MARPOSS

# PRECISION GAUGING

REFERENCE GUIDE


mobile gauge


wireless data connection


manual operations


manual and automatic loading


real-time measure


cost effective


multiple measurements


guided sequence


essential data management


advanced data management


many configurable part programs

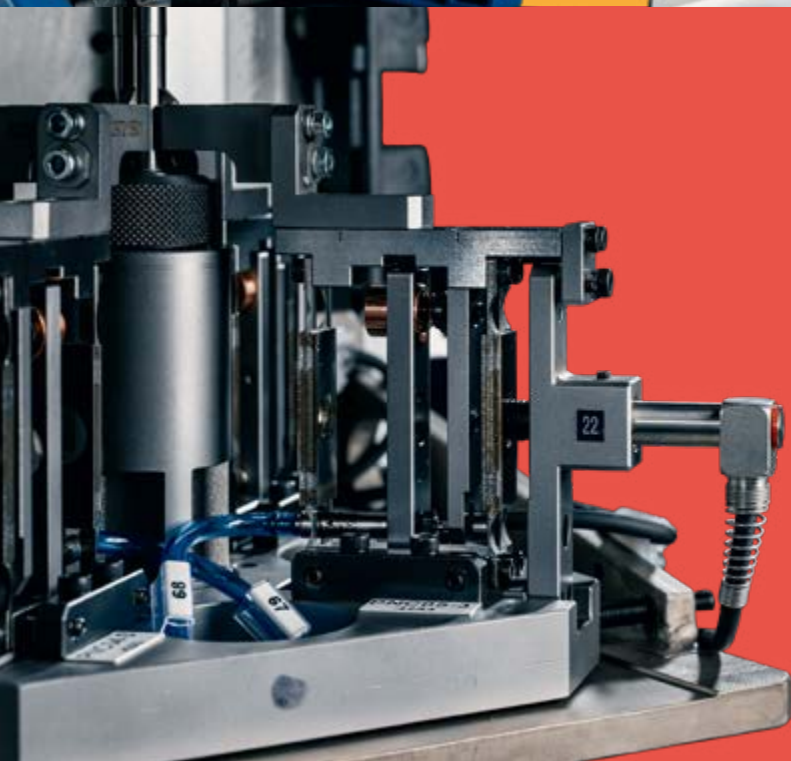

clean and dry part


3D surface inspection


dynamic measurements

# SHOPFLOOR PRODUCTS


# INTEGRATED SOLUTIONS



# GAUGING COMPONENTS

# SHOPFLOOR PRODUCTS


+0.002
OK
MARPOSS iWAVE2

# SHOPFLOOR PRODUCTS

Contact Bore Gauges
Stand Alone

Contact Bore Gauges
With Table-Top Display

Contact Bore Gauges
Color Display and Bluetooth

Contact Snap Gauges
Stand Alone

Contact Snap Gauges
With Table-Top Display

Optical Gauges
Wide and Flexible Measuring Range


Optical Gauges
Total Surface Inspection
3D Visualization


Optical Gauges
Total Surface Inspection
3D Visualization

# CONTACT BORE GAUGES
## STAND ALONE


mobile gauge | manual operations | real-time measure | cost effective

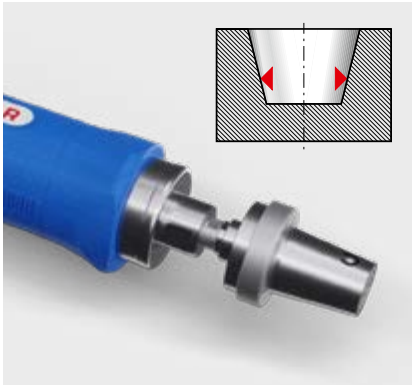
### APPLICATION AND PRODUCT DESCRIPTION

- M1-Star with integrated digital indicator is an “All-in-One” solution for manual precision gauging of internal bores. It integrates the measuring head and the display inside the same structure. It does not require any additional accessory in the use. This characteristic makes it a cost-effective solution.
- M1-Star is perfect to validate workpieces with tight manufacturing tolerance. It features a measurement accuracy up to 1 µm.
- The rugged structure of this hand-held gauge has been designed for the use inside harsh manufacturing environments. Its industrial-grade measuring head is capable of millions of measurement cycles without any performance degradation. The product robustness is fundamental for efficient operations since it allows easy and fast handling of the gauge.
- Thanks to the digital integrated display, the operator can take advantage of the total mobility across the production line, with instantaneous feedback of the measurement and the consequent validation of the workpieces.
- The measuring head is interchangeable, so enabling a high level of gauging flexibility, available directly at the level of the production environment.

### BORE GAUGE DEDICATED SOLUTIONS

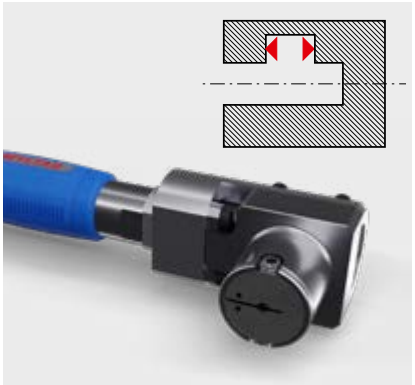
M1-Star can be equipped with different measuring head models. For instance, specific measuring heads are dedicated to shapes like countersinks, splined geometries, and angled bores.

**COUNTERSINK FOR CONICAL PROFILES**



**SPLINED, GEARED**

**PIPE FOR TURNED BORES**



## AVAILABLE MODULES TO EXTEND THE CONFIGURATION

pn: B0E21200003

### QUICKDIGIT HR

Quick Digit™ is a digital indicator, integrating the measuring sensor inside. The measured value is shown in real time on its LCD display, together with the "green-yellow-red" led indication for immediate part quality classification.

Quick Digit™ features a standard visualization resolution of 1 µm. An advanced model with extended resolution up to 0.1 µm is available.

Quick Digit is battery powered, allowing a total mobility of the gauge.

pn: B0E20501001

### QUICKDIGIT HR AND BLUETOOTH

QuickDigit Bluetooth is the premium version of QuickDigit, extending the base functionalities with wireless transmission capabilities.

QuickDigit Bluetooth is a perfect solution to connect the M1 Star gauge to a PC application. It can transfer the data at each measurement acquisition.

### ROTARY SPACER

Accessory to have the indicator display always facing the operator.

### ANGLE ADAPTOR

Accessory to be used when space is limited and the position of the bore is 90° from the direction of insertion

### DEPTH STOP EXTENSION

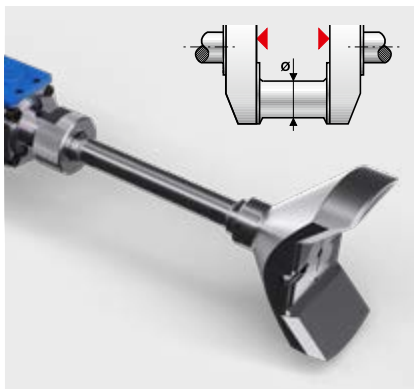
Accessory to control the position in depth where the measurement is executed

### DEPTH EXTENSION

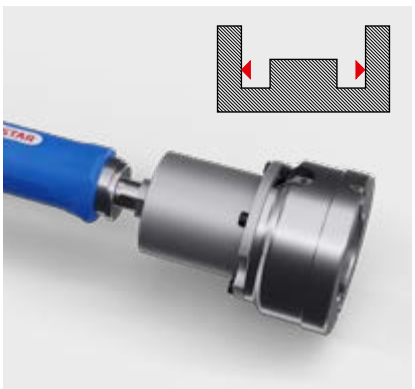
Accessory to bring the gauging head at a farer distance with respect to the direct connection at the handle front-end

### SQUARED NOSEPIECE

### «V» SHAPED NOSEPIECE



### GAUGE HEADS FOR BORES WITH CENTRAL HUB



# CONTACT BORE GAUGES
## WITH TABLE-TOP DISPLAY


manual operations · real-time measure · cost effective · essential data management

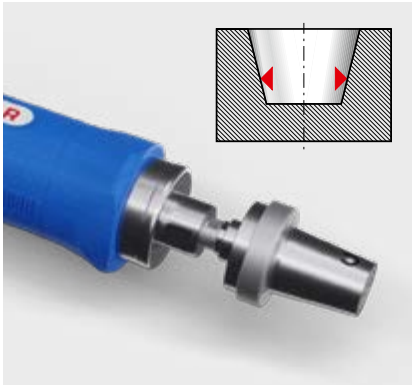
### APPLICATION AND PRODUCT DESCRIPTION

- M1-Star and DUO Display together are a compact workstation dedicated to precision gauging applications with data management requirements.
- M1-Star is the hand-held gauge unit to validate workpieces with tight manufacturing tolerance. It features a measurement accuracy up to 1 µm. Its rugged structure has been designed for the use inside harsh manufacturing environments: the measuring head has an industrial grade and is capable of millions of measurement cycles without any performance degradation. Thanks to a fast-release system, the measuring head is exchangeable in the workshop, offering an high level of gauging flexibility directly inside the production environment.
- DUO Display incorporates a wide range of functionalities, typically required in structured quality control processes. First, it manages the gauge setup and displays the results of the measurements in real-time. Additionally, DUO features several functionalities to manage the measuring data coming from the gauging unit, like results archiving inside the internal microSD card and also transmission of the data to external devices.
- While the USB port, RS232 and RS485 interfaces are available by default, Duo can be optionally equipped with additional Fieldbus interfaces, directly integrated in its structure. ETHERNET/IP, PROFINET and PROFIBUS are available options.

### BORE GAUGE DEDICATED SOLUTIONS

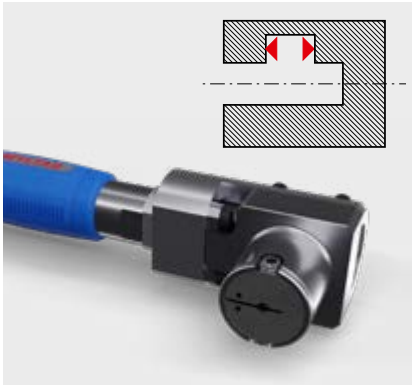
M1-Star can be equipped with different measuring head models. For instance, specific measuring heads are dedicated to shapes like countersinks, splined geometries, and angled bores.

**COUNTERSINK FOR CONICAL PROFILES**



**SPLINED, GEARED**

**PIPE FOR TURNED BORES**



## AVAILABLE MODULES TO EXTEND THE CONFIGURATION

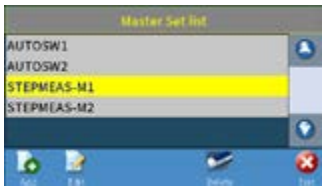

### DUO ELECTRONIC

Duo has a 4.3" touch display. Beyond to be a comfortable display for measurement data, it allows the setup of the workstation directly in the workshop. In fact, its touch-display is IP54-grade and its software interface has been specifically optimized for the use by operators in the production line.

IN-OUT port, USB port, RS232 and RS485 interfaces are embedded. Digital INPUT lines are typically used for cycle activation, for instance with a foot-switch and OUTPUT lines are used to communicate the status (good/not good) of the measurement.






### ROTARY SPACER

Accessory to have the indicator display always facing the operator.

### ANGLE ADAPTOR

Accessory to be used when space is limited and the position of the bore is 90° from the direction of insertion

### DEPTH STOP EXTENSION

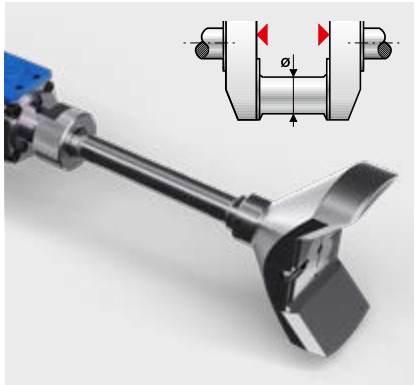
Accessory to control the position in depth where the measurement is executed

### DEPTH EXTENSION

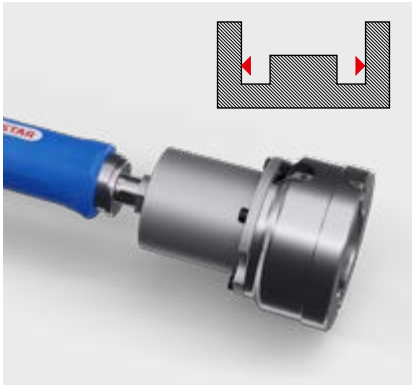
Accessory to bring the gauging head at a farer distance with respect to the direct connection at the handle front-end

### SQUARED NOSEPIECE


### «V» SHAPED NOSEPIECE




### GAUGE HEADS FOR BORES WITH CENTRAL HUB



# CONTACT BORE GAUGES
## COLOR DISPLAY AND BLUETOOTH

pn: B3TJ5SDI100


mobile gauge | wireless data connection | manual operations | real-time measure

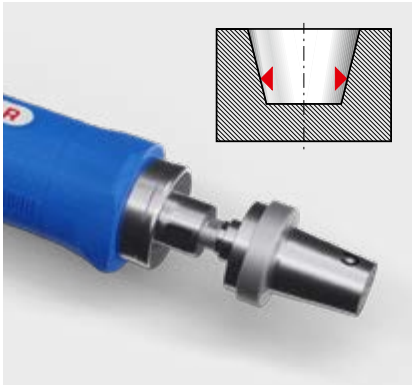
### APPLICATION AND PRODUCT DESCRIPTION

- IWAVE2 is the premium product in the mobile bore gauges line, designed with a toolkit of features to support the maximum efficiency during operations in the production line.
- In fact, it offers all together high gauging precision, total mobility and superior ease-of-use.
- IWAVE2 incorporates a comfortable display, offering in a single view each of the relevant information about the gauging and the handle status, as the power of the Bluetooth connection or the battery level.
- Thanks to its wireless charging system, IWAVE2 actually offers a superior grade of mobility to operators, from gauging activities up to the release of the product into its charger station.
- The activation button is duplicated and the weight of the product is uniformly distributed along its structure. Those are fundamental aspects in order to guarantee the maximum comfort and fast handlings for the operators during the measurement execution.
- Thanks to the integrated Bluetooth connectivity, IWAVE2 can easily transfer the measurement data in real-time to external devices, like PC or even smartphones.
- IWAVE2 comes with Ready2Gauge software application, compatible with PC and smartphones, offering several functionalities to extend the use of the gauge and its potentiality.

### BORE GAUGE DEDICATED SOLUTIONS

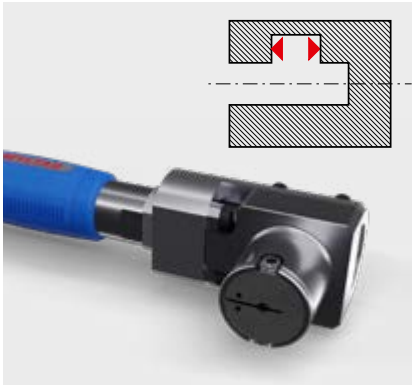
IWAVE2 can be equipped with different measuring head models. For instance, specific measuring heads are dedicated to shapes like countersinks, splined geometries, and angled bores.

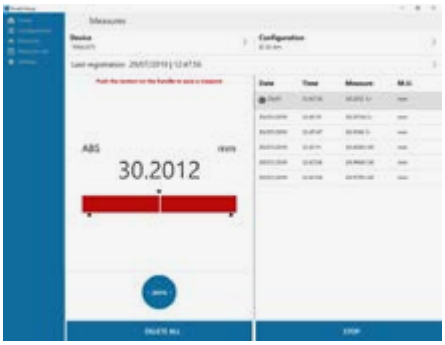
**COUNTERSINK FOR CONICAL PROFILES**



**SPLINED, GEARED**

**PIPE FOR TURNED BORES**



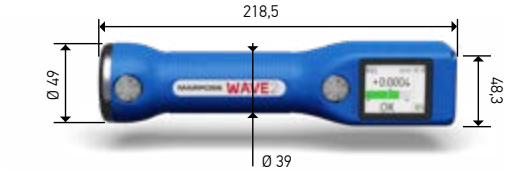



**Ready2Gauge** software is a Marposs application for PC, tables and smartphone, dedicated to extend the functionalities of the IWAVE2 hand-held gauges.
With Ready2Gauge application, it is possible to quickly configure the measurement parameters and then to visualize the measurement results. Ready2Gauge application is also capable to archive the measurement data in different export formats, like csv or Excel.

**Ready2Gauge** is compatible with Windows, Android and IOS.


Direct-Lock is the mechanical interface on IWAVE2 to directly connect the measurement head to the handle. Direct-Lock is available in three sizes: M10, M6 or M3,5 thread, in order to accommodate the full variety of measurement heads.


Star-Lock is the fast release mechanical system for quick change of the measurement heads: with a simple action the operator can release the installed measurement head and connect a new one. Star-Lock version is perfect for frequent gauge head changeovers.

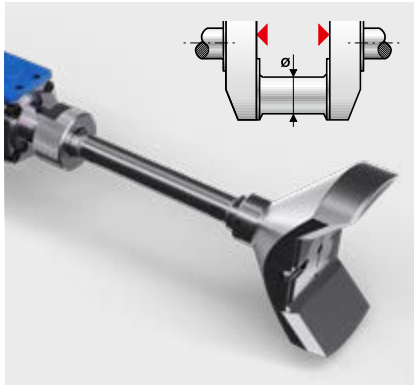



WAVE2 electronic version is the right option for application with ultra-tight tolerance.
It is coupled with the EBG (Electronic Bore Gauge) electronic version of measurement head.

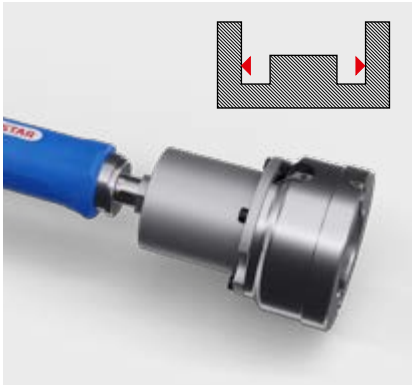

In order to offer the optimal usability for the line operators, the charging station is available in 2 different patterns: Nose-Up, Nose-down.

## SQUARED NOSEPIECE

## «V» SHAPED NOSEPIECE



## GAUGE HEADS FOR BORES WITH CENTRAL HUB



# CONTACT SNAP GAUGE
## STAND ALONE


mobile gauge · manual operations · real-time measure · cost effective

### APPLICATION AND PRODUCT DESCRIPTION

- M3-Star is the hand-held model for manual precision gauging of external diameters.
- M3-Star is perfect to validate workpieces with tight manufacturing tolerance. It features a measurement accuracy up to 1 µm. The measuring head is purposely designed to be as thin as possible, in order to allow measurements into tiny geometries like section grooves.
- The rugged structure of this hand-held gauge has been designed for the use inside harsh manufacturing environments. Its industrial-grade measuring head is capable of millions of measurement cycles without any performance degradation. The product robustness is fundamental for efficient operations since it allows easy and fast handling of the gauge.
- The measuring head is interchangeable, so enabling a high level of gauging flexibility, available directly at the level of the production environment.
- M3-Star can be configured with an integrated digital indicator, so the operator can take advantage of the total mobility across the production line, with instantaneous feedback of the measurement and the consequent validation of the workpieces. Since "All-in-One", this configuration is super cost-effective.

B0E21200003

Quick Digit™ is a digital indicator, integrating the measuring sensor inside. The measured value is shown in real time on its LCD display, together with the "green-yellow-red" led indication for immediate part quality classification. Quick Digit™ features a standard visualization resolution of 1 µm. An advanced model with extended resolution up to 0.1 um is available. Quick Digit is battery powered, allowing a total mobility of the gauge.

B0E20501001

QuickDigit Bluetooth is the premium version of QuickDigit, extending the base functionalities with wireless transmission capabilities.

QuickDigit Bluetooth is a perfect solution to connect the M1 Start gauge to a PC application. It can transfer the data at each measurement acquisition.

### ROTARY SPACER

Accessory to have the indicator display always facing the operator.

### DEPTH EXTENSION

Accessory to bring the gauging head at a farer distance with respect to the direct connection at the handle front-end

# CONTACT SNAP GAUGE
## WITH TABLE-TOP DISPLAY


manual operations · real-time measure · cost effective · essential data management

### APPLICATION AND PRODUCT DESCRIPTION

- M3-Star can be connected to a DUO Display, in order to create a functional and compact workstation, combining together gauging functions and data management.
- DUO Display incorporates a wide range of functionalities, typically required in structured quality control processes. First, it manages the gauge setup and it displays the results of the measurements in real-time. Additionally, DUO features several functionalities to manage the measuring data coming from the gauging unit, like results archiving inside the internal microSD card and also transmission of the data to external devices.
- While the USB port, RS232 and RS485 interfaces are available by default, Duo can be optionally equipped with additional Fieldbus interfaces, directly integrated in its structure. ETHERNET/IP, PROFINET and PROFIBUS are available options.


### DUO ELECTRONIC

Duo has a 4.3'' touch display. Beyond to be a comfortable display for measurement data, it allows the setup of the workstation directly in the workshop. In fact, its touch-display is IP54-grade and its software interface has been specifically optimized for the use by operators in the production line.

IN-OUT ports, USB port, RS232 and RS485 interfaces are embedded. Digital INPUT lines are typically used for cycle activation, for instance with a foot-switch and OUTPUT lines are used to communicate the status (good/not good) of the measurement.

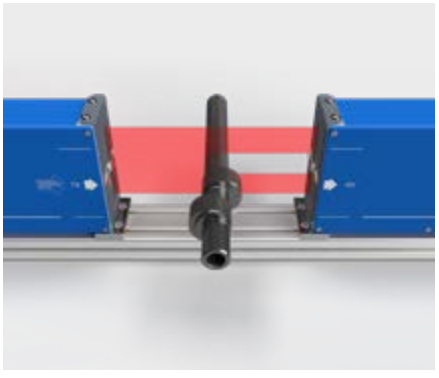
# OPTICAL GAUGE
## WIDE AND FLEXIBLE MEASURING RANGE

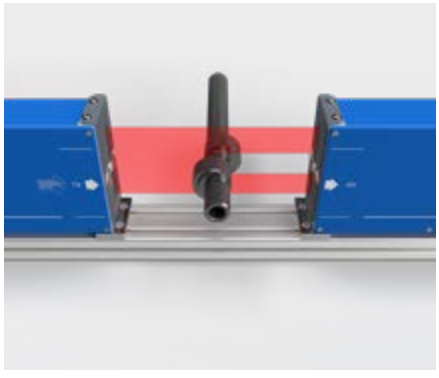
manual operations | cost effective | many configurable part programs | clean and dry part

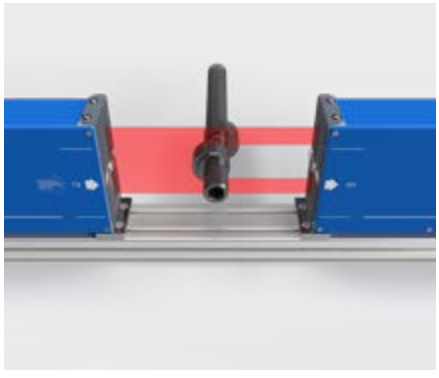

pn: 03PX0610062

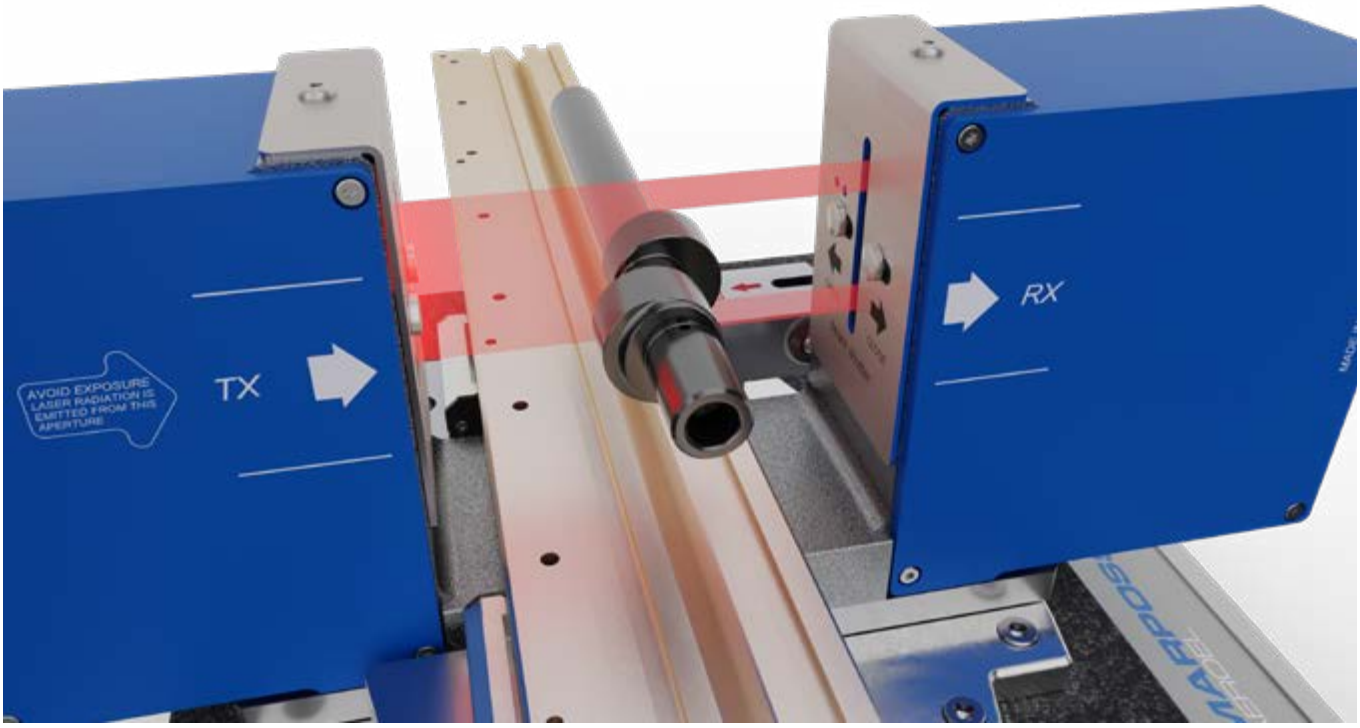
### APPLICATION AND PRODUCT DESCRIPTION

- SUPER-MECLAB is an optical micrometer for the shop floor environment, capable to measure diameters with ultra-precision. For that, SUPER-MECLAB fits several manufacturing applications, even the ones with ultra-tight manufacturing tolerances.
  It performs an unrivalled accuracy, up to ± 0.05µm.
- Beyond accuracy in measurement, its laser technology allows a great flexibility of the gauge: a single SUPER-MECLAB station can easily measure several different diameters sizes. It is sufficient to place the workpiece within the laser beam, without any centering requirement. As result, with one single SUPER-MECLAB station, operator can quickly validate a single shaft in different sections or even can validate different shaft models without any re-tooling operation.
- Thanks to its flexibility in use, precision in measurement and speed in operations, SUPER-MECLAB has a very short time as Return on Investment.



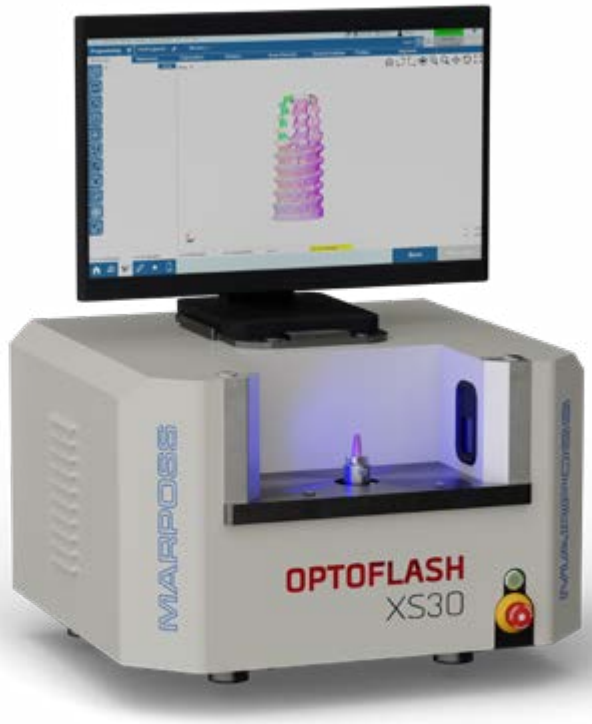







- In order to deliver sub-micron performance grade, both the ambient temperature and the workpiece temperature matter, since they affect the measured values. The high-end measuring system SUPER MECLAB integrates a performing thermal compensation system that automatically removes from the measured value the undesired contributes due to thermal effects. Thank to this function, SUPER-MECLAB is super-accurate even when installed in the harsh production environment.
- The user interface is intuitive and allows fast operations in the line.


# OPTICAL GAUGE
## TOTAL SURFACE INSPECTION – 3D VISUALIZATION




manual operations
advanced data management
many configurable part programs
clean and dry part
3D surface inspection
dynamic measurements

### APPLICATION AND PRODUCT DESCRIPTION

- OptoFlash XS is a ultra-high resolution optical gauge, designed for precision micro-mechanic and dental implants applications.
- Workpieces, that are precise and small-sized at the same time, have generally micro-geometries can be validated on the OptoFlash XS with extreme simplicity and in particular, in a bounce of seconds. In fact, the optical acquisitions has no limitation when inspecting even the most small features on a part.
- MEASUREMENTS ARE CONFIGURED BY SOFTWARE. Through intuitive actions, like drag-n-drop, operators can generate the so called “measurement programs”, autonomously. As result, a single OptoFlash unit can measure a large variety of different part types. It is sufficient to enable the requested “part program” in the software interface and activate the automatic measurement cycle through the start button.

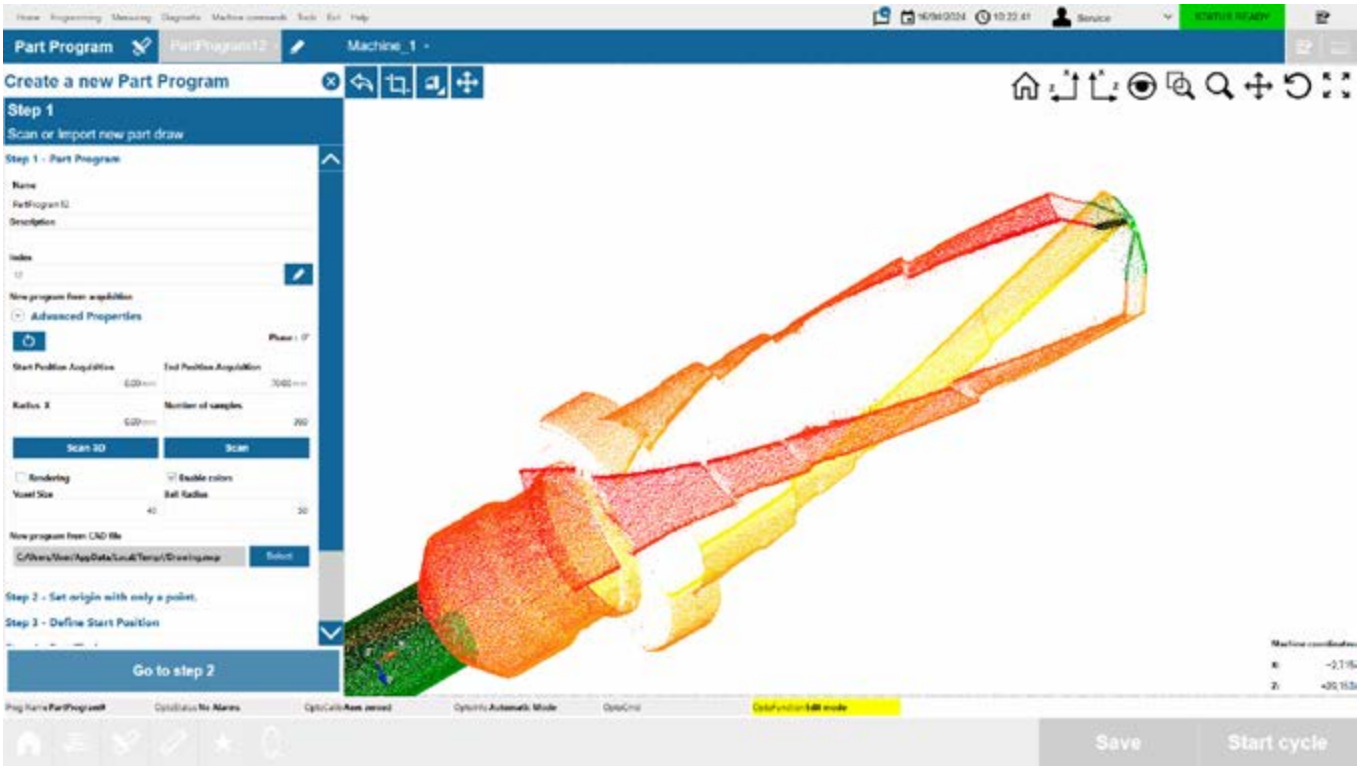
**XS30**
Measuring range:
D 20 x L 30 (mm)


pn: B0407477294

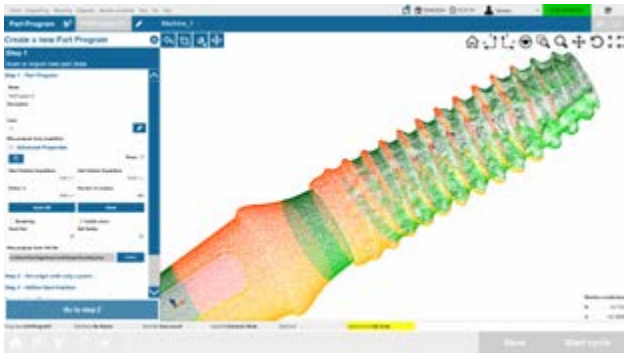
**XS60**
Measuring range:
D 20 x L 60 (mm)

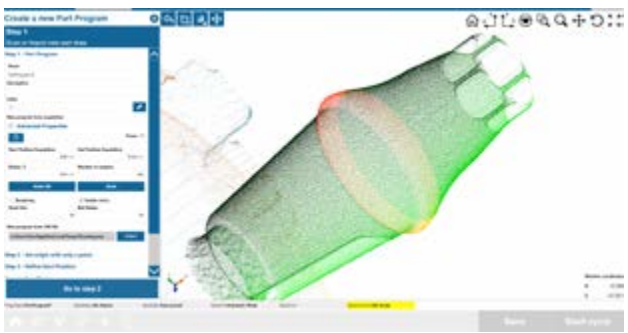

pn: B0407477295

## ACCESSORIES




- EACH OF YOUR SHAFT IS RECONSTRUCTED IN 3D.
  OptoFlash is the only measuring unit in the market capable to digitally reproduce the workpiece in a 3D format with a sub-micron resolution. This unique capability of the OptoFlash has 2 crucial advantages. First, measurement results are visualized with a 3D style, so delivering a superior ease-of-use to line operators, that can visualize the actual workpiece in a realistic form and to navigate its features very intuitively. Moreover, measurements are much more accurate since calculated on the super-precise reconstruction of the entire workpiece surface, that is the Point Cloud.





- Axis calculation
- Keyslot angle
- Radial runout
- Diameters
- Thu-hole diameter
- Thu-hole Z-Position
- Roundness
- Cylindricity
- Parallelism
- Stroke
- Angular shift
- Small radii
- Distances and lengths

# OPTICAL GAUGE
## TOTAL SURFACE INSPECTION – 3D VISUALIZATION

manual operations | advanced data management | many configurable part programs | clean and dry part | 3D surface inspection | dynamic measurements

pn: B2980655205


pn: B0407480657

### APPLICATION AND PRODUCT DESCRIPTION

- Marposs Optoflash is a precision measuring system, that by optical technology, is capable to fully inspect the external geometry of a workpiece and to measure each relevant feature on it. The capability to rotate the part during the measuring cycle allows a 360° control of the complete part surface. Thanks to its special 2D architecture, OptoFlash is a leading product for measuring speed: it can analyze in just 10 seconds the compliance of a workpiece to its design specifications.
- MEASUREMENTS ARE CONFIGURED BY SOFTWARE. Through intuitive actions, like drag-n-drop, operators can generate the so called "measurement programs", autonomously. As result, a single OptoFlash unit can measure a large variety of different part types. It is sufficient to enable the requested "part program" in the software interface and activate the automatic measurement cycle through the start button.
- OptoFlash can measure workpieces up to 300 mm in length and 60 mm in diameter.

**S100**
Measuring range:
D 60 x L 100 (mm)


pn: B0407480655

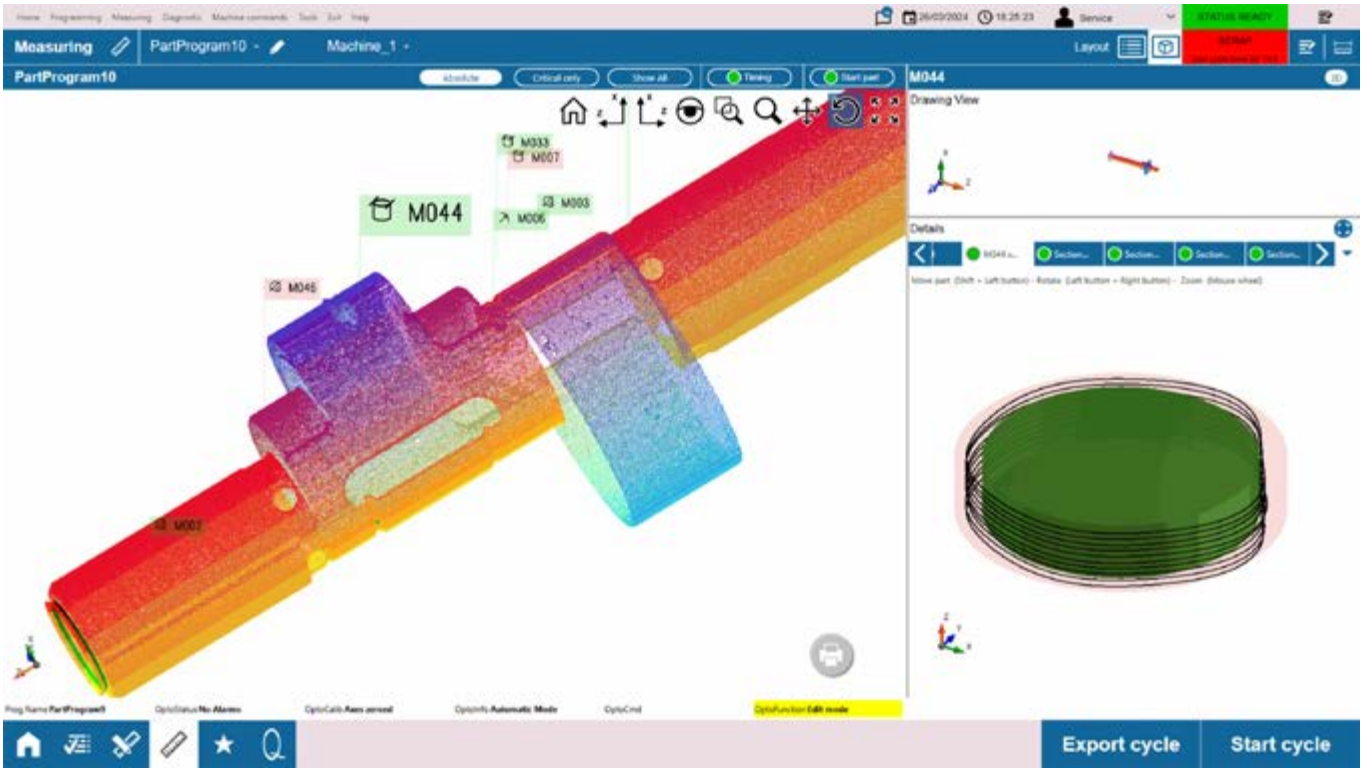
**S200**
Measuring range:
D 60 x L 200 (mm)


pn: B0407480656

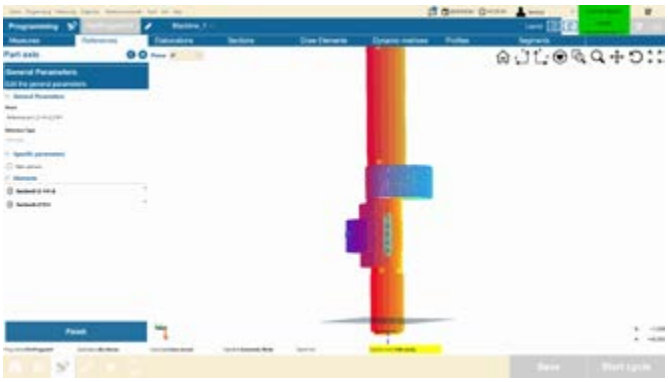
**S300**
Measuring range:
D 60 x L 300 (mm)


pn: B0407480657

## ACCESSORIES




▸ EACH OF YOUR SHAFT IS RECONSTRUCTED IN 3D.
By synchronization of image acquisitions and workpiece rotation, OptoFlash is capable to digitally reproduce the workpiece in a 3D format. This unique capability of the OptoFlash has 2 crucial advantages. First, measurement results are visualized with a 3D style, so delivering a superior ease-of-use to line operators, that can visualize the actual workpiece in a realistic form and to navigate its features very intuitively. Moreover, measurements are much more accurate since calculated on the super-precise reconstruction of the entire workpiece surface, that is the Point Cloud.



- Axis calculation
- Keyslot angle
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- Diameters
- Thu-hole diameter
- Thu-hole Z-Position
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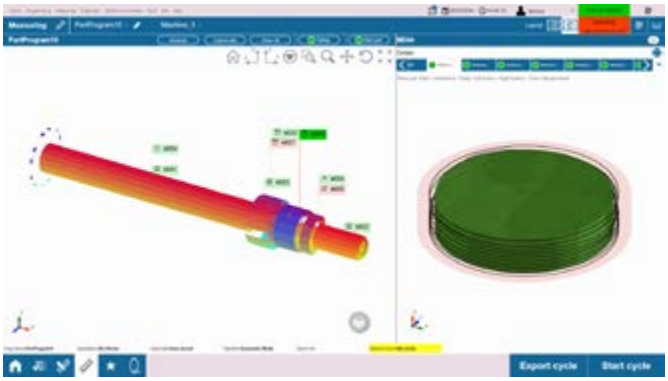
- Stroke
- Angular shift
- Small radii
- Distances and lengths




# INTEGRATED SOLUTIONS


MAIN MEASURE PAGE
EV Part
EV Part
Step 1 (1 / 1)
Good: 0
Scrap: 0
Trend: 0
1
Diameter1 25 ± 0.05
mm
2
Diameter2 25 ± 0.05
mm
MERLINPlus
MARPO

# INTEGRATED SOLUTIONS

Multisensor
Workstations

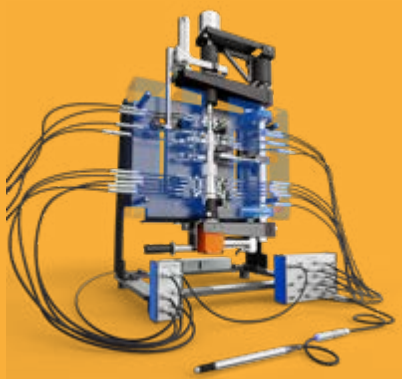
Multisensor
Workstations

Multisensor
Workstations

Multisensor
Workstations

Premium Multisensor
Workstations

Premium Multisensor
Workstations

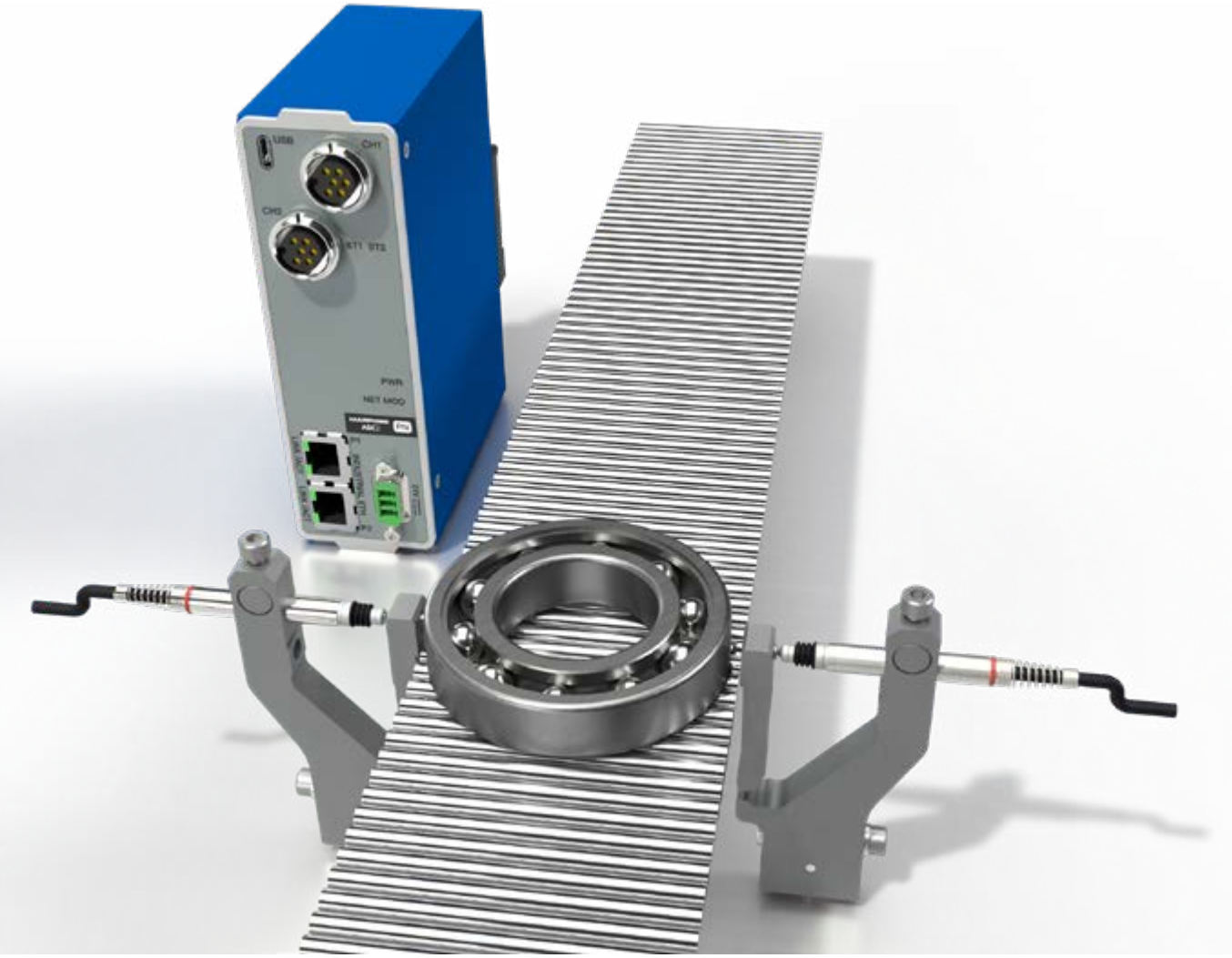


Premium Multisensor
Workstations


Optical Gauge
Total Surface Inspection
3D Visualization


Optical Gauge
Total Surface Inspection
3D Visualization

# MULTISENSOR
## WORKSTATIONS



cost effective | real-time data acquisition | ease to use | essential data management

### APPLICATION AND PRODUCT DESCRIPTION

- The contact element can be selected among a wide range of models, in order to perfectly fit application requirements and constraints. For instance, it is possible to select different contact radius, special material for high temperatures, special profiles of the contact area, like flat or knife shapes.
- For applications with delicate material, so requiring a low measuring force SoftTouch probes without gasket are available. Soft touch versions have protection rate P50 or IP54.

- Pencil Probes are displacement sensors with super high precision performance, designed for integration into application-specific systems.
- Thanks to the large configurability of its mechanical and electrical features, the pencil probes resolve thousands of different applications.
- For instance, multiple pencil probes can be integrated into automated lines for in-line control of bearings or beverage containers.
- Pencil probes are also the measuring heart of the Marposs QuickSet solution for shaft gauging.

- ASC RS232 accepts Marposs standard LVDT analog sensors and LVDT/HBT digital sensors with LVDT pinout.
- ASC acquires the measuring signals from multiple gauge sensors and automatically transforms them into a digital data stream, ready for immediate elaboration on line controls.
- ASC is the perfect solution for small networks with up to 4 sensors and direct connection to the PLC.

- ASC PROFINET accepts Marposs standard LVDT analog sensors and LVDT/HBT digital sensors with LVDT pinout.
- ASC acquires the measuring signals from multiple gauge sensors and automatically transforms them into a digital data stream, ready for immediate elaboration on line controls.
- ASC is the perfect solution for small networks with up to 4 sensors and direct connection to the PLC.

## PRODUCT FEATURES

### DATA MANAGEMENT

Measurement results, at the end of each cycle, are immediately transferred to remote locations via RS-232 or Profinet.

## WHEN TO USE IT

Use ASC when you need real-time transfer of results to a central system without visualization.

### TRANSMISSION PROTOCOLS

RS-232
A simple ASCII serial protocol for straightforward, low-overhead communication.

Profinet
An Industrial Ethernet Fieldbus protocol that allows PLC-controlled measurement cycles to run over a robust Ethernet network.

Choose RS-232 when:
You do not require on-site display of measurements.
The application is simple and does not demand complex commands or high data throughput.

Choose Profinet when:
You need a more powerful, high-speed solution for demanding applications.
You want seamless integration of measurement data into your PLC's Industrial Ethernet network.

### EASE OF USE

The system can be configured in just a few simple steps.

Use ASC whenever you want to minimize setup time and it is ideal if you require a plug-and-play solution without the monitor.

# MULTISENSOR
## WORKSTATIONS


manual operations · real-time measure · cost effective · essential data management

## APPLICATION AND PRODUCT DESCRIPTION

- With Duo control unit, it is easy to create compact and cost-effective gauging workstations with 2 separated gauging sensors. Thanks to its large flexibility in configuration, it makes possible to select the appropriate gauging technology for an application. In fact, with Duo control unit it is possible to interconnect 2 gauges irrespective of their specific gauging technology. For instance, one mechanical gauge and one air gauge can be used in the same workstation, at the same time. This is a typical configuration of a manual workstation for checking the perfect matching of the external diameters of a shaft against the internal diameter of its housing.
- DUO control unit incorporates a wide range of functionalities, typically required during quality control activities in the production. First, it manages the gauge setup and displays the results of the measurements in real-time. Additionally, DUO features several functionalities for the management of the measuring results, like data archiving inside the internal microSD card and also transmission to external devices.
- While the USB port, RS232 and RS485 interfaces are available by default, Duo can be optionally equipped with additional Fieldbus interfaces, integrated in its structure.

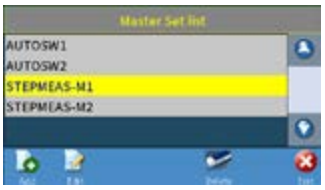
ETHERNET/IP, PROFINET and PROFIBUS are available options.


Interface card is an accessory, and it is integrated in the DUO structure.










### DUO ELECTRONIC

Duo has a 4.3" touch display. Beyond to be a comfortable display for measurement results, the touch-display allows the setup of the workstation directly in the workshop. In fact, it is IP54-grade and the software interface is optimized for use by operators in the production line.

IN-OUT ports, USB port, RS232 and RS485 interfaces are embedded. Digital INPUT lines are typically used for cycle activation, for instance with a foot-switch and OUTPUT lines are used to communicate the status (good/not good) of the measurement.

## PRODUCT FEATURES

## WHEN TO USE IT

### GAUGING CONTROLS

Duo is a compact control unit that integrates a toolkit of essential functionalities for creation of measurement programs, including creation of custom-defined measurement formulas and configuration of the digital input/output.

The standard software allows a large configurability that is a fundamental advantage in order to match most of the application requirements, easily and quickly. Configurability become strategical aspect when introducing new models of workpiece in production.

### DATA VISUALIZATION

When a measurement cycle is complete, results are visualized on the 4.3" product display. The intuitive graphical layout, the high display contrast, the use of colors allow all together a quick review of the results.

Ease-of-use is a fundamental aspect for operators in the field. In fact, basing on the output of a measurement cycle, good/scrap/rework, operator consequently takes actions. DUO is actually intuitive and makes reliable the operators' activities.

### DATA MANAGEMENT

Duo integrates a SD memory, 4GB size, usable to store measurement results after each cycle. Export formats are CSV and DFQ. In addition to the local storage, it is possible to mirror the data on a PC directly connected to Duo by using the integrated Ethernet connectivity.

Even though the primary function of a measuring station is to classify workpieces as "good/scrap/rework", it is not the only important functionality. In fact, the measurement data contains precious information about the process and its efficiency. Archiving measurement data allows implementing traceability programs or improvement programs of the production efficiency.

# MULTISENSOR
## WORKSTATIONS

manual operations

real-time measure

multiple measurements

essential data management

### APPLICATION AND PRODUCT DESCRIPTION

- QUICK SET™ CHUCK is an integrated solution, operator loaded, for gauging multiple features simultaneously on a workpiece. To accomplish this task, it can be configured with multiple contact sensors, integrated in this structure. Sensors can be installed both in a radial and axial pattern in order to perform diameters and height controls on the same workpiece.
- Using QuickSet chuck is easy. In fact, the operator just needs to introduce the workpiece into the measuring cell. The mechanical robustness of the structure allows a high performance of the system, both in terms of repeatability and reproducibility of the measurements. Its industrial grade is also the guarantee of system reliability all over the time.


NEMO control unit is a perfect combination with QuickSet Chuck: it collects measurement data from multiple sensors and generates a comfortable visualization of the measurement results on its 5.7" color display.

NEMO is the control unit dedicated to medium complexity applications, with a maximum number of 16 measuring sensors.

Its 5.7" touch display, IP54 protection grade, allows a comfortable interaction for the operators.

## PRODUCT FEATURES

### GAUGING CONTROLS

With NEMO it is possible to create and manage structured measurement programs with a large number of controls inside. Moreover, Nemo implements functionalities to synchronize the execution of the measurements with production batches, collecting results and calculating statistics consistently with the specific batch in process.

## WHEN TO USE IT

The standard software allows a large configurability that is a fundamental advantage in order to resolve even the most complicate applications.
Configurability becomes a strategical aspect when introducing new models of workpiece in production.
Thanks to the capability to manage production batches, NEMO is a perfect solution for high volume manufacturing or where stringent quality control programs are implemented.

### DATA VISUALIZATION

NEMO features a 5.7" touch display, with IP54 protection grade. The best ease-of-use is obtained through the simple graphical layout, the high display contrast, the use of colors.
In addition to the visualization of the current measurement result, NEMO displays the history of the measuring values on a summary chart, giving the operators clear information of the manufacturing trends.

The industrial grade of the touch display is an important feature since operators can quickly input batch information, directly on the display panel. No keyboard and mouse are necessary.
Ease-of-use for field operators is a fundamental aspect, since it directly improves the speed of the quality validation activities. The visualization of the results is so intuitive, in order to allow reliable processing of the workpieces, that is based on the output of the validation check.

### DATA MANAGEMENT

Measurement results, at the end of each cycle, can be stored into the embedded memory of the product. Optionally those same data can be transferred to remote locations, as networks folders or servers, by using the integrated Ethernet connectivity.

Even though the primary function of a measuring station is to classify workpieces as "good/scrap/rework", it is not the only important functionality. In fact, the measurement data contains precious information about the process and its efficiency. Archiving measurement data allows implementing traceability programs or improvement programs of the production efficiency.

# MULTISENSOR
## WORKSTATIONS

manual operations
real-time measure
multiple measurements
essential data management

### APPLICATION AND PRODUCT DESCRIPTION

- QUICK SET™ HORIZONTAL is a gauging solution for multiple controls on shafts. As a modular system, it is combining gauging capabilities and high flexibility, in order to meet demanding application requirements. In its structure, the QuickSet can accommodate different Marposs sensors. By the appropriate armset, the sensors can be configured to measure radial and axial features of the workpieces.
- For instance, the QUICKSET can be used to validate multiple diameters on the shaft and also axial positions.


pn: B830MEADD00

B6871250022

### ACCESSORIES


pn: B1024017753


pn: B1024017755


pn: B3024017325


pn: B3024017315


pn: B1024017567


pn: B3392401705


pn: B3392401720


pn: B1024017105


pn: B2924017405


pn: B2924017150


pn: B2924017302


pn: B3292401702


pn: B3292401705


pn: B3024017000


pn: B2924025050


MERLIN is the control unit dedicated to large complexity applications, with a maximum number of 16 characteristics per part program.

Its 8.4" touch display, IP54 protection grade, allows a comfortable visualization of each sensor output.

Thanks to the measure history and part history, Merlin helps operators to precisely control the production flow.

## PRODUCT FEATURES

## WHEN TO USE IT

### GAUGING PROCESS CONTROL

MERLIN is the right solution for gauging workstations with several measuring sensors. The large display makes comfortable the management of complex measurement programs with a large number of controls inside. Moreover, MERLIN implements functionalities to synchronize the execution of the measurements with production batches, collecting results and calculating statistics consistently with the specific batch in process.

The standard software allows a large configurability that is a fundamental advantage in order to resolve even the most complicate applications.
Configurability become strategical aspect when introducing new workpiece models in production.
Thanks to the capability to manage production batches, MERLIN is a perfect solution for high volume manufacturing, where stringent quality control programs are implemented.

### DATA VISUALIZATION

MERLIN features a 8.4" touch display, with IP54 protection grade. The best ease-of-use is obtained through the large display, the simple graphical layout, the high display contrast, the use of colors.
In addition to the visualization of the current measurement result, MERLIN can display on summary charts the history of the measuring values, giving the operators immediate information of the manufacturing trends.

The industrial grade of the touch display is an important feature since operators can easily interact with the control unit, for instance to input batch information. No keyboard and mouse are necessary.
Ease-of-use for field operators is a fundamental aspect, since it directly improves the speed of the quality validation activities. The measurement history visualization is a simple as effective tool for the production team. It allows a quick understanding of the production efficiency and facilitate decisions on corrective actions when necessary.

### DATA MANAGEMENT

Measurement results, at the end of each cycle, can be stored into the embedded memory. Optionally those same data can be transferred to remote locations, as networks folders or servers, by using the integrated Ethernet connectivity.

Even though the primary function of a measuring station is to classify workpieces as "good/scrap/rework", it is not the only important functionality. In fact, the measurement data contains precious information about the process and its efficiency.
Archiving measurement data allows implementing traceability programs or improvement programs of the production efficiency.

### STATISTICAL PROCESS CONTROL

On MERLIN there are functionalities dedicated to validate the efficiency of production process as the automatic calculation of the Gauge Capability and Machine Tool Capability.
In fact, MERLIN, is capable to elaborate in real time measurements into statistical parameters of the production process, as Cp and Cpk. On top of this, MERLIN implements functionalities for the active surveillance of the process: basing on the actual statistical figures, warnings and alarms are automatically generated.

Thanks to its integrated statistical toolkit, MERLIN is a perfect solution to quickly implement Statistical Process Control programs.
Real time monitoring of production and its output quality are fundamental aspects to improve productivity, efficiency and definitively to save money. Automatic warnings allows to intercept in time critical situations and so to prevent costly not-compliances.

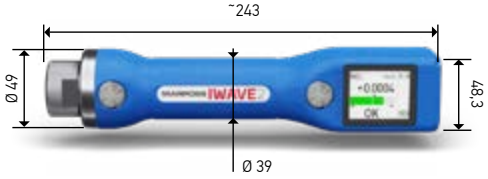
# PREMIUM MULTISENSOR
## WORKSTATIONS


mobile gauge
wireless data connection
manual operations
multiple measurements
guided sequence
advanced data management

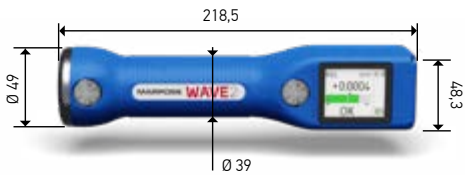
## APPLICATION AND PRODUCT DESCRIPTION

- Fast operations and maximum ease-of-use is what MERLIN Plus together with IWAVE2 gauges can deliver, irrespective of the application complexity. For this reason, MERLIN Plus and IWAVE2 gauges are often used in applications with several gauging steps and with tight requirements of productivity.
- IWAVE2 is the top-of-the-range manual bore gauge, integrating both Bluetooth connectivity and embedded color display for real time measurement review. Double activation button, automatic rotating display, wireless charging station are some of features of this product designed to elevate the level of ease-of-use.
- With Merlin Plus control unit , part programs with a large number of measurements can be easily managed. Guided sequences can be configured, integrating application-specific information as workpieces images and graphical overlays for the maximum ease-of-use of the line operators.


Direct-Lock is the mechanical interface on IWAVE2 to directly connect the measurement head to the handle. Direct-Lock is available in three sizes: M10, M6 or M3,5 thread, in order to accommodate the full variety of measurement heads.




Star-Lock is the fast release mechanical system for quick change of the measurement heads: with a simple action the operator can release the installed measurement head and connect a new one. Star-Lock version is the perfect one for frequent gauge head changeovers.




WAVE2 electronic version is the right option for application with ultra-tight tolerance.
This version is coupled with EBG (Electronic Bore Gauge) the electronic version of measurement head.


MERLIN Plus is the control unit dedicated to medium complexity applications, with a maximum number of 250 measuring sensors.

Its 12.1" touch display, IP54 protection grade, allows a comfortable visualization of each sensor output.

Thanks to the measure history and part history, Merlin Plus helps operators to precisely control the production flow.

## PRODUCT FEATURES

## WHEN TO USE IT

### GAUGING PROCESS CONTROL

MERLIN Plus is the premium control unit offering, on top of the primary gauging application, a wide range of functionalities to support the manufacturing process and the quality control execution. The high level of configurability is one of the key advantages of the MERLIN Plus, allowing a perfect fitting into existing applications.

The combination of a large number of functionalities designed purposely for quality control and the extreme level of configurability make Merlin PLUS the preferred choice for manufacturing with structured quality control and traceability programs.

### DATA VISUALIZATION

With MERLIN Plus, it is possible to create custom-defined pages for the visualization of the measurement results at the end of the cycle. Multiple displays can be connected to MERLIN Plus in order to have a comfortable visualization in case of large control plans. Measurement results can also be printed in pdf format. Operator can access to part history, in order to visualize the results of previous parts. Moreover, summary charts with measurement history are available, normally used for graphical review of the trends.

Configurability of the visualizations gives a significant benefit to operators, making intuitive the review of the measuring cycle even when it is composed by several different controls. Efficiency in manufacturing operations is directly connected to productivity and cost savings.

### DATA MANAGEMENT

Measurement results, at the end of each cycle, can be stored into the embedded memory. Optionally those same data can be transferred to remote locations, as networks folders or servers, by using the integrated Ethernet connectivity.

Even though the primary function of a measuring station is to classify workpieces as "good/not good", it is not the only important functionality. In fact, the measurement data contains precious information about the process and archiving those data allows implementing traceability programs or improvement programs of the production efficiency.

### STATISTICAL PROCESS CONTROL

On MERLIN Plus there are functionalities dedicated to validate the efficiency of production process as the automatic calculation of the Gauge Capability and Machine Tool Capability. In fact, Merlin Plus, is capable to elaborate in real time measurements into statistical parameters of the production process, as Cp and Cpk. On top of this, Merlin Plus implements functionalities for the active surveillance of the process: basing on the actual statistical figures, warnings and alarms are automatically generated.

Thanks to its integrated statistical toolkit, Merlin Plus is a perfect solution to quickly implement Statistical Process Control programs.
Real time monitoring of production and its output quality are fundamental aspects to improve productivity, efficiency and definitively to save money. Automatic warnings allows to intercept in time critical situations and so to prevent costly not-compliances.

# PREMIUM MULTISENSOR WORKSTATIONS


manual operations
multiple measurements
real-time measure
essential data management

## APPLICATION AND PRODUCT DESCRIPTION

- Quick Set Vertical is a gauging system for shafts, capable to execute multiple measurements on a workpiece in a single shot. Its architecture is designed to accommodate measuring sensors in the right position, according to the specific workpiece model. The QuickSet belongs to the class of flexible measuring solutions: in fact, the vertical bars allow an easy repositioning of the measuring head in case of production changes, directly in the workshop.
- QuickSet is also available as dual structure, perfect solution for productions with demanding throughput: on the same base structure there are 2 separated measuring systems, that are normally controlled by one single control unit. Thanks to this structure, with QuickSet dual it is sufficent to change the part program on the software interface to switch from a workpiece model to another or in case of different operations to control. Thanks to the optional motor for part rotation, dynamic measurements are supported.

The GagePod is a line of connectivity modules with a wide range of functionalities. First, GagePod can network the measuring sensors composing the gauging solution and convey measurment data to the Control unit. In addition, GagePod offers connectivity to the customer automation system, thanks to Fieldbus modules like ETHERNET/IP, PROFINET and PROFIBUS.

Several GagePod blocks can be interconnected together in order to create large measuring systems. As option, multiple GagePod can be concatenated, in a side by side mechanical mounting pattern, for the best compact installation in line.

E9066E is the top-of-the-range control unit, capable to resolve up to the most demanding applications.

## PRODUCT FEATURES

## WHEN TO USE IT

### GAUGING PROCESS CONTROL

E9066 control unit, with its software suite QuickSPC, is the top of the product range. It id purposely designed to cover demanding applications both in terms of configuration complexity and computational performance. It offers a toolkit of utilities and functionalities that can cover almost any need in industrial applications from measurement for quality controls, automation, traceability up to data management.

The combination of a large number of functionalities designed purposely for quality control and the extreme level of configurability make E9066 the preferred choice for manufacturing with structured quality control and traceability programs.

### DATA VISUALIZATION

The user interface is optimized to visualize control plans with a large number of measurements. Each single measurement can also be analyzed in details, through a dedicated page with graphical illustration of the profiles. Multiple displays can be connected and custom-defined pages can be created, for a perfect adaptation to the customer application and use. Measurement results can be printed in pdf format, on request or automatically at the end of each cycle.

Configurability of the visualizations gives a significant benefit to operators, making intuitive the review of the measuring cycle even when it is composed by several different controls. Efficiency in manufacturing operations is directly connected to productivity and cost savings.

### DATA MANAGEMENT

Measurement results, at the end of each cycle can be transferred to remote locations. A deep level of configurability is supported, for instance data formatting or custom export-file naming.

Even though the primary function of a measuring station is to classify workpieces as “good/not good”, it is not the only important functionality. In fact, the measurement data contains precious information about the process and archiving those data allows implementing traceability programs or improvement programs of the production efficiency.

### STATISTICAL PROCESS CONTROL

On E9066 there are functionalities dedicated to validate the efficiency of production process as the automatic calculation of the Gauge Capability and Machine Tool Capability.
In fact, E9066, is capable to elaborate in real time measurements into statistical parameters of the production process, as Cp and Cpk. On top of this, E9066 implements functionalities for the active surveillance of the process: basing on the actual statistical figures, warnings and alarms are automatically generated.

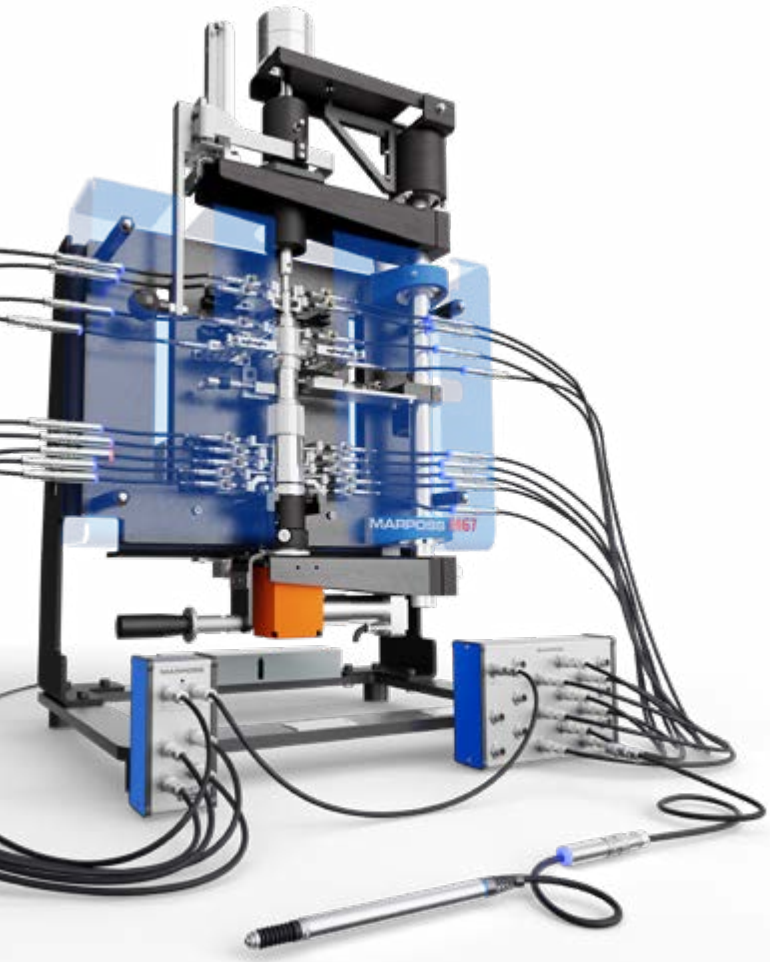
Thanks to its integrated statistical toolkit, E9066 is a perfect solution to quickly implement Statistical Process Control programs.
Real time monitoring of production and its output quality are fundamental aspects to improve productivity, efficiency and definitively to save money. Automatic warnings allows to intercept in time critical situations and so to prevent costly not-compliances.

### ADVANCED SETUP

E9066 and QuickSPC merge all together computational power, configuration flexibility and a wide toolkit of functionalities. Advanced functionalities to develop complex applications are integrated: guided sequences for manual step-by-step controls, interfacing to PLC for automatic loading, in-line thermal compensation base or real part temperature, fine-tuning feedback for the machine tool.

E9066 and QuickSPC are much more than a measuring system. Thanks to the wide range of functionalities, from data management to automation, applications can be resolved with an excellent balance price-performance: the high level of integrated functionalities remove the need of additional components or separated accessories.

# PREMIUM MULTISENSOR WORKSTATIONS



- fast assembly
- real-time data acquisition
- plu & play installation
- instant status diagnostics

## APPLICATION AND PRODUCT DESCRIPTION

- Pencil Probes are high-precision displacement sensors specifically designed for seamless integration into application-specific systems. Thanks to their wide configurability—both mechanical and electrical—they can be adapted to thousands of different applications.
- AMA™, Advanced Measuring Armset, is a line of mechanical structures designed to integrate and to fit pencil probes, such as Marposs RedCrown2 SMART, into applications. The combination of armsets and sensors makes it possible to implement precise and reliable measurements on the workpieces.
- Miniature measuring sensors offer unrivalled solutions for tiny integration spaces, not compromising the level of functionalities.


- Designed to simplify the integration of industrial sensors, SMARTNet drastically reduces installation time and eliminates complex setup operations thanks to its self-setting feature. Its fully digital architecture includes built-in signal digitization and linearization, ensuring precise and reliable measurements with minimal effort.
- With a real-time data acquisition rate of up to 30,000 synchronized measurements per second per sensor, and robust push-pull connectors for instant plug/unplug operations, SMARTNet brings industrial networks to the next level. The 360° bi-color LED gives intuitive diagnostics at a glance, reducing downtime and enabling predictive maintenance in even the most demanding environments.
- SMARTNet's modular plug-and-play design is made to create scalable and easily configurable solutions. Whether for packaging, robotic cells, assembly lines, or automotive applications like bearings and precision controls, SMARTNet simplifies connectivity while ensuring top-level accuracy and adaptability.

MERLIN CORE is the control unit dedicated to large complexity applications,with a maximum number of 20 characteristics per part program.
Its 10.1" touch display, IP54 protection grade, allows a comfortable visualization of each sensor imput.
Thanks to the measure history and part history, Merlin Core helps operators to precisely control the production flow.

## PRODUCT FEATURES

## WHEN TO USE IT

### GAUGING PROCESS CONTROL

MERLIN Core is the ideal solution for gauging workstations with multiple measuring sensors. Its large display facilitates the management of complex measurement programs with a high number of controls. Moreover, MERLIN Core includes features to synchronize measurement execution with production batches, collect results and calculate statistics consistent with the specific batch being processed.

The standard software allows a large configurability that is a fundamental advantage in order to resolve even the most complicate applications.
Configurability become strategical aspect when introducing new workpiece models in production.
Thanks to the capability to manage production batches, MERLIN Core is a perfect solution for high volume manufacturing, where stringent quality control programs are implemented.

### DATA VISUALIZATION

MERLIN Core features a 10.1" touch display with IP54 protection. Optimal ease of use is ensured by the large screen, intuitive graphical layout and effective use of colors. In addition to displaying the current measurement result, MERLIN Core can show historical measurement data in summary charts, providing operators with immediate insight into manufacturing trends.

The industrial grade of the touch display is an important feature since operators can easily interact with the control unit, for instance to input batch information. No keyboard and mouse are necessary. Ease-of-use for field operators is a fundamental aspect, since it directly improves the speed of the quality validation activities. The measurement history visualization is a simple
as effective tool for the production team. It allows a quick understanding of the production efficiency and facilitates decisions on corrective actions when necessary.

### DATA MANAGEMENT

At the end of each cycle, measurement results can be stored on a removable SD card. Optionally, the same data can be transferred to remote locations, such as network folders or servers, using the integrated Ethernet connectivity.

Even though the primary function of a measuring station is to classify workpieces as "good/scrap/rework", it is not the only important functionality. In fact, the measurement data contains precious information about the process and its efficiency. Archiving measurement data allows implementing traceability programs or improvement programs of the production efficiency.

### STATISTICAL PROCESS CONTROL

The advanced version of MERLIN Core includes dedicated features to validate the efficiency of the production process, such as the automatic calculation of Gauge Capability and Machine Tool Capability. It can process measurements in real time and convert them into key statistical parameters, such as Cp and Cpk. In addition, MERLIN Core offers active process monitoring: based on real-time statistical data, it automatically generates warnings and alarms.

The advanced version of MERLIN Core software is the ideal solution for quickly implementing Statistical Process Control programs.
Real time monitoring of production and its output quality are fundamental aspects to improve productivity, efficiency and definitively to save money. Automatic warnings allows to intercept in time critical situations and so to prevent costly not-compliances.

# OPTICAL GAUGE
## TOTAL SURFACE INSPECTION - 3D VISUALIZATION

pn: B47016A6515


pn: B0407477295

manual and automatic loading

3D surface inspection

dynamic measurements

clean and dry part

advanced data management

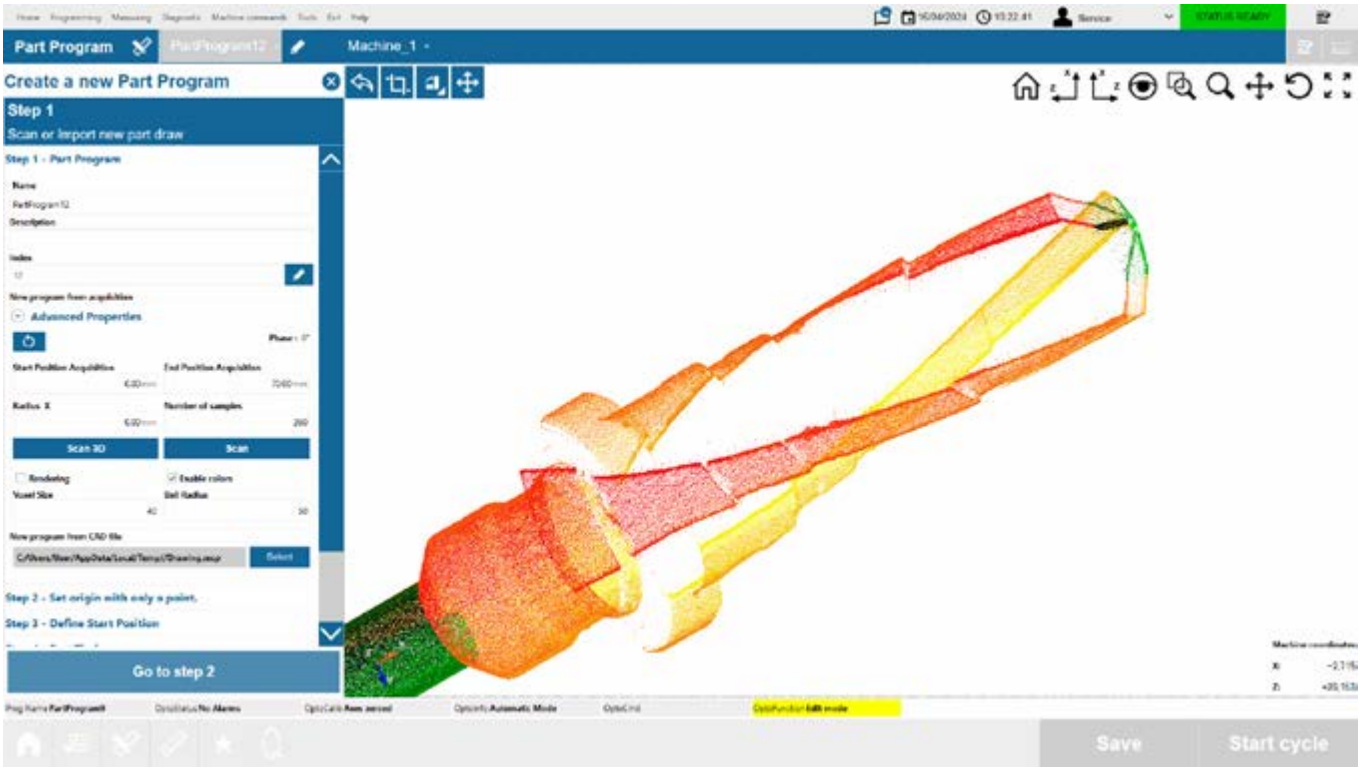
many configurable part programs

### APPLICATION AND PRODUCT DESCRIPTION

- OptoFlash XS is a ultra-high resolution optical gauge, designed for precision micro-mechanic and dental implants applications.
- Workpieces, that are precise and small-sized at the same time, have generally micro-geometries that can be validated on the OptoFlash XS with extreme simplicity and in particular, in a bounce of seconds. In fact, the optical acquisition has no limitation when inspecting even the smallest features on a part.
- MEASUREMENTS ARE CONFIGURED BY SOFTWARE. Through intuitive actions, like drag-n-drop, operators can generate the so called “measurement programs”, autonomously. As result, a single OptoFlash unit can measure a large variety of different part types. It is sufficient to enable the requested “part program” in the software interface and activate the automatic measurement cycle through the start button.

The GagePod is a line of connectivity modules with a wide range of functionalities. First, GagePod can network the measuring sensors composing the gauging solution and convey measurment data to the Control unit. In addition, GagePod offers connectivity to the customer automation system, thanks to Fieldbus modules like ETHERNET/IP, PROFINET and PROFIBUS.

Several GagePod blocks can be interconnected together in order to create large measuring systems. As option, multiple GagePod can be concatenated, in a side by side mechanical mounting pattern, for the best compact installation in line.




## PRODUCT FEATURES

### READY FOR ANY GAUGING CHALLENGE

OptoFlash offers a superior measurement flexibility: measurements are configured by software and each part program is saved in the product memory, ready to be activated in any moment.
Measurements are obtained by digital analysis of the ultra-high resolution images. Complex controls, like small elements or dynamic sessions, are very easy to execute on the OptoFlash

## WHEN TO USE IT

A single OptoFlash unit can measure a large variety of part types, just switching measurement program in the software interface.
It is a perfect product for productions with high mix of part types.

### EASE-OF-USE

Visualization of the measurement results is in a 3D style, making so intuitive for the operator the validation of a measurement cycle. Through intuitive actions, like drag-n-drop actions, operators can generate “measurement programs” autonomously.

No training is necessary for users of the OptoFlash. The ease-of-use is a strategical aspect for this product, since it makes fast the product configuration in line. When new workpieces model are introduced in production, the part programs can be generated in a few moments.

### DATA MANAGEMENT

Measurement results, at the end of each cycle can be transferred to remote locations. A deep level of configurability is supported, for instance data formatting or custom export-file naming.

Even though the primary function of a measuring station is to classify workpieces as “good/not good”, it is not the only important functionality. In fact, the measurement data contains precious information about the process and archiving those data allows implementing traceability programs or improvement programs of the production efficiency.

### AUTOMATIC LOADING

OptoFlash is largely used in automatic applications where workpieces are loaded by robot and where measuring cycle time is actually demanding, in the range of 10 seconds. In fact, thanks to its unrivalled speed in measurement, Optoflash fits the most totality of automated applications, even the most complicated.

HIGHER THE MEASUREMENT SPEED, CHEAPER IS THE AUTOMATION SYSTEM OF THE LINE. A single optoFlash unit is normally sufficient to fulfil the target line throughput. In fact OptoFlash is normally 2 time faster in measurement than a traditional system based on part scanning.

# OPTICAL GAUGE
## TOTAL SURFACE INSPECTION - 3D VISUALIZATION


manual and automatic loading

3D surface inspection

dynamic measurements

clean and dry part

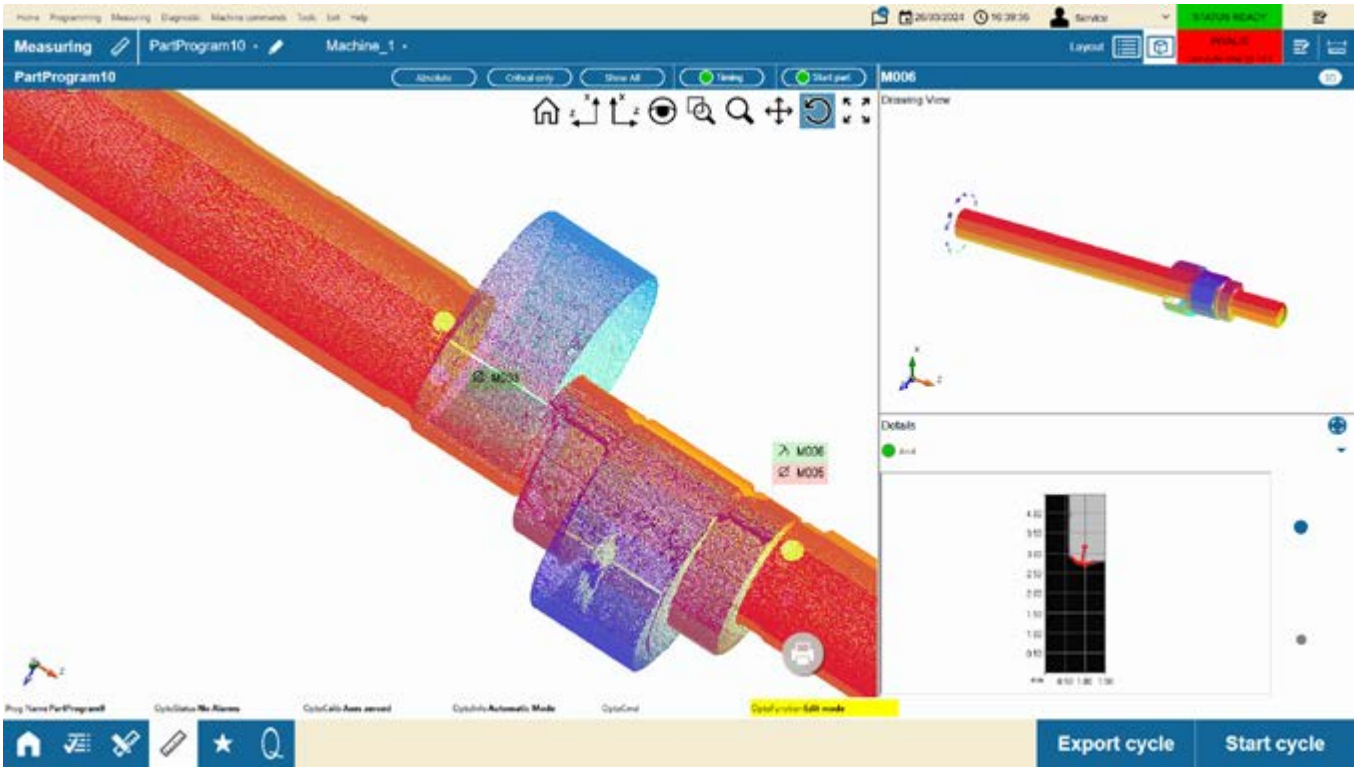
advanced data management

many configurable part programs

### APPLICATION AND PRODUCT DESCRIPTION

- End-of-line is the stage of the production where quality compliance means validating each single feature on the workpiece and checking it is perfectly in specifications. Optical gauging is the right method to validate a workpiece in any of its external features, irrespective of the geometrical contraints of a part, and all over 360°.
- Optical technology is super fast and thanks to this characteristic, it has revolutioned the quality control in the end-of-line, enabling the possibility to control 100% of the workpieces in the end-of-line. OptoFlash is the Marposs precision optical gauge, based on a unique 2D optical architecture without axis motion, that makes this product the first-in-its-class for speed in measurement. A complete measuring cycle takes typically no longer than 10 seconds, irrespective of the number of measurements executed.
- Premium Ease-of-Use is also a distinctive feature of the OptoFlash. In fact, through a special Marposs algorithm, patent-pending, OptoFlash is capable to reconstruct in real-time the 3D of each workpiece in measurement. Measurement results are visualized in a 3D style, so elevating the level of ease-of-use at top of its category.

The GagePod is a line of connectivity modules with a wide range of functionalities. First, GagePod can network the measuring sensors composing the gauging solution and convey measurment data to the Control unit. In addition, GagePod offers connectivity to the customer automation system, thanks to Fieldbus modules like ETHERNET/IP, PROFINET and PROFIBUS.
Several GagePod blocks can be interconnected together in order to create large measuring systems. As option, multiple GagePod can be concatenated, in a side by side mechanical mounting pattern, for the best compact installation in line.

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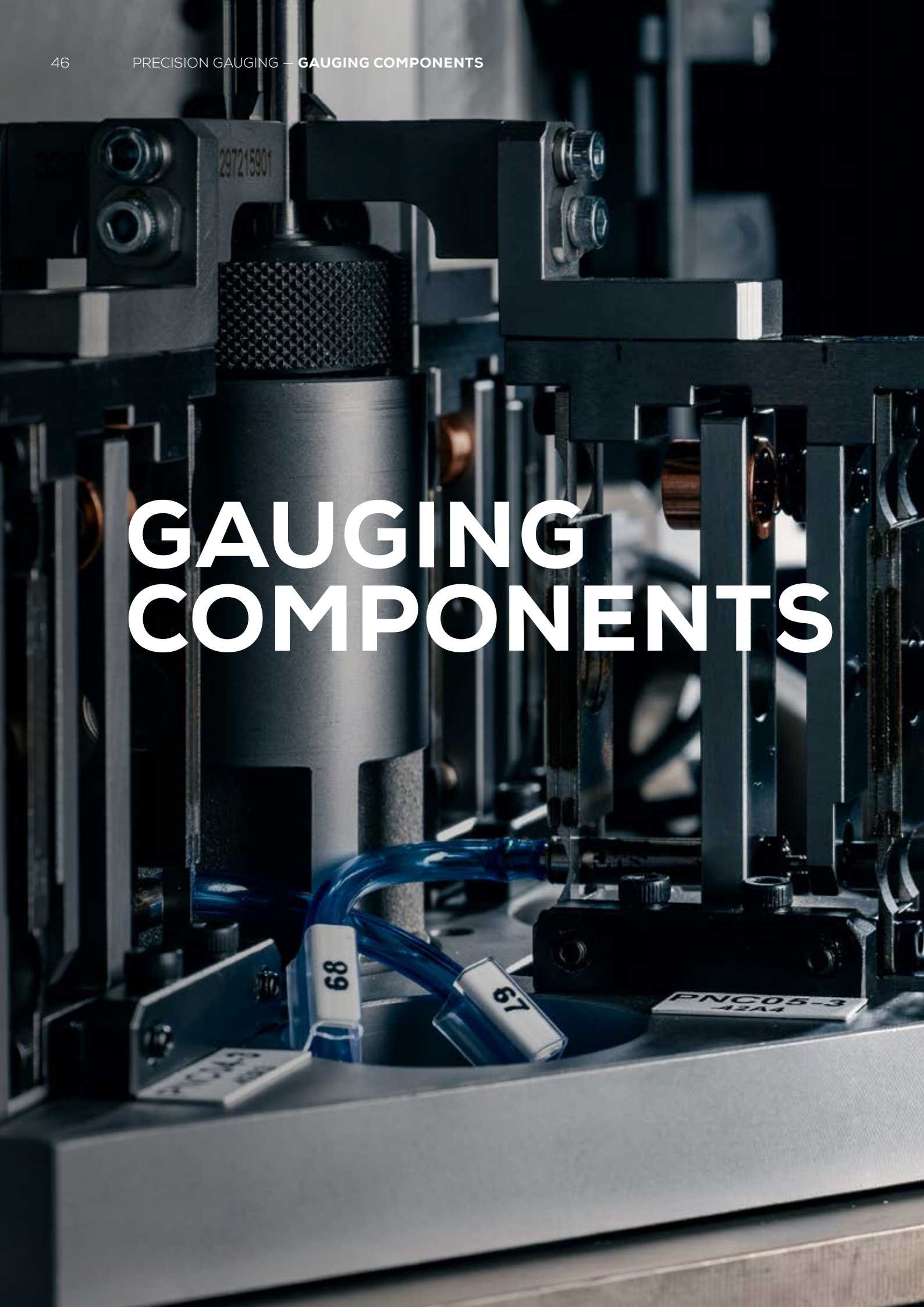



# GAUGING COMPONENTS


22

# GAUGING COMPONENTS

MEASURING CELLS
AND PENCIL PROBES

AMA AND QUICKBLOCK

HAND HELD GAUGES

CHROMATIC CONFOCAL
SOLUTIONS

INTERFEROMETRIC SOLUTIONS


DIGITAL INDICATORS

CONNECTIVITY SOLUTIONS

QUICK SET

MARPOSS AEROEL
LASER MICROMETER

OPTOFLASH

ELECTRONICS

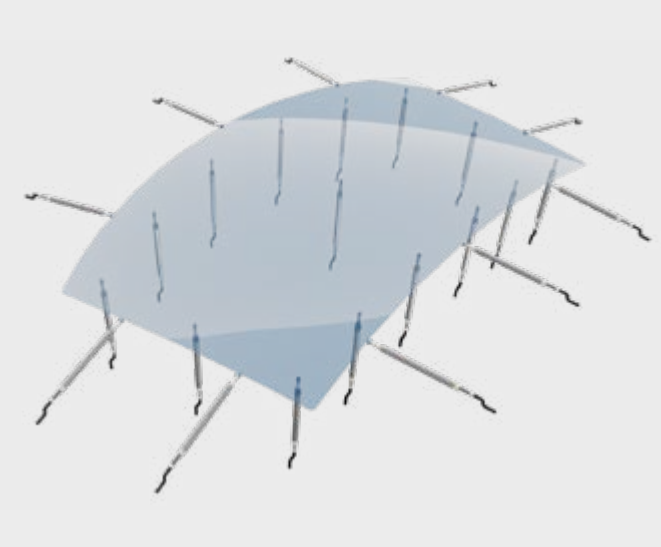
SOFTWARE

# PENCIL PROBES


## APPLICATION AND PRODUCT DESCRIPTION

- Pencil Probes are displacement sensors with a super high precision performance, designed for integration into application-specific systems.
- Thanks to the large configurability of its mechanical and electrical features, the pencil probes resolve thousands of different applications.
- For instance, multiple pencil probes can be integrated into automated lines for in-line control of bearings or beverage containers.
- Pencil probes are also the measuring heart of the Marposs QuickSet solution for shaft gauging.

## APPLICATION EXAMPLES



# PENCIL PROBES

## REDCROWN2

**REDCROWN2** is a high precision displacement sensor for industrial gauging applications. It is capable of accuracy up to 0,3µm. It is available in several different versions in order to perfectly fit applications requirements.
Export free versions are available.

## DIGICROWN2

**DIGICROWN2** is the premium performance displacement sensor in the line, capable to achieve **accuracy up to 0,2µm and featuring a constant** signal linearity all-over its full measuring range.

Thanks to the integrated, TEDS (Transducer Electronic Data Sheet) **DIGICROWN2** is automatically detected by the network controller, so accelerating the installation process and eliminating setup errors.

## REDCROWN2 USB

**REDCROWN2 USB** is the cost-effective model in the product line. In fact, it integrates the premium performance level of the digital version DIGICROWN2 and the USB interface at the same time.

It is designed to be directly connected to a PC, without any additional accessory as power supply or connectivity blocks.
For its characteristics, it is the perfect model for super-high precision applications in the laboratory.

## REDCROWN2 SMART

**REDCROWN2 SMART** is the latest addition to the line, born to deliver a superior level of functionalities in measurement. It delivers the highest accuracy, up to 0,1µm, thanks to the on-board processor, it is fast to install thanks to the push-pull connecting system, it is easy to configure thanks to the auto-detection system and the embedded LED indicator.


- The contact element can be selected among a wide range of models, in order to perfectly fit application requirements and constraints. For instance, it is possible to select different contact radius, special material for high temperatures, special profiles of the contact area, like flat or knife shapes.
- The contact element is in Carbide. As option, Nylon (PA66) versions are available on soft touch and ultra-soft touch versions.

- **The standard probe versions integrate an enclosing gasket** for the IP65 grade, perfect for aggressive environments.
- **For applications with delicate material, so requiring a low measuring force SoftTouch** probes without gasket are available. Soft touch versions have protection rate P50 or IP54.
- **Ultra soft touch** With the same IP characteristics above it was designed to measure delicate or very thin materials (glass, plastic...).

- LVDT and HBT measuring cores are available, in order to satisfy a wide range of different applications. Moreover there is a large range of compatible models: TESA®, Solartron®, Mercer®, Metem®, Mahr-Feinpruef®, Microcontrol®.

- The type of actuation is selectable between:
  - **Spring Push (S):** Always ready to measure
  - **Pneumatic Push (PP):** It needs to be pneumatically activated to perform the measure
  - **Vacuum Retraction(V):** Like the spring version but it can be retracted by the vacuum
  - **Push vacuum (PV):** It needs a pneumatic activation to perform the measure and the vacuum to be retracted.

- Cable output is available in axial and radial pattern, for a perfect integration into tiny spaces.

# MODELS AND ACCESSORIES
# PENCIL PROBES

## MEASURING RANGE ± 0,5MM
**[MECHANICAL TRAVEL 1,5MM]**

### REDCrown2 LVDT
**Cable length:** 2 m
**Accuracy error:** ±MAX(0,5 + 2*Reading [mm]; 7*|Reading [mm]|) • **Sensitivity:** 230 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| F05 | ±0.5 mm | Spring | Axial | 1 | Standard | B3PR01L0000 |
| FR05 | ±0.5 mm | Spring | Radial | 1 | Standard | B3PR01L1200 |
| F05L | ±0.5 mm | Spring | Axial | 0,3 | Soft touch | B3PR01L5000 |

### REDCrown2 HBT
**Cable length:** 2 m
**Accuracy error:** ±MAX(0,5 + 2*Reading [mm]; 7*|Reading [mm]|) • **Sensitivity:** 73,75 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| H05 | ±0.5 mm | Spring | Axial | 1 | Standard | B3PR01N0000 |
| HR05 | ±0.5 mm | Spring | Radial | 1 | Standard | B3PR01N1200 |
| H05L | ±0.5 mm | Spring | Axial | 0,3 | Soft touch | B3PR01T5000(*) |
| H05S | ±0.5 mm | Spring | Axial | 0,3 | Ultra short | B3PR01T0100 |

### DIGICrown2
**Cable length:** 2 m
**Accuracy error:** ±(0,2+Reading [mm]*1)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| D01 | ±0.5 mm | Spring | Axial | 1 | Standard | B3PD01N0000 |
| RD01 | ±0.5 mm | Spring | Radial | 1 | Standard | B3PD01N1200 |
| D01L | ±0.5 mm | Spring | Axial | 0,3 | Soft touch | B3PD01N5000 |
| D01S | ±0.5 mm | Spring | Axial | 0,6 | Ultra short | B3PD01S0000 |

### REDCrown2 USB
**Cable length:** 2 m
**Accuracy error:** ±(0,2+Reading [mm]*1)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| U05 | ±0.5 mm | Spring | Axial | 1 | Standard | B3PR01Y0000 |
| UD05 | ±0.5 mm | Spring | Radial | 1 | Standard | B3PR01Y1200 |
| U05L | ±0.5 mm | Spring | Axial | 0,3 | Soft touch | B3PR01Y5000 |

(*) HBT TESA

### REDCrown2 SMART
**Cable length:** 0,2 m
**Accuracy error:** ±(0,2+Reading [mm]*1)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| K01 | ±0.5 mm | Spring | Axial | 1 | Standard | B3PK01N0000 |
| RK01 | ±0.5 mm | Spring | Radial | 1 | Standard | B3PK01N1200 |
| K01L | ±0.5 mm | Spring | Axial | 0,3 | Soft touch | B3PK01N5000 |

### REDCrown2 SMART
**Cable length:** 2 m
**Accuracy error:** ±(0,2+Reading [mm]*1)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| K01 | ±0.5 mm | Spring | Axial | 1 | Standard | 3PK01N0200 |
| RK01 | ±0.5 mm | Spring | Radial | 1 | Standard | 3PK01N1400 |
| K01L | ±0.5 mm | Spring | Axial | 0,3 | Soft touch | 3PK01N5200 |

## MEASURING RANGE ± 1MM
[MECHANICAL TRAVEL 3MM]

### REDCrown2 LVDT
**Cable length:** 2 m
**Accuracy error:** ±(0,3 + 5*|Reading [mm]|) • **Sensitivity:** 230 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| F10 | ±1 mm | Spring | Axial | 0,7 | Standard | B3PR02L0000 |
| FR10 | ±1 mm | Spring | Radial | 0,7 | Standard | B3PR02L1200 |
| FPA10 | ±1 mm | Pneumatic Push | Axial | from 0,8 to 2,2 | Standard | B3PR02L0400 |
| FP10 | ±1 mm | Pneumatic Push | Radial | from 0,8 to 2,2 | Standard | B3PR02L1600 |
| FVA10 | ±1 mm | Vacuum | Axial | 0,4 | Standard | B3PR02L0560 |
| FV10 | ±1 mm | Vacuum | Radial | 0,4 | Standard | B3PR02L1760 |
| F10L | ±1 mm | Spring | Axial | 0,3 | Soft touch | B3PR02L5000 |
| FR10L | ±1 mm | Spring | Radial | 0,3 | Soft touch | B3PR02L6200 |
| FPA10L | ±1 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR02L5400 |
| FP10L | ±1 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR02L6600 |
| FPVA10L | ±1 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR02L5800 |
| FPV10L | ±1 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR02L7000 |

MEASURING RANGE ± 1MM

## REDCrown2 HBT

**Cable length:** 2 m
**Accuracy error:** ±(0,3 + 5*|Reading [mm]|) • **Sensitivity:** 73,75 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| H10 | ±1 mm | Spring | Axial | 0,7 | Standard | B3PR02N0000 |
| HR10 | ±1 mm | Spring | Radial | 0,7 | Standard | B3PR02N1200 |
| HPA10 | ±1 mm | Pneumatic Push | Axial | from 0,8 to 2,2 | Standard | B3PR02N0400 |
| HP10 | ±1 mm | Pneumatic Push | Radial | from 0,8 to 2,2 | Standard | B3PR02N1600 |
| HVA10 | ±1 mm | Vacuum | Axial | 0,4 | Standard | B3PR02N0560 |
| HV10 | ±1 mm | Vacuum | Radial | 0,4 | Standard | B3PR02N1760 |
| H10L | ±1 mm | Spring | Axial | 0,3 | Soft touch | B3PR02T5000(*) |
| HR10L | ±1 mm | Spring | Radial | 0,3 | Soft touch | B3PR02T6200(*) |
| HPA10L | ±1 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR02T5400(*) |
| HP10L | ±1 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR02T6600(*) |
| HPVA10L | ±1 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR02T5800(*) |
| HPV10L | ±1 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR02T7000(*) |

## DIGICrown2

**Cable length:** 2 m
**Accuracy error:** ±(0,2+Reading [mm]*1)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| D02 | ±1 mm | Spring | Axial | 0,7 | Standard | B3PD02N0000 |
| RD02 | ±1 mm | Spring | Radial | 0,7 | Standard | B3PD02N1200 |
| PAD02 | ±1 mm | Pneumatic Push | Axial | from 0,8 to 2,2 | Standard | B3PD02N0400 |
| PD02 | ±1 mm | Pneumatic Push | Radial | from 0,8 to 2,2 | Standard | B3PD02N1600 |
| VAD02 | ±1 mm | Vacuum | Axial | 0,4 | Standard | B3PD02N0560 |
| VD02 | ±1 mm | Vacuum | Radial | 0,4 | Standard | B3PD02N1760 |
| D02L | ±1 mm | Spring | Axial | 0,3 | Soft touch | B3PD02N5000 |
| RD02L | ±1 mm | Spring | Radial | 0,3 | Soft touch | B3PD02N6200 |
| PAD02L | ±1 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PD02N5400 |
| PD02L | ±1 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PD02N6600 |
| PVAD02L | ±1 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PD02N5800 |
| PVD02L | ±1 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PD02N7000 |

## REDCrown2 USB

**Cable length:** 2 m
**Accuracy error:** ±(0,2+Reading [mm]*1)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| U10 | ±1 mm | Spring | Axial | 0,7 | Standard | B3PR02Y0000 |
| UR10 | ±1 mm | Spring | Radial | 0,7 | Standard | B3PR02Y1200 |
| UPA10 | ±1 mm | Pneumatic Push | Axial | from 0,8 to 2,2 | Standard | B3PR02Y0400 |
| UP10 | ±1 mm | Pneumatic Push | Radial | from 0,8 to 2,2 | Standard | B3PR02Y1600 |
| UVA10 | ±1 mm | Vacuum | Axial | 0,4 | Standard | B3PR02Y0560 |
| UV10 | ±1 mm | Vacuum | Radial | 0,4 | Standard | B3PR02Y1760 |
| U10L | ±1 mm | Spring | Axial | 0,3 | Soft touch | B3PR02Y5000 |
| UR10L | ±1 mm | Spring | Radial | 0,3 | Soft touch | B3PR02Y6200 |
| UPA10L | ±1 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR02Y5400 |
| UP10L | ±1 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR02Y6600 |
| UPVA10L | ±1 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR02Y5800 |
| UPV10L | ±1 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR02Y7000 |

(*) HBT TESA

## REDCrown2 SMART

**Cable length:** 0,2 m
**Accuracy error:** ±(0,2+Reading [mm]*1)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| K02 | ±1 mm | Spring | Axial | 0,7 | Standard | B3PK02N0000 |
| RK02 | ±1 mm | Spring | Radial | 0,7 | Standard | B3PK02N1200 |
| PAK02 | ±1 mm | Pneumatic Push | Axial | from 0,8 to 2,2 | Standard | B3PK02N0400 |
| PK02 | ±1 mm | Pneumatic Push | Radial | from 0,8 to 2,2 | Standard | B3PK02N1600 |
| VAK02 | ±1 mm | Vacuum | Axial | 0,4 | Standard | B3PK02N0560 |
| VK02 | ±1 mm | Vacuum | Radial | 0,4 | Standard | B3PK02N1760 |
| K02L | ±1 mm | Spring | Axial | 0,3 | Soft touch | B3PK02N5000 |
| RK02L | ±1 mm | Spring | Radial | 0,3 | Soft touch | B3PK02N6200 |
| PAK02L | ±1 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PK02N5400 |
| PK02L | ±1 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PK02N6600 |
| PVAK02L | ±1 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PK02N5800 |
| PVK02L | ±1 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PK02N7000 |

## REDCrown2 SMART

**Cable length:** 2 m
**Accuracy error:** ±(0,2+Reading [mm]*1)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| K02 | ±1 mm | Spring | Axial | 0,7 | Standard | 3PK02N0200 |
| RK02 | ±1 mm | Spring | Radial | 0,7 | Standard | 3PK02N1400 |
| PAK02 | ±1 mm | Pneumatic Push | Axial | from 0,8 to 2,2 | Standard | 3PK02N0600 |
| PK02 | ±1 mm | Pneumatic Push | Radial | from 0,8 to 2,2 | Standard | 3PK02N1800 |
| VAK02 | ±1 mm | Vacuum | Axial | 0,4 | Standard | 3PK02N0680 |
| VK02 | ±1 mm | Vacuum | Radial | 0,4 | Standard | 3PK02N1880 |
| K02L | ±1 mm | Spring | Axial | 0,3 | Soft touch | 3PK02N5200 |
| RK02L | ±1 mm | Spring | Radial | 0,3 | Soft touch | 3PK02N6400 |
| PAK02L | ±1 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | 3PK02N5600 |
| PK02L | ±1 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | 3PK02N6800 |
| PVAK02L | ±1 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | 3PK02N6000 |
| PVK02L | ±1 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | 3PK02N7200 |

# MEASURING RANGE ± 2MM
[MECHANICAL TRAVEL 6,6MM]

## REDCrown2 LVDT

**Cable length:** 2 m
**Accuracy error:** ±(0,3 + 7*|Reading [mm]|) • **Sensitivity:** 230 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| F20 | ±2 mm | Spring | Axial | 0,7 | Standard | B3PR05L0199 |
| FR20 | ±2 mm | Spring | Radial | 0,7 | Standard | B3PR05L1399 |
| FP20 | ±2 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PR05L1759 |
| F20L | ±2 mm | Spring | Axial | 0,3 | Soft touch | B3PR05L5199 |

MEASURING RANGE ± 2MM

### REDCrown2 HBT

**Cable length:** 2 m

**Accuracy error:** ±(0,3 + 7*|Reading [mm]|) • **Sensitivity:** 73,75 mV/V/mm<

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| H20 | ±2 mm | Spring | Axial | 0,7 | Standard | B3PR05N0199 |
| HR20 | ±2 mm | Spring | Radial | 0,7 | Standard | B3PR05N1399 |
| HP20 | ±2 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PR05N1759 |
| H20L | ±2 mm | Spring | Axial | 0,3 | Soft touch | B3PR05T5199(*) |

## [MECHANICAL TRAVEL 11MM]

### REDCrown2 LVDT

**Cable length:** 2 m

**Accuracy error:** ±MIN(0,3 + 10*|Reading [mm]|; 12 + 2*|Reading [mm]|) • **Sensitivity:** 230 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| F21L | ±2LR mm | Spring | Axial | 0,7 | Standard | B3PR1020199 |
| FR21L | ±2LR mm | Spring | Radial | 0,7 | Standard | B3PR1021399 |
| FPA21 | ±2LR mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PR1020559 |
| FP21 | ±2LR mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PR1021759 |
| FVA21 | ±2LR mm | Vacuum | Axial | 0,5 | Standard | B3PR1020599 |
| FV21 | ±2LR mm | Vacuum | Radial | 0,5 | Standard | B3PR1021799 |
| F21L | ±2LR mm | Spring | Axial | 0,3 | Soft touch | B3PR1025199 |
| FR21L | ±2LR mm | Spring | Radial | 0,3 | Soft touch | B3PR1026399 |
| FPA21L | ±2LR mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR1025559 |
| FP21L | ±2LR mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR1026759 |
| FPVA21L | ±2LR mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR1025999 |
| FPV21L | ±2LR mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR1027199 |

### REDCrown2 HBT

**Cable length:** 2 m

**Accuracy error:** ±MAX (2,0 + 2*|Reading [mm]|;7*|Reading [mm]|) • **Sensitivity:** 73,75 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| H21 | ±2LR mm | Spring | Axial | 0,7 | Standard | B3PR10N0199 |
| HR21 | ±2LR mm | Spring | Radial | 0,7 | Standard | B3PR10N1399 |
| HPA21 | ±2LR mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PR10N0559 |
| HP21 | ±2LR mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PR10N1759 |
| HVA21 | ±2LR mm | Vacuum | Axial | 0,5 | Standard | B3PR10N0599 |
| HV21 | ±2LR mm | Vacuum | Radial | 0,5 | Standard | B3PR10N1799 |
| H21L | ±2LR mm | Spring | Axial | 0,3 | Soft touch | B3PR10T5199(*) |
| HR21L | ±2LR mm | Spring | Radial | 0,3 | Soft touch | B3PR10T6399(*) |
| HPA21L | ±2LR mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR10T5559(*) |
| HP21L | ±2LR mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR10T6759(*) |
| HPVA21L | ±2LR mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR10T5999(*) |
| HPV21L | ±2LR mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR10T7199(*) |

(*) HBT TESA

# MEASURING RANGE ± 2,5MM
[MECHANICAL TRAVEL 6,6MM]

## REDCrown2 LVDT
**Cable length:** 2 m
**Accuracy error:** ±MIN(0,3 + 10*|Reading [mm]|; 11 + 2*|Reading [mm]|) • **Sensitivity:** 115 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| F25 | ±2.5 mm | Spring | Axial | 0,7 | Standard | B3PR05L0000 |
| FR25 | ±2.5 mm | Spring | Radial | 0,7 | Standard | B3PR05L1200 |
| FPA25 | ±2.5 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PR05L0400 |
| FP25 | ±2.5 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PR05L1600 |
| FVA25 | ±2.5 mm | Vacuum | Axial | 0,5 | Standard | B3PR05L0560 |
| FV25 | ±2.5 mm | Vacuum | Radial | 0,5 | Standard | B3PR05L1760 |
| F25L | ±2.5 mm | Spring | Axial | 0,3 | Soft touch | B3PR05L5000 |
| FR25L | ±2.5 mm | Spring | Radial | 0,3 | Soft touch | B3PR05L6200 |
| FPA25L | ±2.5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR05L5400 |
| FP25L | ±2.5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR05L6600 |
| FV25L | ±2.5 mm | Vacuum | Radial | - | Soft touch | B3PR05L6760 |
| FPVA25L | ±2.5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR05L5800 |
| FPV25L | ±2.5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR05L7000 |

## REDCrown2 HBT
**Cable length:** 2 m
**Accuracy error:** ±MAX (2,5 + 2*|Reading [mm]|; 7*|Reading [mm]|)
**Sensitivity:** (Marposs) 36,875 mV/V/mm; (*TESA) 73,75 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| H25 | ±2.5 mm | Spring | Axial | 0,7 | Standard | B3PR05N0000 |
| HR25 | ±2.5 mm | Spring | Radial | 0,7 | Standard | B3PR05N1200 |
| HPA25 | ±2.5 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PR05N0400 |
| HP25 | ±2.5 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PR05N1600 |
| HVA25 | ±2.5 mm | Vacuum | Axial | 0,5 | Standard | B3PR05N0560 |
| HV25 | ±2.5 mm | Vacuum | Radial | 0,5 | Standard | B3PR05N1760 |
| H25L | ±2.5 mm | Spring | Axial | 0,3 | Soft touch | B3PR05T5000(*) |
| HR25L | ±2.5 mm | Spring | Radial | 0,3 | Soft touch | B3PR05T6200(*) |
| HPA25L | ±2.5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR05T5400(*) |
| HP25L | ±2.5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR05T6600(*) |
| HPVA25L | ±2.5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR05T5800(*) |
| HPV25L | ±2.5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR05T7000(*) |

(*) HBT TESA

## DIGICrown2

**Cable length:** 2 m
**Accuracy error:** ±(0,6+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| D05 | ±2.5 mm | Spring | Axial | 0,7 | Standard | B3PD05N0000 |
| RD05 | ±2.5 mm | Spring | Radial | 0,7 | Standard | B3PD05N1200 |
| PAD05 | ±2.5 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PD05N0400 |
| PD05 | ±2.5 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PD05N1600 |
| VAD05 | ±2.5 mm | Vacuum | Axial | 0,5 | Standard | B3PD05N0560 |
| VD05 | ±2.5 mm | Vacuum | Radial | 0,5 | Standard | B3PD05N1760 |
| D05L | ±2.5 mm | Spring | Axial | 0,3 | Soft touch | B3PD05N5000 |
| RD05L | ±2.5 mm | Spring | Radial | 0,3 | Soft touch | B3PD05N6200 |
| PAD05L | ±2.5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PD05N5400 |
| PD05L | ±2.5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PD05N6600 |
| PVAD05L | ±2.5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PD05N5800 |
| PVD05L | ±2.5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PD05N7000 |

## REDCrown2 USB

**Cable length:** 2 m
**Accuracy error:** ±(0,6+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| U25 | ±2.5 mm | Spring | Axial | 0,7 | Standard | B3PR05Y0000 |
| UR25 | ±2.5 mm | Spring | Radial | 0,7 | Standard | B3PR05Y1200 |
| UPA25 | ±2.5 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PR05Y0400 |
| UP25 | ±2.5 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PR05Y1600 |
| UVA25 | ±2.5 mm | Vacuum | Axial | 0,5 | Standard | B3PR05Y0560 |
| UV25 | ±2.5 mm | Vacuum | Radial | 0,5 | Standard | B3PR05Y1760 |
| U25L | ±2.5 mm | Spring | Axial | 0,3 | Soft touch | B3PR05Y5000 |
| UR25L | ±2.5 mm | Spring | Radial | 0,3 | Soft touch | B3PR05Y6200 |
| UPA25L | ±2.5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR05Y5400 |
| UP25L | ±2.5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR05Y6600 |
| UPVA25L | ±2.5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR05Y5800 |
| UPV25L | ±2.5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR05Y7000 |

## REDCrown2 SMART

**Cable length:** 0,2 m
**Accuracy error:** ±(0,6+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| K05 | ±2.5 mm | Spring | Axial | 0,7 | Standard | B3PK05N0000 |
| RK05 | ±2.5 mm | Spring | Radial | 0,7 | Standard | B3PK05N1200 |
| PAK05 | ±2.5 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PK05N0400 |
| PK05 | ±2.5 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PK05N1600 |
| VAK05 | ±2.5 mm | Vacuum | Axial | 0,5 | Standard | B3PK05N0560 |
| VK05 | ±2.5 mm | Vacuum | Radial | 0,5 | Standard | B3PK05N1760 |
| K05L | ±2.5 mm | Spring | Axial | 0,3 | Soft touch | B3PK05N5000 |
| RK05L | ±2.5 mm | Spring | Radial | 0,3 | Soft touch | B3PK05N6200 |
| PAK05L | ±2.5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PK05N5400 |
| PK05L | ±2.5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PK05N6600 |
| PVAK05L | ±2.5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PK05N5800 |
| PVK05L | ±2.5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PK05N7000 |

### REDCrown2 SMART

**Cable length:** 2 m
**Accuracy error:** ±(0,6+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| K05 | ±2.5 mm | Spring | Axial | 0,7 | Standard | 3PK05N0200 |
| RK05 | ±2.5 mm | Spring | Radial | 0,7 | Standard | 3PK05N1400 |
| PAK05 | ±2.5 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | 3PK05N0600 |
| PK05 | ±2.5 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | 3PK05N1800 |
| VAK05 | ±2.5 mm | Vacuum | Axial | 0,5 | Standard | 3PK05N0680 |
| VK05 | ±2.5 mm | Vacuum | Radial | 0,5 | Standard | 3PK05N1880 |
| K05L | ±2.5 mm | Spring | Axial | 0,3 | Soft touch | 3PK05N5200 |
| RK05L | ±2.5 mm | Spring | Radial | 0,3 | Soft touch | 3PK05N6400 |
| PAK05L | ±2.5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | 3PK05N5600 |
| PK05L | ±2.5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | 3PK05N6800 |
| PVAK05L | ±2.5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | 3PK05N6000 |
| PVK05L | ±2.5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | 3PK05N7200 |

## MEASURING RANGE ± 5MM
[MECHANICAL TRAVEL 11MM]

### REDCrown2 LVDT

**Cable length:** 2 m
**Accuracy error:** ±MAX(5,0 + 2*|Reading [mm]|;7*|Reading [mm]|) • **Sensitivity:** 115 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| F50 | ±5 mm | Spring | Axial | 0,7 | Standard | B3PR10L0000 |
| FR50 | ±5 mm | Spring | Radial | 0,7 | Standard | B3PR10L1200 |
| FPA50 | ±5 mm | Pneumatic Push | Axial | from 0,8 to 2 | Standard | B3PR10L0400 |
| FP50 | ±5 mm | Pneumatic Push | Radial | from 0,8 to 2 | Standard | B3PR10L1600 |
| FVA50 | ±5 mm | Vacuum | Axial | 0,4 | Standard | B3PR10L0560 |
| FV50 | ±5 mm | Vacuum | Radial | 0,4 | Standard | B3PR10L1760 |
| F50L | ±5 mm | Spring | Axial | 0,3 | Soft touch | B3PR10L5000 |
| FR50L | ±5 mm | Spring | Radial | 0,3 | Soft touch | B3PR10L6200 |
| FPA50L | ±5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR10L5400 |
| FP50L | ±5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR10L6600 |
| FPVA50L | ±5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR10L5800 |
| FPV50L | ±5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR10L7000 |

## REDCrown2 HBT

**Cable length:** 2 m
**Accuracy error:** ±MAX(5,0 + 2*|Reading [mm]|;7*|Reading [mm]|) • **Sensitivity:** 29,5 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| H50 | ±5 mm | Spring | Axial | 0,7 | Standard | B3PR10N0000 |
| HR50 | ±5 mm | Spring | Radial | 0,7 | Standard | B3PR10N1200 |
| HPA50 | ±5 mm | Pneumatic Push | Axial | from 0,8 to 2 | Standard | B3PR10N0400 |
| HP50 | ±5 mm | Pneumatic Push | Radial | from 0,8 to 2 | Standard | B3PR10N1600 |
| HVA50 | ±5 mm | Vacuum | Axial | 0,4 | Standard | B3PR10N0560 |
| HV50 | ±5 mm | Vacuum | Radial | 0,4 | Standard | B3PR10N1760 |
| H50L | ±5 mm | Spring | Axial | 0,3 | Soft touch | B3PR10T5000(*) |
| HR50L | ±5 mm | Spring | Radial | 0,3 | Soft touch | B3PR10T6200(*) |
| HPA50L | ±5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR10T5400(*) |
| HP50L | ±5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR10T6600(*) |
| HPVA50L | ±5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR10T5800(*) |
| HPV50L | ±5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR10T7000(*) |
| HPA50UL | ±5 mm | Pneumatic Push | Axial | 0,12 | Ultra soft touch | B3PR10T5410(*) |

## DIGICrown2

**Cable length:** 2 m
**Accuracy error:** ±(0,6+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| D10 | ±5 mm | Spring | Axial | 0,7 | Standard | B3PD10N0000 |
| RD10 | ±5 mm | Spring | Radial | 0,7 | Standard | B3PD10N1200 |
| PAD10 | ±5 mm | Pneumatic Push | Axial | from 0,8 to 2 | Standard | B3PD10N0400 |
| PD10 | ±5 mm | Pneumatic Push | Radial | from 0,8 to 2 | Standard | B3PD10N1600 |
| VAD10 | ±5 mm | Vacuum | Axial | 0,4 | Standard | B3PD10N0560 |
| VD10 | ±5 mm | Vacuum | Radial | 0,4 | Standard | B3PD10N1760 |
| D10L | ±5 mm | Spring | Axial | 0,3 | Soft touch | B3PD10N5000 |
| RD10L | ±5 mm | Spring | Radial | 0,3 | Soft touch | B3PD10N6200 |
| PAD10L | ±5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PD10N5401 |
| PD10L | ±5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PD10N6600 |
| PVAD10L | ±5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PD10N5800 |
| PVD10L | ±5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PD10N7000 |
| PAD10UL | ±5 mm | Pneumatic Push | Axial | 0,12 | Ultra soft touch | B3PD10N5410 |
| PAD10J | ±5 mm | Pneumatic Push | Axial | 0,3 | Dust-Proof | B3PD10N0558 |

## REDCrown2 USB

**Cable length:** 2 m
**Accuracy error:** ±(0,6+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| U50 | ±5 mm | Spring | Axial | 0,7 | Standard | B3PR10Y0000 |
| UR50 | ±5 mm | Spring | Radial | 0,7 | Standard | B3PR10Y1200 |
| UPA50 | ±5 mm | Pneumatic Push | Axial | from 0,8 to 2 | Standard | B3PR10Y0400 |
| UP50 | ±5 mm | Pneumatic Push | Radial | from 0,8 to 2 | Standard | B3PR10Y1600 |
| UVA50 | ±5 mm | Vacuum | Axial | 0,4 | Standard | B3PR10Y0560 |
| UV50 | ±5 mm | Vacuum | Radial | 0,4 | Standard | B3PR10Y1760 |
| U50L | ±5 mm | Spring | Axial | 0,3 | Soft touch | B3PR10Y5000 |
| UR50L | ±5 mm | Spring | Radial | 0,3 | Soft touch | B3PR10Y6200 |
| UPA50L | ±5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR10Y5400 |
| UP50L | ±5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR10Y6600 |
| UPVA50L | ±5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR10Y5800 |
| UPV50L | ±5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR10Y7000 |

(*) HBT TESA

## REDCrown2 SMART

**Cable length:** 0,2 m
**Accuracy error:** ±(0,6+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| K10 | ±5 mm | Spring | Axial | 0,7 | Standard | B3PK10N0000 |
| RK10 | ±5 mm | Spring | Radial | 0,7 | Standard | B3PK10N1200 |
| PAK10 | ±5 mm | Pneumatic Push | Axial | from 0,8 to 2 | Standard | B3PK10N0400 |
| PK10 | ±5 mm | Pneumatic Push | Radial | from 0,8 to 2 | Standard | B3PK10N1600 |
| VAK10 | ±5 mm | Vacuum | Axial | 0,4 | Standard | B3PK10N0560 |
| VK10 | ±5 mm | Vacuum | Radial | 0,4 | Standard | B3PK10N1760 |
| K10L | ±5 mm | Spring | Axial | 0,3 | Soft touch | B3PK10N5000 |
| RK10L | ±5 mm | Spring | Radial | 0,3 | Soft touch | B3PK10N6200 |
| PAK10L | ±5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PK10N5401 |
| PK10L | ±5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PK10N6600 |
| PVAK10L | ±5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PK10N5800 |
| PVK10L | ±5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PK10N7000 |

## REDCrown2 SMART

**Cable length:** 2 m
**Accuracy error:** ±(0,6+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| K10 | ±5 mm | Spring | Axial | 0,7 | Standard | 3PK10N0200 |
| RK10 | ±5 mm | Spring | Radial | 0,7 | Standard | 3PK10N1400 |
| PAK10 | ±5 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | 3PK10N0600 |
| PK10 | ±5 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | 3PK10N1800 |
| VAK10 | ±5 mm | Vacuum | Axial | 0,4 | Standard | 3PK10N0680 |
| VK10 | ±5 mm | Vacuum | Radial | 0,4 | Standard | 3PK10N1880 |
| K10L | ±5 mm | Spring | Axial | 0,3 | Soft touch | 3PK10N5200 |
| RK10L | ±5 mm | Spring | Radial | 0,3 | Soft touch | 3PK10N6400 |
| PAK10L | ±5 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | 3PK10N5600 |
| PK10L | ±5 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | 3PK10N6800 |
| PVAK10L | ±5 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | 3PK10N6000 |
| PVK10L | ±5 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | 3PK10N7200 |

# MEASURING RANGE ± 10MM
[MECHANICAL TRAVEL 21MM]

## REDCrown2 LVDT
**Cable length:** 2 m
**Accuracy error:** ±MAX(10 + 2*|Reading [mm]|;7*|Reading [mm]|) • **Sensitivity:** 23 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| F100 | ±10 mm | Spring | Axial | 0,1 | Standard | B3PR20L0000 |
| FR100 | ±10 mm | Spring | Radial | 0,1 | Standard | B3PR20L1200 |
| FPA100 | ±10 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PR20L0400 |
| FP100 | ±10 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PR20L1600 |
| F100L | ±10 mm | Spring | Axial | 0,3 | Soft touch | B3PR20L5000 |
| FR100L | ±10 mm | Spring | Radial | 0,3 | Soft touch | B3PR20L6200 |
| FPA100L | ±10 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR20L5400 |
| FP100L | ±10 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR20L6600 |
| FPVA100L | ±10 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR20L5800 |
| FPV100L | ±10 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR20L7000 |

## REDCrown2 HBT
**Cable length:** 2 m
**Accuracy error:** ±MAX(10 + 2*|Reading [mm]|;7*|Reading [mm]|) • **Sensitivity:** 7,375 mV/V/mm

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| H100 | ±10 mm | Spring | Axial | 0,1 | Standard | B3PR20N0000 |
| HR100 | ±10 mm | Spring | Radial | 0,1 | Standard | B3PR20N1200 |
| HPA100 | ±10 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PR20N0400 |
| HP100 | ±10 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PR20N1600 |
| H100L | ±10 mm | Spring | Axial | 0,3 | Soft touch | B3PR20T5000(*) |
| HR100L | ±10 mm | Spring | Radial | 0,3 | Soft touch | B3PR20T6200(*) |
| HPA100L | ±10 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PR20T5400(*) |
| HP100L | ±10 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PR20T6600(*) |
| HPVA100L | ±10 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PR20T5800(*) |
| HPV100L | ±10 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PR20T7000(*) |

## DIGICrown2
**Cable length:** 2 m
**Accuracy error:** ±(1,2+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| D20 | ±10 mm | Spring | Axial | 0,1 | Standard | B3PD20N0000 |
| RD20 | ±10 mm | Spring | Radial | 0,1 | Standard | B3PD20N1200 |
| PAD20 | ±10 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PD20N0400 |
| PD20 | ±10 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PD20N1600 |
| D20L | ±10 mm | Spring | Axial | 0,3 | Soft touch | B3PD20N5000 |
| RD20L | ±10 mm | Spring | Radial | 0,3 | Soft touch | B3PD20N6200 |
| PAD20L | ±10 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PD20N5400 |
| PD20L | ±10 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PD20N6600 |
| PVAD20L | ±10 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PD20N5800 |
| PVD20L | ±10 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PD20N7000 |

(*) HBT TESA

## REDCrown2 SMART

**Cable length:** 0,2 m
**Accuracy error:** ±(1,2+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| K20 | ±10 mm | Spring | Axial | 0,1 | Standard | B3PK20N0000 |
| RK20 | ±10 mm | Spring | Radial | 0,1 | Standard | B3PK20N1200 |
| PAK20 | ±10 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | B3PK20N0400 |
| PK20 | ±10 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | B3PK20N1600 |
| K20L | ±10 mm | Spring | Axial | 0,3 | Soft touch | B3PK20N5000 |
| RK20L | ±10 mm | Spring | Radial | 0,3 | Soft touch | B3PK20N6200 |
| PAK20L | ±10 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | B3PK20N5400 |
| PK20L | ±10 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | B3PK20N6600 |
| PVAK20L | ±10 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | B3PK20N5800 |
| PVK20L | ±10 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | B3PK20N7000 |

## REDCrown2 SMART

**Cable length:** 2 m
**Accuracy error:** ±(1,2+Reading [mm]*2)

| MODEL | MEASURING RANGE | ACTUATION | CABLE OUTLET | MEAS. FORCE [N±25%] | VERSION | ORDER CODE |
|---|---|---|---|---|---|---|
| K20 | ±10 mm | Spring | Axial | 0,1 | Standard | 3PK20N0200 |
| RK20 | ±10 mm | Spring | Radial | 0,1 | Standard | 3PK20N1400 |
| PAK20 | ±10 mm | Pneumatic Push | Axial | from 0,7 to 2 | Standard | 3PK20N0600 |
| PK20 | ±10 mm | Pneumatic Push | Radial | from 0,7 to 2 | Standard | 3PK20N1800 |
| K20L | ±10 mm | Spring | Axial | 0,3 | Soft touch | 3PK20N5200 |
| RK20L | ±10 mm | Spring | Radial | 0,3 | Soft touch | 3PK20N6400 |
| PAK20L | ±10 mm | Pneumatic Push | Axial | from 0,18 to 1,9 | Soft touch | 3PK20N5600 |
| PK20L | ±10 mm | Pneumatic Push | Radial | from 0,18 to 1,9 | Soft touch | 3PK20N6800 |
| PVAK20L | ±10 mm | Push vacuum | Axial | from 0,14 to 2,3 | Soft touch | 3PK20N6000 |
| PVK20L | ±10 mm | Push vacuum | Radial | from 0,14 to 2,3 | Soft touch | 3PK20N7200 |

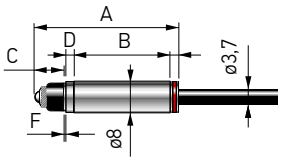
# STANDARD TOUCH
## COMPATIBLE MODELS

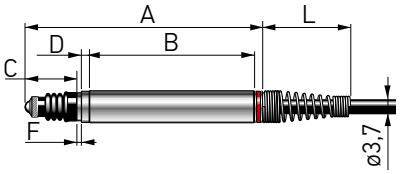
| MEASURING RANGE | CABLE OUTLET | ACTUATION | TESA STANDARD | MERCER STANDARD | METEM STANDARD | MAHR STANDARD | MICROCONTROL STANDARD |
|---|---|---|---|---|---|---|---|
| ± 0,5 mm | A | Spring | B3PR01T0000 | B3PR01R0000 | B3PR01S0000 | B3PR01P0000 | B3PR01K0000 |
| ± 0,5 mm | R | Spring | B3PR01T1200 | B3PR01R1200 | B3PR01S1200 | B3PR01P1200 | B3PR01K1200 |
| ± 1 mm | A | Spring | B3PR02T0000 | B3PR02R0000 | B3PR02S0000 | B3PR02P0000 | B3PR02K0000 |
| ± 1 mm | R | Spring | B3PR02T1200 | B3PR02R1200 | B3PR02S1200 | B3PR02P1200 | B3PR02K1200 |
| ± 2 mm | A | Spring | B3PR05T0199 | B3PR05R0199 | - | B3PR05P0199 | - |
| ± 2 mm | R | Spring | B3PR05T1399 | - | - | - | - |
| ± 2 mm LongRange | A | Spring | B3PR10T0199 | - | - | - | - |
| ± 2 mm LongRange | R | Spring | B3PR10T1399 | B3PR10R1399 | - | - | - |
| ± 2,5 mm | A | Spring | B3PR05T0000 | B3PR05R0000 | B3PR05S0000 | B3PR05P0000 | B3PR05K0000 |
| ± 2,5 mm | R | Spring | B3PR05T1200 | B3PR05R1200 | B3PR05S1200 | B3PR05P1200 | B3PR05K1200 |
| ± 5 mm | A | Spring | B3PR10T0000 | B3PR10R0000 | B3PR10S0000 | B3PR10P0000 | B3PR10K0000 |
| ± 5 mm | R | Spring | B3PR10T1200 | B3PR10R1200 | B3PR10S1200 | B3PR10P1200 | B3PR10K1200 |
| ± 10 mm | A | Spring | B3PR20T0000 | B3PR20R0000 | B3PR20S0000 | B3PR20P0000 | B3PR20K0000 |
| ± 10 mm | R | Spring | B3PR20T1200 | B3PR20R1200 | B3PR20S1200 | B3PR20P1200 | B3PR20K1200 |
| ± 0,5 mm | A | Pneum. push | NA | NA | NA | NA | NA |
| ± 0,5 mm | R | Pneum. push | NA | NA | NA | NA | NA |
| ± 1 mm | A | Pneum. push | B3PR02T0400 | B3PR02R0400 | B3PR02S0400 | B3PR02P0400 | B3PR02K0400 |
| ± 1 mm | R | Pneum. push | B3PR02T1600 | B3PR02R1600 | B3PR02S1600 | B3PR02P1600 | B3PR02K1600 |
| ± 2 mm | A | Pneum. push | - | - | - | - | - |
| ± 2 mm | R | Pneum. push | - | - | - | - | - |
| ± 2 mm LongRange | A | Pneum. push | B3PR10T0559 | - | - | - | - |
| ± 2 mm LongRange | R | Pneum. push | B3PR10T1759 | - | - | - | - |
| ± 2,5 mm | A | Pneum. push | B3PR05T0400 | B3PR05R0400 | B3PR05S0400 | B3PR05P0400 | B3PR05K0400 |
| ± 2,5 mm | R | Pneum. push | B3PR05T1600 | B3PR05R1600 | B3PR05S1600 | B3PR05P1600 | B3PR05K1600 |
| ± 5 mm | A | Pneum. push | B3PR10T0400 | B3PR10R0400 | B3PR10S0400 | B3PR10P0400 | B3PR10K0400 |
| ± 5 mm | R | Pneum. push | B3PR10T1600 | B3PR10R1600 | B3PR10S1600 | B3PR10P1600 | B3PR10K1600 |
| ± 10 mm | A | Pneum. push | B3PR20T0400 | B3PR20R0400 | B3PR20S0400 | B3PR20P0400 | B3PR20K0400 |
| ± 10 mm | R | Pneum. push | B3PR20T1600 | B3PR20R1600 | B3PR20S1600 | B3PR20P1600 | B3PR20K1600 |
| ± 0,5 mm | A | Vacuum | NA | NA | NA | NA | NA |
| ± 0,5 mm | R | Vacuum | NA | NA | NA | NA | NA |
| ± 1 mm | A | Vacuum | B3PR02T0560 | B3PR02R0560 | B3PR02S0560 | B3PR02P0560 | B3PR02K0560 |
| ± 1 mm | R | Vacuum | B3PR02T1760 | B3PR02R1760 | B3PR02S1760 | B3PR02P1760 | B3PR02K1760 |
| ± 2 mm | A | Vacuum | - | - | - | - | - |
| ± 2 mm | R | Vacuum | - | - | - | - | - |
| ± 2 mm LongRange | A | Vacuum | B3PR10T0599 | B3PR10R0599 | - | - | - |
| ± 2 mm LongRange | R | Vacuum | B3PR10T1799 | - | - | - | - |
| ± 2,5 mm | A | Vacuum | B3PR05T0560 | B3PR05R0560 | B3PR05S0560 | B3PR05P0560 | B3PR05K0560 |
| ± 2,5 mm | R | Vacuum | B3PR05T1760 | B3PR05R1760 | B3PR05S1760 | B3PR05P1760 | B3PR05K1760 |
| ± 5 mm | A | Vacuum | B3PR10T0560 | B3PR10R0560 | B3PR10S0560 | B3PR10P0560 | B3PR10K0560 |
| ± 5 mm | R | Vacuum | B3PR10T1760 | B3PR10R1760 | B3PR10S1760 | B3PR10P1760 | B3PR10K1760 |
| ± 10 mm | A | Vacuum | - | - | - | - | - |
| ± 10 mm | R | Vacuum | - | - | - | - | - |

# SOFT TOUCH
## COMPATIBLE MODELS

| RANGE | CABLE OUTLET | ACTUATION | TESA SOFT TOUCH | MERCER SOFT TOUCH | METEM SOFT TOUCH | MAHR SOFT TOUCH | MICROCONTROL SOFT TOUCH |
|---|---|---|---|---|---|---|---|
| ± 0,5 mm | A | Spring | B3PR01T5000 | | B3PR01S5000 | | - |
| ± 0,5 mm | R | Spring | B3PR01T6200 | | B3PR01S6200 | | - |
| ± 1 mm | A | Spring | B3PR02T5000 | | B3PR02S5000 | | - |
| ± 1 mm | R | Spring | B3PR02T6200 | | B3PR02S6200 | | B3PR02K6200 |
| ± 2 mm | A | Spring | B3PR05T5199 | | - | | - |
| ± 2 mm | R | Spring | - | | - | | - |
| ± 2 mm LongRange | A | Spring | B3PR10T5199 | | - | | - |
| ± 2 mm LongRange | R | Spring | B3PR10T6399 | | - | | - |
| ± 2,5 mm | A | Spring | B3PR05T5000 | | B3PR05S5000 | | B3PR05K5000 |
| ± 2,5 mm | R | Spring | B3PR05T6200 | | B3PR05S6200 | | B3PR05K6200 |
| ± 5 mm | A | Spring | B3PR10T5000 | | B3PR10S5000 | | B3PR10K5000 |
| ± 5 mm | R | Spring | B3PR10T6200 | | B3PR10S6200 | | B3PR10K6200 |
| ± 10 mm | A | Spring | B3PR20T5000 | | B3PR20S5000 | | B3PR20K5000 |
| ± 10 mm | R | Spring | B3PR20T6200 | | B3PR20S6200 | | B3PR20K6200 |
| | | | 0 | | 0 | | 0 |
| ± 0,5 mm | A | Pneum. push | NA | | NA | | NA |
| ± 0,5 mm | R | Pneum. push | NA | | NA | | NA |
| ± 1 mm | A | Pneum. push | B3PR02T5400 | | B3PR02S5400 | | B3PR02K5400 |
| ± 1 mm | R | Pneum. push | B3PR02T6600 | | B3PR02S6600 | | B3PR02K6600 |
| ± 2 mm | A | Pneum. push | - | | - | | - |
| ± 2 mm | R | Pneum. push | - | | - | | - |
| ± 2 mm LongRange | A | Pneum. push | B3PR10T5559 | | - | | - |
| ± 2 mm LongRange | R | Pneum. push | B3PR10T6759 | | - | | - |
| ± 2,5 mm | A | Pneum. push | B3PR05T5400 | | B3PR05S5400 | | B3PR05K5400 |
| ± 2,5 mm | R | Pneum. push | B3PR05T6600 | | B3PR05S6600 | | B3PR05K6600 |
| ± 5 mm | A | Pneum. push | B3PR10T5400 | | B3PR10S5400 | | B3PR10K5400 |
| ± 5 mm | R | Pneum. push | B3PR10T6600 | | B3PR10S6600 | | B3PR10K6600 |
| ± 10 mm | A | Pneum. push | B3PR20T5400 | | B3PR20S5400 | | B3PR20K5400 |
| ± 10 mm | R | Pneum. push | B3PR20T6600 | | B3PR20S6600 | | B3PR20K6600 |
| | | | 0 | | 0 | | 0 |
| ± 0,5 mm | A | Vacuum | NA | | NA | | NA |
| ± 0,5 mm | R | Vacuum | NA | | NA | | NA |
| ± 1 mm | A | Vacuum | B3PR02T5560 | | B3PR02S5560 | | - |
| ± 1 mm | R | Vacuum | B3PR02T6760 | | B3PR02S6760 | | - |
| ± 2 mm | A | Vacuum | - | | - | | - |
| ± 2 mm | R | Vacuum | - | | - | | - |
| ± 2 mm LongRange | A | Vacuum | B3PR10T5599 | | - | | - |
| ± 2 mm LongRange | R | Vacuum | B3PR10T6799 | | - | | - |
| ± 2,5 mm | A | Vacuum | B3PR05T5560 | | B3PR05S5560 | | - |
| ± 2,5 mm | R | Vacuum | B3PR05T6760 | | B3PR05S6760 | | - |
| ± 5 mm | A | Vacuum | B3PR10T5560 | | B3PR10S5560 | | B3PR10K5560 |
| ± 5 mm | R | Vacuum | B3PR10T6760 | | B3PR10S6760 | | - |
| ± 10 mm | A | Vacuum | B3PR20T5560 | | B3PR20S5560 | | - |
| ± 10 mm | R | Vacuum | B3PR20T6760 | | B3PR20S6760 | | - |

# STANDARD TOUCH
## DIMENSIONS (MM)



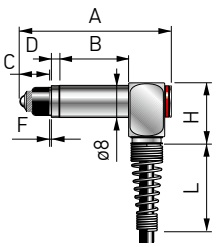



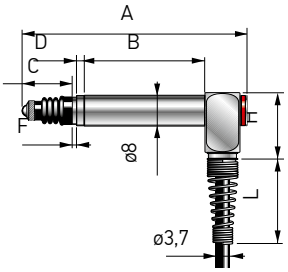

### AXIAL SPRING

Pencil probe ±0,5mm

| | ±0,5 | ±1 | ±2 | ±2LR | ±2,5 | ±5 | ±10 |
|---|---|---|---|---|---|---|---|
| A | 36,20 | 59,40 | 83,35 | 106,35 | 83,35 | 114,45 | 162,45 |
| B | 24,35 | 41,25 | 61,05 | 75,50 | 61,05 | 86,60 | 120,65 |
| C | 7,10 | 12,80 | 17,25 | 25,30 | 16,75 | 22,30 | 39,45 |
| D | 2,00 | 2,00 | 2 | 2,00 | 2,00 | 2,00 | 2,00 |
| E | 2,05 | - | - | - | - | - | - |
| F | 0,70 | 1,30 | 1 | 1,50 | 1,50 | 1,50 | - |
| G | - | - | - | - | - | - | - |
| H | - | - | - | - | - | - | - |
| L | - | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 |
| M | - | - | - | - | - | - | - |

F= Max. pretravel adj. value



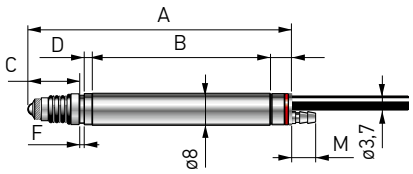




### RADIAL SPRING

Pencil probe ±0,5mm

| | ±0,5 | ±1 | ±2 | ±2LR | ±2,5 | ±5 | ±10 |
|---|---|---|---|---|---|---|---|
| A | 37,50 | 57,78 | 84,85 | 107,85 | 84,85 | 115,95 | 163,95 |
| B | 17,20 | 31,20 | 54,1 | 88,58 | 54,10 | 79,65 | 112,50 |
| C | 7,10 | 12,80 | 17,25 | 25,30 | 16,75 | 22,30 | 39,45 |
| D | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | - |
| E | 1,50 | - | - | - | - | - | - |
| F | 0,70 | 1,30 | 1 | 1,50 | 1,50 | 1,50 | - |
| G | - | - | - | - | - | - | - |
| H | 15,20 | 15,20 | 15,20 | 15,20 | 15,20 | 15,20 | 15,20 |
| L | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 |
| M | - | - | - | - | - | - | - |

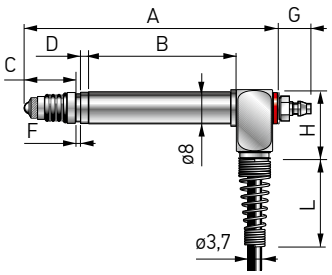
F= Max. pretravel adj. value




## AXIAL PNEUMATIC PUSH

| | ±0,5 | ±1 | ±2 | ±2LR | ±2,5 | ±5 | ±10 |
|---|---|---|---|---|---|---|---|
| A | - | 65,98 | 86,65 | 109,65 | 86,65 | 117,75 | 166,75 |
| B | - | 44,55 | 61,05 | 75,50 | 61,05 | 86,60 | 120,65 |
| C | - | 12,80 | 17,25 | 25,30 | 16,75 | 22,30 | 39,45 |
| D | - | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | - |
| E | - | - | - | - | - | - | - |
| F | - | 1,30 | 1 | 1,50 | 1,50 | 1,50 | - |
| G | - | - | - | - | - | - | - |
| H | - | - | - | - | - | - | - |
| L | - | - | - | - | - | - | - |
| M | - | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 |

F= Max. pretravel adj. value

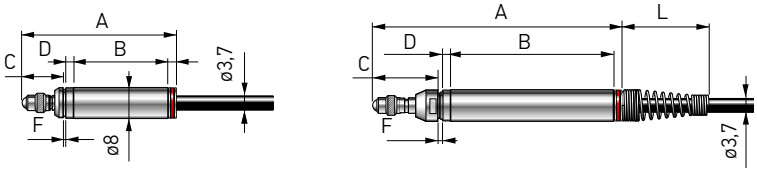



## RADIAL PNEUMATIC PUSH

| | ±0,5 | ±1 | ±2 | ±2LR | ±2,5 | ±5 | ±10 |
|---|---|---|---|---|---|---|---|
| A | - | 71,75 | 84,85 | 107,85 | 84,85 | 115,95 | 163,95 |
| B | - | 36,10 | 54,1 | 68,55 | 52,60 | 78,15 | 112,50 |
| C | - | 12,80 | 17,25 | 25,30 | 16,75 | 22,30 | 39,45 |
| D | - | 2,00 | 2,00 | 2,00 | 2,00 | 2,00 | - |
| E | - | - | - | - | - | - | - |
| F | - | 1,30 | 1 | 1,50 | 1,50 | 1,50 | - |
| G | - | 7,50 | - | 7,50 | 7,50 | 7,50 | 7,50 |
| H | - | 15,20 | 15,20 | 15,20 | 15,20 | 15,20 | 15,20 |
| L | - | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 |
| M | - | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 |

F= Max. pretravel adj. value

# SOFT TOUCH
## DIMENSIONS (MM)

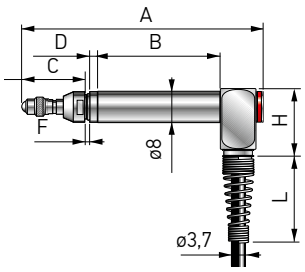



Pencil probe ±0,5mm

### AXIAL SPRING

| | ±0,5 | ±1 | ±2 | ±2LR | ±2,5 | ±5 | ±10 |
|---|---|---|---|---|---|---|---|
| A | 39,90 | 63,00 | 87,00 | 106,35 | 87,00 | 114,45 | 162,45 |
| B | 24,35 | 41,25 | 61,05 | 75,50 | 61,05 | 86,60 | 120,65 |
| C | 10,65 | 16,40 | 20,9 | 28,80 | 20,40 | 22,30 | 39,45 |
| D | 2,00 | 2,00 | 2 | - | 2,00 | - | - |
| E | 2,05 | - | - | - | - | - | - |
| F | 0,70 | 1,30 | 1 | - | 1,50 | - | - |
| G | - | - | - | - | - | - | - |
| H | - | - | - | - | - | - | - |
| L | - | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 |
| M | - | - | - | - | - | - | - |

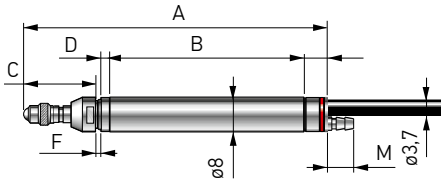
F= Max. pretravel adj. value




### RADIAL SPRING

| | ±0,5 | ±1 | ±2 | ±2LR | ±2,5 | ±5 | ±10 |
|---|---|---|---|---|---|---|---|
| A | - | 61,43 | 88,50 | 107,85 | 88,50 | 115,95 | 163,95 |
| B | - | 31,20 | 54,1 | 68,55 | 54,10 | 79,65 | 112,50 |
| C | - | 16,40 | 20,9 | 28,80 | 20,40 | 16,90 | 39,45 |
| D | - | 2,00 | 2 | - | 2,00 | - | - |
| E | - | - | - | - | - | - | - |
| F | - | 1,30 | 1 | - | 1,50 | - | - |
| G | - | - | - | - | - | - | - |
| H | - | 15,20 | 15,20 | 15,20 | 15,20 | 15,20 | 15,20 |
| L | - | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 | 22,00 |
| M | - | - | - | - | - | - | - |

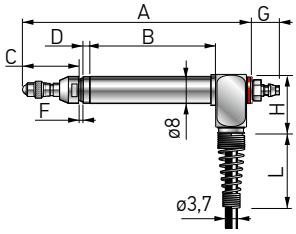
F= Max. pretravel adj. value




## AXIAL PNEUMATIC PUSH

| | ±0,5 | ±1 | ±2 | ±2LR | ±2,5 | ±5 | ±10 |
|---|---|---|---|---|---|---|---|
| A | - | 69,63 | 90,30 | 109,65 | 90,30 | 117,75 | 165,75 |
| B | - | 44,55 | 61,05 | 75,50 | 61,05 | 86,60 | 120,65 |
| C | - | 16,40 | 20,90 | 28,80 | 20,40 | 16,90 | 39,45 |
| D | - | 2,00 | 2,00 | - | 2,00 | - | - |
| E | - | - | - | - | - | - | - |
| F | - | 1,30 | 1 | - | 1,50 | - | - |
| G | - | - | - | - | - | - | - |
| H | - | - | - | - | - | - | - |
| L | - | - | - | - | - | - | - |
| M | - | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 | 6,00 |

F= Max. pretravel adj. value




## RADIAL PNEUMATIC PUSH

| | ±0,5 | ±1 | ±2 | ±2LR | ±2,5 | ±5 | ±10 |
|---|---|---|---|---|---|---|---|
| A | - | 66,30 | 88,50 | 107,85 | 88,50 | 115,95 | 163,95 |
| B | - | 36,10 | 52,6 | 68,55 | 52,60 | 78,15 | 112,50 |
| C | - | 16,40 | 20,40 | 28,80 | 20,40 | 16,90 | 39,45 |
| D | - | 2,00 | 2,00 | - | 2,00 | - | - |
| E | - | - | - | - | - | - | - |
| F | - | 1,30 | 1 | - | 1,50 | - | - |
| G | - | 7,50 | - | 7,50 | 7,50 | 7,50 | 7,50 |
| H | - | 15,20 | 15,20 | 15,20 | 15,20 | 15,20 | 15,20 |
| L | - | 22,00 | 22 | 22,00 | 22,00 | 22,00 | 22,00 |
| M | - | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 | 7,5 |

F= Max. pretravel adj. value

# SPECIAL MODELS

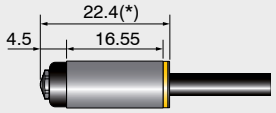
| MODEL | | ULTRA-SHORT | ULTRA-SOFT TOUCH | SOFT-TOUCH & DUST-PROOF |
|---|---|---|---|---|
| Cable (A=axial - R=radial) | | A | A | A |
| Actuation (*) | | S | PP | PP |
| Measuring range | [mm] | 1 | 10 | 10 |
| Mechanical travel | [mm] | 1,5 | 11 | 11 |
| Body Ø | [mm] | 8 | 8 | 8 |
| Spring strength | [N/mm] | 0,17 | 0,003 | 0,007 |
| Measuring force | [N±25%] | 0,60 | 0,12 | 0,30 |
| PP pressure | bar | - | 0,20 | 0,5 ÷ 2 |
| | psi | - | 2,90 | 7,3 ÷ 29 |
| Vacuum retract pressure | bar | - | - | - |
| | psi | - | - | - |
| Cable length | [m] | 2 | 2 | 2 |
| Gasket | | Fluoroelastometer | - | Fluoroelastometer |
| Repeatability (2.77 σ) | [µm] | ≤0,15 | ≤0,15 | ≤0,15 |
| Zero thermal drift | [µm/°C] | <0,25 | <0,25 | <0,25 |
| Operating temperature | [°C] | (-10)÷(+65) | (-10)÷(+65) | (-10)÷(+65) |
| Storage temperature | [°C] | (-20)÷(+100) | (-20)÷(+100) | (-20)÷(+100) |
| Protection grade | | IP65 | IP54 | IP54 |
| Contact type | | Carbide | Nylon (PA66) | Nylon (PA66) |
| Contact thread | | M2,5 | M2,5 | M2,5 |

| DIGITAL HBT MARPOSS | | D01S B3PD01S0000 | PAD10UL B3PD10N5410 | PAD10J B3PD10N0558 |
|---|---|---|---|---|
| Accuracy error | [µm] | ±(0,2+K*1) | ±(0,6+K*2) | ±(0,6+K*2) |
| **ANALOG HBT TESA** | | **H05S B3PR01T0100** | **HPA50UL B3PR10T5410** | **-** |
| Sensitivity | [mV/V/mm] | 73,75 | 29,5 | - |
| Calibration spec. | | $3_v$RMS @13KHz with load 2KΩ±0,1% | $3_v$RMS @13KHz with load 2KΩ±0,1% | - |
| Accuracy error | [µm] | ±(0,2+K**1) | ±(0,2+K**1) | - |

* Movement S= spring - PP= pneumatic push. K= Reading [mm]

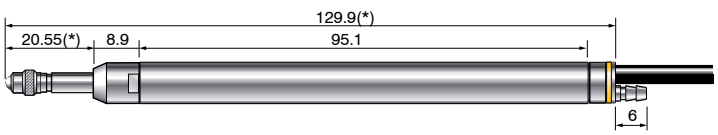
**±0,5 mm**

**D01S**
**H05S**

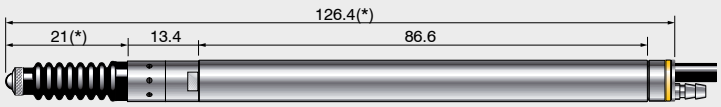



**±5 mm**

**PAD10UL**
**HPA50UL**



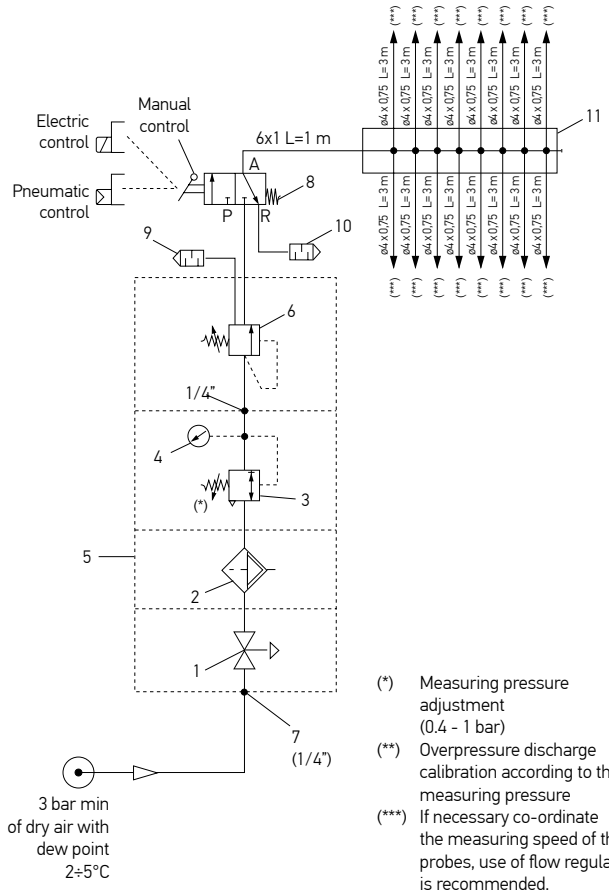

**PAD10J**




(*) Dimensions at zero position.
For other special models (i.e. Gravity actuation) please contact Marposs

- For applications with pneumatic push and vacuum retraction probe type, the pneumatic system should be sized as shown in the below schemes.
- Air supply: air must be dry and unoiled, with dew point in the range 2-5 °C and filtered to 5 µm.

## PNEUMATIC SYSTEM FOR MEASURING PROBES

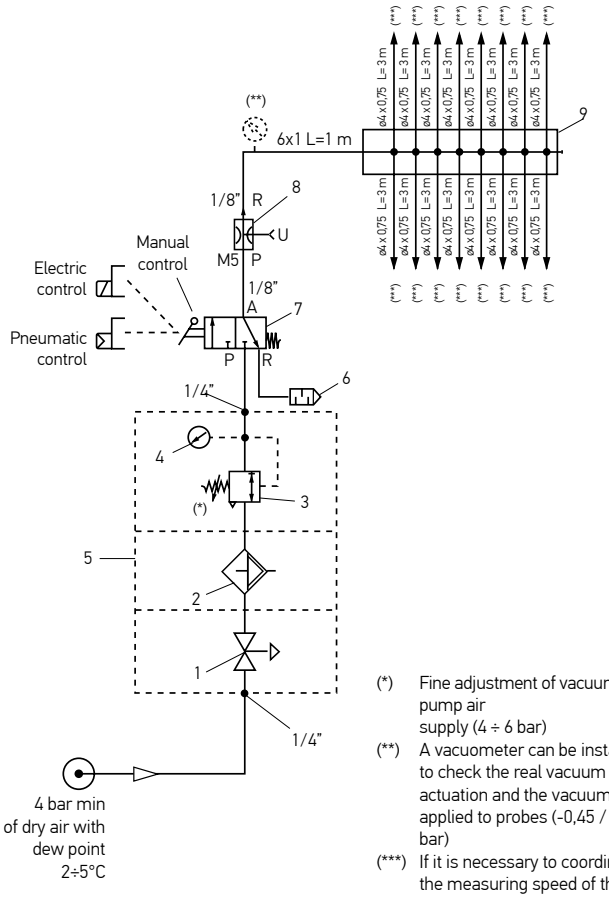



(*) Measuring pressure adjustment (0.4 - 1 bar)
(**) Overpressure discharge calibration according to the measuring pressure
(***) If necessary co-ordinate the measuring speed of the probes, use of flow regulators is recommended.

| REF | Q.TY | DESCRIPTION |
|---|---|---|
| 1 | 1 | ON-OFF valve 1/4" |
| 2 | 1 | Filter 5µ with semi automatic discharge |
| 3 | 1 | Pressure regulator |
| 4 | 1 | Pressure gauge ø 50 1/8" scale 0÷4 bar |
| 5 | 2 | Rapid terminal with bracket 72 |
| 6 | 1 | Overpressure discharge valve |
| 7 | 1 | Beam 1/4" |
| 8 | 1 | Monostable lever 3-way 2-position valve |
| 9 | 1 | Silencer 1/2" |
| 10 | 1 | Silencer 1/8" |
| 11 | 1 | Distributor for max 16 probes |

Application specs for pneumatic push probes:
- Standard version with gaiter: 0,4÷1 bar
- Version without gaiter: 0,5÷2 bar

## PNEUMATIC LAYOUT FOR VACUUM CONTACT RETRACTION



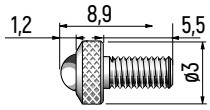
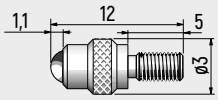
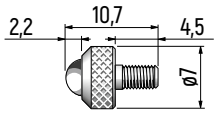
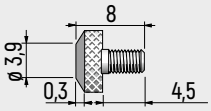
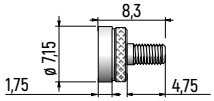
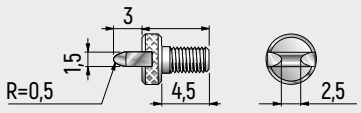

(*) Fine adjustment of vacuum pump air supply (4 ÷ 6 bar)
(**) A vacuometer can be installed to check the real vacuum actuation and the vacuum value applied to probes (-0,45 / -0,6 bar)
(***) If it is necessary to coordinate the measuring speed of the probes, it is suggested to use flow regulators

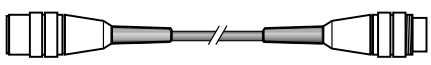
| REF | Q.TY | DESCRIPTION |
|---|---|---|
| 1 | 1 | ON-OFF valve 1/4" |
| 2 | 1 | Filter 5µ with semi automatic discharge |
| 3 | 1 | Pressure regulator |
| 4 | 1 | Pressure gauge ø 50 1/8" scale 0÷4 bar |
| 5 | 2 | Rapid terminal with bracket 72 |
| 6 | 1 | Silencer 1/2" |
| 7 | 1 | Monostable lever 3-way 2-position valve |
| 8 | 1 | Vacuum pump |
| 9 | 1 | Distributor for max 16 probes |

Application specs for probes with spring push and vacuum retraction:
- Standard version with gaiter: -0,45÷ -0,6 bar
- Version without gaiter: 0,5÷2 bar

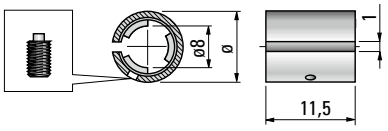
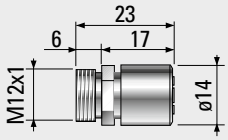
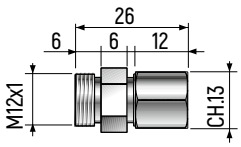
# ACCESSORIES
# PENCIL PROBES

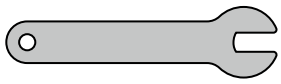
| SPRINGS | | ±0,5 mm | ±1 mm | ±2 mm | ±2LR mm | ±2,5 mm | ±5 mm | ±10 mm |
|---|---|---|---|---|---|---|---|---|
|  | 0,3 (N) | B1024099751 | - | - | - | - | - | - |
| | 1 (N) | - | B1042414237 | - | - | B1042414435 | B1042414537 | - |
| | 1,6 (N) | - | - | - | - | B1042414441 | B1042414561 | B1042414736 |
| | 2 (N) | B1024099753 | B1042414236 | - | - | B1042414436 | B1042414536 | - |
| | 2,5 (N) | B1024099754 | B1042414235 | - | - | B1042414437 | - | - |

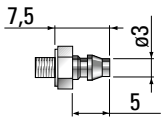
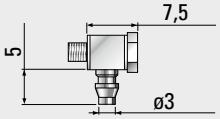
| CONTACTS (THREAD M2,5) | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | Contact radius R1,5 mm - Widia (standard) | B3394241450 |
|  | Contact radius R1,5 mm - Nylon (soft-touch) | B3394156100 |
|  | Contact radius R2,5 mm - Widia | B3392409910 |
|  | Flat contact - Widia | B3392409912 |
|  | Full-Flat contact - Widia | B3394241401 |
|  | Cut contact - Widia | B3392409914 |

| EXTENSION CABLES | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | Cable extension 1 m | B6735932026 |
| | Cable extension 2 m | B6735932015 |
| | Cable extension 5 m | B6735932016 |
| | Cable extension 10 m | B6735932017 |
| | Cable extension 15 m | B6735932037 |

LVDT / HBT

| CLAMPING | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | Bushing outside ø 10 mm* | B1019826001 |
| | Bushing outside ø 3/8"* | B1019826002 |
| | Dowel M3x10 | B1024099760 |
| | Dowel 4-40 UNC x .375" | B1024099761 |
|  | Tongs bushing ø 8 - Compact version | B2042414100 |
|  | Tongs bushing ø 8 - For standard wrench | B2042414200 |

| WRENCH | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | Pre-travel regulator wrench | B1346040027 |

| AIR ADAPTORS | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | Axial air adaptor | B4430RSMV03 |
|  | Radial air adaptor | B4430RSMVAB |

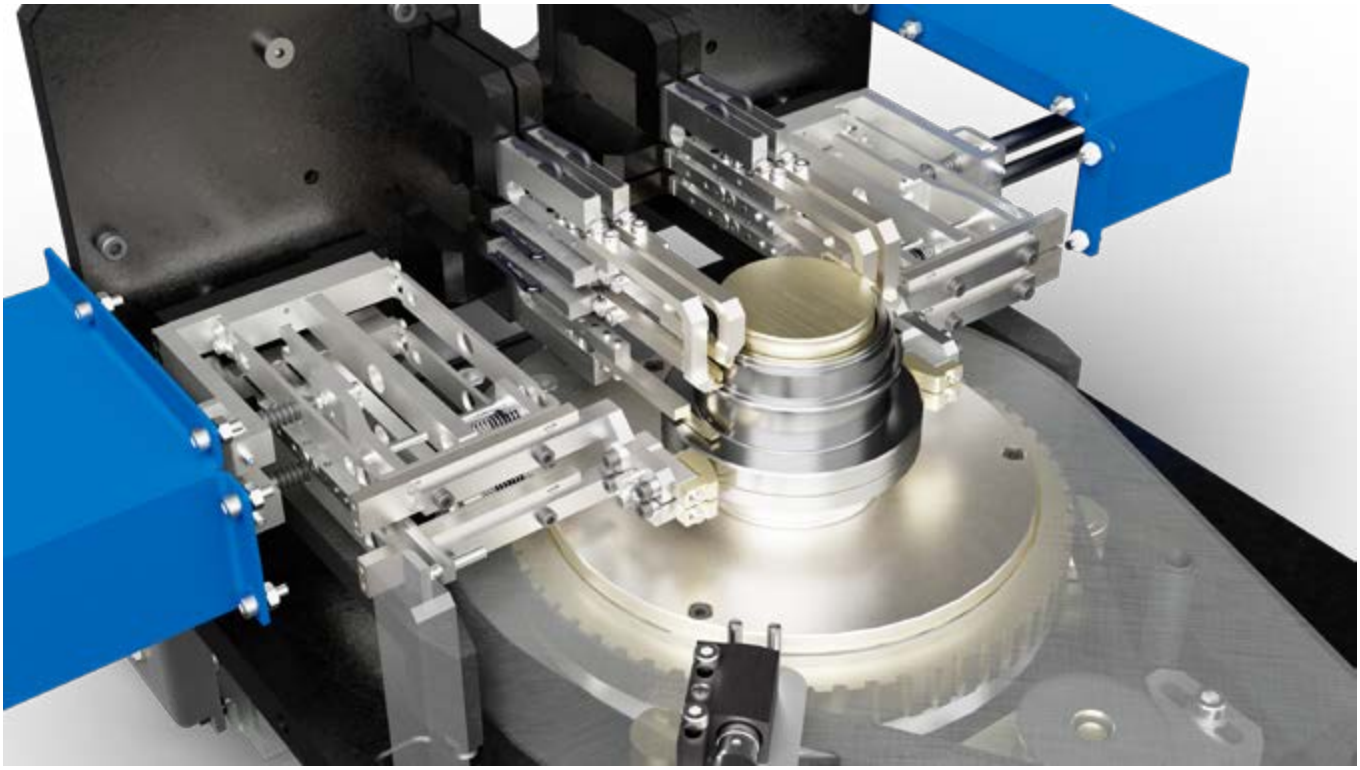
* Recommended hole tolerance: G7

# MINIATURE MEASURING SENSORS


## APPLICATION AND PRODUCT DESCRIPTION

- When mechanical spaces are demanding and it seems almost impossible to integrate multiple measuring cells, Marposs can offer unrivalled solutions through a line of miniature measuring cells, actually a unique solution since merging performance and miniaturization, overcoming the traditional trade-offs.
- The miniature sensors are available in 3 versions, all with HBT transducer: A17, A129R, D124. They are purposely designed to fit different integration patterns and measurement strategy.
- Not only the perfect products for tiny integration spaces. The miniature sensors are also a unique solution for side-by-side measuring sections, with a minimum section pitch up to 4 mm, a level of performance not reachable with traditional contact pencil probes.
- The super compact dimensions of those precision sensors do not compromise the level of functionalities: the sensor can be directly connected to standard Marposs connectivity accessories and it works perfectly in sensor networks with different sensor models. The contact element is available in a number of different materials and shapes, in order to fit the different requirements. Moreover, the contact is replaceable with ease, without the need to dismount the sensor.

## APPLICATION EXAMPLES



# MODELS AND ACCESSORIES
# MINIATURE MEASURING SENSORS


A17 is the miniature sensor with 6 mm thickness.

It is unique for merging together high measuring performance and mechanical robustness that makes it usable in harsh environment.

A17 is easily configurable after installation in pre-travel and over-travel sizes.

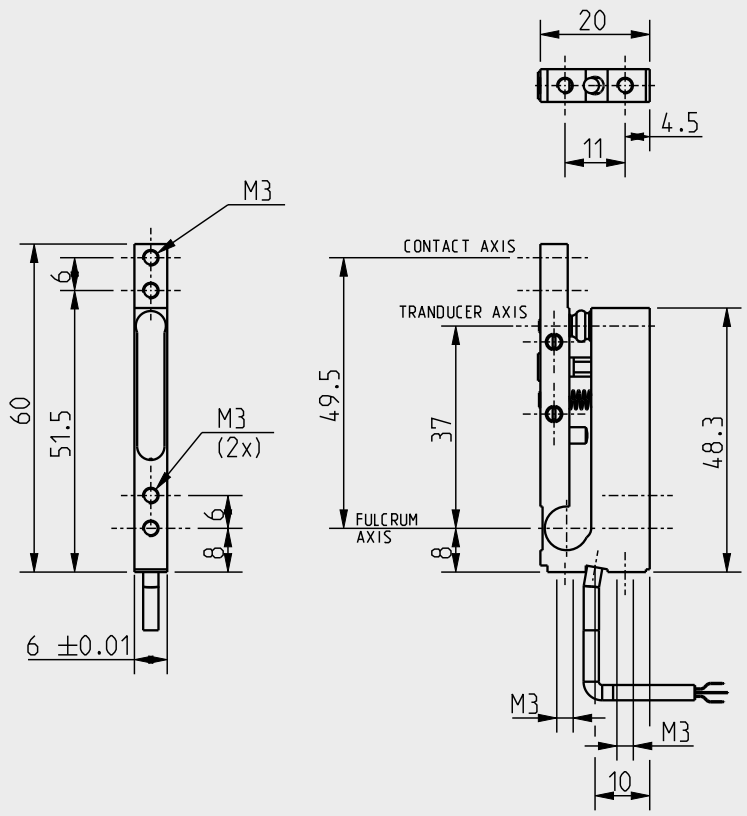

With respect to the A17, the A129 R version offers compactness both as length and width.

D124 is the premium model, at the top of its category for miniaturization and performance all together.

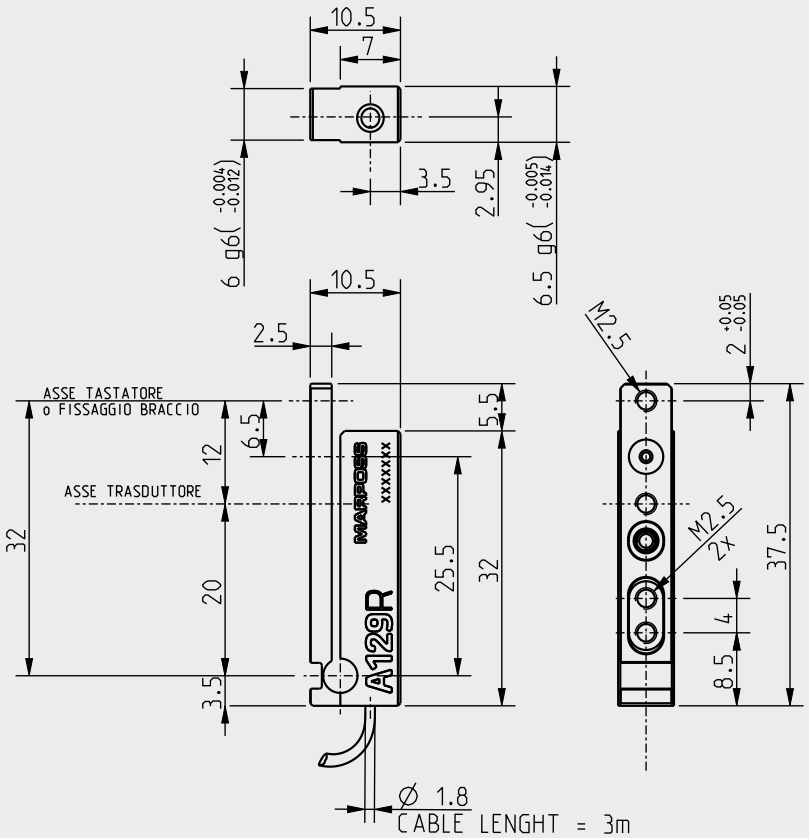
| TECHNICAL SPECIFICATIONS | | D124 | A17 | A129R |
|---|---|---|---|---|
| Type of transducer | | HBT | HBT | HBT |
| Measuring range | [µm] | ± 200 | ± 350 | ± 300 |
| Nominal arm ratio | | 1 | 1,34 | 1,6 |
| Pretravel at electrical zero | [µm] | 270 ± 30 | 425 ± 50 | 50 - 370 |
| Overtravel at electrical zero | [µm] | 290 ± 40 | 600 ± 50 | >= 650 |
| Measuring force at electrical zero | [N] | 0,9 ± 0,2 | 0,9 ± 0,2 | 0,7 ± 0,1 |
| Repeatability (2,77σ) | [µm] | <= 0,2 | <= 0,2 | <= 0,1 |
| Protection degree | | IP67 | | |
| Contact thread | | M3 | | |
| Accuracy error | [µm] | ± 0,2+K*2 (#) | ± 0,6+K*2 (#) | ± 0,6+K*2 (#) |
| Thermal drift at zero | [µm/°C] | <= 0,3 | <= 0,25 | <= 0,2 |
| Operating temperature | [°C] | + 5 to +40 | | |
| Cable length | [m] | 3 | 3 | 3 |
| Sensitivity | [mV/V/mm] | 230 | 230 | 230 |

| MODEL | ORDER CODE |
|---|---|
| D124 HBT DIGI | B3419886400 |
| A17 HBT DIGI WITH PUSH SPRING, INT. TRANSDUCER ADJ. AND AXIAL CABLE OUTLET | B3470024807 |
| A17 HBT DIGI WITH PUSH SPRING, INT. TRANSDUCER ADJ. AND SIDE CABLE OUTLET | B3470024817 |
| A17 HBT DIGI WITH PUSH SPRING, EXT. TRANSDUCER ADJ. AND AXIAL CABLE OUTLET | B3470024827 |
| A17 HBT DIGI WITH PUSH SPRING, EXT. TRANSDUCER ADJ. AND SIDE CABLE OUTLET | B3470024837 |
| A17 HBT DIGI WITH PULL SPRING, INT. TRANSDUCER ADJ. AND AXIAL CABLE OUTLET | B3470024847 |
| A17 HBT DIGI WITH PULL SPRING, INT. TRANSDUCER ADJ. AND SIDE CABLE OUTLET | B3470024857 |
| A17 HBT DIGI WITH PULL SPRING, EXT. TRANSDUCER ADJ. AND AXIAL CABLE OUTLET | B3470024867 |
| A17 HBT DIGI WITH PULL SPRING, EXT. TRANSDUCER ADJ. AND SIDE CABLE OUTLET | B3470024877 |
| A129R HBT DIGI WITH PUSH SPRING AND AXIAL CABLE OUTLET | B3470016107 |
| A129R HBT DIGI WITH PUSH SPRING AND AXIAL CABLE OUTLET, SPECIAL MEAS. FORCE 1,18 N | B3470016127 |
| A129R HBT DIGI WITH PULL SPRING AND AXIAL CABLE OUTLET | B3470016147 |

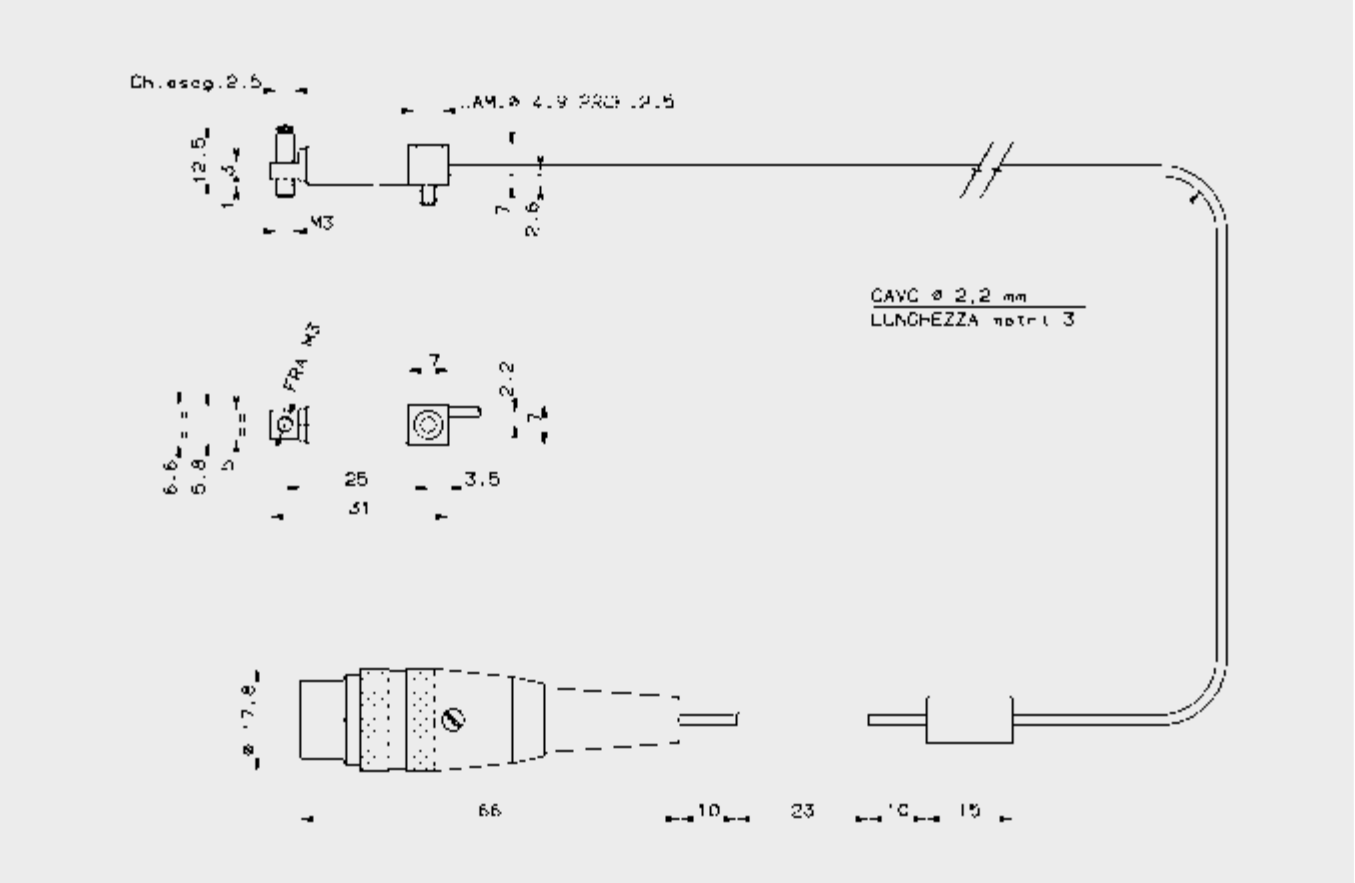
## A17


20
4.5
11
M3
6
60
51.5
M3
(2x)
8
6 ±0.01
CONTACT AXIS
TRANDUCER AXIS
49.5
37
48.3
FULCRUM
AXIS
8
M3
M3
10

## A129R


10.5
7
3.5
2.95
6 g6(-0.004 -0.012)
6.5 g6(-0.005 -0.014)
10.5
2.5
ASSE TASTATORE
o FISSAGGIO BRACCIO
ASSE TRASDUTTORE
32
12
6.5
20
3.5
5.5
25.5
32
MARPOSS
XXXXXXX
A129R
M2.5
2 +0.05 -0.05
M2.5
2x
37.5
4
8.5
Ø 1.8
CABLE LENGHT = 3m

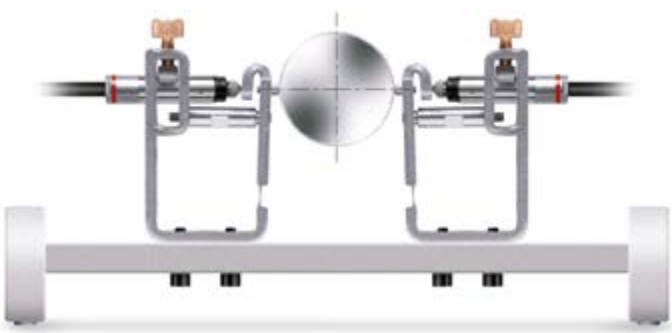
## D124


Ch.esag.2.5
M3
CAVO ø 2,2 mm
LUNGHEZZA metri 3
FR4
25
3.5
51
66
10
23
15

# AMA

## APPLICATION AND PRODUCT DESCRIPTION

- AMA™, Advanced Measuring Armset, is a line of mechanical structures designed to integrate and to fit Marposs measuring sensors into applications.
- By the combination of different armsets and measuring sensors it is possible to implement precise and reliable measurements on the workpieces.
- AMA is also a fundamental accessory to protect the precision measuring sensor from mechanical stresses or accidental events.



## TB10, TB16

TB10, TB10C, TB16, TB16C are compact measuring armsets, appropriate for tight installation spaces.

TB10 and TB10C have a working range of 1000 µm.

TB16 and TB16C have a working range of 1600 µm

The “C” versions (TB10C, TB16C) accommodate short size ±0.5 mm pencil probes, while the base models (TB10, TB16) accommodate regular size ±1 mm pencil probes.

## TP12

The TP12 line has a working range of 1200 µm, that allows the use of pencil probes with ±1 mm measuring range.

It is available in different models, for internal and external diameter check and for different probes actuation, spring and pneumatic.

A self-centering model is also available.

## TP60

TP60 line has a working range of 6000 µm, that allows the use of pencil probe with ±5 mm measuring range.

It is available in different models, for internal and external diameter check and for different probes actuation, spring and pneumatic.

A self-centering model is also available.

## TS12, TS21

The TS12 line has a working range of 1200 µm, while TS21 a working range from 1800 to 2100 µm. Both models allow the use of pencil probes with ±1 mm measuring range. Pencil probes must be “Spring push” type.

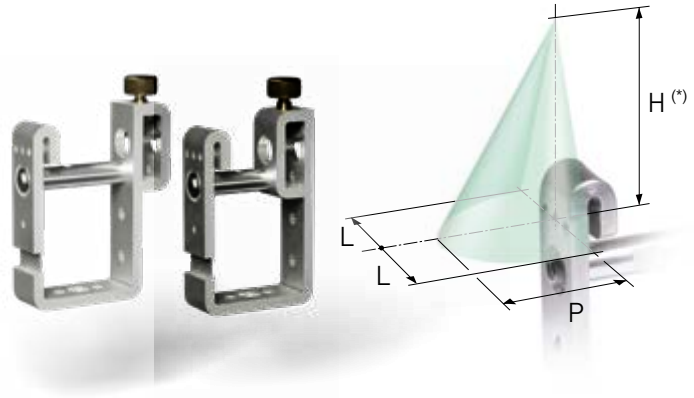
This model is used to measure shoulders and it is perfect in case of limited installation space.

TS12E is the premium version of the TS12 line, featuring superior measurement repeatability thanks to the built-in transducer. It is available with LVDT and HBT transducer, also compatible with Tesa electronics.

# MODELS AND ACCESSORIES
# AMA

## TB10

- TB10 and TB10C are compact measuring armsets, perfect for a reduced overall installation dimension.
- Working range is 1000 µm.
- TB10C accommodates short size ±0.5 mm pencil probe, while the base models TB10 accommodates longer ±1 mm pencil probes.




| MODEL Ø SIZE | H MAX* (mm) | L MAX (mm) | P MAX (mm) | ORDER CODE |
|---|---|---|---|---|
| TB10 ø 8 mm | 30 | 14 | 20 | B2927364005 |
| TB10 ø 3/8" | 30 | 14 | 20 | B2927364035 |
| TB10C ø 8 mm | 30 | 14 | 20 | B2927364006 |
| TB10C ø 3/8" | 30 | 14 | 20 | B2927364036 |

* With a vertical off-set the Arm Ratio changes: mod. TB10 [30/ (30 + h)] mod. TB16 [50 / (50 + h)] with h = 0 ÷ H

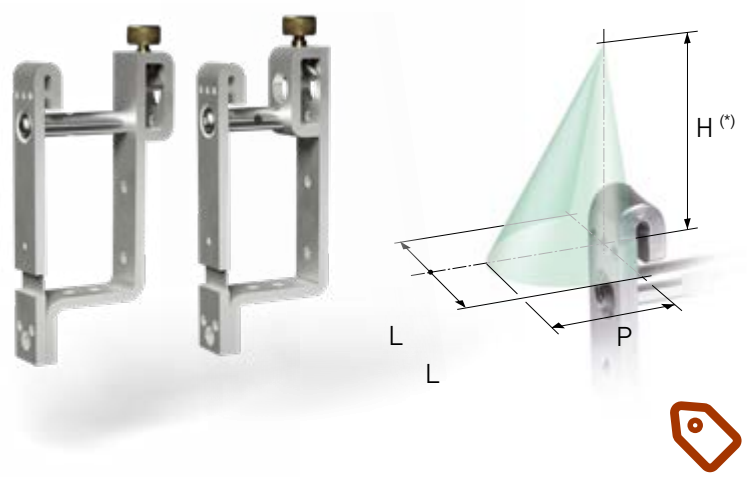
## NON ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TB10 ø 8 mm | TB10 ø 3/8" | TB10C ø 8 mm | TB10C ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Working range | [µm] | 1000 (0/+300) | 1000 (0/+300) | 1000 (0/+300) | 1000 (0/+300) |
| Suggested pretravel (•••) | [µm] | 300 | 300 | 300 | 300 |
| Suggested overtravel (•••) | [µm] | 700 | 700 | 700 | 700 |
| Measuring force at 300 µm from the front stop | [N] | Fprobe ± 0,3 (••) | Fprobe ± 0,3 (••) | Fprobe ± 0,3 (••) | Fprobe ± 0,3 (••) |
| Stiffness K measured on the contact (only armset) | [N/mm] | 0,9 ± 0,3 | 0,9 ± 0,3 | 0,9 ± 0,3 | 0,9 ± 0,3 |
| Mechanical repeatability error (2.77 σ) (assembled through the measuring gauge) | [µm] | ≤ 0,15 (•) | ≤ 0,15 (•) | ≤ 0,15 (•) | ≤ 0,15 (•) |
| Mechanical repeatability error (2.77 σ) (assembled to one side) | [µm] | ≤ 0,15 (•) | ≤ 0,15 (•) | ≤ 0,15 (•) | ≤ 0,15 (•) |
| Mechanical repeatability error (2.77 σ) (assembled to the base) | [µm] | ≤ 0,4 (•) | ≤ 0,4 (•) | ≤ 0,4 (•) | ≤ 0,4 (•) |
| Maximum sensitivity error | | ± 1% | ± 1% | ± 1% | ± 1% |
| Linearity error on the working range | [µm] | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 2 |
| Thermal drift | [µm/°C] | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 |
| Operating and storage temperature | [°C] | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Weight | [g] | 49 | 49 | 47 | 47 |

(•) With standard Marposs Red Crown F10 pencil probe. The performance is recorded at the suggested zero.
(••) F probe = Force of the measuring gauge. Ex.: with 0,8N measuring gauge, F = 0,8 ÷ 0,3 N
(•••) As the mechanical zero device is not available to identify any fixed positioning inside the measuring range, the "suggested zero position" (at 300µm from the front stop) is the one with minimum measuring errors

## TB16

- TB16 and TB16C are compact measuring armsets, perfect for a reduced overall installation dimension.
- Working range is 1000 µm.
- TB16C accommodates short size pencil probe ±0,5 mm, while the base models TB16 accommodates longer pencil probes ±1 mm.




| MODEL Ø SIZE | H MAX* (mm) | L MAX (mm) | P MAX (mm) | ORDER CODE |
|---|---|---|---|---|
| TB16 ø 8 mm | 50 | 14 | 20 | B2927364003 |
| TB16 ø 3/8" | 50 | 14 | 20 | B2927364033 |
| TB16C ø 8 mm | 50 | 14 | 20 | B2927364004 |
| TB16C ø 3/8" | 50 | 14 | 20 | B2927364034 |

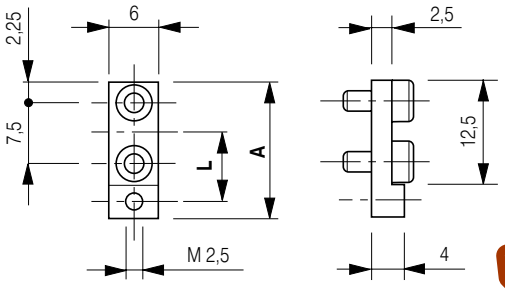
* With a vertical off-set the Arm Ratio changes: mod. TB16 [30/ (30 + h)] mod. TB16 [50 / (50 + h)] with h = 0 ÷ H

## NON ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TB16 ø 8 mm | TB16 ø 3/8" | TB16C ø 8 mm | TB16C ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Working range | [µm] | 1600 (0/+300) | 1600 (0/+300) | 1600 (0/+300) | 1600 (0/+300) |
| Suggested pretravel (•••) | [µm] | 300 | 300 | 300 | 300 |
| Suggested overtravel (•••) | [µm] | 1300 | 1300 | 1300 | 1300 |
| Measuring force at 300 µm from the front stop | [N] | Fprobe ± 0,3 (••) | Fprobe ± 0,3 (••) | Fprobe ± 0,3 (••) | Fprobe ± 0,3 (••) |
| Stiffness K measured on the contact (only armset) | [N/mm] | 0,4 ± 0,2 | 0,4 ± 0,2 | 0,4 ± 0,2 | 0,4 ± 0,2 |
| Mechanical repeatability error (2.77 σ) (assembled through the measuring gauge) | [µm] | ≤ 0,15 (•) | ≤ 0,15 (•) | ≤ 0,15 (•) | ≤ 0,15 (•) |
| Mechanical repeatability error (2.77 σ) (assembled to one side) | [µm] | ≤ 0,4 (•) | ≤ 0,4 (•) | ≤ 0,4 (•) | ≤ 0,4 (•) |
| Mechanical repeatability error (2.77 σ) (assembled to the base) | [µm] | ≤ 0,4 (•) | ≤ 0,4 (•) | ≤ 0,4 (•) | ≤ 0,4 (•) |
| Maximum sensitivity error | | ± 1% | ± 1% | ± 1% | ± 1% |
| Linearity error on the working range | [µm] | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 2 |
| Thermal drift | [µm/°C] | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 |
| Operating and storage temperature | [°C] | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Weight | [g] | 62 | 62 | 60 | 60 |

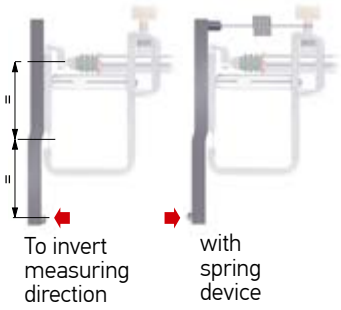
(•) With standard Marposs Red Crown F10 pencil probe. The performance is recorded at the suggested zero.
(••) F probe = Force of the measuring gauge. Ex.: with 0,8N measuring gauge, F = 0,8 ÷ 0,3 N
(•••) As the mechanical zero device is not available to identify any fixed positioning inside the measuring range, the "suggested zero position" (at 300µm from the front stop) is the one with minimum measuring errors

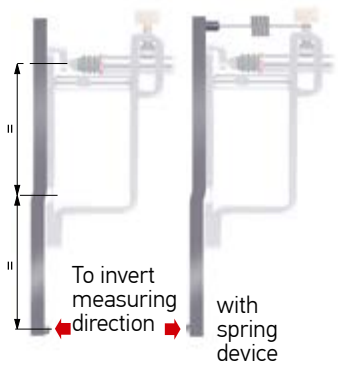
# ACCESSORIES
# AMA




## OFF-SET ARMSET (ARM RATIO 1:1)

| MODEL | VERSION | A | OFF-SET L | ORDER CODE |
|---|---|---|---|---|
| TB10 / TB10C / TB16 / TB16C ø 8 mm | M 2,5 | 16,5 [mm] | 8,5 [mm] | B2924017150 |
| TB10 / TB10C / TB16 / TB16C ø 8 mm | M 2,5 | 18 [mm] | 10 [mm] | B2924017151 |
| TB10 / TB10C / TB16 / TB16C ø 3/8" | 4-48 UNF | 16,5 [mm] | 8,5 [mm] | B2924017152 |
| TB10 / TB10C / TB16 / TB16C ø 3/8" | 4-48 UNF | 18 [mm] | 10 [mm] | B2924017152 |



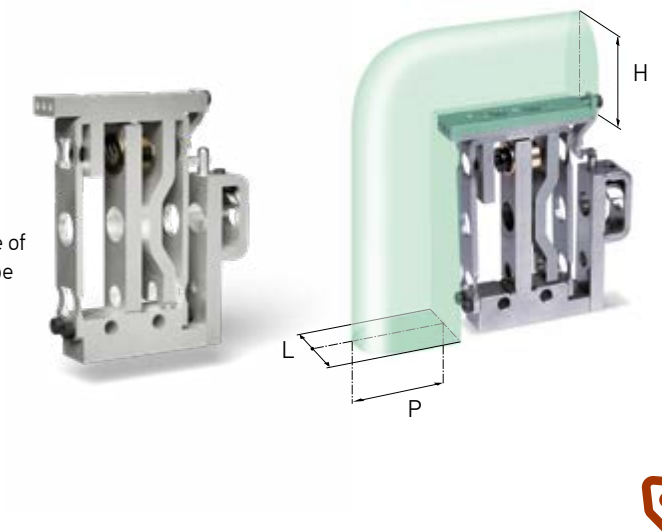




## STRAIGHT ARMSET (ARM RATIO 1:1)

| MODEL | VERSION | ORDER CODE |
|---|---|---|
| TB10 | 8 [mm] | B3192736405 |
| TB10C | 3/8" | B3192736435 |
| TB16 | 8 [mm] | B3192736403 |
| TB16C | 3/8" | B3192736433 |
| **ACCESSORY MODEL** | | **ORDER CODE** |
| Spring for TB10 / TB16 | | B2027364001 |
| Spring for TB10C / TB16C | | B2027364002 |
| Alternate Clamping Device | | B2027364000 |

## TP12 E, TP12 I

- The TP12 line has a working range of 1200 µm, that allows the use of pencil probes with ±1 mm measuring range. Pencil probes must be Spring push type.
- TP12E is the model for checking external diameters.
- TP12I is the model for checking internal diameters.




| MODEL Ø SIZE | H MAX* (mm) | L MAX (mm) | P MAX (mm) | ORDER CODE |
|---|---|---|---|---|
| TP12E ø 8 mm | 40 | 14 | 40 | B2924051200 |
| TP12E ø 3/8" | 40 | 14 | 40 | B2924051202 |
| TP12I ø 8 mm | 40 | 14 | 40 | B2924051201 |
| TP12I ø 3/8" | 40 | 14 | 40 | B2924051203 |

* The Arm Ratio is 1:1 for any contact position.

## NON ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TP12E ø 8 mm | TP12E ø 3/8" | TP12I ø 8 mm | TP12I ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Working range | [µm] | 1200 (0/+300) | 1200 (0/+300) | 1200 (0/+300) | 1200 (0/+300) |
| Retraction field | [µm] | 0 | 0 | 0 | 0 |
| Pretravel | [µm] | 350 ± 50 | 350 ± 50 | 350 ± 50 | 350 ± 50 |
| Overtravel | [µm] | 800 min | 800 min | 800 min | 800 min |
| Stiffness K measured on the contact | [N/mm] | 0,75 ± 0,2 | 0,75 ± 0,2 | 0,95 ± 0,2 | 0,95 ± 0,2 |
| Mechanical repeatability error (2.77 σ) | [µm] | ≤ 0,2 (•) | ≤ 0,2 (•) | ≤ 0,2 (•) | ≤ 0,2 (•) |
| Maximum sensitivity error | | ± 1,5% | ± 1,5% | ± 1,5% | ± 1,5% |
| Linearity error on the working range | [µm] | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 2 |
| Thermal drift | [µm/°C] | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 |
| Operating and storage temperature | [°C] | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Operative pressure | [MPa] | - | - | - | - |
| Weight | [g] | 147 | 147 | 147 | 147 |

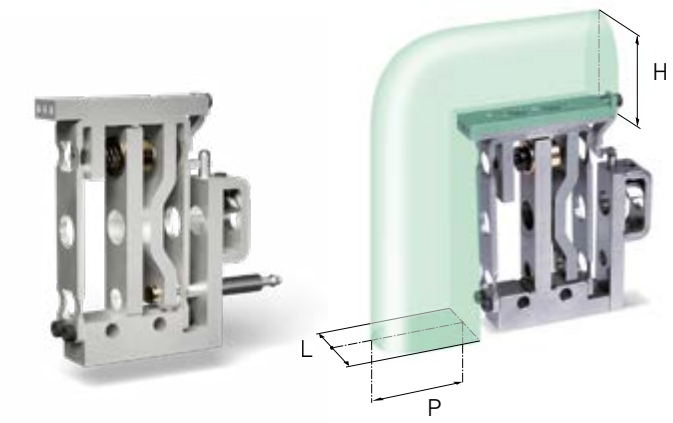
(•) With standard Marposs Red Crown F10 pencil probe.

## ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TP12E ø 8 mm | TP12E ø 3/8" | TP12I ø 8 mm | TP12I ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Measuring force at 350 µm from the front stop | (N) ± 0,15 | Fmin = Fprobe - 0,25 (••) | Fmin = Fprobe - 0,25 (••) | Fmin = 1,2 - Fprobe (••) | Fmin = 1,2 - Fprobe (••) |
| Maximum measuring force | [µm] | FMAX ≥ Fprobe + 0,05 (••) | FMAX ≥ Fprobe + 0,05 (••) | FMAX ≥ 1,5 - Fprobe (••) | FMAX ≥ 1,5 - Fprobe (••) |

(••) F probe = Force of the measuring gauge.
The armset is provided at F min minimum measuring force.

# MODELS AND ACCESSORIES
## AMA




## TP12 EP, TP12 IP

- The TP12 line has a working range of 1200 µm, that allows the use of pencil probes with ±1 mm measuring range. Pencil probes must be Spring push type.
- This version is pneumatically actuated, and works with pneumatic retraction.
- TP12EP is the model for checking external diameters.
- TP12IP is the model for checking internal diameters.

| MODEL Ø SIZE | H MAX* (mm) | L MAX (mm) | P MAX (mm) | ORDER CODE |
|---|---|---|---|---|
| TP12EP ø 8 mm | 40 | 14 | 40 | B3024051204 |
| TP12EP ø 3/8" | 40 | 14 | 40 | B3024051206 |
| TP12IP ø 8 mm | 40 | 14 | 40 | B3024051205 |
| TP12IP ø 3/8" | 40 | 14 | 40 | B3024051207 |

* The Arm Ratio is 1:1 for any contact position.

## NON ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TP12EP ø 8 mm | TP12EP ø 3/8" | TP12IP ø 8 mm | TP12IP ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Working range | [µm] | 1200 (0/+300) | 1200 (0/+300) | 1200 (0/+300) | 1200 (0/+300) |
| Retraction field | [µm] | 900 (0/+100) | 900 (0/+100) | 900 (0/+100) | 900 (0/+100) |
| Pretravel | [µm] | 350 ± 50 | 350 ± 50 | 350 ± 50 | 350 ± 50 |
| Overtravel | [µm] | 800 min | 800 min | 800 min | 800 min |
| Stiffness K measured on the contact | [N/mm] | 0,75 ± 0,2 | 0,75 ± 0,2 | 0,95 ± 0,2 | 0,95 ± 0,2 |
| Mechanical repeatability error (2.77 σ) | [µm] | ≤ 0,2 (•) | ≤ 0,2 (•) | ≤ 0,2 (•) | ≤ 0,2 (•) |
| Maximum sensitivity error | | ± 1,5% | ± 1,5% | ± 1,5% | ± 1,5% |
| Linearity error on the working range | [µm] | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 2 |
| Thermal drift | [µm/°C] | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 |
| Operating and storage temperature | [°C] | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Operative pressure | [MPa] | 0,3 to 0,7 | 0,3 to 0,7 | 0,3 to 0,7 | 0,3 to 0,7 |
| Weight | [g] | 154 | 154 | 154 | 154 |

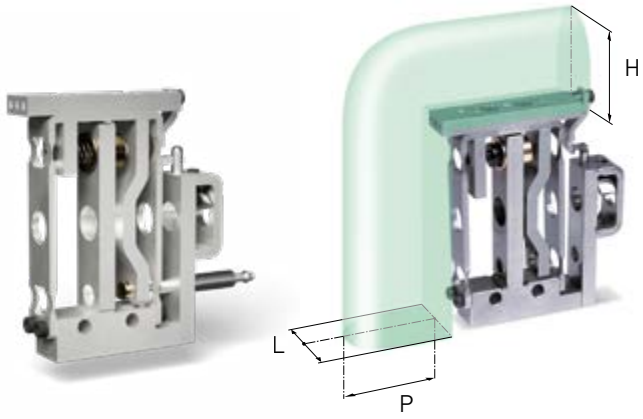
(•) With standard Marposs Red Crown F10 pencil probe.

## ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TP12EP ø 8 mm | TP12EP ø 3/8" | TP12IP ø 8 mm | TP12IP ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Measuring force at 350 µm from the front stop | (N) ± 0,15 | Fmin = Fprobe - 0,25 (••) | Fmin = Fprobe - 0,25 (••) | Fmin = 1,2 - Fprobe (••) | Fmin = 1,2 - Fprobe (••) |
| Maximum measuring force | [µm] | FMAX ≥ Fprobe + 0,05 (••) | FMAX ≥ Fprobe + 0,05 (••) | FMAX ≥ 1,5 - Fprobe (••) | FMAX ≥ 1,5 - Fprobe (••) |

(••) F probe = Force of the measuring gauge.
The armset is provided at F min minimum measuring force.

## TP12 SE, TP12 SI




- The TP12 line has a working range of 1200 µm, that allows the use of pencil probes with ±1 mm measuring range. Pencil probes must be Spring push type.
- This specific version is self-centering type, feature that allows to use one single measurement probe and one static contact point, instead of 2 measurement probes.
- TP12SE is the model for checking external diameters.
- TP12SI is the model for checking internal diameters.

| MODEL Ø SIZE | H MAX* (mm) | L MAX (mm) | P MAX (mm) | ORDER CODE |
|---|---|---|---|---|
| TP12SE ø 8 mm | 40 | 14 | 40 | B2924051208 |
| TP12SE ø 3/8" | 40 | 14 | 40 | B2924051209 |
| TP12SI ø 8 mm | 40 | 14 | 40 | B2924051228 |
| TP12SI ø 3/8" | 40 | 14 | 40 | B2924051229 |

* The Arm Ratio is 1:1 for any contact position.

## NON ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TP12SE ø 8 mm | TP12SE ø 3/8" | TP12SI ø 8 mm | TP12SI ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Working range | [µm] | 1200 (0/+300) | 1200 (0/+300) | 1200 (0/+300) | 1200 (0/+300) |
| Retraction field | [µm] | 0 | 0 | 0 | 0 |
| Pretravel | [µm] | 350 ± 50 | 350 ± 50 | 350 ± 50 | 350 ± 50 |
| Overtravel | [µm] | 800 min | 800 min | 800 min | 800 min |
| Stiffness K measured on the contact | [N/mm] | 1,2 ± 0,2 | 1,2 ± 0,2 | 0,8 ± 0,2 | 0,8 ± 0,2 |
| Mechanical repeatability error (2.77 σ) | [µm] | ≤ 0,6 each pair (•) | ≤ 0,6 each pair (•) | ≤ 0,6 each pair (•) | ≤ 0,6 each pair (•) |
| Maximum sensitivity error | | ± 1,5% | ± 1,5% | ± 1,5% | ± 1,5% |
| Linearity error on the working range | [µm] | ≤ 2 | ≤ 2 | ≤ 2 | ≤ 2 |
| Thermal drift | [µm/°C] | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 |
| Operating and storage temperature | [°C] | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Operative pressure | [MPa] | - | - | - | - |
| Weight | [g] | 132 | 132 | 132 | 132 |

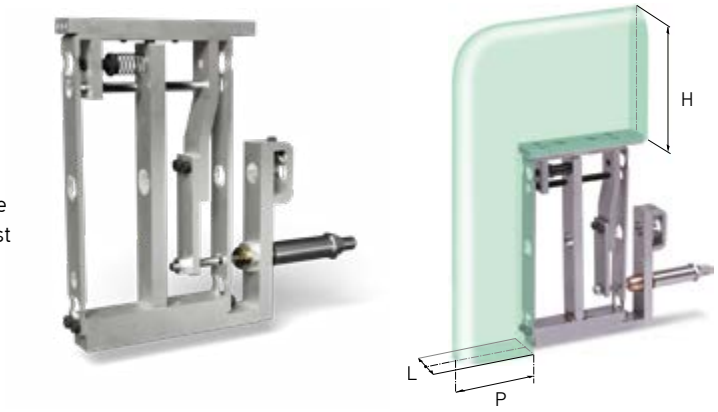
(•) With standard Marposs Red Crown F10 pencil probe

## ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TP12SE ø 8 mm | TP12SE ø 3/8" | TP12SI ø 8 mm | TP12SI ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Measuring force at 350 µm from the front stop | (N) ± 0,15 | Fmin = 1,2 - Fprobe (••) | Fmin = 1,2 - Fprobe (••) | Fmin = Fprobe - 0,25 (••) | Fmin = Fprobe - 0,25 (••) |
| Maximum measuring force | [µm] | FMAX ≥ 1,5 - Fprobe (••) | FMAX ≥ 1,5 - Fprobe (••) | FMAX ≥ Fprobe + 0,05 (••) | FMAX ≥ Fprobe + 0,05 (••) |

(••) F probe = Force of the measuring gauge.
The armset is provided at F min minimum measuring force.

# MODELS AND ACCESSORIES
## AMA




### TP60E, TP60I

- The TP60 line has a working range of 6000 µm, that allows the use of pencil probes with ±5 mm measuring range. Pencil probes must be Spring push type.
- TP60E is the model for checking external diameters.
- TP60I is the model for checking internal diameters.

| MODEL Ø SIZE | H MAX* (mm) | L MAX (mm) | P MAX (mm) | ORDER CODE |
|---|---|---|---|---|
| TP60E ø 8 mm | 90 | 14 | 50 | B2924051400 |
| TP60E ø 3/8" | 90 | 14 | 50 | B2924051430 |
| TP60I ø 8 mm | 90 | 14 | 50 | B2924051401 |
| TP60I ø 3/8" | 90 | 14 | 50 | B2924051431 |

* The Arm Ratio is 1:1 for any contact.

## NON ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TP60E ø 8 mm | TP60E ø 3/8" | TP60I ø 8 mm | TP60I ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Maximum working range | [µm] | 6000 (0/+300) | 6000 (0/+300) | 6000 (0/+300) | 6000 (0/+300) |
| Stiffness K measured on the contact | [N/mm] | 0,15 ± 0,1 | 0,15 ± 0,1 | 0,25 ± 0,1 | 0,25 ± 0,1 |
| Mechanical repeatability error (2.77 σ) | [µm] | ≤ 0,3 (•) | ≤ 0,3 (•) | ≤ 0,3 (•) | ≤ 0,3 (•) |
| Maximum sensitivity error | | ± 1,5% | ± 1,5% | ± 1,5% | ± 1,5% |
| Linearity error on the working range | [µm] | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 6 |
| Thermal drift | [µm/°C] | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 |
| Operating and storage temperature | [°C] | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Operating pressure | [MPa] | 0,3 to 0,6 | 0,3 to 0,6 | 0,3 to 0,6 | 0,3 to 0,6 |
| Weight | [g] | 292 | 292 | 294 | 294 |
| Operating and storage temperature | [°C] | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Operative pressure | [MPa] | 0,3 to 0,7 | 0,3 to 0,7 | 0,3 to 0,7 | 0,3 to 0,7 |
| Weight | [g] | 154 | 154 | 154 | 154 |

(•) With standard Marposs Red Crown F10 pencil probe

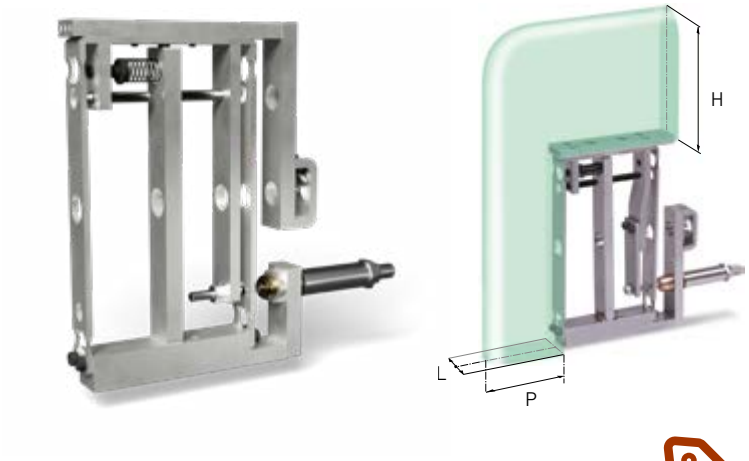
## ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TP60E ø 8 mm | TP60E ø 3/8" | TP60I ø 8 mm | TP60I ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Adjusted working range | [µm] | 5700 ± 100 | 5700 ± 100 | 5700 ± 100 | 5700 ± 100 |
| Retraction range | [µm] | 5700 ± 100 | 5700 ± 100 | 5700 ± 100 | 5700 ± 100 |
| Measuring force at zero (ref. of the travel centre + 2750 µm) | (N) ± 0,15 | Fmin = Fprobe + 0,2 (••) | Fmin = Fprobe + 0,2 (••) | Fmin = 2,6 - Fprobe (••) | Fmin = 2,6 - Fprobe (••) |
| Maximum measuring force | (N) | FMAX ≥ Fprobe + 0,5 (••) | FMAX ≥ Fprobe + 0,5 (••) | FMAX ≥ 3,0 - Fprobe (••) | FMAX ≥ 3,0 - Fprobe (••) |

(••) F probe = Force of the measuring gauge.
The armset is provided at F min minimum measuring force.

# TP60SE, 60SI

- The TP60 line has a working range of 6000 µm, that allows the use of pencil probes with ±5 mm measuring range. Pencil probes must be Spring push type.
- This specific version is self-centering type, feature that allows to use one single measurement probe and one static contact point, instead of 2 measurement probes.
- TP60SE is the model for checking external diameters.
- TP60SI is the model for checking internal diameters.




| MODEL Ø SIZE | H MAX* (mm) | L MAX (mm) | P MAX (mm) | ORDER CODE |
|---|---|---|---|---|
| TP60SE ø 8 mm | 90 | 14 | 50 | B2924051409 |
| TP60SE ø 3/8" | 90 | 14 | 50 | B2924051407 |
| TP60SI ø 8 mm | 90 | 14 | 50 | B2924051406 |
| TP60SI ø 3/8" | 90 | 14 | 50 | B2924051408 |

* The Arm Ratio is 1:1 for any contact.

## NON ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TP60SE ø 8 mm | TP60SE ø 3/8" | TP60SI ø 8 mm | TP60SI ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Maximum working range | [µm] | 6000 (0/+300) | 6000 (0/+300) | 6000 (0/+300) | 6000 (0/+300) |
| Stiffness K measured on the contact | [N/mm] | 0,25 ± 0,1 | 0,25 ± 0,1 | 0,15 ± 0,1 | 0,15 ± 0,1 |
| Mechanical repeatability error (2.77 σ) | [µm] | ≤ 0,6 each pair (•) | ≤ 0,6 each pair (•) | ≤0,6 each pair (•) | ≤0,6 each pair (•) |
| Maximum sensitivity error | | ± 1,5% | ± 1,5% | ± 1,5% | ± 1,5% |
| Linearity error on the working range | [µm] | ≤ 6 | ≤ 6 | ≤ 6 | ≤ 6 |
| Thermal drift | [µm/°C] | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 |
| Operating and storage temperature | [°C] | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Operating pressure | [MPa] | 0,3 to 0,6 | 0,3 to 0,6 | 0,3 to 0,6 | 0,3 to 0,6 |
| Weight | [g] | 267 | 267 | 267 | 267 |

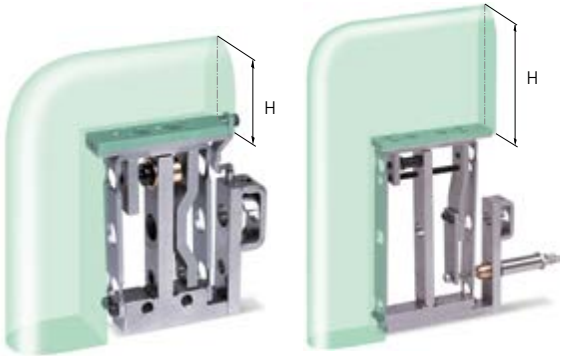
(•) With standard Marposs Red Crown F10 pencil probe

## ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TP60SE ø 8 mm | TP60SE ø 3/8" | TP60SI ø 8 mm | TP60SI ø 3/8" |
|---|---|---|---|---|---|
| Contact thread | | M2,5 | 4-48 UNF | M2,5 | 4-48 UNF |
| Adjusted working range | [µm] | 5700 ± 100 | 5700 ± 100 | 5700 ± 100 | 5700 ± 100 |
| Retraction range | [µm] | 5700 ± 100 | 5700 ± 100 | 5700 ± 100 | 5700 ± 100 |
| Measuring force at zero (ref. of the travel centre + 2750 µm) | (N) ± 0,15 | Fmin = 2,6 - Fprobe (••) | Fmin = 2,6 - Fprobe (••) | Fmin = Fprobe +0,2 (••) | Fmin = Fprobe +0,2 (••) |
| Maximum measuring force | (N) | FMAX ≥ 3,0 Fprobe (••) | FMAX ≥ 3,0 Fprobe (••) | FMAX ≥ Fprobe + 0,5 (••) | FMAX ≥ Fprobe + 0,5 (••) |

(••) F probe = Force of the measuring gauge.
The armset is provided at F min minimum measuring force.

# ACCESSORIES
## AMA


### SLIDES

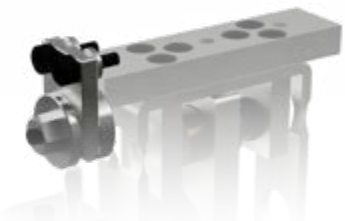
| MODEL | H(*) MAX (MM) | S SIZE (MM) | COMPATIBLE WITH ARMSET | ORDER CODE |
|---|---|---|---|---|
| M 2,5 | 20 | 4 | TP12 | B2924051211 |
| M 2,5 | 40 | 6 | TP12 | B2924051219 |
| 4-48 UNF | 20 | 4 | TP12 | B2924051212 |
| 4-48 UNF | 40 | 6 | TP12 | B2924051220 |
| M 2,5 | 90 | 6 | TP60 | B2924051405 |
| 4-48 UNF | 90 | 6 | TP60 | B2924051435 |


### ARMSET

| MODEL | A SIZE (MM) | COMPATIBLE WITH ARMSET | ORDER CODE |
|---|---|---|---|
| M 2,5 | 30 | TP12 | B3192405120 |
| 4-48 UNF | 30 | TP12 | B3192405123 |
| M 2,5 | 60 | TP60 | B3192405140 |
| 4-48 UNF | 60 | TP60 | B3192405143 |

### OFFSET ARMSET

| MODEL | MAX OFFSET (MM) | ORDER CODE |
|---|---|---|
| M 2,5 | 8,5 mm | B2924017150 |
| M 2,5 | 10 mm | B2924017151 |
| 4-48 UNF | 8,5 mm | B2924017152 |
| 4-48 UNF | 10 mm | B2924017153 |

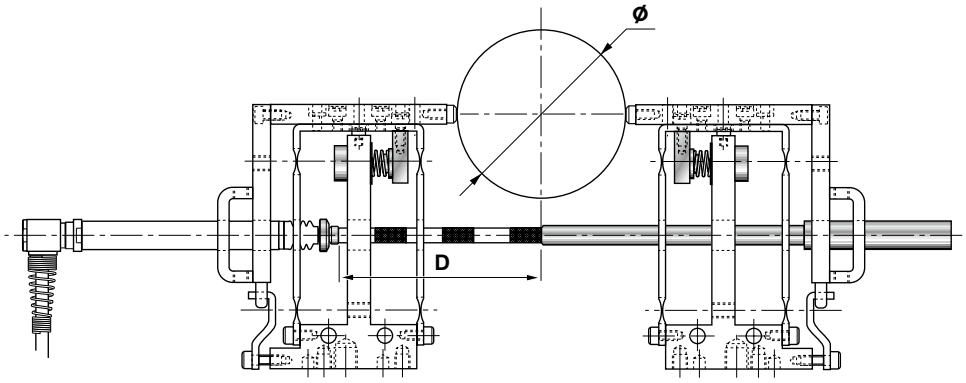


### PRETRAVEL/ OVERTRAVEL LIMITER

| MODEL | COMPATIBLE WITH | ORDER CODE |
|---|---|---|
| TP12 (any model) | TP12 any model | B2924051260 |

## SELF-CENTERING KIT

| COMPATIBLE CELL MODEL | Ø | ORDER CODE |
|---|---|---|
| TP12 | 8 mm | B2924051210 |
| TP12 | 3/8" | B2924051213 |
| TP60 | 8 mm | B2924051410 |
| TP60 | 3/8" | B2924051413 |




| COMPATIBLE CELL MODEL | PART DIAMETER TO MEASURE Ø [MM] | TOTAL EXTENSION LENGTH D [MM] | ORDER CODE |
|---|---|---|---|
| TP12 | 0-3 | 10 | B1024017105 |
| TP12 | 3-8 | 15 | B1024017106 |
| TP12 | 8-13 | 20 | B1024017107 |
| TP12 | 13-18 | 25 | B1024017108 |
| TP12 | 18-23 | 30 | B1024017109 |
| TP12 | 23-28 | 35 | B1024017105 + B1024017107 |
| TP12 | 28-33 | 40 | B1024017107 + B1024017107 |
| TP12 | 33-38 | 45 | B1024017109 + B1024017106 |
| TP12 | 38-43 | 50 | B1024017109 + B1024017107 |
| TP12 | 43-48 | 55 | B1024017109 + B1024017108 |
| TP12 | 48-53 | 60 | B1024017109 + B1024017109 |
| TP12 | 53-58 | 65 | B1024017109 + B1024017108 + B1024017105 |

| COMPATIBLE CELL MODEL | PART DIAMETER TO MEASURE Ø [MM] | TOTAL EXTENSION LENGTH D [MM] | ORDER CODE |
|---|---|---|---|
| TP60 | 0-10 | - | |
| TP60 | 10-20 | 10 | B1024017105 |
| TP60 | 20-30 | 20 | B1024017107 |
| TP60 | 30-40 | 30 | B1024017109 |
| TP60 | 40-50 | 40 | B1024017107 + B1024017107 |
| TP60 | 50-60 | 50 | B1024017109 + B1024017107 |
| TP60 | 60-70 | 60 | B1024017109 + B1024017109 |
| TP60 | 70-80 | 70 | B1019750093 |
| TP60 | 80-90 | 80 | B1019750122 |
| TP60 | 90-100 | 90 | B1019750093 + B1024017107 |

# MODELS AND ACCESSORIES
# AMA

## TS12, TS21

- The TS12 line has a working range of 1200 µm, while TS21 a working range from 1800 to 2100 µm. Both models allow the use of pencil probes with ±1 mm measuring range. Pencil probes must be Spring push type.
- This model is used to measure shoulders and is perfect in case of limited installation space.

| MODEL Ø SIZE | ORDER CODE |
|---|---|
| TS12 ø 8 mm | B2927364100 |
| TS12 ø 3/8" | B2927364130 |
| TS21 ø 8 mm | B2927364101 |
| TS21 ø 3/8" | B2927364131 |

## NON ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TS12 ø 8 mm | TS12 ø 3/8" | TS21 ø 8 mm | TS21 ø 8 mm | TS21 ø 3/8" | TS21 ø 3/8" |
|---|---|---|---|---|---|---|---|
| Contact thread | | M2 | M2 | M2 | M2 | M2 | M2 |
| Arm ratio (min and max value) | | 1 | 1 | 1,5 | 1,75 | 1,5 | 1,75 |
| Suggested pretravel (•••) | [µm] | 300 | 300 | 450 | 525 | 450 | 525 |
| Suggested overtravel (•••) | [µm] | 900 | 900 | 1350 | 1375 | 1350 | 1375 |
| Measuring force at suggested zero | [N] | Fprobe + 0,8 ± 0,2 (••) | Fprobe + 0,8 ± 0,2 (••) | Fprobe + 0,4 ± 0,2 (••) | Fprobe + 0,25 ± 0,2 (••) | Fprobe + 0,4 ± 0,2 (••) | Fprobe + 0,25 ± 0,2 (••) |
| Mechanical repeatability error (2.77 σ) | [µm] | ≤ 0,5 (•) | ≤ 0,5 (•) | ≤ 0,5 (•) | ≤ 0,5 (•) | ≤ 0,5 (•) | ≤ 0,5 (•) |
| Maximum sensitivity error | | ± 2% | ± 2% | ± 2% | ± 2% | ± 2% | ± 2% |
| Linearity error | [µm] | ≤ 5 (in 1000 µm) | ≤ 5 (in 1000 µm) | ≤ 10 | ≤ 10 | ≤ 10 | ≤ 10 |
| Thermal drift | [µm/°C] | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 | ≤ 0,2 |
| Protection degree | | - | - | - | - | - | - |
| Operating and storage temperature | [°C] | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Weight | [g] | 80 | 82 | 80 | 80 | 82 | 82 |

(•) With standard Marposs Red Crown F10 pencil probe. The performance is recorded at the suggested zero.
(••) F probe = Force of the measuring gauge.
(•••) As the mechanical zero device is not available to identify any fixed positioning inside the measuring range, the "suggested zero position" (at 450µm from the front stop with arm ratio 1,5) is the one with minimum measuring errors.

## ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TS12 ø 8 mm | TS12 ø 3/8" | TS21 ø 8 mm | TS21 ø 8 mm | TS21 ø 3/8" | TS21 ø 3/8" |
|---|---|---|---|---|---|---|---|
| Contact thread | | M2 | M2 | M2 | M2 | M2 | M2 |
| Working range | [µm] | 1200 (0/+200) to 900 | 1200 (0/+200) to 900 | 1800 (0/+200) to 1350 | 1800 (0/+200) to 1350 | 1800 (0/+200) to 1350 | 2100 (0/+200) to 1575 |

## TS12, TS21

– TS12E is the premium version of the TS12 line, featuring superior measurement repeatability thanks to the built-in transducer. It is available with LVDT and HBT transducer, also compatible with Tesa electronics.

| MODEL Ø SIZE | ORDER CODE |
|---|---|
| TS12E LVDT | B3427364150 |
| TS12E HBT | B3427364005 |
| TS12E HBT TESA | B3427364100 |

## NON ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TS12E LVDT | TS12E LVDT | TS12E HBT | TS12E HBT | TS12E HBT TESA | TS12E HBT TESA |
|---|---|---|---|---|---|---|---|
| Contact thread | | M2 | M2 | M2 | M2 | M2 | M2 |
| Arm ratio (min and max value) | | 1 | 1 | 1 | 1 | 1 | 1 |
| Suggested pretravel (•••) | [µm] | 550 | 600 | 550 | 600 | 550 | 600 |
| Suggested overtravel (•••) | [µm] | 700 | 800 | 700 | 800 | 700 | 800 |
| Measuring force at suggested zero | [N] | 0,8 ± 0,2 | 0,8 ± 0,2 | 0,8 ± 0,2 | 0,8 ± 0,2 | 0,8 ± 0,2 | 0,8 ± 0,2 |
| Mechanical repeatability error (2.77 σ) | [µm] | ≤ 0,3 | ≤ 0,3 | ≤ 0,3 | ≤ 0,3 | ≤ 0,3 | ≤ 0,3 |
| Maximum sensitivity error | | ± 0,5% | ± 0,5% | ± 0,5% | ± 0,5% | ± 0,5% | ± 0,5% |
| Linearity error | [µm] | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 | ≤ 3 |
| Thermal drift | [µm/°C] | ≤ 0,25 | ≤ 0,25 | ≤ 0,25 | ≤ 0,25 | ≤ 0,25 | ≤ 0,25 |
| Protection degree | | IP65 | IP65 | IP65 | IP65 | IP65 | IP65 |
| Operating and storage temperature | [°C] | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Sensitivity | [mV/V/mm] | 230 ± 0,5% | 230 ± 0,5% | 73,75 ± 0,5% | 73,75 ± 0,5% | 73,75 ± 0,5% | 73,75 ± 0,5% |
| Calibration spec. | LVDT | 3,5355 Vrms @ 7,5 kHz with load 1 MΩ//360 pF | 3,5355 Vrms @ 7,5 kHz with load 1 MΩ//360 pF | 10 Vpp @ 7,5 kHz with load 2 kΩ ± 0,1% | 10 Vpp @ 7,5 kHz with load 2 kΩ ± 0,1% | 3 Vrms @ 13 kHz with load 2 kΩ ± 0,1% | 3 Vrms @ 13 kHz with load 2 kΩ ± 0,1% |
| Weight | [g] | 80 | 80 | 80 | 80 | 80 | 80 |

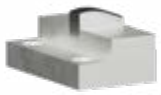
(•••) As the mechanical zero device is not available to identify any fixed positioning inside the measuring range, the "suggested zero position" (at 450µm from the front stop with arm ratio 1,5) is the one with minimum measuring errors.

## ADJUSTABLE FEATURES

| MODEL Ø SIZE | | TS12E LVDT | TS12E LVDT | TS12E HBT | TS12E HBT | TS12E HBT TESA | TS12E HBT TESA |
|---|---|---|---|---|---|---|---|
| Contact thread | | M2 | M2 | M2 | M2 | M2 | M2 |
| Working range | [µm] | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |

# ACCESSORIES
## AMA

### CONTACT FOR **TS12** (AR 1:1)



| ORDER CODE |
|---|
| B3292736401 |

### CONTACT FOR **TS12** (AR 1:1)

| R | ORDER CODE |
|---|---|
| 5 | B3292736405 |
| 20 | B3292736410 |

### CONTACT FOR **TS12E** (AR 1:1)

| ORDER CODE |
|---|
| B3292736430 |

### ARMSET FOR GROOVES FOR **TS21** (AR 1:1.75)

| ORDER CODE |
|---|
| B3292736415 |

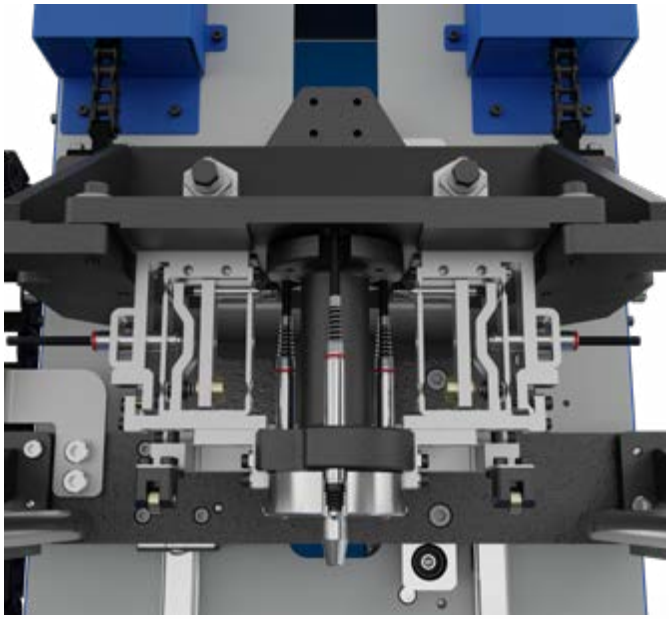
### INTERFACE BLOCK FOR QUICK SET SUPPORT BRACKET

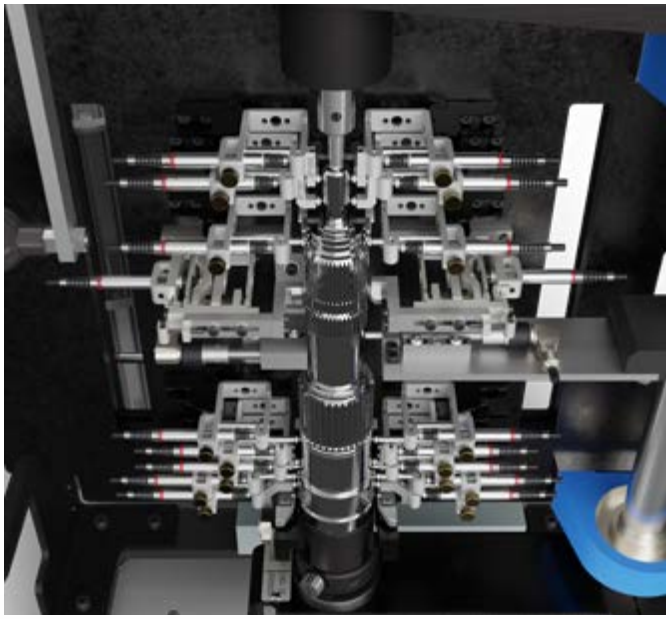
| ORDER CODE |
|---|
| B2927364150 |

### SIDE COVER

| ORDER CODE |
|---|
| B1027364145 |

## APPLICATION EXAMPLES





# QUICKBLOCK


## APPLICATION AND PRODUCT DESCRIPTION

- QUICK BLOCK is a measuring module designed to be integrated into applications having both measuring performance demands and high motion speed. Quick Block purposely integrates a sliding system, that is super-precise and robust at the same time. The measuring sensor is incorporated into the QUICK BLOCK structure, so it is well protected from mechanical stresses and external agents. It features up to IP65 protection grade.
- The QUICK BLOCK comes with a number of different options, as for instance LVDT or HBT built-in sensor and different measuring ranges, up to ± 5 mm.
- Thanks to the different connectivity options, it is always possible to obtain the perfect cost-effectiveness: the USB version is a perfect solution for single measurement point, while for larger systems the DigiCrown version offers high flexibility in networking multiple sensors together.

## QBF100 / QBH100

QUICK BLOCK structure with a measuring range of 2 mm and a total stroke of 6 mm.

Available with integrated LVDT sensor and HBT sensor.

## QBF1000 / QBH1000 / QBH1000 TESA

QUICK BLOCK structure with an extended measuring range of 10 mm and a total stroke of 10.6 mm.

Available with integrated LVDT sensor and HBT sensor,
also compatible with Tesa electronics.

## DB1000

This is the premium version of QUICK BLOCK structure with superior level of measuring accuracy, thanks to the integration of a digital probe inside with the DigiCrown interface.

DB1000 features an extended measuring range of 10 mm and a total stroke of 10.6 mm.

## UB1000

This is the premium version of QUICK BLOCK structure with superior level of measuring accuracy, thanks to the integration of a digital probe inside with the DigiCrown interface.

Thanks to the USB interface on the sensor, this version can be directly connected to a standard PC, without the need of interfacing box and power supply.

DB1000 features an extended measuring range of 10 mm and a total stroke of 10.6 mm.

## QB600 / 1000

QUICKBLOCK structure with the possibility to mount a desired probe.

It comes with the 8mm hole ready to accommodate a desired pencil probe

Available for 6 and 10 mm measuring ranges.

# MODELS AND ACCESSORIES
## QUICKBLOCK

| MODEL | SENSOR VERSION | MEASURING RANGE | ACTUATION | CABLE OUTLET | FIXING INTERFACE | IP RATE | ORDER CODE |
|---|---|---|---|---|---|---|---|
| QBF100 | LVDT | 2 mm | SPRING | AXIAL | SQUARE GUIDE | IP65 | B3419883300 |
| QBF100 | LVDT | 2 mm | PNEUM A | AXIAL | SQUARE GUIDE | IP65 | B3419883305 |
| QBH100 | HBT | 2 mm | SPRING | AXIAL | SQUARE GUIDE | IP65 | B3419883350 |
| QBH100 | HBT | 2 mm | PNEUM A | AXIAL | SQUARE GUIDE | IP65 | B3419883355 |
| QBH100 | HBT | 2 mm | SPRING | AXIAL | TESA INTERFACE | IP65 | B3419883360 |
| QBH100 | HBT | 2 mm | PNEUM A | AXIAL | TESA INTERFACE | IP65 | B3419883365 |
| QBF1000 | LVDT | 10 mm | SPRING | AXIAL | SQUARE GUIDE | IP40 | B3419883800 |
| QBF1000 | LVDT | 10 mm | SPRING | RADIAL | SQUARE GUIDE | IP40 | B3419883801 |
| QBF1000 | LVDT | 10 mm | PNEUM A | AXIAL | SQUARE GUIDE | IP40 | B3419883805 |
| QBF1000 | LVDT | 10 mm | PNEUM R | RADIAL | SQUARE GUIDE | IP40 | B3419883806 |
| QBF1000 | LVDT | 10 mm | SPRING | AXIAL | SQUARE GUIDE | IP65 | B3419883810 |
| QBF1000 | LVDT | 10 mm | SPRING | RADIAL | SQUARE GUIDE | IP65 | B3419883811 |
| QBF1000 | LVDT | 10 mm | PNEUM A | AXIAL | SQUARE GUIDE | IP65 | B3419883815 |
| QBF1000 | LVDT | 10 mm | PNEUM R | RADIAL | SQUARE GUIDE | IP65 | B3419883816 |
| QBH1000 | HBT | 10 mm | SPRING | AXIAL | SQUARE GUIDE | IP40 | B3419883850 |
| QBH1000 | HBT | 10 mm | SPRING | RADIAL | SQUARE GUIDE | IP40 | B3419883851 |
| QBH1000 | HBT | 10 mm | PNEUM A | AXIAL | SQUARE GUIDE | IP40 | B3419883855 |
| QBH1000 | HBT | 10 mm | PNEUM R | RADIAL | SQUARE GUIDE | IP40 | B3419883856 |
| QBH1000 | HBT | 10 mm | SPRING | AXIAL | SQUARE GUIDE | IP65 | B3419883860 |
| QBH1000 | HBT | 10 mm | SPRING | RADIAL | SQUARE GUIDE | IP65 | B3419883861 |
| QBH1000 | HBT | 10 mm | PNEUM A | AXIAL | SQUARE GUIDE | IP65 | B3419883865 |
| QBH1000 | HBT | 10 mm | PNEUM R | RADIAL | SQUARE GUIDE | IP65 | B3419883866 |
| QBH1000 TESA | HBT TESA | 10 mm | SPRING | AXIAL | SQUARE GUIDE | IP40 | B3419883900 |
| QBH1000 TESA | HBT TESA | 10 mm | SPRING | RADIAL | SQUARE GUIDE | IP40 | B3419883901 |
| QBH1000 TESA | HBT TESA | 10 mm | PNEUM A | AXIAL | SQUARE GUIDE | IP40 | B3419883905 |
| QBH1000 TESA | HBT TESA | 10 mm | PNEUM R | RADIAL | SQUARE GUIDE | IP40 | B3419883906 |
| QBH1000 TESA | HBT TESA | 10 mm | SPRING | AXIAL | SQUARE GUIDE | IP65 | B3419883910 |
| QBH1000 TESA | HBT TESA | 10 mm | SPRING | RADIAL | SQUARE GUIDE | IP65 | B3419883911 |
| QBH1000 TESA | HBT TESA | 10 mm | PNEUM A | AXIAL | SQUARE GUIDE | IP65 | B3419883915 |
| QBH1000 TESA | HBT TESA | 10 mm | PNEUM R | RADIAL | SQUARE GUIDE | IP65 | B3419883916 |

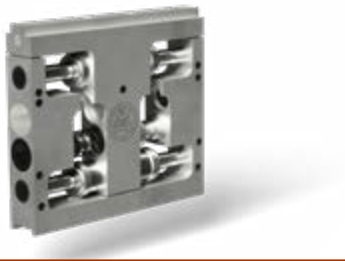
| TECHNICAL SPECIFICATIONS | | QBF100 | QBH100 | QBF1000 | QBH1000 | QBH1000 TESA |
|---|---|---|---|---|---|---|
| Transducer | mm | LVDT | HBT | LVDT | HBT | HBT |
| Tot Stroke | mm | 6 | 6 | 10,6 | 10,6 | 10,6 |
| Meas Range | mm | 2 | 2 | 10 | 10 | 10 |
| Pretravel | | 1.1 / 1.2 | 1.1 / 1.2 | 5.1 / 5.2 | 5.1 / 5.2 | 5.1 / 5.2 |
| Interface | | square guide | square guide / TESA Dovetail | square guide | square guide | square guide |
| Guiding Sys | | ball cage | ball cage | ball cage | ball cage | ball cage |
| Antirotation | | allen screw | allen screw | ball cage | ball cage | ball cage |
| Repeatibility | µm | < 0.5 | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Tip Force with Standard Spring | N | 1±20% | 1±20% | 1.7±20% | 1.7±20% | 1.7±20% |
| Thermal Drift | µm/°C | < 0.25 | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Operat. Pressure | Bar | 3 to 6 | 3 to 6 | 3 to 6 | 3 to 6 | 3 to 6 |
| Total Weight | G(N) | < 260 | < 260 | < 260 | < 260 | < 260 |
| Mobile Part Weight | G(N) | 100 | 100 | 110 | 110 | 110 |
| Operating Temp | °C | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Protection Degree Guides | | IP65 | IP65 | IP40 / IP65 | IP40 / IP65 | IP40 / IP65 |
| Protection Degree Transducer | | IP65 | IP65 | IP65 | IP65 | IP65 |
| Cable Length | m | 2 | 2 | 2 | 2 | 2 |
| Connector | | Lumberg SV50/6 | Lumberg SV50/6 | Lumberg SV50/6 | Lumberg SV50/6 | Lumberg SV50/6 |
| Sensitivity | mV/V/mm | 230 | 73,75 | 115 | 29,5 | 29,5 |
| Accuracy | µm | ±MAX(1+\|10•K\|;\|15•K\|)*** | ±MAX(1+\|10•K\|;\|15•K\|)*** | ±MAX(8+\|3•K\|;\|8•K\|)*** | ±MAX(8+\|3•K\|;\|8•K\|)*** | ±MAX(8+\|3•K\|;\|8•K\|)*** |
| Calibration Specs | | 3,5V RMS @7,5kHz with load 1MΩ//360pF | 3,5V RMS @7,5kHz with load 2KΩ±0,1% | 3,5V RMS @7,5kHz with load 1MΩ//360pF | 3,5V RMS @7,5kHz with load 2KΩ±0,1% | 3V RMS @13kHz with load 2KΩ±0,1% |

*** K = reading value (mm)

# MODELS AND ACCESSORIES
## QUICKBLOCK

| MODEL | SENSOR VERSION | MEASURING RANGE | ACTUATION | CABLE OUTLET | FIXING INTERFACE | IP RATE | ORDER CODE |
|---|---|---|---|---|---|---|---|
| DB1000 | DIGITIZED | 10 | SPRING | AXIAL | SQUARE GUIDE | IP40 | B3419883970 |
| DB1000 | DIGITIZED | 10 | SPRING | RADIAL | SQUARE GUIDE | IP40 | B3419883971 |
| DB1000 | DIGITIZED | 10 | PNEUM A | AXIAL | SQUARE GUIDE | IP40 | B3419883975 |
| DB1000 | DIGITIZED | 10 | PNEUM R | RADIAL | SQUARE GUIDE | IP40 | B3419883976 |
| DB1000 | DIGITIZED | 10 | SPRING | AXIAL | SQUARE GUIDE | IP65 | B3419883980 |
| DB1000 | DIGITIZED | 10 | SPRING | RADIAL | SQUARE GUIDE | IP65 | B3419883981 |
| DB1000 | DIGITIZED | 10 | PNEUM A | AXIAL | SQUARE GUIDE | IP65 | B3419883985 |
| DB1000 | DIGITIZED | 10 | PNEUM R | AXIAL | SQUARE GUIDE | IP65 | B3419883986 |

| MODEL | SENSOR VERSION | MEASURING RANGE | ACTUATION | CABLE OUTLET | FIXING INTERFACE | IP RATE | ORDER CODE |
|---|---|---|---|---|---|---|---|
| UB1000 | USB | 10 | SPRING | AXIAL | SQUARE GUIDE | IP40 | B3419883972 |
| UB1000 | USB | 10 | SPRING | RADIAL | SQUARE GUIDE | IP40 | B3419883973 |
| UB1000 | USB | 10 | PNEUM A | AXIAL | SQUARE GUIDE | IP40 | B3419883977 |
| UB1000 | USB | 10 | PNEUM R | RADIAL | SQUARE GUIDE | IP40 | B3419883978 |
| UB1000 | USB | 10 | SPRING | AXIAL | SQUARE GUIDE | IP65 | B3419883982 |
| UB1000 | USB | 10 | SPRING | RADIAL | SQUARE GUIDE | IP65 | B3419883983 |
| UB1000 | USB | 10 | PNEUM A | AXIAL | SQUARE GUIDE | IP65 | B3419883987 |
| UB1000 | USB | 10 | PNEUM R | AXIAL | SQUARE GUIDE | IP65 | B3419883989 |



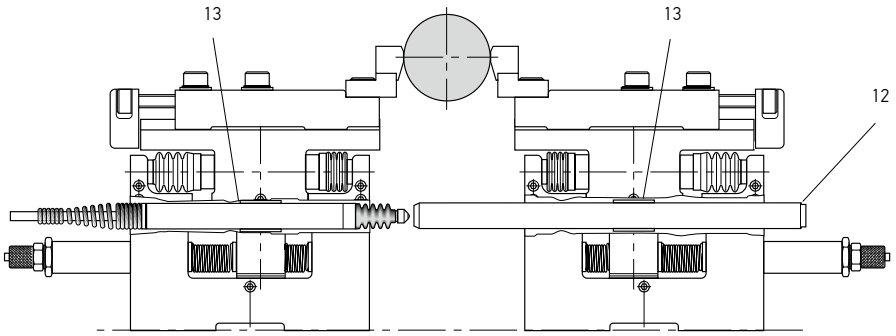
| MODEL | SENSOR | STROKE | ACTUATION | FIXING INTERFACE | IP RATE | ORDER CODE |
|---|---|---|---|---|---|---|
| QB600 | NOT INCLUDED | 6 | SPRING | SQUARE GUIDE | IP65 | B3019883001 |
| QB600 | NOT INCLUDED | 6 | PNEUM A | SQUARE GUIDE | IP65 | B3019883002 |
| QB1000 | NOT INCLUDED | 10.6 | SPRING | SQUARE GUIDE | IP40 | B3019883711 |
| DB1000 | NOT INCLUDED | 10.6 | PNEUM A | SQUARE GUIDE | IP40 | B3019883712 |
| DB1000 | NOT INCLUDED | 10.6 | PNEUM R | SQUARE GUIDE | IP40 | B3019883714 |
| QB1000 | NOT INCLUDED | 10.6 | SPRING | SQUARE GUIDE | IP65 | B3019883721 |
| DB1000 | NOT INCLUDED | 10.6 | PNEUM A | SQUARE GUIDE | IP65 | B3019883722 |
| DB1000 | NOT INCLUDED | 10.6 | PNEUM R | SQUARE GUIDE | IP65 | B3019883724 |

| TECHNICAL SPECIFICATIONS | | DB1000 | UB1000 | QB1000 | QB600 |
|---|---|---|---|---|---|
| Transducer | | Digitized | USB | - | - |
| Tot Stroke | mm | 10,6 | 10,6 | 10,6 | 6 |
| Meas Range | mm | 10 | 10 | - | - |
| Pretravel | mm | 5.1 / 5.2 | 5.1 / 5.2 | - | - |
| Interface | | square guide | square guide | square guide | square guide |
| Guiding Sys | | ball cage | ball cage | ball cage | ball cage |
| Antirotation | | | | ball cage | allen screw |
| Repeatibility | µm | < 0.5 | < 0.5 | < 0.5 | < 0.5 |
| Tip Force with Standard Spring | N | 1±20% | 1±20% | 1.7±20% | 1.7±20% |
| Thermal Drift | µm/°C | < 0.25 | < 0.25 | < 0.25 | < 0.25 |
| Operat. Pressure | bar | 3 to 6 | 3 to 6 | 3 to 6 | 3 to 6 |
| Total Weight | g(N) | < 260 | < 260 | < 260 | < 260 |
| Mobile Part Weigth | g(N) | 110 | 110 | 100 | 95 |
| Operating Temp | °C | -10 to 65 | -10 to 65 | -10 to 65 | -10 to 65 |
| Protection Degree Guides | | IP40 / IP65 | IP40 / IP65 | IP40 / IP65 | IP65 |
| Protection Degree Transducer | | IP65 | IP65 | IP65 | IP65 |
| Cable Length | m | 2 | 2 | - | - |
| Connector | | Lumberg SV50/6 | Standard USB | - | - |
| Sensitivity | mV/V/mm | - | - | - | - |
| Accuracy | µm | ±(1.2+K*2)*** | ±(1.2+K*2)*** | - | - |

*** K = reading value (mm)

## ACCESSORIES FOR QB600/QB1000 APPLICATION

| REF. | DESCRIPTION | ORDER CODE |
|---|---|---|
| 12 | Mechanical reference rod dia. 8 mm, L = 120 mm, for using a single probe | B1119883071 |
| 13 | Adapter bushing for fixing probe or reference rod dia. 8 mm | B1019826001 |
| | Adapter bushing for fixing probe dia. 3/8" | B1019883072 |




## ACCESSORIES FOR APPLICATION ON A QUICK SET BENCH GAUGE

To integrate the Quick Block with the Quick Set bench gauge, dedicated accessories are available.

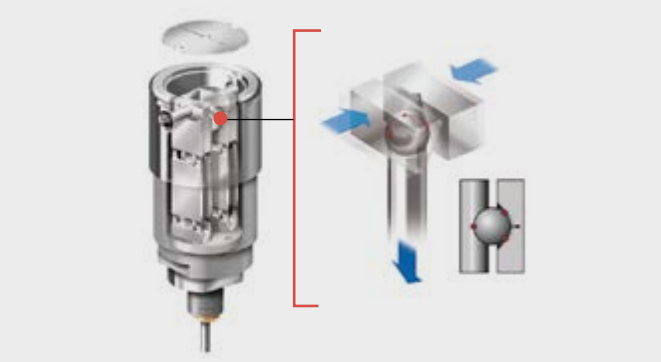
| DESCRIPTION | ORDER CODE |
|---|---|
| Support bracket L = 200 mm to measure diameters up to 40 mm, with interface for two Quick Block | B3024017100 |
| Support bracket L = 250 mm to measure diameters up to 90 mm (without interface for Quick Block) | B3024018100 |
| Mounting interface for one Quick Block for support bracket L = 250 mm | B2924018110 |

# HAND HELD GAUGES




- Marposs hand-held gauges are industrial-grade products for precision measurements of internal and outside diameters during manufacturing operations. M1-Star and IWAVE2 are the product models dedicated to internal diameters (I.D), while M3-Star is for outside diameters (O.D).
- The Marposs hand-held gauges have a rugged structure, purposely designed for the use inside harsh manufacturing environments. The industrial-grade measuring sensor is capable of millions of measurement cycles without any performance degradation. The product robustness is fundamental for efficient operations since it allows easy and fast handling of the gauge.
- The measuring head is exchangeable in the workshop, so enabling a high level of gauging flexibility, directly at the level of the production environment.

## APPLICATION EXAMPLES

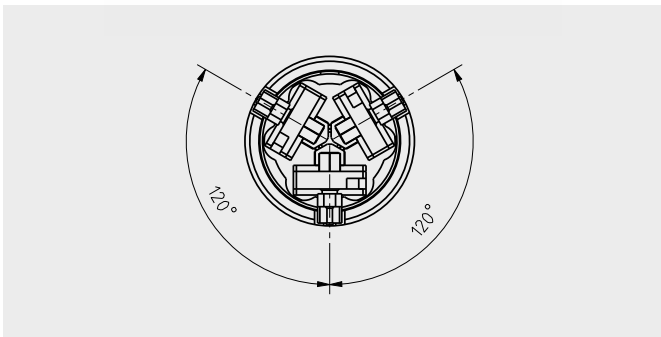


**MECHANICAL BORE GAUGE (MBG)** is the measuring head for Internal Diameters (I.D). In its structure, the MBG is capable to transfer with ultra-precision the radial position of the contacts to an axial movement of the plug.
The measurement is executed by sensing the plug position through a Marposs pencil probe, that is integrated inside the handle structure and connected to a measuring electronic. On mobile gauges configuration, a digital indicator is mounted on the top of the handle, to execute the measurement and to display values.
Measurement Repeatability is 1 µm.
Its industrial-grade measuring head is capable of millions of measurement cycles without any performance degradation.

**ELECTRONIC BORE GAUGE (EBG)** is the premium version, integrating directly inside the head structure the electronic measuring sensor.
Thanks to its specific architecture, the EBG is capable of measuring internal diameters with a repeatability of 0.5 µm

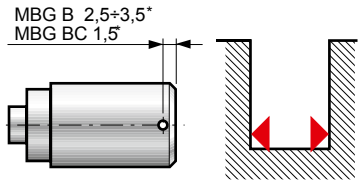
**MECHANICAL SNAP GAUGE (MSG)** is the measuring head for Outer Diameters (O.D). In its structure, the MSG is capable to transfer with ultra-precision the radial position of the contacts to an axial movement of the plug. The measurement is executed by sensing the plug position through a Marposs pencil probe, that is integrated inside the handle structure and connected to a measuring electronic. On mobile gauges configuration, a digital indicator is mounted on the top of the handle, to execute the measurement and to display values. Measurement Repeatability is 1 µm.
Its industrial-grade measuring head is capable of millions of measurement cycles without any performance degradation. The product robustness is fundamental for efficient operations since it allows easy and fast handling of the gauge.

**ELECTRONIC SNAP GAUGE (ESG)** is the premium version of the line, integrating directly inside the head structure the electronic measuring sensor.
Thanks to its specific architecture, the ESG is capable of measuring outer diameters with a repeatability of 0.5 µm.




**MECHANICAL BORE GAUGE – 3 CONTACTS.**
With its 3 contacts, positioned with a pitch of 120°, this version is ideal solution for squared shaped bores and trilobed shapes.
Its measuring range is from 12 mm to 100mm.
Thanks to the 3 independent contacts, it is perfect to measure very tiny tolerances.

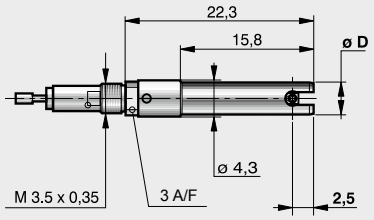
# MODELS AND ACCESSORIES
# MECHANICAL BORE GAUGES



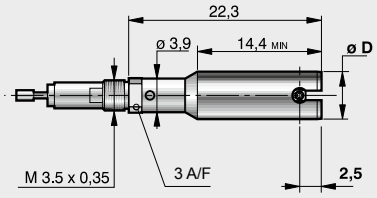

MBG-B/BC Plug Heads for blind bores.

## PLUG HEAD MBG-B

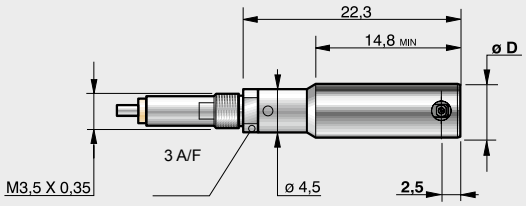
**ØMIN* 3 TO<4**



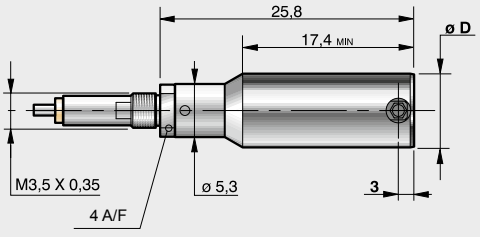

**ØMIN* 4 TO < 4,5**



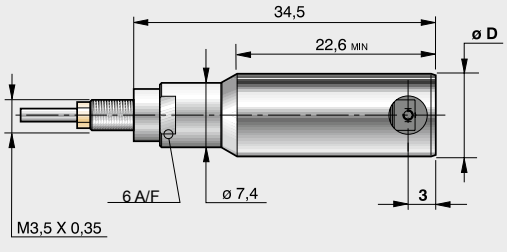

**ØMIN* 4,5 TO < 5,5**




**ØMIN* 5,5 TO < 7,5**

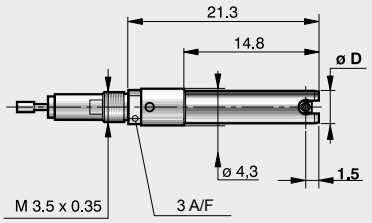


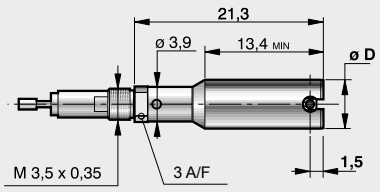

**ØMIN* 7,5 TO < 9,5**

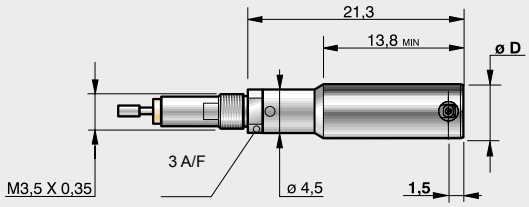


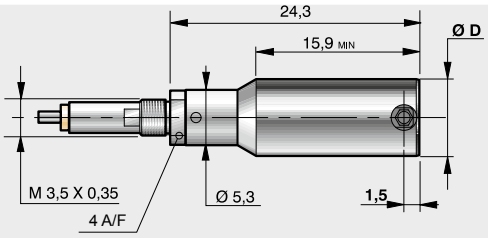

| MEASURING CONTACTS FOR PLUG HEADS TYPE B | | | | |
|---|---|---|---|---|
| | CARBIDE OR DLC - COATED | | DIAMOND | |
| Ø D | R1 | R2 | R1 | R2 |
| 3 ÷ <5,5 | 0,25 | 0,75 | - | - |
| 5,5 ÷ <7,5 | 0,5 | 1 | - | - |
| 7,5 ÷ <9,5 | 1,5 | 2,5 | 0,75 | - |

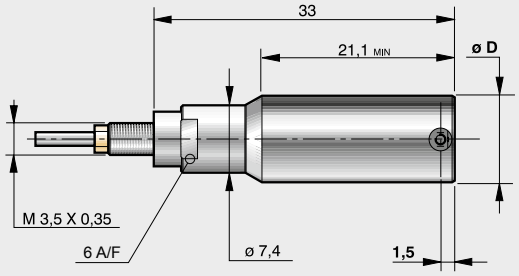
## PLUG HEAD MBG-BC



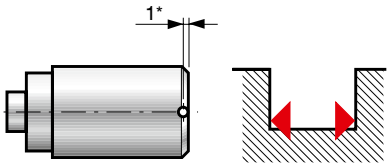



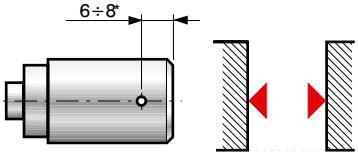




| MEASURING CONTACTS FOR PLUG HEADS TYPE BC | | | | |
|---|---|---|---|---|
| | CARBIDE OR DLC - COATED | | DIAMOND | |
| Ø D | R1 | R2 | R1 | R2 |
| 3 ÷ <5,5 | 0,25 | 0,75 | - | - |
| 5,5 ÷ <7,5 | 0,5 | 1 | - | - |
| 7,5 ÷ <9,5 | 1,5 | 2,5 | - | - |

* Ømin = minimum bore diameter



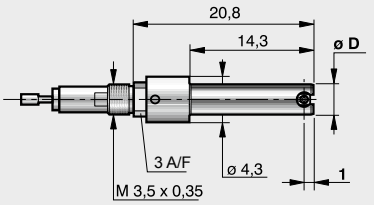

MBG-SB Plug Heads for superblind bores.




MBG-T Plug Heads for through bores.

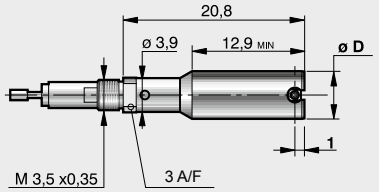
## PLUG HEAD MBG-SB

## PLUG HEAD MBG-T



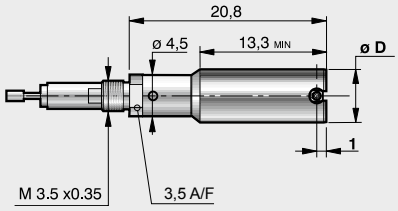

N.A.

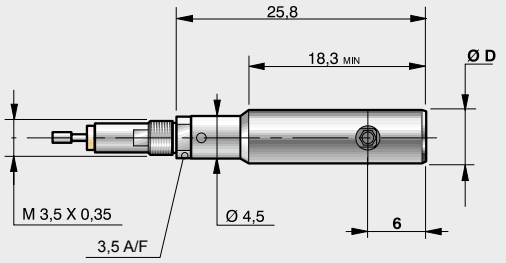
ØMIN* 3 TO<4



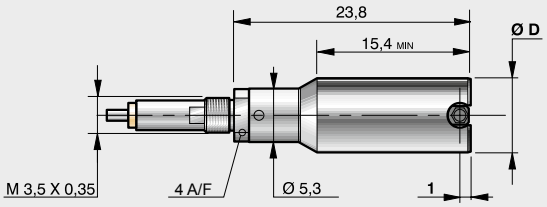

N.A.

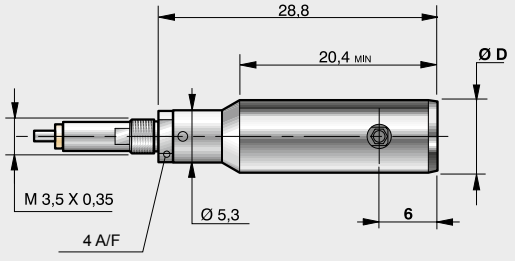
ØMIN* 4 TO < 4,5



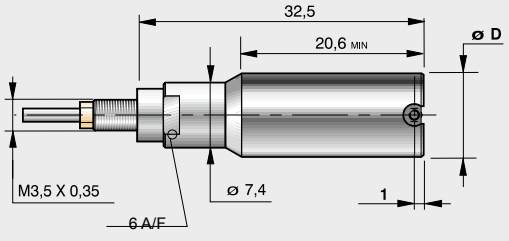



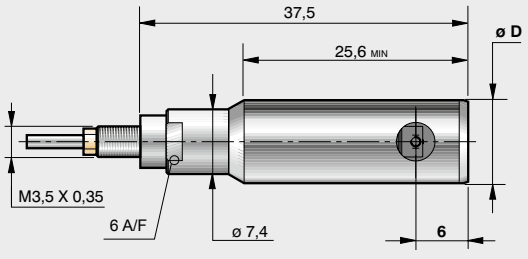

ØMIN* 4,5 TO < 5,5




ØMIN* 5,5 TO < 7,5




ØMIN* 7,5 TO < 9,5

**MEASURING CONTACTS FOR PLUG HEADS TYPE SB**

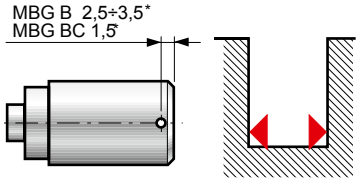
| | CARBIDE OR DLC - COATED | | DIAMOND | |
|---|---|---|---|---|
| Ø D | R1 | R2 | R1 | R2 |
| 3 ÷ <5,5 | 0,25 | 0,75 | - | - |
| 5,5 ÷ <7,5 | 0,5 | 1 | - | - |
| 7,5 ÷ <9,5 | 1,5 | 2,5 | - | - |

**MEASURING CONTACTS FOR PLUG HEADS TYPE T**

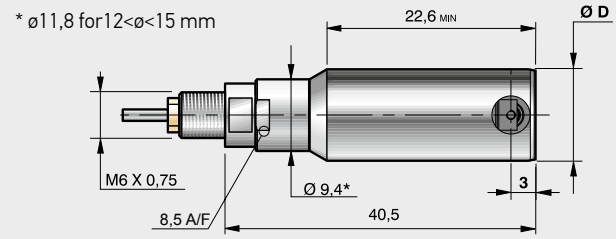
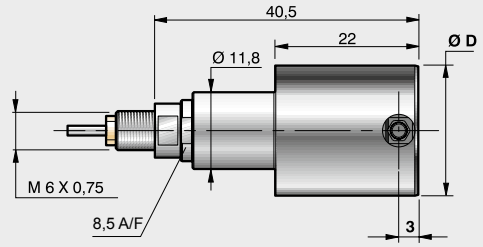
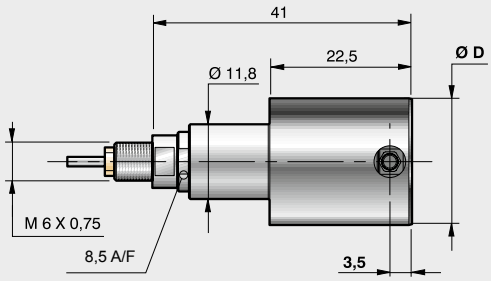
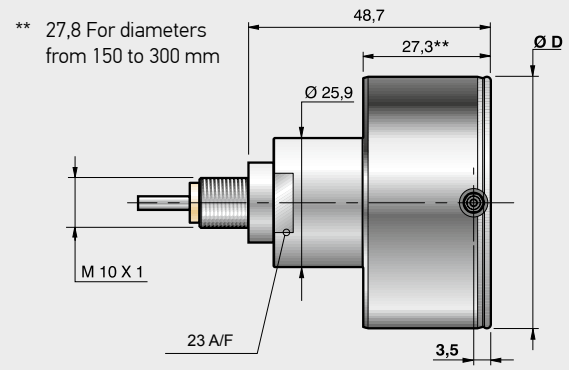
| | CARBIDE OR DLC - COATED | | DIAMOND | |
|---|---|---|---|---|
| Ø D | R1 | R2 | R1 | R2 |
| 4,5 ÷ <5,5 | 0,25 | 0,75 | - | - |
| 5,5 ÷ <7,5 | 0,5 | 1 | - | - |
| 7,5 ÷ <9,5 | 1,5 | 2,5 | 0,75 | - |

* Ømin = minimum bore diameter

# MODELS AND ACCESSORIES
## MECHANICAL BORE GAUGES

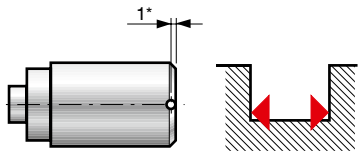



MBG-B/BC Plug Heads for blind bores.

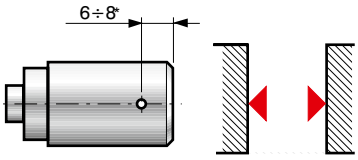
| | PLUG HEAD MBG-B | PLUG HEAD MBG-BC |
|---|---|---|
| ØMIN* 9,5 TO < 15 |  | N.A. |
| ØMIN* 15 TO < 20 |  | N.A. |
| ØMIN* 20 TO < 26 |  | N.A. |
| ØMIN* 26 TO < 300 |  | N.A. |

| MEASURING CONTACTS FOR PLUG HEADS TYPE B | | | | |
|---|---|---|---|---|
| | CARBIDE OR DLC - COATED | | DIAMOND | |
| Ø D | R1 | R2 | R1 | R2 |
| 9,5 ÷ <15 | 2 | 3,5 | 0,75 | - |
| 15 ÷ <16 | 2 | 5 | 0,75 | - |
| 16 ÷ <20 | 2 | 5 | 2 | - |
| 20 ÷ <26 | 2 | 5 | 2 | 5 |
| 26 ÷ <32 | 4 | 10 | 2 | - |
| 32 ÷ <300 | 4 | 10 | 4 | 10 |

* Ømin = minimum bore diameter

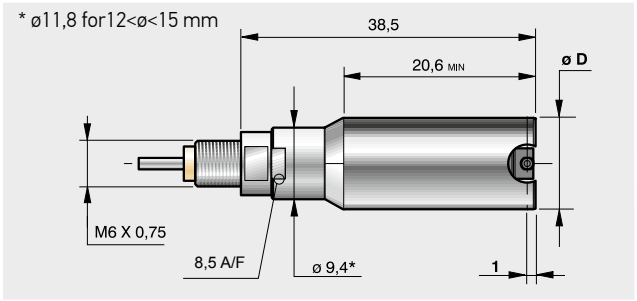


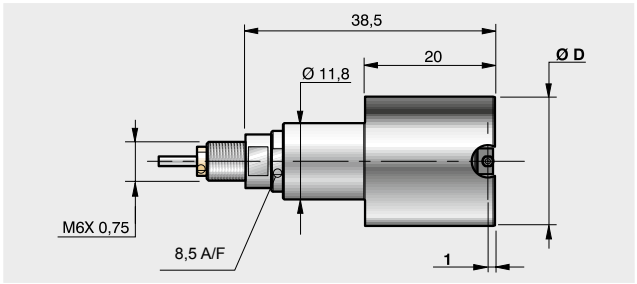

MBG-SB Plug Heads for superblind bores.

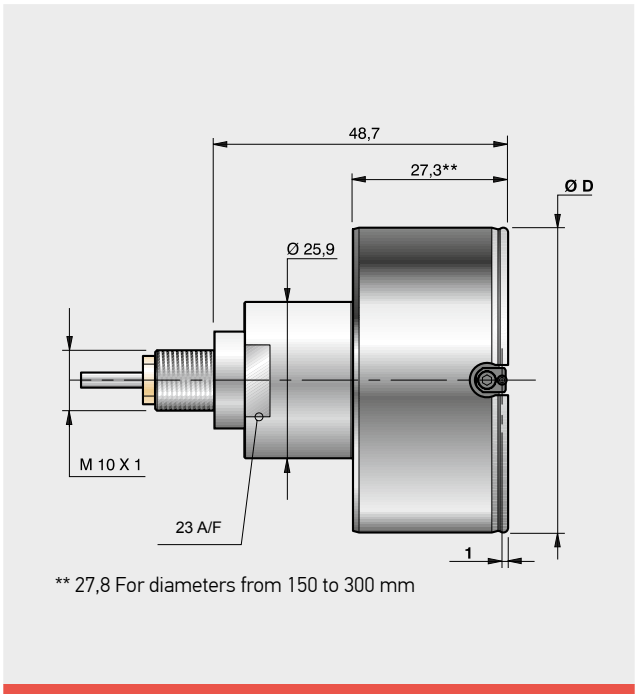



MBG-T Plug Heads for through bores.

## PLUG HEAD MBG-SB

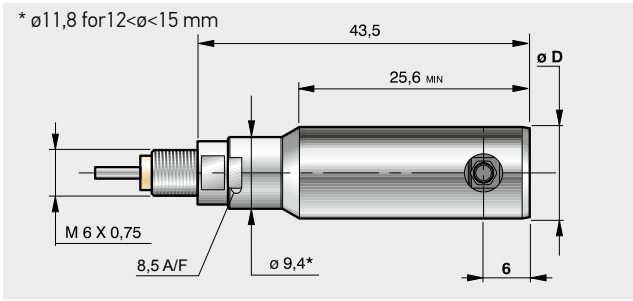


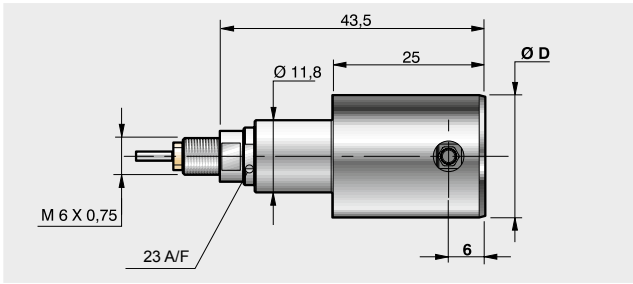



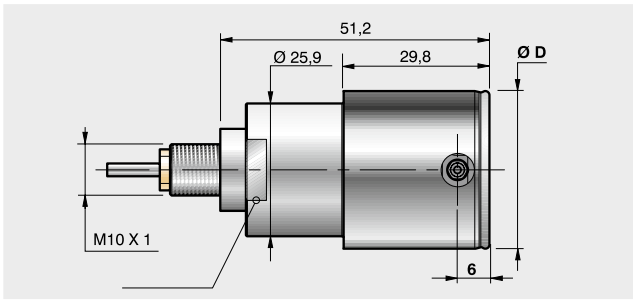



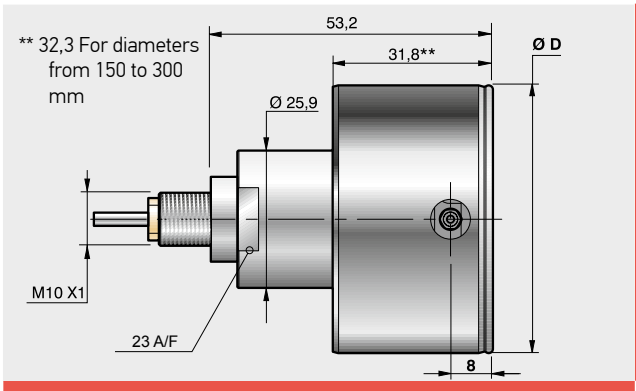

** 27,8 For diameters from 150 to 300 mm

## PLUG HEAD MBG-T




ØMIN* 9,5 TO < 15

ØMIN* 15 TO < 26

ØMIN* 26 TO < 40

ØMIN* 40 TO < 300

**MEASURING CONTACTS FOR PLUG HEADS TYPE SB**

| | CARBIDE OR DLC - COATED | | DIAMOND | |
|---|---|---|---|---|
| Ø D | R1 | R2 | R1 | R2 |
| 9,5 ÷ <15 | 2 | 3,5 | - | - |
| 15 ÷ <26 | 2 | 5 | - | - |
| - | - | - | - | - |
| 26 ÷ <300 | 4 | 10 | - | - |

**MEASURING CONTACTS FOR PLUG HEADS TYPE T**

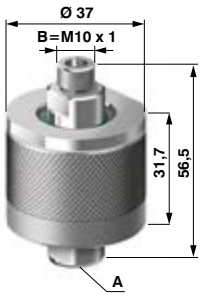
| | CARBIDE OR DLC - COATED | | DIAMOND | |
|---|---|---|---|---|
| Ø D | R1 | R2 | R1 | R2 |
| 9,5 ÷ <15 | 2 | 3,5 | 0,75 | - |
| 15 ÷ <16 | 2 | 5 | 0,75 | - |
| 16 ÷ <26 | 2 | 5 | 2 | 5 |
| 26 ÷ <32 | 4 | 10 | 2 | - |
| 32 ÷ <300 | 4 | 10 | 4 | 10 |

* Ømin = minimum bore diameter

# ACCESSORIES MBG

## ROTARY SPACERS

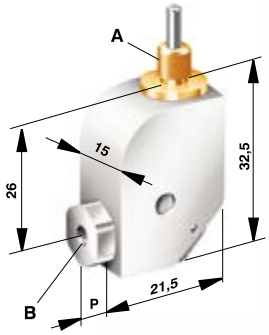
Rotary spacers make it possible to have the indicator display always facing the operator, even during dynamic measurements.




| THREAD A FOR GAUGE HEAD | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|
| M6X0,75 | MBG | B2TR060S000 |
| M10X1 | MBG | B2TR100S000 |

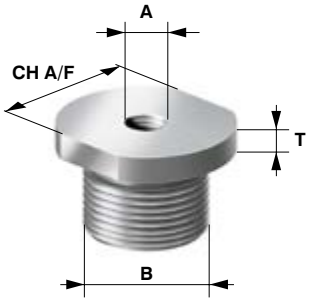
## ANGLE ADAPTORS

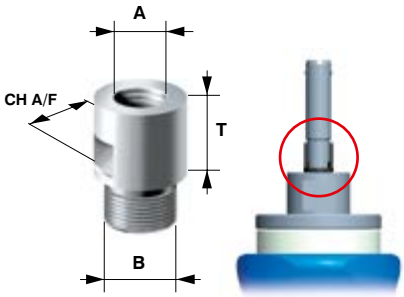
The angle adaptors are needed when space is limited and the position of the bore is 90° from the direction of insertion.




| THREAD B FOR GAUGE HEAD | THREAD A ON HANDLE-SIDE | P [mm] | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|
| M3,5 X 0,35 | M6 X 0,75 | 3,7 | MBG | B2TAS630000 |
| M6 X 0,75 | M6 X 0,75 | 4,2 | MBG | B2TAS660000 |
| M10 X 1 | M6 X 0,75 | 13,1 | MBG | B2TAS6A0000 |
| M3,5 X 0,35 | M10 X 1 | 3,7 | MBG | B2TASA30000 |
| M6 X 0,75 | M10 X 1 | 4,2 | MBG | B2TASA60000 |
| M10 X 1 | M10 X 1 | 13,1 | MBG | B2TASAA0000 |

## STANDARD THREAD ADAPTORS

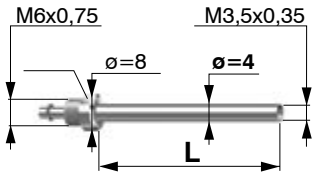


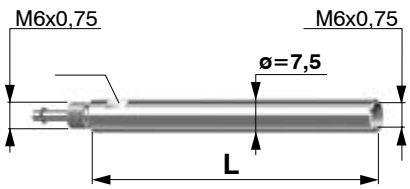



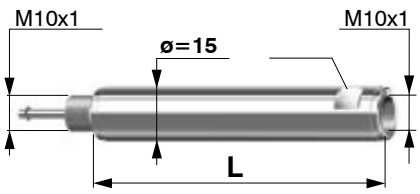

| THREAD A FOR GAUGE HEAD | THREAD B ON HANDLE-SIDE | RANGE [mm] | CH A/F | T [mm] | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|---|---|
| M3,5X0,35 | M6X0,75 | 3 - 9,5 | 7 | 1 | MBG | B1TA0350600 |
| M3,5X0,35 | M10X1 | 3 - 9,5 | 13 | 2 | MBG | B1TA0351000 |
| M6X0,75 | M10X1 | 9,5 - 26 | 13 | 2 | MBG | B1TA0601000 |

## PROTECTIVE THREAD ADAPTORS

| THREAD A ON GAUGE HEAD-SIDE | THREAD B ON HANDLE-SIDE | RANGE [mm] | CH A/F | T [mm] | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|---|---|
| M3,5X0,35 | M6X0,75 | 3-4 | 6 | 6 | MBG | B1TA0350600 |
| M3,5X0,35 | M6X0,75 | 4-4.5 | 6 | 6 | MBG | B1TA0351000 |
| M3,5X0,35 | M6X0,75 | 4.5-5.5 | 6 | 6 | MBG | B1TA0601000 |
| M3,5X0,35 | M6X0,75 | 5.5-7.5 | 6 | 6 | MBG | B1TAP350603 |
| M3,5X0,35 | M6X0,75 | 7.5-9.5 | 9 | 9 | MBG | B1TAP350604 |




## DEPTH EXTENSIONS

| DIAMETER [mm] | LENGTH L [mm] | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|
| 4 | 20 | MBG | B2TXMS40020 |
| 4 | 30 | MBG | B2TXMS40030 |
| 4 | 40 | MBG | B2TXMS40040 |
| 4 | 50 | MBG | B2TXMS40050 |
| 4 | 65 | MBG | B2TXMS40065 |
| 4 | 80 | MBG | B2TXMS40080 |
| 4 | 100 | MBG | B2TXMS40100 |
| 4 | 125 | MBG | B2TXMS40125 |
| 7.5 | 20 | MBG | B2TXMS70020 |
| 7.5 | 30 | MBG | B2TXMS70030 |
| 7.5 | 40 | MBG | B2TXMS70040 |
| 7.5 | 50 | MBG | B2TXMS70050 |
| 7.5 | 65 | MBG | B2TXMS70065 |
| 7.5 | 80 | MBG | B2TXMS70080 |
| 7.5 | 100 | MBG | B2TXMS70100 |
| 7.5 | 125 | MBG | B2TXMS70125 |
| 7.5 | 250 | MBG | B2TXMS70250 |
| 15 | 50 | MBG | B2TXMSF0050 |
| 15 | 65 | MBG | B2TXMSF0065 |
| 15 | 80 | MBG | B2TXMSF0080 |
| 15 | 100 | MBG | B2TXMSF0100 |
| 15 | 125 | MBG | B2TXMSF0125 |
| 15 | 250 | MBG | B2TXMSF0250 |
| 15 | 500 | MBG | B2TXMSF0500 |

## SPECIAL DEPTH EXTENSIONS

For special applications and used where the extension diameter must not exceed the plug head size:

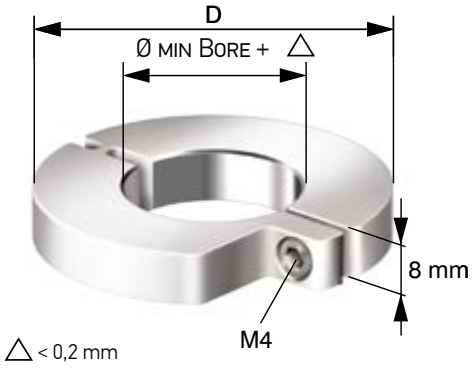

| REF | DIAMETER [mm] | LENGTH L [mm] | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|
| 1 | 3,8 | 20 | MBG | B2TXMS30020 |
| 1 | 3,8 | 65 | MBG | B2TXMS30065 |
| 1 | 4,8 | 65 | MBG | B2TXMS50065 |
| 1 | 4,8 | 80 | MBG | B2TXMS50080 |
| 1 | 5,3 | 65 | MBG | B2TXMS60065 |
| 1 | 5,3 | 80 | MBG | B2TXMS60080 |
| 2 | 8 | 65 | MBG | B2TXMS80065 |
| 2 | 8 | 80 | MBG | B2TXMS80080 |
| 2 | 8 | 100 | MBG | B2TXMS80100 |
| 2 | 8 | 125 | MBG | B2TXMS80125 |

# ACCESSORIES
## MBG

### EXTENSIONS FOR BORE GAUGE WITH CABLE

The stainless steel extensions, when inserted between the plug head and the handle, make it possible to reach the correct position in a bore, where the measurement must be read.

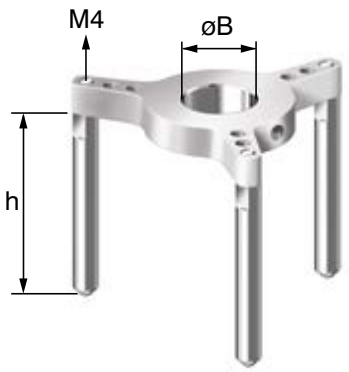
| DIAMETER [mm] | LENGTH L [mm] | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|
| 26<D≤375 | 20 | EBG | B1TX0S00020 |
| 26<D≤375 | 30 | EBG | B1TX0S00030 |
| 26<D≤375 | 40 | EBG | B1TX0S00040 |
| 26<D≤375 | 50 | EBG | B1TX0S00050 |
| 26<D≤375 | 65 | EBG | B1TX0S00065 |
| 26<D≤375 | 80 | EBG | B1TX0S00080 |
| 26<D≤375 | 100 | EBG | B1TX0S00100 |
| 26<D≤375 | 125 | EBG | B1TX0S00125 |
| 26<D≤375 | 250 | EBG | B1TX0S00250 |
| 26<D≤375 | 500 | EBG | B1TX0S00500 |

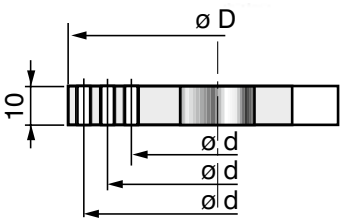



### DEPTH STOPS FOR NOSEPIECE

| [mm] | [inch] | [mm] | [inch] |
|---|---|---|---|
| 8 < 11 | 0.3150"< 0.4331" | 33 | 1.29" |
| 11 < 15 | 1.7716"< 1.9685" | 37 | 1.45" |
| 15 < 20 | 0.5905"< 0.7874" | 42 | 1.77" |
| 20 < 25 | 0.7874"< 0.9842" | 51 | 2.00" |
| 25 < 30 | 0.9842"< 1.1811" | 56 | 2.20" |
| 30 < 35 | 1.1811"< 1.378" | 61 | 2.40" |
| 35 <40 | 1.378"<1.5748" | 66 | 2.59" |
| 40 < 45 | 1.5748"< 1.7716" | 71 | 2.79" |
| 45 < 50 | 1.7716"< 1.9685" | 76 | 2.99" |
| 50 < 60 | 1.9685"< 2.3622" | 86 | 3.38" |
| 60 < 70 | 2.3622"< 2.7559" | 96 | 3.77" |
| 70 < 80 | 2.7559"< 3.1496" | 106 | 4.17" |
| 80 < 90 | 3,1496"< 3.5433" | 116 | 4.56" |
| 90 <=100 | 3.5433"<= 3.937" | 126 | 4.96" |

NOTE: specific order codes are defined according to the application requirements




## DEPTH STOPS FOR EXTENSION

| Ø B [mm] | Ø D [mm] | h [mm] | Ø d [mm] | ORDER CODE |
|---|---|---|---|---|
| 4 | 32 | 32,8 | 26 | B2TDEM040A0 |
| 7,5 | 42 | 34,8 | 36 | B2TDEM075A0 |
| 15 | 45 | 45 | 38 | B2TDEM150A0 |
| 15 | 75 | 45 | 44, 56, 68 | B2TDEM150B0 |
| 15 | 110 | 45 | 79, 91, 103 | B2TDEM150C0 |
| 15 | 160 | 45 | 117, 129, 141, 153 | B2TDEM150D0 |
| 15 | 220 | 45 | 177, 189, 201, 213 | B2TDEM150E0 |
| 22 | 45 | 63,3 | 38 | B2TDEE220A0 |
| 22 | 75 | 63,3 | 44, 56, 68 | B2TDEE220B0 |
| 22 | 110 | 63,3 | 79, 91, 103 | B2TDEE220C0 |
| 22 | 160 | 63,3 | 117, 129, 141, 153 | B2TDEE220D0 |
| 22 | 220 | 63,3 | 177, 189, 201, 213 | B2TDEE220E0 |


Eye hook


T-shaped hook

## HOOKS

| DESCRIPTION | ORDER CODE |
|---|---|
| Eye hook for pencil probe handle | B1T0JHS0810 |
| T-shaped hook for pencil probe handle | B1T0JHS0811 |
| Eye hook for indicator handle | B1T0JHS0812 |

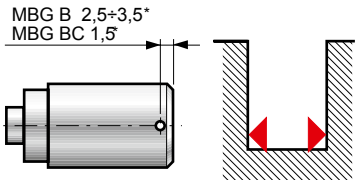

Multiposition Stand


Extra plug support kit

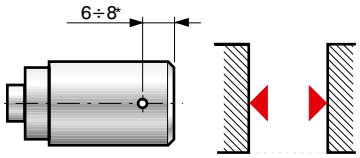
## STAND

| DESCRIPTION | ORDER CODE |
|---|---|
| Multiposition Stand for EBG and MBG | B2TS0001111 |
| Extra plug support kit for stand 2TS0001111 | B2TS0002222 |

# MODELS AND ACCESSORIES
# ELECTRONIC BORE GAUGES




EBG-B Plug Heads for blind bores.

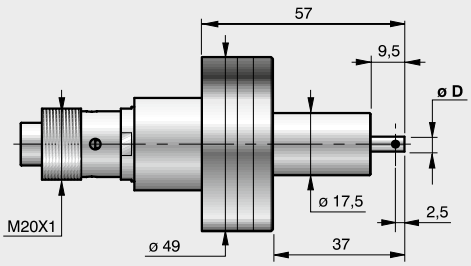


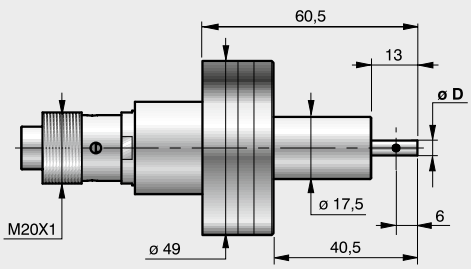

EBG-T Plug Heads for through bores.

## PLUG HEAD EBG-B

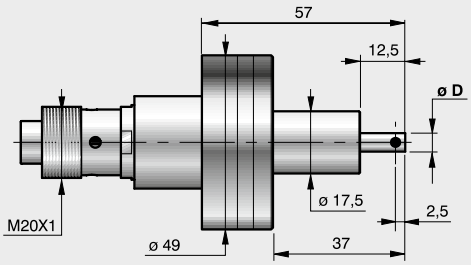
## PLUG HEAD EBG-T

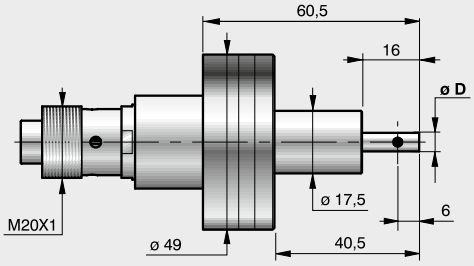
**ØMIN* 3 ÷<4**



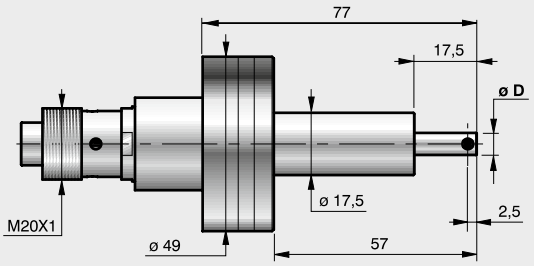



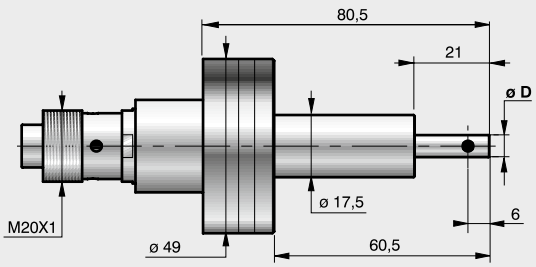

**ØMIN* 4 ÷ < 5**



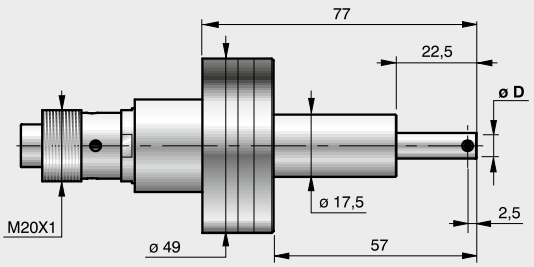



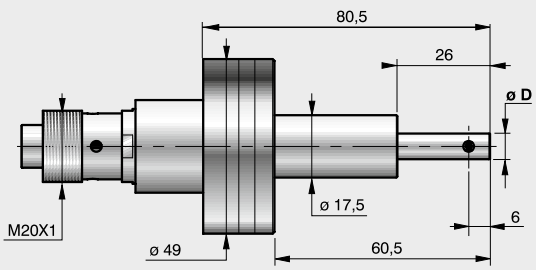

**ØMIN* 5 ÷ < 6**




**ØMIN* 6 ÷ < 7**

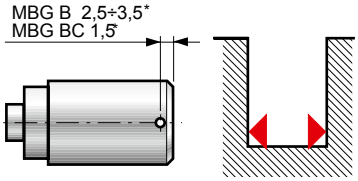


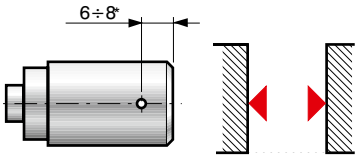

| CONTACTS FOR B-TYPE PLUG HEADS | | | | |
|---|---|---|---|---|
| | CARBIDE OR DLC | | DIAMOND | |
| Ø D | R1 | R2 | R1 | R2 |
| 3 ÷ <6 | 0,25 | - | - | - |
| 6 ÷ <7 | 0,5 | 1 | - | - |

| CONTACTS FOR T-TYPE PLUG HEADS | | | | |
|---|---|---|---|---|
| | CARBIDE OR DLC | | DIAMOND | |
| Ø D | R1 | R2 | R1 | R2 |
| 3 ÷ <6 | 0,25 | - | - | - |
| 6 ÷ <7 | 0,5 | 1 | - | - |

* Ømin = minimum bore diameter

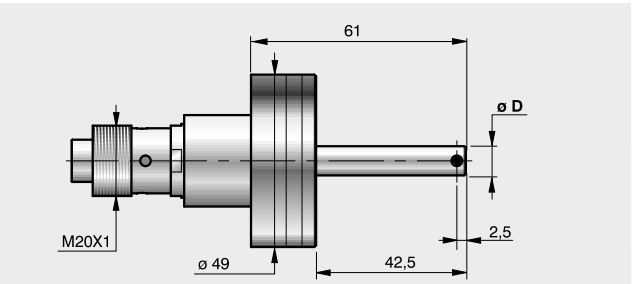


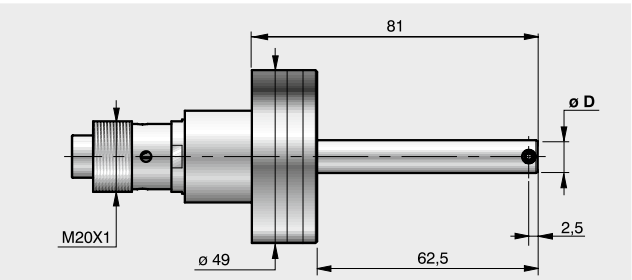

EBG-B Plug Heads for blind bores.

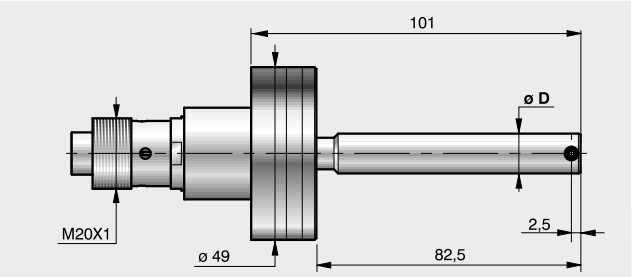


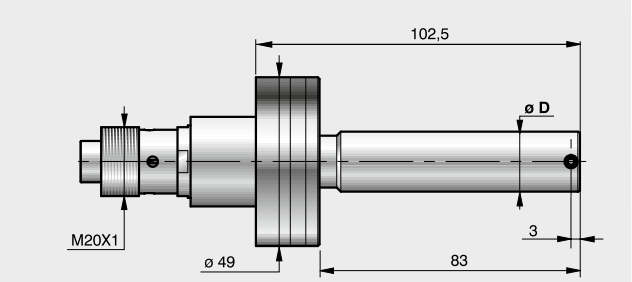

EBG-T Plug Heads for through bores.

## PLUG HEAD EBG-B



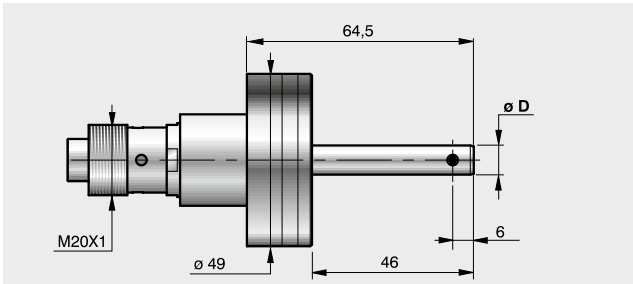



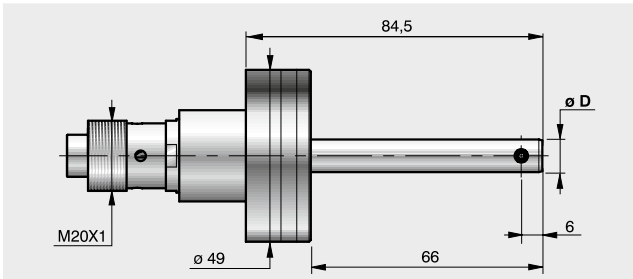




| CONTACTS FOR B-TYPE PLUG HEADS | | | | |
|---|---|---|---|---|
| | CARBIDE OR DLC | | DIAMOND | |
| Ø D | R1 | R2 | R1 | R2 |
| 7 ÷ <8 | 0,5 | 1 | 0,4 | - |
| 8 ÷ <10,5 | 1,5 | 2,5 | 0,4 | - |
| 10,5 ÷ <13 | 1,5 | 2,5 | 0,75 | - |
| 13 ÷ <20 | 2 | 5 | 2 | 5 |

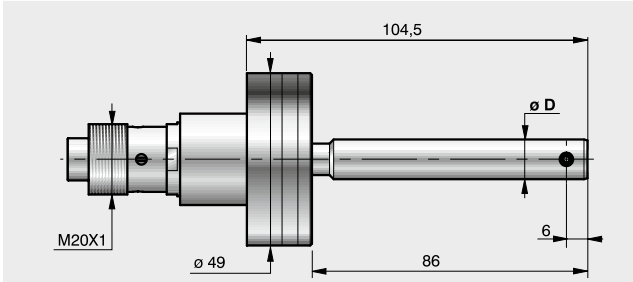
## PLUG HEAD EBG-T



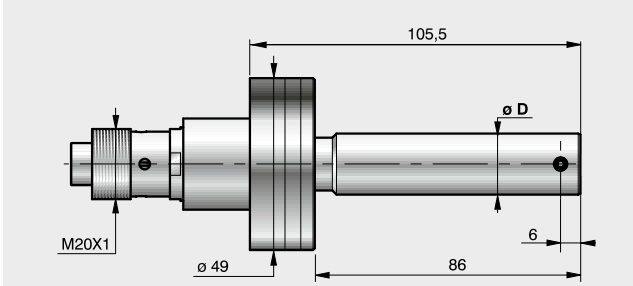

ØMIN* 7 ÷<8




ØMIN* 8 ÷ < 9




ØMIN* 9 ÷ < 13

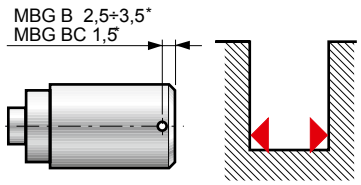



ØMIN* 13 ÷ < 20

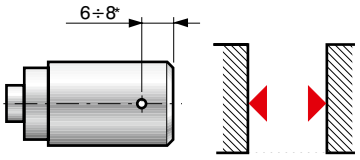
| CONTACTS FOR T-TYPE PLUG HEADS | | | | |
|---|---|---|---|---|
| | CARBIDE OR DLC | | DIAMOND | |
| Ø D | R1 | R2 | R1 | R2 |
| 7 ÷ <8 | 0,5 | 1 | 0,4 | - |
| 8 ÷ <10,5 | 1,5 | 2,5 | 0,4 | - |
| 10,5 ÷ <13 | 1,5 | 2,5 | 0,75 | - |
| 13 ÷ <20 | 2 | 5 | 2 | 5 |

* Ømin = minimum bore diameter

# MODELS AND ACCESSORIES
## ELECTRONIC BORE GAUGES



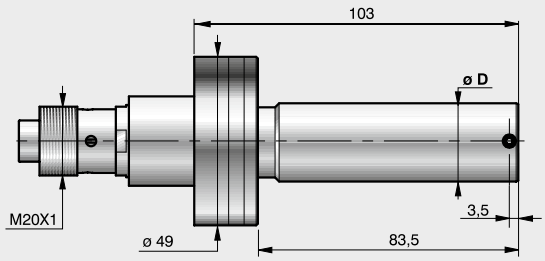

EBG-B Plug Heads for blind bores.



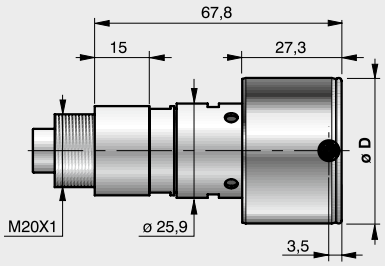

EBG-T Plug Heads for through bores.

## PLUG HEAD EBG-B

### ØMIN* 20 ÷<26

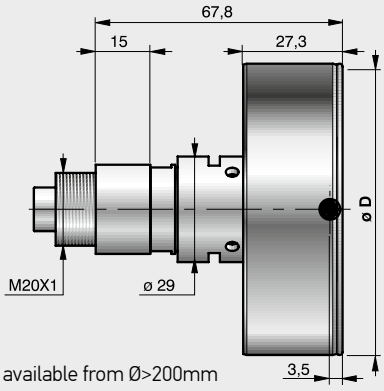



### ØMIN* 26 ÷<40




### ØMIN* 40 ÷ < 74

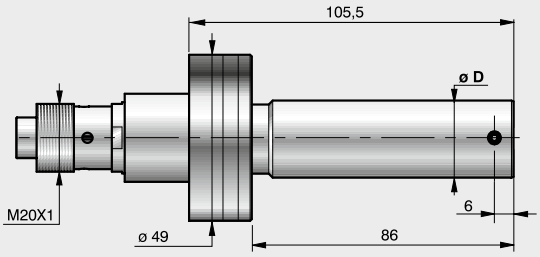
### ØMIN* 74 ÷ < 375



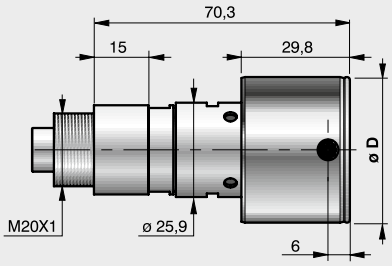

"T" handles available from Ø>200mm

## PLUG HEAD EBG-T

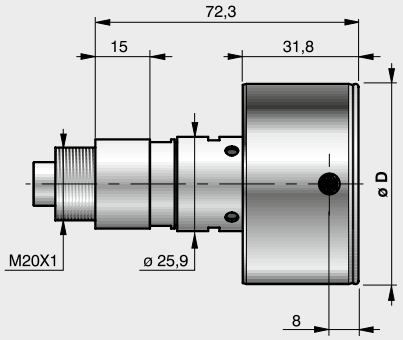
### ØMIN* 20 ÷<26



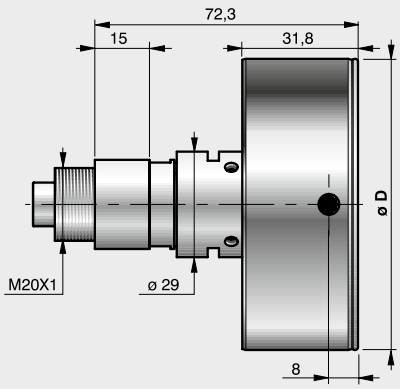

### ØMIN* 26 ÷<40




### ØMIN* 40 ÷ < 74



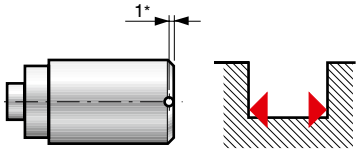

### ØMIN* 74 ÷ < 375




| CONTACTS FOR B-TYPE PLUG HEADS | | | | |
|---|---|---|---|---|
| | CARBIDE OR DLC | | DIAMOND | |
| Ø D | R1 | R2 | R1 | R2 |
| 20 ÷ <26 | 2 | 5 | 2 | 5 |
| 26 ÷ <32 | 4 | 10 | 2 | - |
| 32 ÷ <375 | 4 | 10 | 4 | 10 |

| CONTACTS FOR T-TYPE PLUG HEADS | | | | |
|---|---|---|---|---|
| | CARBIDE OR DLC | | DIAMOND | |
| Ø D | R1 | R2 | R1 | R2 |
| 20 ÷ <26 | 2 | 5 | 2 | 5 |
| 26 ÷ <32 | 4 | 10 | 2 | - |
| 32 ÷ <375 | 4 | 10 | 4 | 10 |

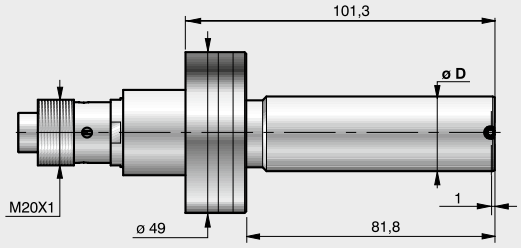
* Ømin = minimum bore diameter



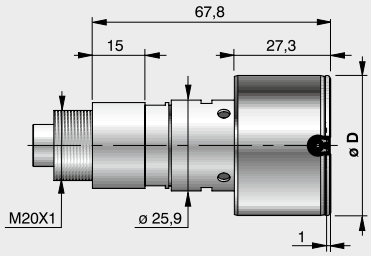

EBG-SB Plug Heads for superblind bores.

## PLUG HEAD EBG-SB

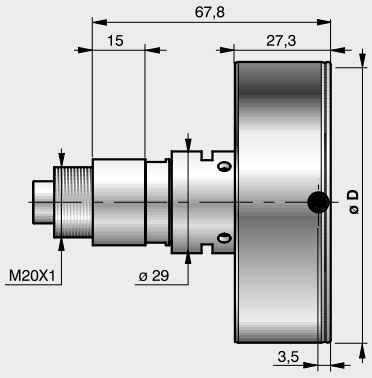
ØMIN* 13 ÷<26




ØMIN* 26 ÷ < 74




ØMIN* 74 ÷ < 375



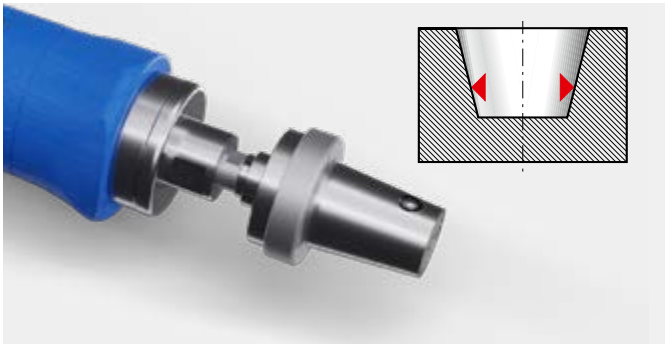

"T" handles available from Ø>200mm

**CONTACTS FOR T-TYPE PLUG HEADS**

| | CARBIDE OR DLC | | DIAMOND | |
|---|---|---|---|---|
| **Ø D** | **R1** | **R2** | **R1** | **R2** |
| 13 ÷ <26 | 2 | 5 | - | - |
| 26 ÷ <375 | 4 | 10 | - | - |

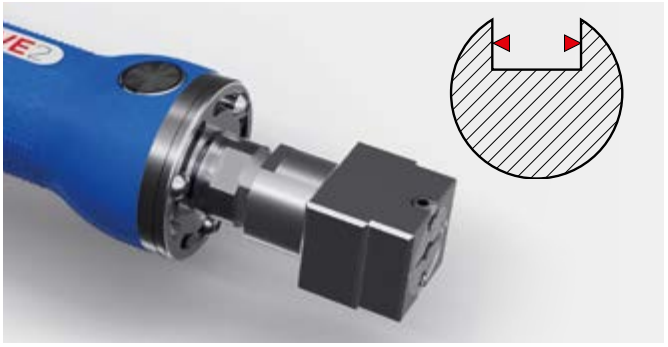
* Ømin = minimum bore diameter

# MODELS AND ACCESSORIES
# DEDICATED SOLUTIONS



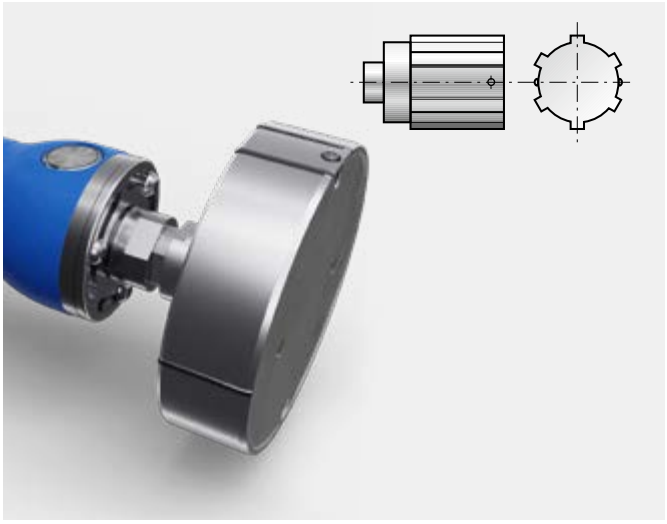
### CONICAL NOSEPIECE

Usually supplied with a calibrated depth stop, it allows to measure the diameter of tapered bores in a specific position. Example: knuckle joint.



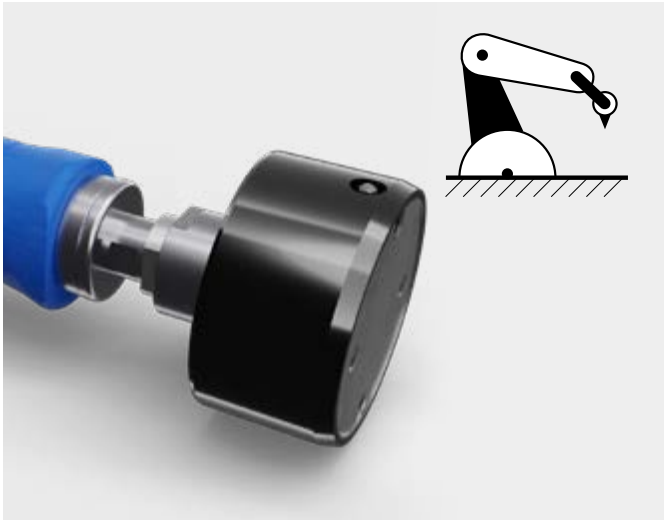
### SQUARED NOSEPIECE

To be used for gap measurements, for example: keyways or splines.



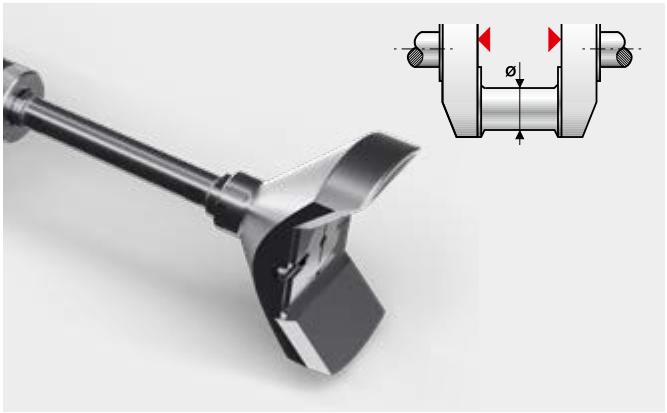
### NOSEPIECE WITH CARBIDE BAR INSERTS

The carbide bars protect the nosepiece from wear and jamming caused by the presence of metal swarfs or debris, thus increasing the life of the gauge.



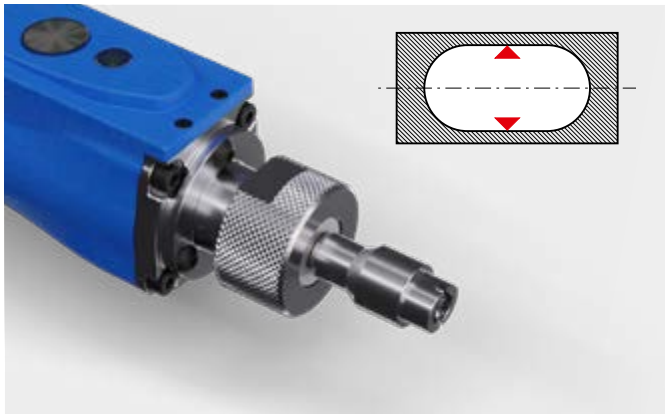
### NOSEPIECE WITH DLC COATING

The DLC coating improves the wear resistence of the nosepiece, increasing the surface hardness and reducing the surface friction coefficient. This is the ideal choice for demanding applications.



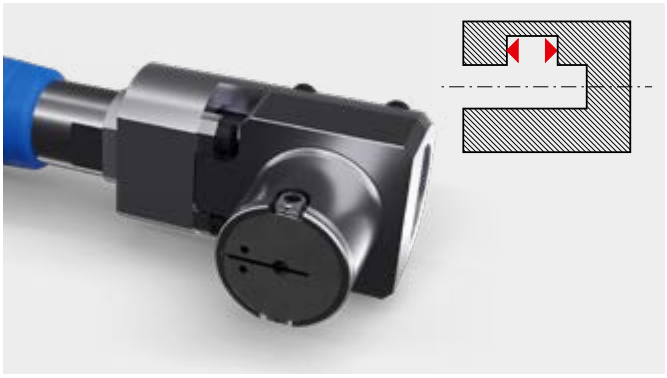

### «V» SHAPED NOSEPIECE

Gauges with V shaped nosepiece refer on the shaft and measure the distance between the faces of the counterweights, for the assembly of connecting rod bearing on crankshafts or camshafts.



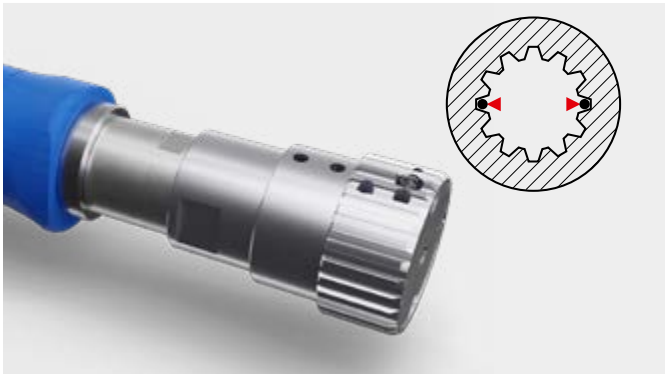
### OVAL NOSEPIECE

Designed for measuring oval bores or inter-connecting bores. Example: lobe pump designs in fuel and oil pumps.



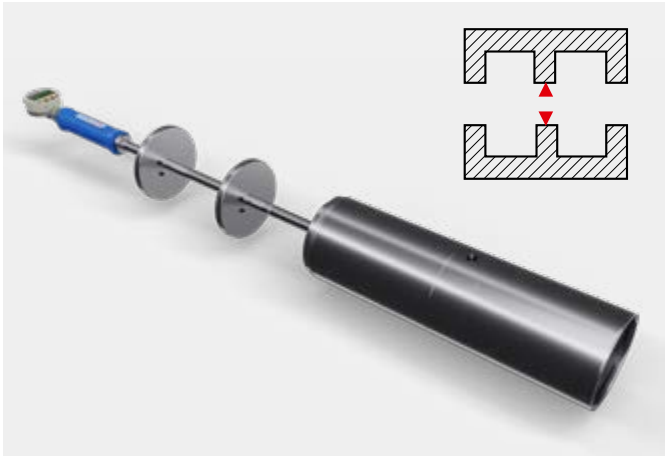
## RIGHT ANGLE PLUG HEAD

For measuring bores with perpendicular axis to the direction of gage insertion, or for limited space applications. Example: differential carrier.



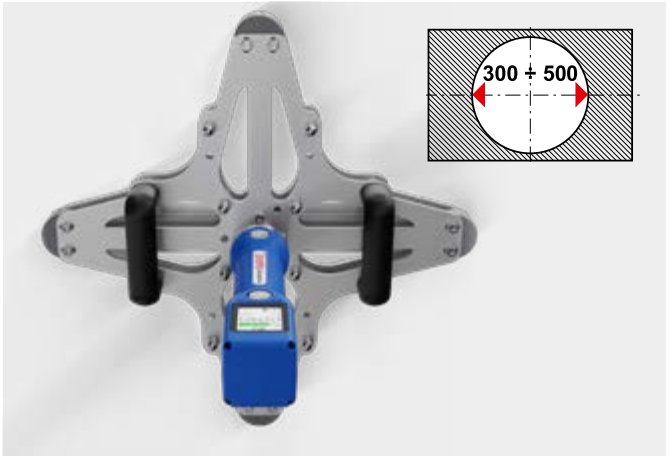
## PLUG HEAD FOR GEARS

The toothed nosepiece is manufactured to engage with the workpiece.
The HSS material ensures high durability.
The accurate choice of contacts allows measurement of
Over ball diameter
Major diameter
Minor diameter
The wide range of solutions for the choice of armset allows the measurement of both even and odd gears.



## LONG NOSEPIECE

The long nosepiece guides the plug head when measuring discontinuous or interrupted deep bores, improving ergonomics. It can be equipped with reference rings to help the user in the positioning.

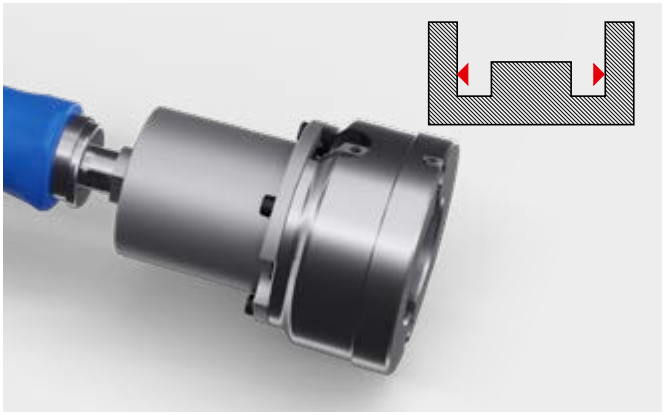



## MACROLIGHT NOSEPIECE

For big size bores. The specific design allows to reduce the weight of the nosepiece.

## NOSEPIECE WITH PILOT CONE

For CNC automatic applications, the cone helps the introduction of the nosepiece into the workpiece, reducing the possibility of accidental damages.



## GAUGE HEADS FOR BORES WITH CENTRAL HUB

For the measuring of internal diameters where there is a central hub projection. Example: automatic transmission components.

# MODELS AND ACCESSORIES
# MECHANICAL SNAP GAUGES

## MECHANICAL SNAP GAUGE (ONLY HEAD)

| RANGE [MM] | 20MM "V" REFERENCE | 14MM "V" REFERENCE | 10MM "V" REFERENCE |
|---|---|---|---|
| 5 - 15 | B3TTASAWXXS | B3TTATAWXXS | B3TTAUAWXXS |
| 15 - 30 | B3TTASBWXXS | B3TTATBWXXS | B3TTAUBWXXS |
| 30 - 50 | B3TTASCWXXS | B3TTATCWXXS | B3TTAUCWXXS |
| 50 - 70 | B 3TTASDWXXS | B3TTATDWXXS | B3TTAUDWXXS |

## COMPLETE SNAP GAUGE WITH MINI HANDLE

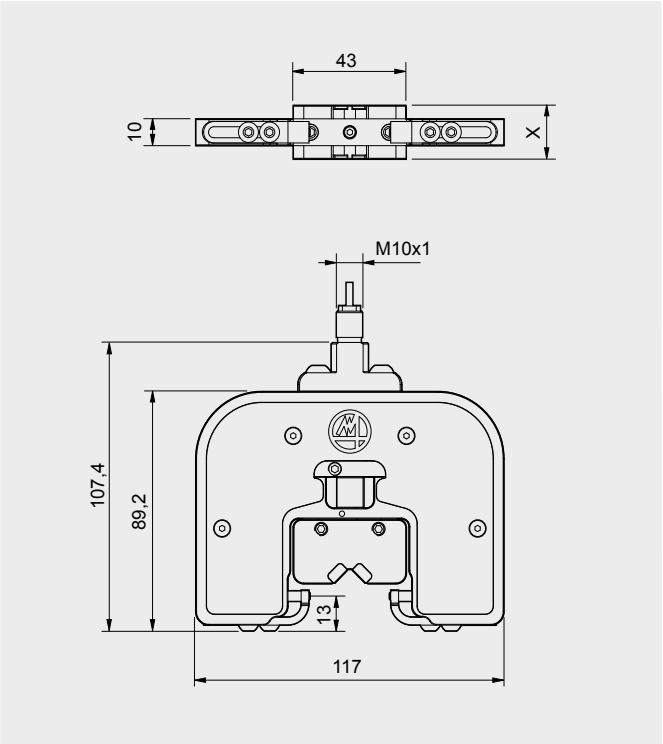
| RANGE [MM] | 20MM "V" REFERENCE | 14MM "V" REFERENCE | 10MM "V" REFERENCE |
|---|---|---|---|
| 5 - 15 | B3TBAMISAWS | B3TBAMITAWS | B3TBAMIUAWS |
| 15 - 30 | B3TBAMISBWS | B3TBAMITBWS | B3TBAMIUBWS |
| 30 - 50 | B3TBAMISCWS | B3TBAMITCWS | B3TBAMIUCWS |
| 50 - 70 | B3TBAMISDWS | B3TBAMITDWS | B3TBAMIUDWS |

## COMPLETE SNAP GAUGE WITH REGULAR HANDLE

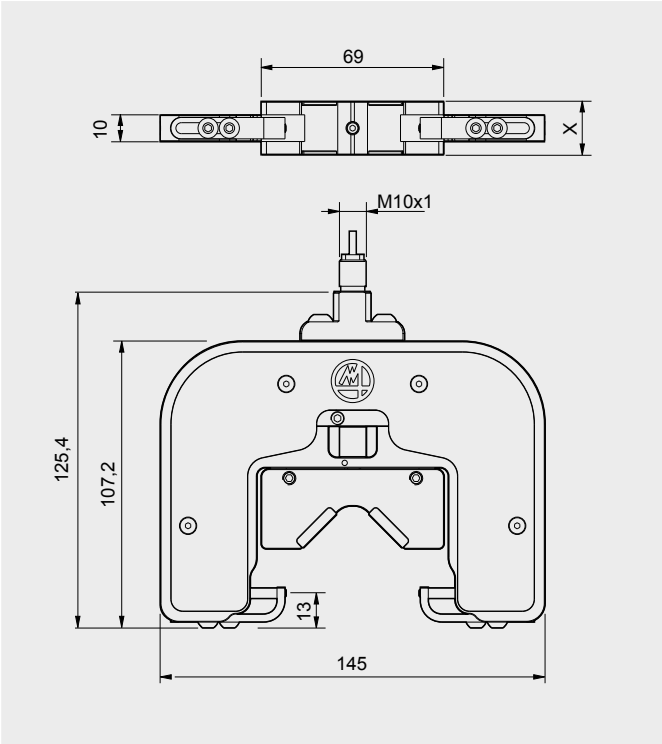
| RANGE [MM] | 20MM "V" REFERENCE | 14MM "V" REFERENCE | 10MM "V" REFERENCE |
|---|---|---|---|
| 5 - 15 | B3TBAIHSAWS | B3TBAIHTAWS | B3TBAIHUAWS |
| 15 - 30 | B3TBAIHSBWS | B3TBAIHTBWS | B3TBAIHUBWS |
| 30 - 50 | B3TBAIHSCWS | B3TBAIHTCWS | B3TBAIHUCWS |
| 50 - 70 | B3TBAIHSDWS | B3TBAIHTDWS | B3TBAIHUDWS |

## MSG SNAP HEAD

### MEASURABLE DIAMETER 5≤D<30 mm



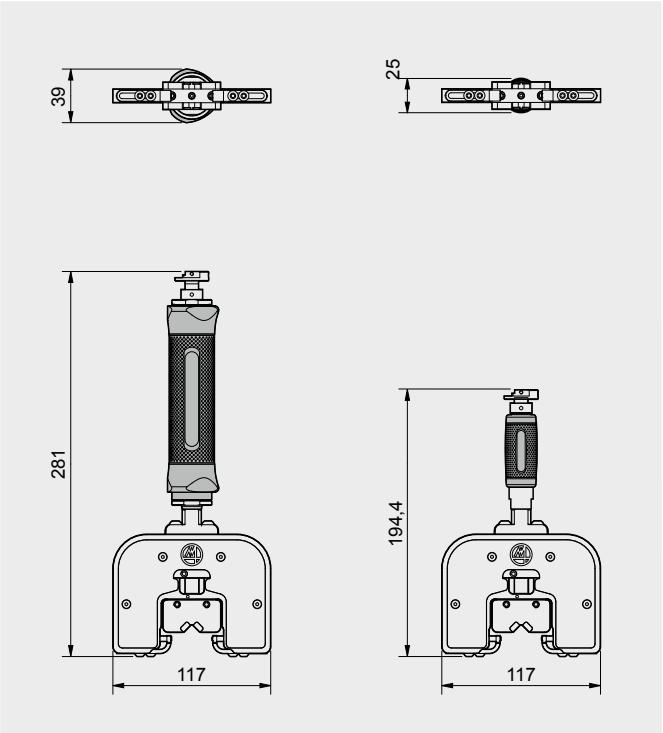

### MEASURABLE DIAMETER 30≤D<70 mm



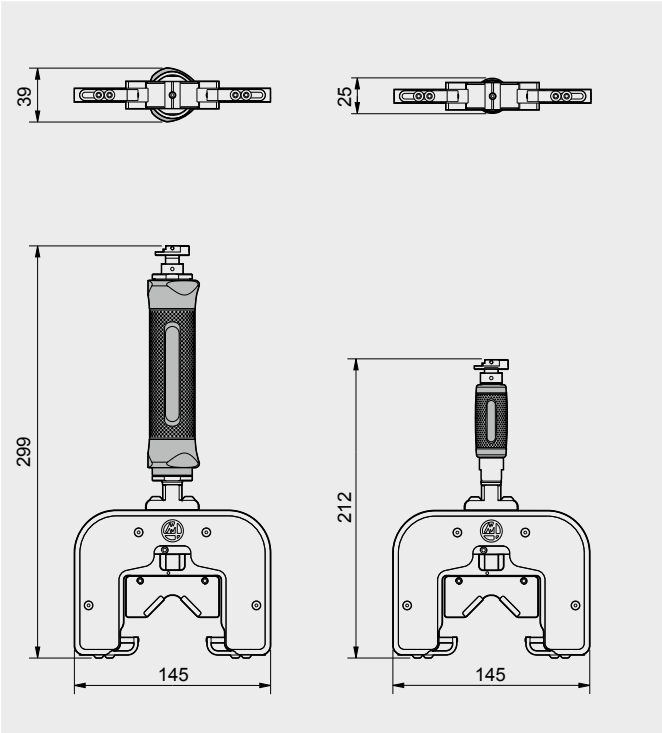

| X= V reference part thickness | 20 mm | 14 mm | 10 mm |
|---|---|---|---|

## COMPLETE SNAP GAUGE

### MEASURING RANGE 5÷30




### MEASURING RANGE 30÷70



# MODELS AND ACCESSORIES
# ELECTRONIC SNAP GAUGES

## ELECTRONIC SNAP GAUGE (ONLY HEAD)

| RANGE [MM] | CELL TYPE | 20MM "V" REFERENCE | 14MM "V" REFERENCE | 10MM "V" REFERENCE |
|---|---|---|---|---|
| 5 - 15 | LVDT | B3TTFSAWXXS | B3TTFTAWXXS | B3TTFUAWXXS |
| 15 - 30 | LVDT | B3TTFSBWXXS | B3TTFTBWXXS | B3TTFUBWXXS |
| 30 - 50 | LVDT | B3TTFSCWXXS | B3TTFTCWXXS | B3TTFUCWXXS |
| 50 - 70 | LVDT | B3TTFSDWXXS | B3TTFTDWXXS | B3TTFUDWXXS |
| 5 - 15 | HBT | B3TTHSAWXXS | B3TTHTAWXXS | B3TTHUAWXXS |
| 15 - 30 | HBT | B3TTHSBWXXS | B3TTHTBWXXS | B3TTHUBWXXS |
| 30 - 50 | HBT | B3TTHSCWXXS | B3TTHTCWXXS | B3TTHUCWXXS |
| 50 - 70 | HBT | B3TTHSDWXXS | B3TTHTDWXXS | B3TTHUDWXXS |

## COMPLETE SNAP GAUGE WITH REGULAR HANDLE

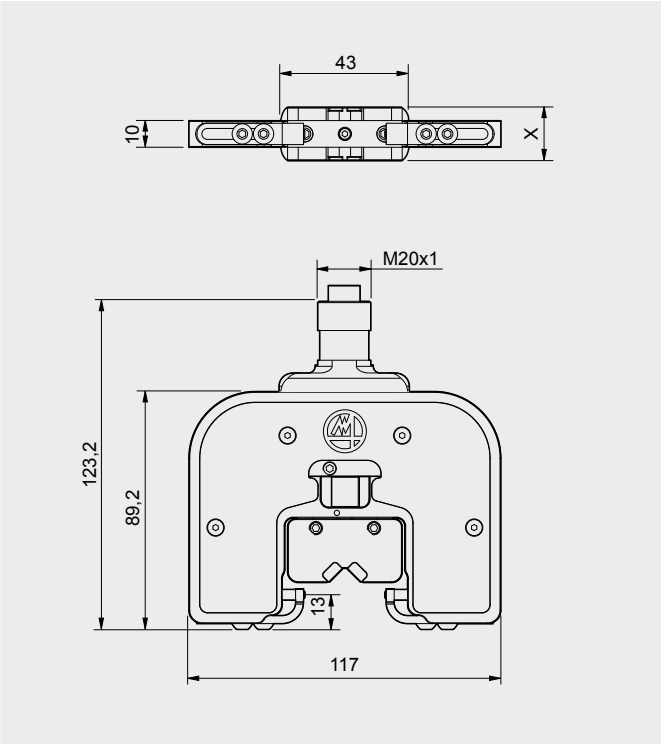
| RANGE [MM] | CELL TYPE | 20MM "V" REFERENCE | 14MM "V" REFERENCE | 10MM "V" REFERENCE |
|---|---|---|---|---|
| 5 - 15 | LVDT | B3TBFE3SAWS | B3TBFE3TAWS | B3TBFE3UAWS |
| 15 - 30 | LVDT | B3TBFE3SBWS | B3TBFE3TBWS | B3TBFE3UBWS |
| 30 - 50 | LVDT | B3TBFE3SBWS | B3TBFE3TCWS | B3TBFE3UCWS |
| 50 - 70 | LVDT | B3TBFE3SDWS | B3TBFE3TDWS | B3TBFE3UDWS |
| 5 - 15 | HBT | B3TBHE3SAWS | B3TBHE3TAWS | B3TBHE3UAWS |
| 15 - 30 | HBT | B3TBHE3SBWS | B3TBHE3TBWS | B3TBHE3UBWS |
| 30 - 50 | HBT | B3TBHE3SCWS | B3TBHE3TCWS | B3TBHE3UCWS |
| 50 - 70 | HBT | B3TBHE3SDWS | B3TBHE3TDWS | B3TBHE3UDWS |

## COMPLETE SNAP GAUGE WITH MINI WAVE HANDLE

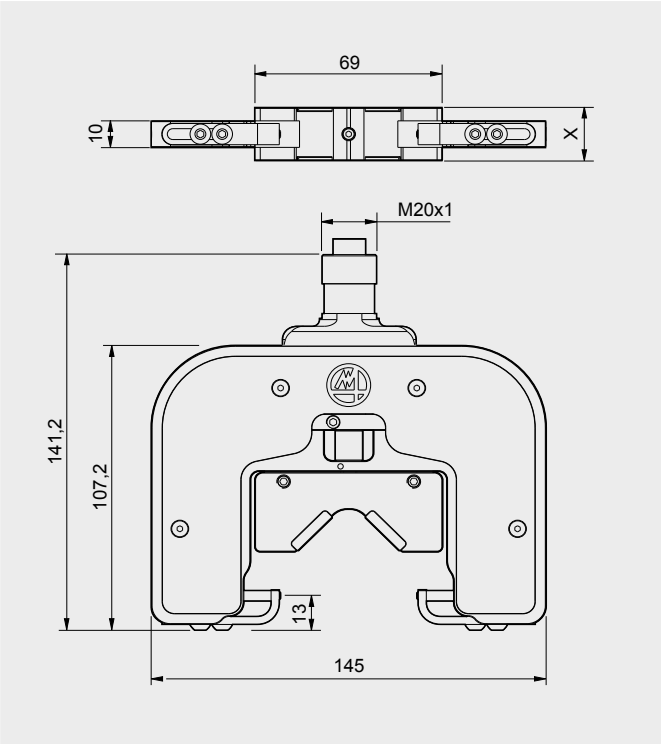
| RANGE [MM] | CELL TYPE | 20MM "V" REFERENCE | 14MM "V" REFERENCE | 10MM "V" REFERENCE |
|---|---|---|---|---|
| 5 - 15 | LVDT | B3TBFEWSAWS | B3TBFEWTAWS | B3TBFEWUAWS |
| 15 - 30 | LVDT | B3TBFEWSBWS | B3TBFEWTBWS | B3TBFEWUBWS |
| 30 - 50 | LVDT | B3TBFEWSCWS | B3TBFEWTCWS | B3TBFEWUCWS |
| 50 - 70 | LVDT | B3TBFEWSDWS | B3TBFEWTDWS | B3TBFEWUDWS |
| 5 - 15 | HBT | B3TBHEWSAWS | B3TBHEWTAWS | B3TBHEWUAWS |
| 15 - 30 | HBT | B3TBHEWSBWS | B3TBHEWTBWS | B3TBHEWUBWS |
| 30 - 50 | HBT | B3TBHEWSCWS | B3TBHEWTCWS | B3TBHEWUCWS |
| 50 - 70 | HBT | B3TBHEWSDWS | B3TBHEWTDWS | B3TBHEWUDWS |

## ESG SNAP HEAD

### MEASURING RANGE 5÷30



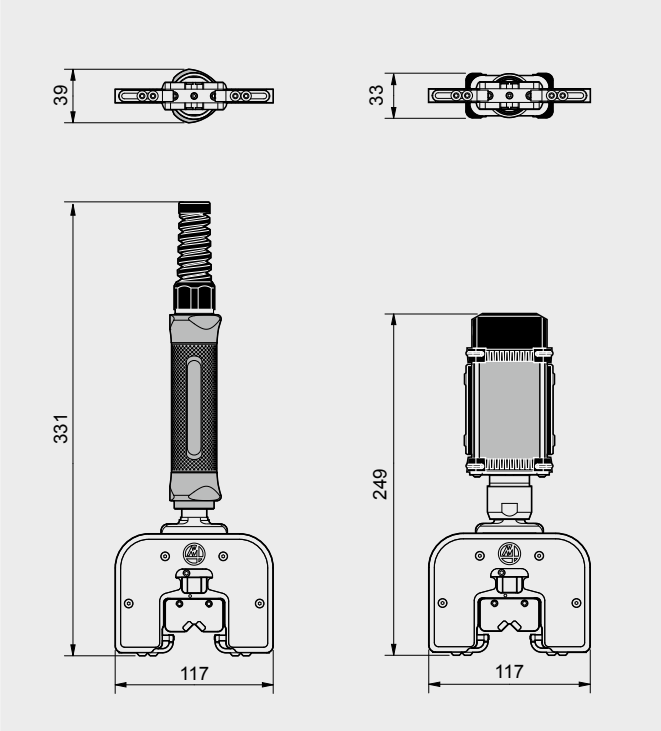

### MEASURING RANGE 30÷70



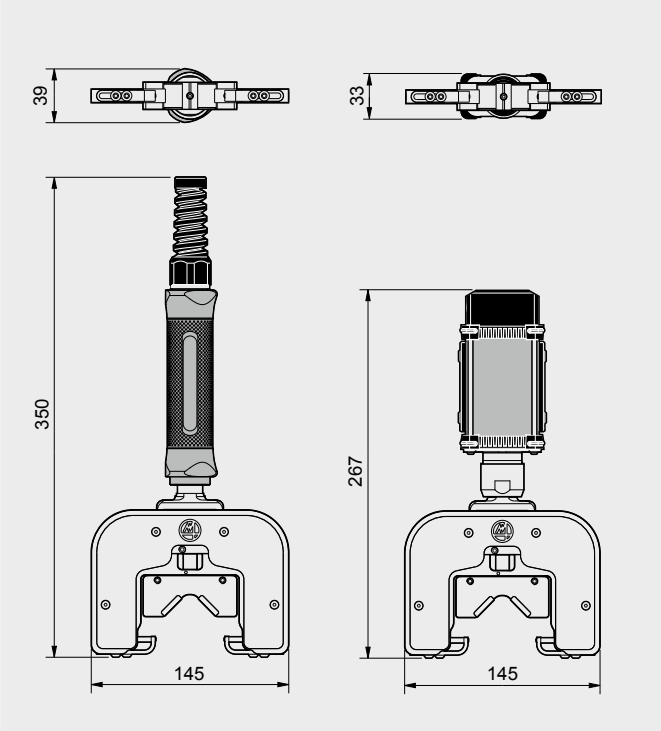

| X= V reference part thickness | 20 mm | 14 mm | 10 mm |
|---|---|---|---|

## COMPLETE SNAP GAUGE

### MEASURING RANGE 5÷30




### MEASURING RANGE 30÷70



# ACCESSORIES
# MECHANICAL SNAP GAUGES

## BODIES SPARE PARTS

| RANGE [MM] | CELL TYPE | ORDER CODE |
|---|---|---|
| 5 - 30 | MECHANIC | B2942426421 |
| 30 - 70 | MECHANIC | B2942426411 |
| 5 - 30 | ELECTRONIC, LVDT | B2942426422 |
| 30 - 70 | ELECTRONIC, LVDT | B2942426412 |
| 5 - 30 | ELECTRONIC, HBT | B2942426423 |
| 30 - 70 | ELECTRONIC, HBT | B2942426413 |

## V-PART REFERENCES

| RANGE | 20MM "V" | ORDER CODE | 14MM "V" | ORDER CODE | 10MM "V" | ORDER CODE |
|---|---|---|---|---|---|---|
| 5 - 15 mm |  | B2942426459 |  | B2942426463 |  | B2942426457 |
| 15 - 30 mm | | B2942426458 | | B2942426462 | | B2942426456 |
| 30 - 50 mm | | B2942426455 | | B2942426465 | | B2942426453 |
| 50 - 70 mm | | B2942426454 | | B2942426464 | | B2942426452 |

## CONTACT AND PROTECTIONS

| CONTACT (CARBIDE 1 PIECE) | ORDER CODE | CONTACT PROTECTIONS (CARBIDE) | | ORDER CODE |
|---|---|---|---|---|
|  | B3TXCX00026 |  | M3Star 5÷30 mm | B2942426434 |
| | | | M3Star 30÷50 mm | B2942426435 |
| | | | M3Star 50÷70 mm | B2942426436 |

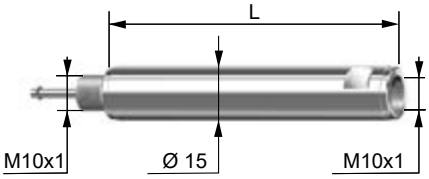
## TOOLS

| | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | 2 mm Hex wrench | B4413675303 |
| | 2,5 mm Hex wrench | B4413675304 |

## SPARES

| | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | Protections kit for 5-30mm body | B4413675303 |
| | Protections kit for 30-70mm body | B4413675304 |
|  | Spring – 1 piece | B1042426287 |
|  | Screw for spring limitation - 1 piece | B1042426286 |
|  | Transfer Rod | B2042433015 |
|  | Rod Bushing | B1042433204 |

## DEPTH EXTENSIONS AVAILABLE ONLY FOR M3STAR MSG




| LENGTH L (mm) | ORDER CODE |
|---|---|
| 50 | B2TXMSF0050 |
| 65 | B2TXMSF0065 |
| 80 | B2TXMSF0080 |
| 100 | B2TXMSF0100 |
| 125 | B2TXMSF0125 |

## STAND AVAILABLE ONLY FOR M3STAR ESG MINI WAVE

| | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | Stand charger for M3 Star ESG with Mini Wave handle (power supply unit included). | B2T0IRBS004 |

# GAUGE HANDLES
# M1STAR AND M3STAR HANDLES

## REGULAR HANDLE, WITH DIGITAL INDICATOR


### WHEN TO USE IT

M1 Star with QuickDigit indicator is the right configuration for applications where operators need a **mobile gauge**. This configuration is **super-cost effective** since it integrates the measuring head and the indicator in the same product.

It is available in combination with mechanical measuring head only (MBG and MSG). M1 Star Bore Gauges and M3 Star Snap Gauges are compatible with this handle configuration.

## MINI HANDLE

The MINI HANDLE is the compact version, designed for applications with spacing constraints, especially in the repository of the unit.

It is available for M1 Star and M3 Star mechanical gauges.

## REGULAR HANDLE, CABLE CONNECTIVITY, MBG/MSG HEADS


M1 Star with cable is the product configuration to connect to control unit, offering the possibility of data visualization on large displays and data archiving.

## REGULAR HANDLE, CABLE CONNECTIVITY, EBG/ESG HEADS


M1 Star with cable is the product configuration to connect to control unit, offering the possibility of data visualization on large displays and data archiving.

EBG version is the premium performance one, that features 0.5 µm accuracy

## REGULAR HANDLE, DIGITAL INDICATOR

Compatible with mechanical bore gauges only


| THREAD ON GAUGE HEAD | CLAMPING DIAMETER | HANDLE LENGTH | COMPATIBLE GAUGE HEAD | ORDER CODE |
|---|---|---|---|---|
| M3,5 | 8 mm h6 | 169-192 | M1STAR BORE GAUGE | B2TCL3S0000 |
| M3,5 | 3/8" | 189-212 | M1STAR BORE GAUGE | B2TCL4S0000 |
| M6 | 8 mm h6 | 169-192 | M1STAR BORE GAUGE | B2TCL6S0000 |
| M6 | 3/8" | 189-212 | M1STAR BORE GAUGE | B2TCL7S0000 |
| M10 | 8 mm h6 | 169-190 | M1STAR BORE GAUGE | B2TCLAS0000 |
| M10 | 3/8" | 189-210 | M1STAR BORE GAUGE | B2TCLBS0000 |
| M10 | 8 mm h6 | | M3STAR SNAP GAUGE | B2TCLAS0030 |

## MINI HANDLE, DIGITAL INDICATOR

Compatible with mechanical bore gauges only

| THREAD ON GAUGE HEAD | CLAMPING DIAMETER | HANDLE LENGTH | COMPATIBLE GAUGE HEAD | ORDER CODE |
|---|---|---|---|---|
| M3,5 | 8 mm h6 | 88-110 | M1STAR BORE GAUGE | B2TCS3S0000 |
| M3,5 | 3/8" | 108-130 | M1STAR BORE GAUGE | B2TCS4S0000 |
| M6 | 8 mm h6 | 88-110 | M1STAR BORE GAUGE | B2TCS6S0000 |
| M6 | 3/8" | 108-130 | M1STAR BORE GAUGE | B2TCS7S0000 |
| M10 | 8 mm h6 | 88-108 | M1STAR BORE GAUGE | B2TCSAS0000 |
| M10 | 3/8" | 108-128 | M1STAR BORE GAUGE | B2TCSBS0000 |
| M10 | 8 mm h6 | | M3STAR SNAP GAUGE | B2TCSAS0030 |

## ACCESSORIES



| DESCRIPTION | ORDER CODE |
|---|---|
| Protective shell for mechanical Indicator (P=38 mm) | B2T0DIPS001 |
| Protective shell for digital Indicator (P=52 mm) | B2T0DIPS000 |
| Protective cap for digital Indicator (P=52 mm) | B2T0DICS000 |

# GAUGE HANDLES
## M1STAR AND M3STAR HANDLES


### REGULAR HANDLES WITH CABLE, MBG/MSG

| THREAD ON GAUGE HEAD | MEASURING SENSOR | HANDLE LENGTH | COMPATIBLE GAUGE HEAD | ORDER CODE |
|---|---|---|---|---|
| M3,5 | Without Pencil Probe - 8 mm h6 Clamping Diameter | 237,5 | M1STAR BORE GAUGE | B2TPL300000 |
| M3,5 | With RedCrown2 LVDT ±2 mm, cable L=2 m, Lumberg SV50/6 | 237,5 | M1STAR BORE GAUGE | B2TPL3F2000 |
| M3,5 | With RedCrown2 HBT ±2 mm, cable L=2 m, Lumberg SV50/6 | 237,5 | M1STAR BORE GAUGE | B2TPL3H2000 |
| M6 | Without Pencil Probe - 8 mm h6 Clamping Diameter | 237,5 | M1STAR BORE GAUGE | B2TPL600000 |
| M6 | With RedCrown2 LVDT ±2 mm, cable L=2 m, Lumberg SV50/6 | 237,5 | M1STAR BORE GAUGE | B2TPL6F2000 |
| M6 | With RedCrown2 HBT ±2 mm, cable L=2 m, Lumberg SV50/6 | 237,5 | M1STAR BORE GAUGE | B2TPL6H2000 |
| M10 | Without Pencil Probe - 8 mm h6 Clamping Diameter | 239,5 | M1STAR BORE GAUGE | B2TPLA00000 |
| M10 | With RedCrown2 LVDT ±2 mm, cable L=2 m, Lumberg SV50/6 | 239,5 | M1STAR BORE GAUGE | B2TPLAF2000 |
| M10 | With RedCrown2 HBT ±2 mm, cable L=2 m, Lumberg SV50/6 | 239,5 | M1STAR BORE GAUGE | B2TPLAH2000 |


### REGULAR HANDLES WITH CABLE, EBG/ESG

| DESCRIPTION | COMPATIBLE GAUGE HEAD | ORDER CODE |
|---|---|---|
| M1 Handle without cable | M1STAR BORE GAUGE | B2THS000000 |
| M3 Handle without cable | M3STAR SNAP GAUGE | B2TH3000001 |
| Cable 2 m LVDT - connector SV50/6 | M1STAR BORE GAUGE / M3STAR SNAP GAUGE | B2TG0000026 |
| Cable 3,5 m LVDT - connector SV50/6 | M1STAR BORE GAUGE / M3STAR SNAP GAUGE | B2TG0000356 |
| Cable 5 m LVDT - connector SV50/6 | M1STAR BORE GAUGE / M3STAR SNAP GAUGE | B2TG0000056 |
| Cable 2 m LVDT - connector S3 | M1STAR BORE GAUGE / M3STAR SNAP GAUGE | B2TG0000023 |
| Cable 2 m TESA COMPATIBLE - connector SV50/6 | M1STAR BORE GAUGE / M3STAR SNAP GAUGE | B2TG00TS026 |
| Cable 2 m HBT - connector SV50/6 | M1STAR BORE GAUGE / M3STAR SNAP GAUGE | B2TG0001026 |
| Cable 3,5 m HBT - connector SV50/6 | M1STAR BORE GAUGE / M3STAR SNAP GAUGE | B2TG0001356 |
| Cable 5 m HBT - connector SV50/6 | M1STAR BORE GAUGE / M3STAR SNAP GAUGE | B2TG0001056 |

# GAUGE HANDLES
# WAVE LINE – PREMIUM MOBILE HANDLES

The Marposs Wave Line features high-end mobile gauges for demanding applications. These gauges are battery powered, with a wireless charging system. The Bluetooth connectivity is embedded in any model of the Wave line. As result, Wave line gauges deliver a superior level of usability and performance, allowing fast operations at the manufacturing line and also a real-time measuring data transfer to the control unit.

As option, versions with embedded display are available, in order to fit those applications where the feedback to operator at the measurement instant is fundamental for correct operations.


## IWAVE2 AND WAVE2

I-WAVE2 is the premium mobile gauge, with **Bluetooth connectivity, wireless charging system**, and an **integrated TFT color display**, size 1.8 inches.

On-board there is a motion sensor that enables a superior level of usability. In fact, it automatically adapts the display orientation during handlings. In addition, the motion sensor is used to optimize the battery duration, by dynamically activating the gauge on movement detection.

The **integrated Li-ion batteries** guarantee a long charge duration and a short charging time.

The doubled trigger buttons are to furtherly increase fast and ergonomic operations.

The models **I-WAVE2** can be connected to any Marposs **Mechanical Gauge Head** in the line, as mechanical bore gauges (MBG) and mechanical snap gauges (MSG).

The models **WAVE2** can be connected to any Marposs **Electronic Gauge Head** in the line, as electronic bore gauges (EBG) and electronic snap gauges (ESG).


## IWAVE AND M1 WAVE

I-WAVE and M1 WAVE are cost-effective mobile gauge, with **Bluetooth** connectivity and a two different battery configurations, in order to match different requirements in terms of price-performance requirements.

The models **I-WAVE** can be connected to any **Marposs Mechanical Gauge Head i**n the line, as mechanical bore gauges (MBG) and mechanical snap gauges (MSG).

The models **WAVE** can be connected to any Marposs **Electronic Gauge Head** in the line, as electronic bore gauges (EBG) and electronic snap gauges (ESG).


## MINI I WAVE AND MINIWAVE

Compact dimensions, lightweight and double push buttons, make it perfect for small bores and countersink gauges.

# WAVE2 VERSION

## IWAVE2 WITH DIRECT-LOCK FOR MECHANICAL BORE GAUGE

I-WAVE2 can be connected to any Marposs Mechanical Gauge Head in the line, as mechanical bore gauges (MBG) and mechanical snap gauges (MSG).

| DESCRIPTION | BATTERY TYPE | CHARGING SYSTEM | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|
| I-Wave2 Handle with Direct-Lock interface M18 thread | Li-Ion rechargeable | Inductive | MBG and MSG | B3TJ5SDI000 |
| I-Wave2 Handle with Direct-Lock for plug heads with M10 thread | Li-Ion rechargeable | Inductive | MBG and MSG | B3TJ5SDI100 |
| I-Wave2 Handle with Direct-Lock for plug heads with M6 thread | Li-Ion rechargeable | Inductive | MBG and MSG | B3TJ5SDI060 |
| I-Wave2 Handle with Direct-Lock for plug heads with M3.5 thread | Li-Ion rechargeable | Inductive | MBG and MSG | B3TJ5SDI035 |

## IWAVE2 WITH STAR-LOCK FOR MECHANICAL BORE GAUGE

| DESCRIPTION | BATTERY TYPE | CHARGING SYSTEM | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|
| I-Wave2 Handle with Starlock system for plug heads | Li-Ion rechargeable | Inductive | MBG and MSG | B3TJ6SDI000 |

## WAVE2 FOR ELECTRONIC BORE GAUGE

| DESCRIPTION | BATTERY TYPE | CHARGING SYSTEM | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|
| Wave2 display handle | Li-Ion rechargeable | Inductive | EBG | B3TJESDI000 |
| Wave2 display handle - full (Transducer compensation function available) | Li-Ion rechargeable | Inductive | EBG | B3TJFSDI000 |

| TECHNICAL SPECIFICATIONS | I-WAVE2 | WAVE2 |
|---|---|---|
| Compatibility | Mechanical Gauge Head M3.5/M6/M10 | Electronic Gauge Head/RedCrown2/A124 |
| Display | 1.8" full color | 1.8" full color |
| Wireless transmission technology | Bluetooth Smart | Bluetooth Smart |
| Communication distance | 10 m | 10 m |
| Ergonomic handle design | Dual buttons Line | Dual buttons Line |
| Compatibility with Marposs Electronic Display Units | Nemo, Merlin Line, E9066 Line | Nemo, Merlin Line, E9066 Line |
| Software for Windows OS | Easy Acquisition, Merlin Plus SW, Quick SPC, DLL | Easy Acquisition, Merlin Plus SW, Quick SPC, DLL |
| Programming for stand alone use | by Ready2Gauge (R2G) APP for IOS or Android phone/tablet or Windows PC (FREE) | by Ready2Gauge (R2G) APP for IOS or Android phone/tablet or Windows PC (FREE) |
| Auto switch on | by accelerometer | by accelerometer |
| View display aspect | Portrait/Landscape-selectable | Portrait/Landscape-selectable |
| Programmable auto shut down time | YES | YES |
| Settable acoustic feedback | YES | YES |
| IP rating | 67 | 65 |
| Weight | 540 g | 500g |
| Battery type | Li-Ion rechargeable | Li-Ion rechargeable |
| Wireless charging system | Inductive | Inductive |

# ACCESSORIES
## WAVE2 VERSION


| DESCRIPTION | COMPATIBLE WITH | ORDER CODE |
|---|---|---|
| Interface adapter to fix EBG plug heads to Wave or Wave2 handle | Wave 2 | B2TIESF0000 |
| Interface adapter to fix LVDT probes with SV50/6 connector to Wave or Wave2 handle | Wave 2 | B2042421960 |
| Interface adapter to fix HBT probes with SV50/6 connector to Wave or Wave2 handle | Wave 2 | B2042421959 |
| Interface adapter to fix LVDT probes with SV50/6 connector to Wave or Wave2 handle with flange Ø 59 | Wave 2 | B2042421966 |
| Interface adapter to fix HBT probes with SV50/6 connector to Wave or Wave2 handle with flange Ø 59 | Wave 2 | B2042421965 |


| DESCRIPTION | ORDER CODE |
|---|---|
| Nose-Up stand with battery charger | B2T0IRBS030 |
| Nose-Down stand with battery charger | B2T0IRBS031 |
| Power supply unit for one stand with battery charger | B2T0IRCS010 |
| Power supply unit and junction box for up to four stands with charger | B2T0IRSS010 |
| Cable for connecting the stand charger to junction box (length 1m) | B2T0IRCS001 |
| Power supply cable with CE plug (L=2m)* | B4709009001 |
| I-Wave2 BT SMART USB adapter | B6872020044 |

# WAVE VERSION

## I-WAVE

| DESCRIPTION | BATTERY TYPE | CHARGING SYSTEM | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|
| I-Wave handle with Star Lock - Li-Ion battery | Li-Ion rechargeable | Inductive | MBG and MSG | B3TJ0SFI000 |
| I-Wave handle with Star Lock - Alkaline battery | Alkaline rechargeable | Inductive | MBG and MSG | B3TJ0SFB000 |

## M1WAVE

| DESCRIPTION | BATTERY TYPE | CHARGING SYSTEM | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|
| M1 WAVE Handle with Star Lock - Li-ion battery | Li-Ion rechargeable | Inductive | EBG | B2TW0SFI000 |
| M1 WAVE handle with Star Lock - Alkaline battery | Alkaline rechargeable | Inductive | EBG | B2TW0SFB000 |

| TECHNICAL SPECIFICATIONS | I-WAVE | M1WAVE |
|---|---|---|
| Compatibility | M1Star MBG M10 M6 M3.5, M3Star MSG (by means of an adapter)* | M1Star EBG |
| Wireless transmission technology | BT 2.0 | BT 2.0 |
| Communication distance | 10m | 10m |
| Compatibility with Marposs Electronic Display Units | Nemo, Merlin line, E9066 line | Nemo, Merlin line, E9066 line |
| Software for Windows OS | Easy Acquisition, Merlin Plus SW, Quick SPC | Easy Acquisition, Merlin Plus SW, Quick SPC |
| Max. Number of manageable signals | N/A | 1 |
| IP rating | 67 | 67 (with the EBG installed) |

# ACCESSORIES
# WAVE VERSION

## STAR ADJUST INTERFACE

| DESCRIPTION | ORDER CODE |
|---|---|
| StarAdjust interface (M10 and M6) | B2TIMSMT600 |

## INTERFACE ADAPTER TO FIX EBG PLUG HEADS TO WAVE HANDLE

| DESCRIPTION | ORDER CODE |
|---|---|
| Interface adapter to fix EBG plug heads to Wave handle | B2TIESF0000 |

## "CLIP ON" MANUAL CHARGER FOR I-WAVE, WAVE AND MULTIWAVE HANDLE WITH LI-ION BATTERIES (WITHOUT PSU)

| DESCRIPTION | HANDLES MODEL | ORDER CODE |
|---|---|---|
| "Clip On" manual charger for I-Wave, Wave and MultiWave handle with Li-Ion Batteries (without PSU) | I-Wave, Wave and MultiWave | B2T0IRMS001 |

## STAND WITH BATTERY CHARGER

| DESCRIPTION | ORDER CODE |
|---|---|
| Stand with battery charger for I-Wave and Wave handles with Li-Ion Batteries (without PSU) | B2T0IRBS001 |
| Stand with battery charger for MultiWave handle (without PSU) | B2T0IRBS005 |
| Power supply unit for one stand with battery charger | B2T0IRCS010 |
| Power supply unit and junction box for up to four chargers. | B2T0IRSS010 |
| Cable for connecting the stand charger to the junction box (length 1m) | B2T0IRCS001 |
| I-Wave/M1Wave/Mini I-Wave/MiniWave/MultiWave BT USB adapter | B47013J0101 |

# GAUGE HANDLES
# MINI WAVE LINE


## MINI WAVE

| DESCRIPTION | BATTERY TYPE | CHARGING SYSTEM | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|
| Mini Wave | Li-Ion rechargeable | Inductive | | B3TJ2SDJ000 |


## MINI I WAVE

| DESCRIPTION | BATTERY TYPE | CHARGING SYSTEM | GAUGE HEAD MODEL | ORDER CODE |
|---|---|---|---|---|
| Mini I-Wave | Li-Ion rechargeable | Inductive | | B3TJ2SDJ000 |

## STAND WITH BATTERY CHARGER

| DESCRIPTION | ORDER CODE |
|---|---|
| Stand with battery charger for Mini I-Wave and MiniWave handle (PSU included) | B47013J0101 |

| TECHNICAL SPECIFICATIONS | MINI I-WAVE | MINI WAVE |
|---|---|---|
| Compatibility | MBG M10 M6 M3.5, M3Star MSG (by means of an adapter)* | M1Star EBG M3Star ESG |
| Wireless transmission technology | BT 2.0 | BT 2.0 |
| Communication distance | 10m | 10m |
| Compatibility with Marposs Electronic Display Units | Nemo, Merlin line, E9066 line | Nemo, Merlin line, E9066 line |
| Software for Windows OS | Easy Acquisition, Merlin Plus SW, Quick SPC | Easy Acquisition, Merlin Plus SW, Quick SPC |
| Max. Number of manageable signals | N/A | 1 |
| IP rating | 54 | 54 |
| Weight | 390g | 340g |
| Battery type | Li-ion Recharg. | Li-ion Recharg. |
| Battery min. duration | 36 hours** | 36 hours** |
| Time to reach the full charge of the battery | 3 hours | 3 hours |


MERLIN Plus
MARPOSS

# GAUGE HANDLES
# M1AIR

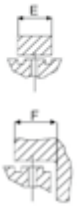
## APPLICATION AND PRODUCT DESCRIPTION

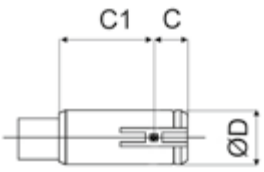
- M1 Air, pneumatic bore gauge, is particularly suitable to test components within very tight tolerances (from IT2 to IT7), and roughness ≤ 0,8 mm Ra.
- The measurement principle is based on the variation of pressure, that is proportional to the distance between the bore gauge nozzles and the part under test.
- The measurement is obtained by means of the so called “balanced pneumatic bridge” system, with differential pressure transducers and electronic amplification of the signal.
- The signal is converted from analogue to digital through electronic converters like DUO AIR, DUO AIR D, EASYBOX


| TECHNICAL SPECIFICATIONS | | | |
|---|---|---|---|
| Retooling range | 3 - 4,15 | 4,15 - 6,3 | 6,3 - 100 |
| Measuring range | max. 0,03 mm | max. 0,05 mm | max. 0,1 mm |
| Repeatability | ≤ 0,5 µm | | |
| Air supply | Dry air carefully filtered and purified (filtering degree < 5 µm) | | |
| Pipe for air supply | Internal → 4 mm - length 2 meters | | |
| Average consumption | < 1000 l/h | | |

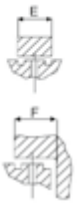
## TPS - PNEUMATIC PLUG GAUGES

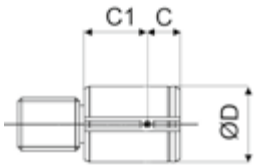
| | | THROUGH BORE | | | | BLIND BORE | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ø D | range | C | C1 | E | Type | C | C1 | F | Type |
| 3 - 4,15 | 0,03 | 6,5 | 31,5 | 1,8 | | 3,5 | 34,5 | 4,4 | |
| 4,15 - 6,3 | 0,05 | 9,5 | 28,5 | 2,5 | T | 3,5 | 34,5 | 4,8 | B |
| 6,3 - 10 | 0,1 | 13 | 25 | 3 | | 3,5 | 34,5 | 5 | |



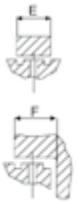


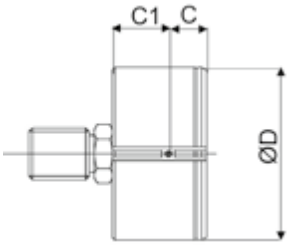

| | | THROUGH BORE | | | | BLIND BORE | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ø D | range | C | C1 | E | Type | C | C1 | F | Type |
| 10 - 20 | 0,1 | 13 | 25 | 3 | | 4 | 34 | 5,5 | |
| 20 - 30 | 0,1 | 13 | 25 | 3 | T | 4 | 34 | 5,5 | B |
| 30 - 42 | 0,1 | 13 | 25 | 3 | | 4 | 34 | 5,5 | |
| 42 - 55 | 0,1 | 13 | 25 | 3 | | 4 | 34 | 5,5 | |



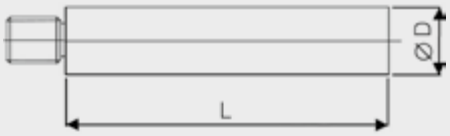



| | | THROUGH BORE | | | | BLIND BORE | | | |
|---|---|---|---|---|---|---|---|---|---|
| Ø D | range | C | C1 | E | Type | C | C1 | F | Type |
| 55 - 70 | 0,1 | 13 | 25 | 3 | | 4 | 34 | 5,5 | |
| 70 - 85 | 0,1 | 13 | 25 | 3 | T | 4 | 34 | 5,5 | B |
| 85 - 100 | 0,1 | 13 | 25 | 3 | | 4 | 34 | 5,5 | |



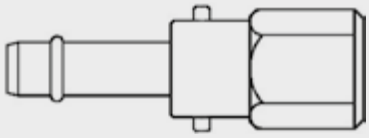



## EXTENSION

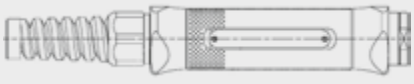



| Ø D | L | code |
|---|---|---|
| 20 | 50 | PLPM-50 |
| 20 | 100 | PLPM-100 |
| 20 | 200 | PLPM-200 |

## QUICK CONNECTION

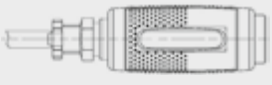


## HANDLES



STANDARD

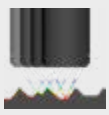
WITH QUICK CONNECTION



MINI

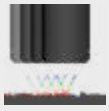
# CHROMATIC CONFOCAL SOLUTIONS


- Marposs Chromatic Confocal is a line of industrial solutions based on the optical technology, perfect to measure delicate and transparent components with micron precision and without touching them.
  This is a unique advantage of the optical technology that makes it perfect for applications in the semiconductor and medical industries, where the optical technology is the only one that has zero-risk of damaging the part.
- Marposs is capable to offer complete measurement workstations, integrating the confocal optical heads, the electronic controller and the software, to visualize and manage the measurement results.



**DISTANCE**
0.15 µm --> 100 mm

**THICKNESS**
5 µm --> +00



**ROUGHNESS**
Ra = 0.05 µm -->700 µm

**INSPECTION**
Defect size > 1 µm

The Chromatic Confocal Head incorporates optical lenses inside an industrial-grade mechanics, specifically designed to be installed close to the target surface to inspect. The optical heads are structured to perform highly and simultaneously to resist even inside though production environments.

Marposs offers a large variety of optical heads, differentiated by working distances, optical spot dimensions, optical output pattern 0-90°. Also different external mechanical dimensions are available in the range.

By calculating the absolute distance of the target point, the confocal technology enables a number of different typologies of quality controls, as for instance surface position, dimensions or flatness.

Moreover, by selecting the appropriate optical spot dimension, it is possible to resolve complex applications. For instance Confocal sensors with small optical spot are ideal for surface roughness measurements. In fact, the small spot can detect the specific characteristics, with high frequency variations, typical of the surface structure of the material.

On the other hand, there are optical heads in the range featuring large spots, perfect for low-reflectivity surfaces. More in detail, a large spot is necessary to obtain a good level of return light intensity even with semitransparent materials like grass.

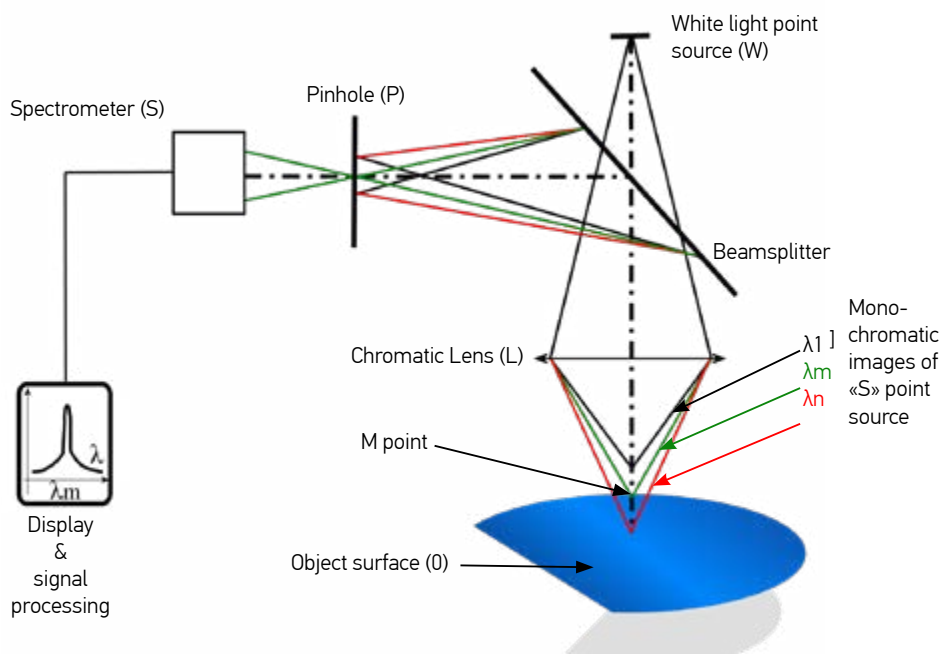
## WORKING PRINCIPLE

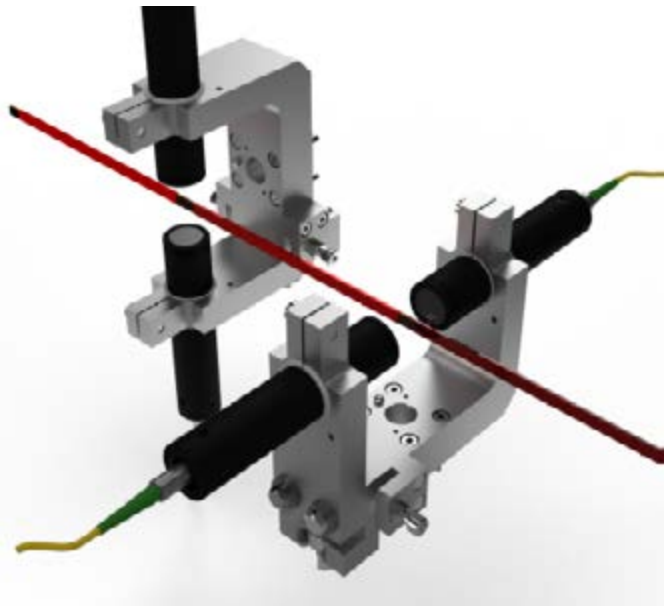
The chromatic confocal principle is as simple as effective in measurement.

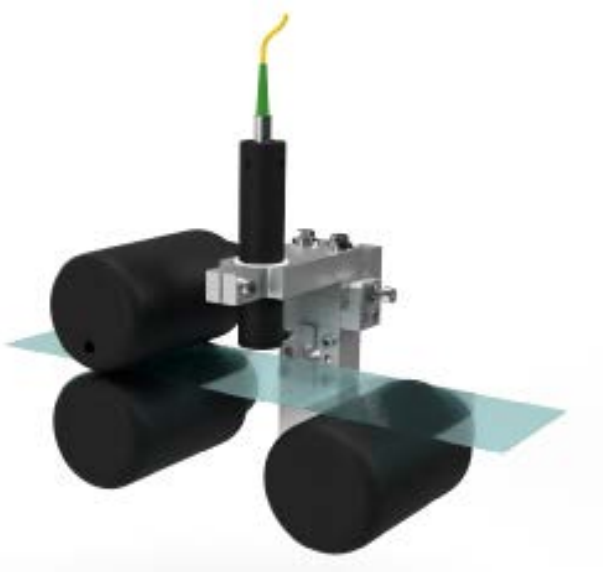
A white light source come across a diffractive lens before to reach the target surface to measure. The diffractive lens decomposes the white light into any of its chromatic components, each one having a specific wavelength.

The target surface reflects the projected light back to sensor and only one of the light wavelengths, among the projected components, will be perfectly in focus on the spectrometer sensor.

By analyzing the output of the spectrometer sensor, it is possible to perfectly calculate the distance of the target surface, with an incredible resolution down to 3 nanometers, quickly and without touching the material.





# CHROMATIC CONFOCAL SENSORS

Marposs Chromatic Confocal are optical sensors capable to execute distance measurements from the sensor to a target surface with ultra-high precision and without touching the target material. Since based on light, this non-contact sensors is perfect for delicate materials and super-accurate measurements at the same time.
Marposs Chromatic Confocal solutions have been designed to resolve applications in highly demanding industries like semiconductors and medical, where measurements technologies are subject to restrictive constraints, as for instance the capability to operate at high temperatures or inside vacuum chambers

## CL-MG

**CL-MG** is a single point optical sensor, with ultra-high accuracy up to the nanometer.
CL-MG is the most used confocal model in applications. In fact, thanks to the high number of optical options supported, it fits the requirements of typical optical applications.
Among its configurability, there is the possibility to define the measuring range and the spot size.
It is purposely designed to operate into harsh environments as for instance vacuum chambers or high temperatures.

## ENDO

**ENDO** is a point confocal sensor, featuring the smallest physical diameter in the line.
It is available in 3 different external diameter sizes: 4 mm, 6 mm, 8mm. Thanks to its excellent compactness, it is perfect for integrations into very constrained spaces.

## OP

**OP** is the point sensor for applications where long working distances are required. OP can be installed and properly operate far away from the measuring target, up to 500 mm.
With a long working distance, the OP sensor can safely measure hot materials or in remote positions outside protective or safety barriers.
OP is the perfect model for glass, bottles production or automotive applications.

## EVEREST

**EVEREST** is the premium performance point sensor, capable to accomplish high demand tasks like surfaces profiles acquisition. In fact, it is designed to work at a short distance from the target material. Moreover, thanks to its super-large optic aperture, it can easily collect scattered light during roughness measurement or it is perfect for analysis of curved surfaces.

## CHROMALINE

**CHROMALINE** is a multi-point sensor, typically applied in applications of scanning and inspecting large surfaces in a short time. As per its name, CHROMALINE operates through a line pattern, obtained by the projection of 180 separate optical points, side-by-side. Its unique capability is to generate a simultaneous acquisition of its 180 optical points. By synchronizing each single shot with the encoder value it can generate a digital reconstruction of a surface area, with the resolution of nanometers.

## CHROMA VISION CAMERA

The **CHROMA VISION CAMERA** is the advanced sensor for micro-defect detection on surfaces.
It is based on the CHROMALINE architecture and elaborates the optical signal through a precision 2D sensor, in order to generate a 3 dimensional picture of the surface.
It is a unique solution where scanning speed matters. In fact, CHROMA VISION CAMERA features an unrivalled intrinsic optical depth-of-field, with no autofocus and no moving parts inside. This technology definitively overcomes the limitations of traditional microscopes that need to adjust the focus in order to follow the real surface profile.
CHROMA VISION CAMERA is not just fast and precise. Its capability to generate 3D pictures of the scanned surface is an important advantage, being images intuitive and easy to inspect by definition.

# CONTROLLERS FOR CHROMATIC CONFOCAL POINT SENSORS

Marposs Controllers for Confocal Point Sensors are electronic units featuring any necessary functionality to implement a gauging system. They integrate both the active opto-electronic components, light generator and spectrometer, and a powerful digital processor. At the same time, the controller is the element in the system managing input and output signals, like triggers and encoder for dynamic measurements.


## ZENITH

**ZENITH** Controller is the new and also pivotal model in the line.

It is available with 1 or 2 channels and also with 2 different levels of performance, namely acquisition frequency 5 kHz and 10 kHz.

ZENITH is compatible with any Confocal Point Head in the range, as CL-MG, OP, ENDO, EVEREST.

Ethernet and RS422 communication interfaces are integrated.

ZENITH comes with its dedicated software suite, composed by the ChromaPoint manager and a Software Development Kit (SDK), allowing both effective control of the sensor and a fast integration with the automation system.

## LIGHTMASTER

The **LIGHTMASTER** is a multi-channel controller for large networks of chromatic confocal point-sensor heads, up to a maximum of 48 units. Each single channel of the LightMaster can control and manage a single point-sensor head.

The channels can be installed on the LightMaster through boards, having 4 channels each one.

The LightMaster standard version accommodates up to 12 separate slots, 4 channels each, for a total of 48 sensors connected.

The lightMaster16 is the compact and cost-effective version, that accommodates up to 4 different slots, 4 channels each, for a total of 16 sensors.

LightMaster is available with 2 different levels of acquisition frequency, namely 1300Hz and 2000Hz.

LightMaster has a trigger input, Ethernet interface for easy integration, and can be easily mounted on a production line.


## MPLS

**MPLS**, standing for MultiPoint Line System, is a controller dedicated to the Line Sensor Heads in the Chromatic Confocal portfolio. As per its name, Line Sensors perform an optical linear pattern, obtained by the projection of several separate optical points, on the target surface. Different models of line sensors are available, with an increasing number of side-by-side points, from 45 up to 180.

MPLS interconnects optical sensors through its 8 optical ports, named MP0, each one performing 45 separate optical channels. By using the different optical ports the MPLS Controller can operate with a variable number of sensors, from 1 to 4.

MPLS is provided of the necessary interfaces to develop demanding applications, like trigger and encoder for dynamic measurements. Gigabit Ethernet is also available.

# MODELS AND ACCESSORIES
## CL-MG

CL-MG is a single point optical sensor, with ultra-high accuracy up to the nanometer. It is purposely designed to operate into harsh environments as for instance vacuum chambers or high temperatures.

Confocal technology is "speckle free" and thanks to the high-end optical architecture, CL-MG is immune to shadow effects. As result, CL-MG is performing well with demanding materials, like black carbon, glass, ceramics or polished metals.

The CL-MG is available with a high number of optical options as a variable measuring range from 150 µm to 24 mm, different optical spot size, straight and 90° folded optical pattern.

CL-MG optical heads can be connected to ChromaPoint controllers, like Zenith and Lightmaster.

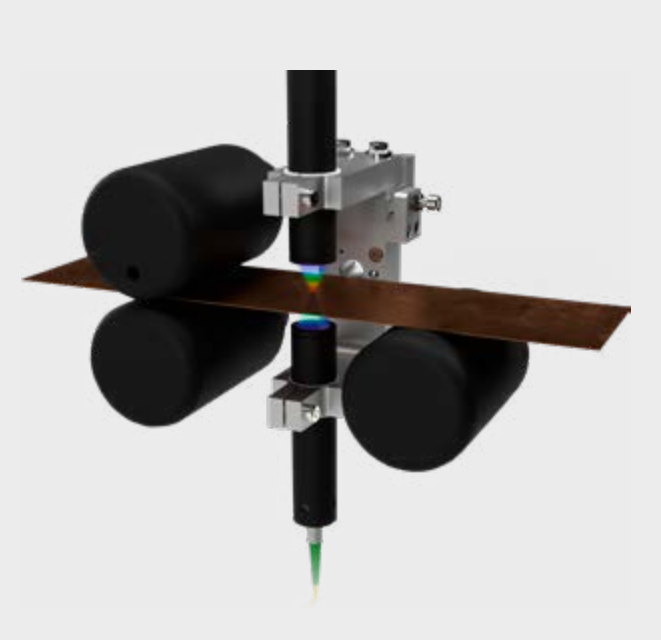
| MODEL | UNIT | CL1-MG420 | CL1-MG210 | CL1-MG140 | CL2-MG210 | CL2-MG140 | CL2-MG70 | CL3-MG140 |
|---|---|---|---|---|---|---|---|---|
| **ORDER CODE** | | O3PS0114202 | O3PS0112102 | O3PS0111402 | O3PS0122102 | O3PS0121402 | O3PS0127002 | O3PS0131401 |
| Measuring Range | mm | 0.15 | 0.15 | 0.15 | 0.4 | 0.4 | 0.4 | 1.4* |
| Working Distance | mm | 3.3 | 3.3 | 3.3 | 10.8 | 10.8 | 10.8 | 12.2 |
| Numerical Aperture | | 0.71 | 0.71 | 0.71 | 0.46 | 0.46 | 0.46 | 0.41 |
| Max. Slope Angle | ° | ±42 | ±42 | ±42 | ±28 | ±28 | ±28 | ±25 |
| Axial | | | | | Standard | | | |
| 90° Folded Model | | | | | Option | | | |
| Max. Linearity Error* | µm | ±0.025 | ±0.025 | ±0.02 | ±0.045 | ±0.04 | ±0.035 | ±0.11 |
| Static Noise* | nm | 3.5 | 4 | 4.5 | 9 | 11 | 13 | 27 |
| Axial resolution (Averaging 10)* | nm | 1.17 | 1.33 | 1.5 | 3 | 3.67 | 4.33 | 9 |
| Lateral Resolution | µm | 0.8 | 1.1 | 1.3 | 1.7 | 1.8 | 3.7 | 2.6 |
| Spot Size | µm | 1.8 | 2.7 | 3.5 | 4 | 5.2 | 8.8 | 6.8 |
| Photometric Efficiency | | 0.8 | 5 | 13 | 3 | 8 | 42 | 12 |
| Min. Measurable Thickness | µm | 5 | 7.5 | 9 | 14 | 14 | 22 | 38 |
| Length | mm | 270 | 243.8 | 209.4 | 243.3 | 208.9 | 176.1 | 208.9 |
| Diameter | mm | 27 | 27 | 27 | 27 | 27 | 27 | 27 |
| Weight | g | 310 | 268 | 195 | 248 | 190 | 189 | 215 |

| MODEL | UNIT | CL3-MG70 | CL4-MG35 | CL4-MG20 | CL5-MG35 | CL5-MG20 | CL6-MG35 | CL6-MG20 |
|---|---|---|---|---|---|---|---|---|
| **ORDER CODE** | | O3PS0137001 | O3PS0143501 | O3PS0142001 | O3PS0153501 | O3PS0152001 | O3PS0163501 | O3PS0162001 |
| Measuring Range | mm | 1.4* | 4 | 4 | 12 | 12 | 24 | 24 |
| Working Distance | mm | 12.2 | 16.5 | 16.5 | 26.6 | 26.6 | 20 | 20 |
| Numerical Aperture | | 0.41 | 0.32 | 0.32 | 0.2 | 0.2 | 0.12 | 0.12 |
| Max. Slope Angle | ° | ±25 | ±21 | ±21 | ±14 | ±14 | ±8.5 | ±8.5 |
| Axial | | | | | Standard | | | |
| 90° Folded Model | | | | | Option | | | |
| Max. Linearity Error* | µm | ±0.08 | ±0.225 | ±0.205 | ±0.5 | ±0.4 | ±1.2 | ±1 |
| Static Noise* | nm | 30 | 65 | 80 | 210 | 270 | 370 | 400 |
| Axial resolution (Averaging 10)* | nm | 10 | 21.67 | 26.67 | 70 | 90 | 123.33 | 133.33 |
| Lateral Resolution | µm | 4.5 | 4.6 | 7 | 11 | 14 | 11 | 18 |
| Spot Size | µm | 11.9 | 12.3 | 19.9 | 24.3 | 40 | 26.8 | 43 |
| Photometric Efficiency | | 63 | 31 | 96 | 42 | 108 | 14 | 60 |
| Min. Measurable Thickness | µm | 40 | 110 | 120 | 350 | 550 | 590 | 725 |
| Length | mm | 176.1 | 145.4 | 130 | 145.4 | 130 | 171 | 155.6 |
| Diameter | mm | 27 | 27 | 27 | 27 | 27 | 27 | 27 |
| Weight | g | 214 | 155 | 140 | 175 | 160 | 195 | 180 |

* With ZENITH Controller

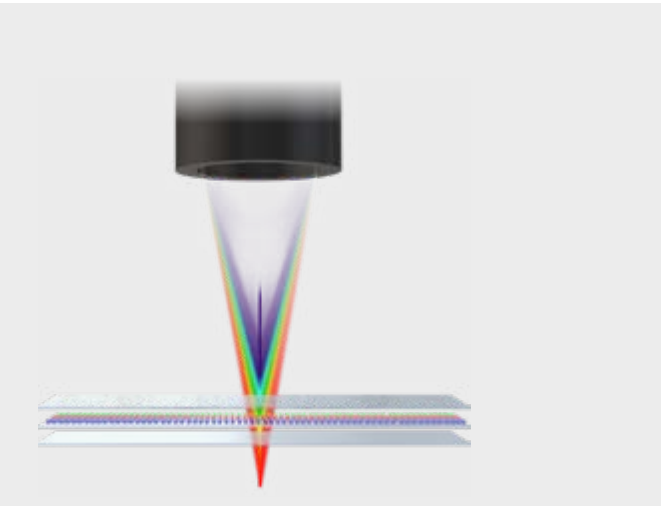
# MODELS AND ACCESSORIES
## CL-MG

## APPLICATION EXAMPLES



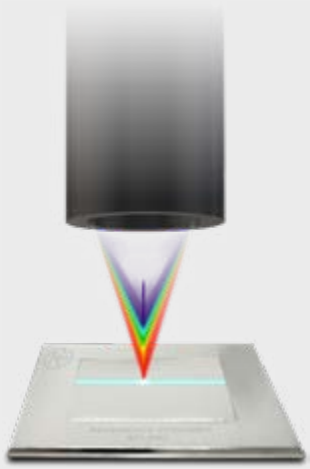
### ROLL-TO-ROLL (R2R) THICKNESS

R2R applications include thickness measurement of carbon or ceramic lithium-ion battery electrodes, metallic laminated films, transparent (rubbery) or reflective materials; and more.

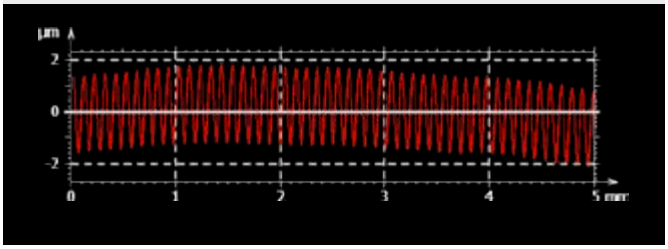


### TRANSPARENT MULTI-LAYER MEASUREMENTS

CL-MG sensors in association with Zenith or LightMaster controller can measure up to 8 transparent layers at once. This is of interest for multilayer car-glass windows, isolating windows, coated / varnished surfaces, multi-layers polymers.



| ISO 4287 - ROUGHNESS (S-L) | | |
|---|---|---|
| F: None | | |
| S-filter (λs): Gaussian, 2.5 µm | | |
| L- filter (λc): Gaussian, 0.8 mm | | |
| Evaluation length: All λc (6) | | |
| **AMPLITUDE PARAMETERS** | | |
| Ra | 0.967 | µm |
| Rq | 1.072 | µm |




### SURFACE TOPOGRAPHY / ROUGHNESS CERTIFIED MEASUREMENTS

Chromatic Confocal technology is one of the non-contact / contactless technologies that ISO 25 178 norm recommends to measure “Surface Topography” including roughness (Ra, Rq, Rz, ... Sa, Sq ...).

CL1TM CL2TM and CL3TM are the most suitable sensors for such Surface Topography contactless measurements, allowing, Roughness Ra ≥ 70 nm (mirror polished surface) to be measured. Certified gauge measurements had been proved (against tactile measurements).

The main advantages of using non-contact Confocal Chromatic technology for Roughness measurements are :

- Surface is not scratched or contaminated, allowing the part to continue its way in production
- Measurement is faster than tactile profilers

# MODELS AND ACCESSORIES
## CL-MG FOR VACUUM APPLICATIONS

| MODEL | UNIT | CL1-MG210 | CL1-MG140 | CL2-MG210 | CL2-MG140 | CL2-MG70 | CL3-MG140 | CL3-MG70 |
|---|---|---|---|---|---|---|---|---|
| ORDER CODE | | O3PS01121V1 | O3PS01114V1 | O3PS01221V2 | O3PS01214V2 | O3PS01270V2 | O3PS013140V1 | O3PS01370V2 |
| Measuring Range | mm | 0.15 | 0.15 | 0.4 | 0.4 | 0.4 | 1.4* | 1.4* |
| Working Distance | mm | 3.3 | 3.3 | 10.8 | 10.8 | 10.8 | 12.2 | 12.2 |
| Numerical Aperture | | 0.71 | 0.71 | 0.46 | 0.46 | 0.46 | 0.41 | 0.41 |
| Max. Slope Angle | ° | ±42 | ±42 | ±28 | ±28 | ±28 | ±25 | ±25 |
| Axial | | | | | Standard | | | |
| 90° Folded Model | | | | | Option | | | |
| Max. Linearity Error* | µm | ±0.025 | ±0.02 | ±0.045 | ±0.04 | ±0.035 | ±0.11 | ±0.08 |
| Static Noise* | nm | 4 | 4.5 | 9 | 11 | 13 | 27 | 30 |
| Axial resolution (Averaging 10)* | nm | 1.33 | 1.5 | 3 | 3.67 | 4.33 | 9 | 10 |
| Lateral Resolution | µm | 1.1 | 1.3 | 1.7 | 1.8 | 3.7 | 2.6 | 4.5 |
| Spot Size | µm | 2.7 | 3.5 | 4 | 5.2 | 8.8 | 6.8 | 11.9 |
| Photometric Efficiency | | 5 | 13 | 3 | 8 | 42 | 12 | 63 |
| Min. Measurable Thickness | µm | 7.5 | 9 | 14 | 14 | 22 | 38 | 40 |
| Length | mm | 243.8 | 209.4 | 243.3 | 208.9 | 176.1 | 208.9 | 176.1 |
| Diameter | mm | 27 | 27 | 27 | 27 | 27 | 27 | 27 |
| Weight | g | 268 | 195 | 248 | 190 | 189 | 215 | 214 |

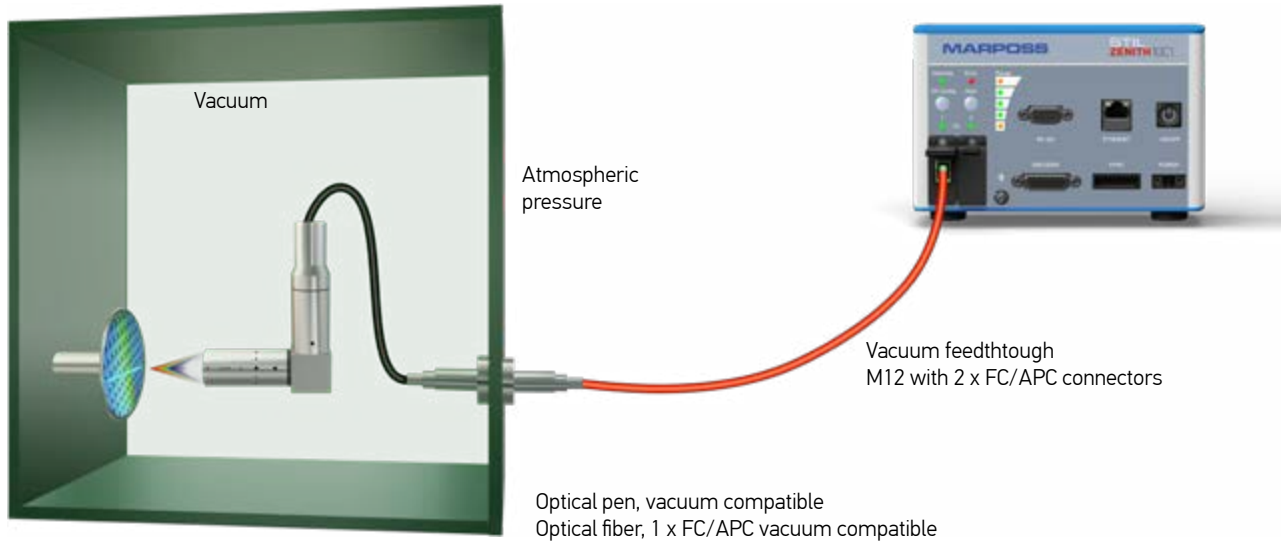
| MODEL | UNIT | CL4-MG35 | CL4-MG20 | CL5-MG35 | CL5-MG20 | CL6-MG35 | CL6-MG20 |
|---|---|---|---|---|---|---|---|
| ORDER CODE | | O3PS01435V1 | O3PS01420V1 | O3PS01535V1 | O3PS01520V1 | O3PS01635V1 | O3PS01620V1 |
| Measuring Range | mm | 4 | 4 | 12 | 12 | 24 | 24 |
| Working Distance | mm | 16.5 | 16.5 | 26.6 | 25.9 | 20 | 20 |
| Numerical Aperture | | 0.32 | 0.32 | 0.2 | 0.2 | 0.12 | 0.12 |
| Max. Slope Angle | ° | ±21 | ±21 | ±14 | ±14 | ±8.5 | ±8.5 |
| Axial | | | | | Standard | | |
| 90° Folded Model | | | | | Option | | |
| Max. Linearity Error* | µm | ±0.225 | ±0.205 | ±0.5 | ±0.4 | ±1.2 | ±1 |
| Static Noise* | nm | 65 | 80 | 210 | 270 | 370 | 400 |
| Axial resolution (Averaging 10)* | nm | 21.67 | 26.67 | 70 | 90 | 123.33 | 133.33 |
| Lateral Resolution | µm | 4.6 | 7 | 11 | 14 | 11 | 18 |
| Spot Size | µm | 12.3 | 19.9 | 24.3 | 40 | 26.8 | 43 |
| Photometric Efficiency | | 31 | 96 | 42 | 108 | 14 | 60 |
| Min. Measurable Thickness | µm | 110 | 120 | 350 | 550 | 590 | 725 |
| Length | mm | 145.4 | 130 | 145.4 | 130 | 171 | 155.6 |
| Diameter | mm | 27 | 27 | 27 | 27 | 27 | 27 |
| Weight | g | 155 | 140 | 175 | 160 | 195 | 180 |

* With ZENITH Controller ** Design to be tested by customer based on his specific paremeters

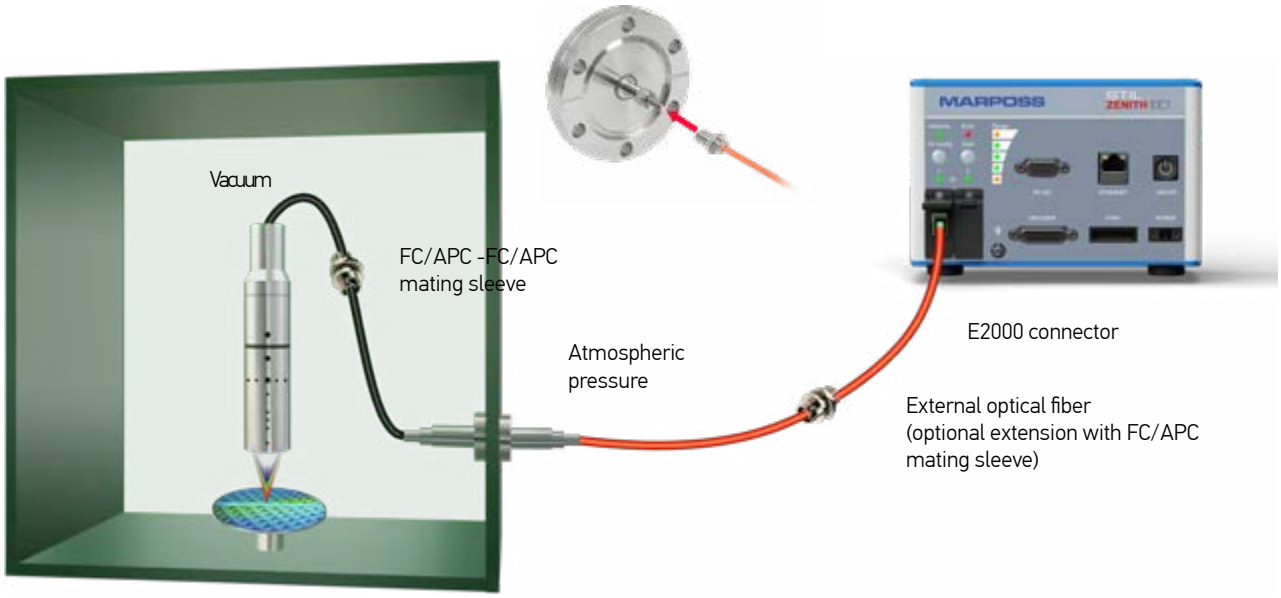
# MODELS AND ACCESSORIES
# CL-MG FOR VACUUM APPLICATIONS

## APPLICATION EXAMPLES

### STANDARD SETUP

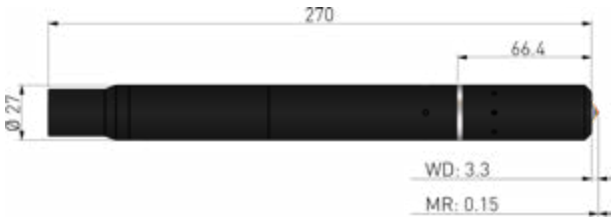



### SPECIFIC SETUP



## DIMENSIONS (MM)

### CL1-MG420™

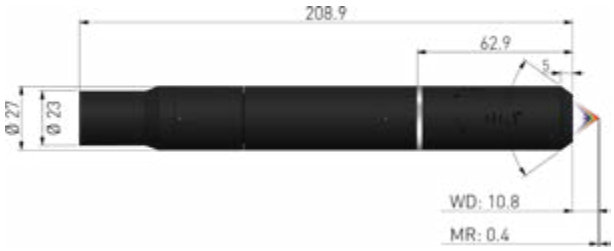



### CL1-MG210TM


### CL1-MG140™


### CL2-MG210™

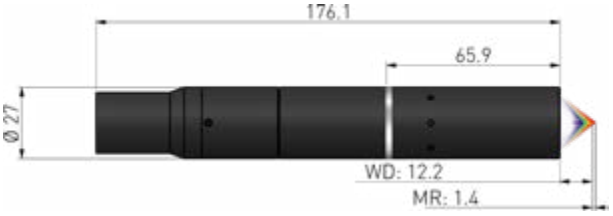

### CL2-MG140™




### CL2-MG70™

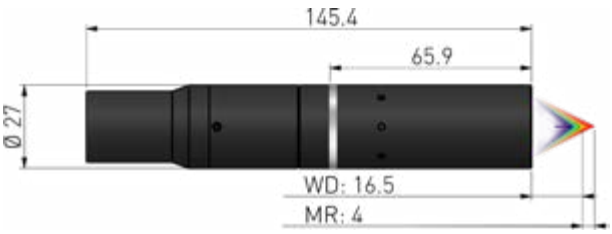

### CL3-MG140™


### CL3-MG70™



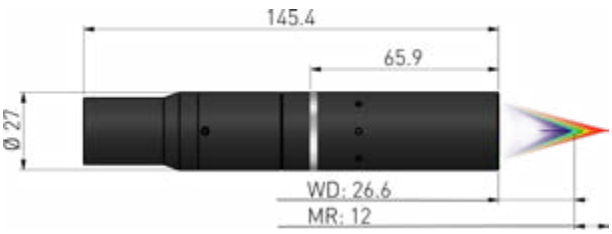
## MODELS AND ACCESSORIES
## CL-MG FOR VACUUM APPLICATIONS

### CL4-MG35TM



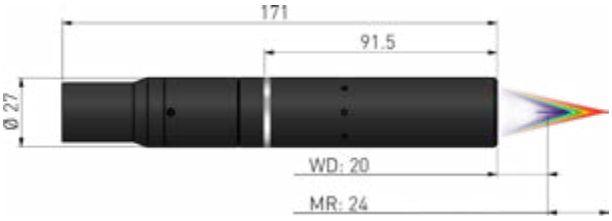

### CL4-MG20T$^{M}$


### CL5-MG35TM

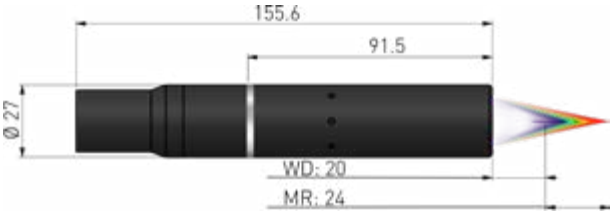



### CL5-MG20TM


### CL6-MG35TM

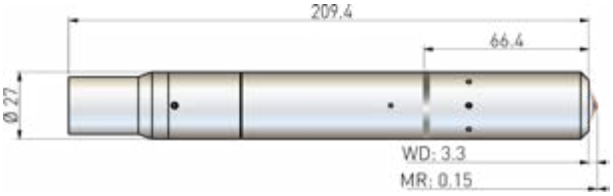



### CL6-MG20TM



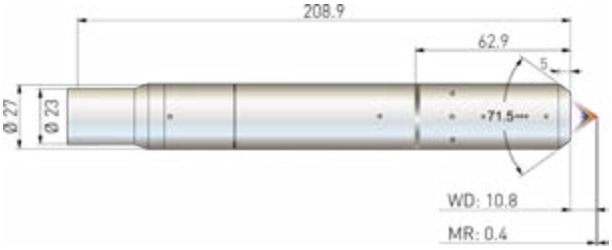
### CL1-MG210™


### CL1-MG140™




### CL2-MG210™

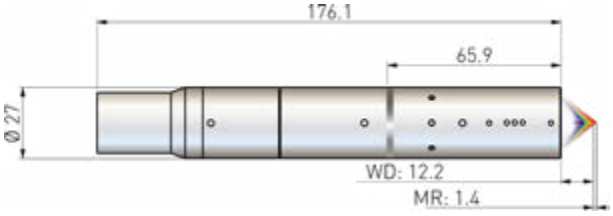

### CL2-MG140™



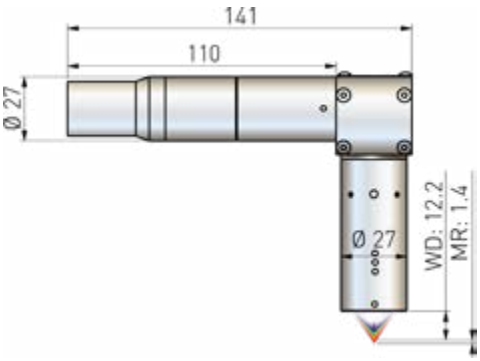

### CL2-MG70™


### CL3-MG140™


### CL3-MG70™

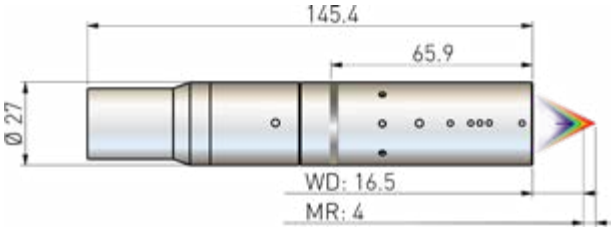



### CL3-MG70-90™

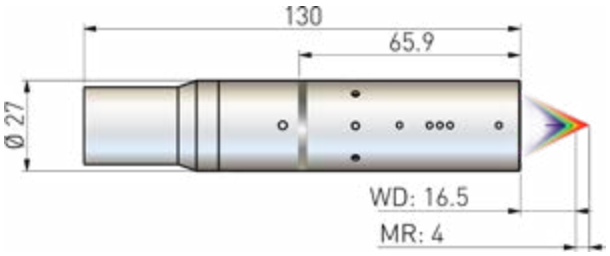


# MODELS AND ACCESSORIES
## CL-MG FOR VACUUM APPLICATIONS

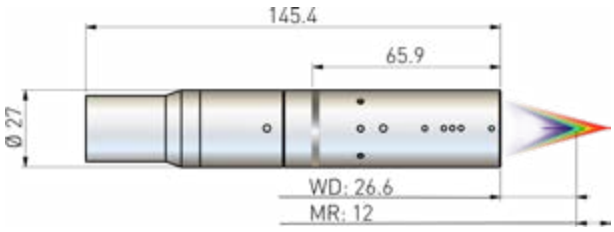
### CL4-MG35™



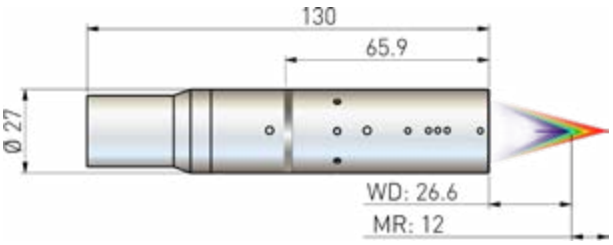

### CL4-MG20™



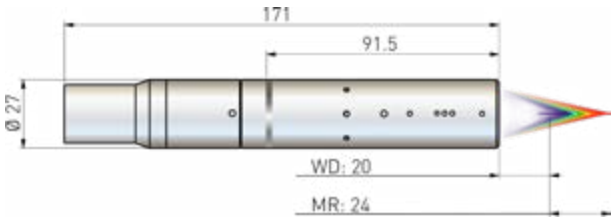

### CL5-MG35™



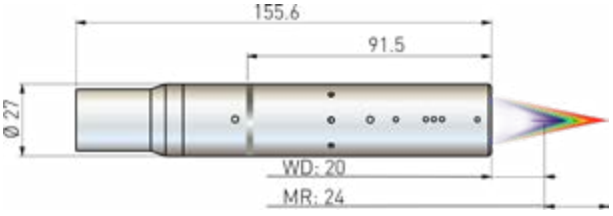

### CL5-MG20™




### CL6-MG35™




### CL6-MG20™



# MODELS AND ACCESSORIES
## ENDO

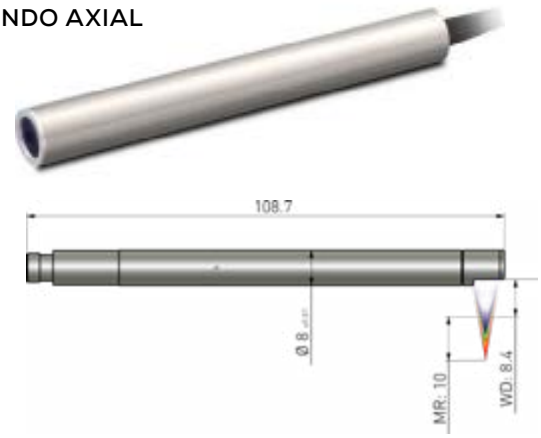
ENDO is a point confocal sensor, featuring the smallest physical diameter in the line.

ENDO is available in 3 different external diameter sizes, 4 mm, 6 mm, 8mm and also straight and 90° folded optical pattern.

Thanks to the combination of its excellent compactness and optical versions, it is the perfect solution for integrations into very constrained spaces.

ENDO features a coaxial optic pattern, so it is immune to shadow effects. ENDO is performing well with demanding materials, like black carbon, glass, ceramics or polished metals.

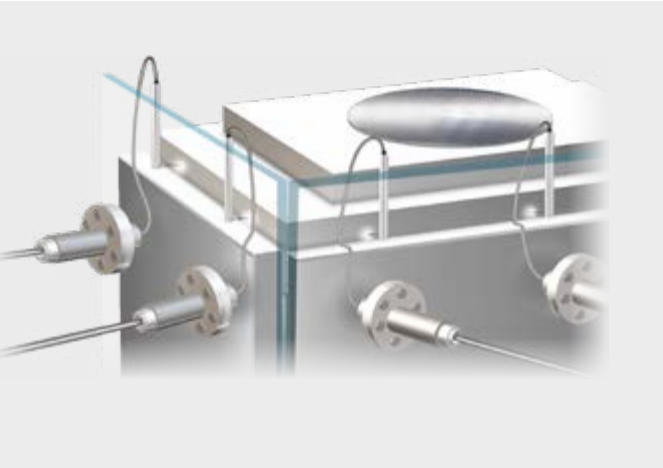
### ENDO AXIAL




| MODEL | UNIT | ENDO 0.2/D8 | ENDO 1/D4-R | ENDO 1.5/D6-R | ENDO 2/D6 | ENDO 1/D8-R | ENDO 1.2/D8 | ENDO 10/D8 | ENDO 10/D8-R |
|---|---|---|---|---|---|---|---|---|---|
| **ORDER CODE** | | O3PS0382002 | O3PS0341002 | O3PS0362502 | O3PS0362702 | O3PS0386501 | O3PS0386001 | O3PS0388001 | O3PS0388501 |
| Measuring Range | mm | 0.22 | 1 | 1.5 | 2 | 1 | 1.2 | 10 | 10 |
| Working Distance | mm | 4.8 | 1 | 0.9 | 5.2 | 0.6 | 3.5 | 11.3 | 8.4 |
| Numerical Aperture | | 0.39 | 0.16 | 0.19 | 0.18 | 0.37 | 0.36 | 0.1 | 0.1 |
| Max. Slope Angle | ° | ±21.5 | ±7.5 | 10 | 10 | 20 | ±19.5 | ±4.5 | ±4.5 |
| Axial or Radial model | | Axial | | | Axial | Radial | Axial | | Radial |
| Max. Linearity Error* | µm | ±0.04 | ±0.15 | ±0.15 | ±0.16 | ±0.06 | ±0.06 | ±0.45 | ±0.45 |
| Static Noise* | nm | 15 | 60 | 95 | 100 | 35 | 35 | 300 | 300 |
| Axial resolution (Averaginng 10)* | nm | 5 | 20 | 570 | 600 | 210 | 11.67 | 100 | 100 |
| Lateral Resolution | µm | 2.5 | 6.5 | 10 | 8.5 | 3.4 | 3.4 | 17 | 17 |
| Spot Size | µm | 4.6 | 13.2 | 19.5 | 16.5 | 6.7 | 6.8 | 31 | 31 |
| Photometric Efficiency | | 16 | 10 | 29 | 24 | 13 | 19 | 36 | 24 |
| Min. Measurable Thickness | µm | 25 | 300 | 200 | 180 | 60 | 60 | 500 | 500 |
| Length | mm | 102 | 64 | 95.1 | 82.2 | 77.6 | 74 | 102 | 108.7 |
| Diameter | mm | 8 | 4 | 6 | 6 | 8 | 8 | 8 | 8 |
| Weight | g | 20 | 3.5 | 13 | 12 | 16 | 16 | 23 | 23 |

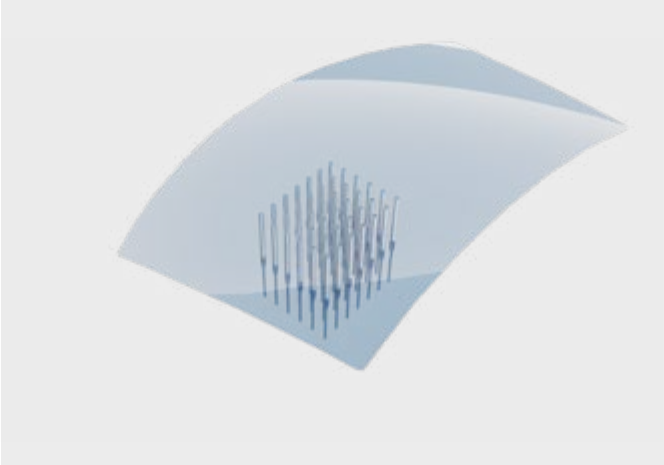
# MODELS AND ACCESSORIES
# ENDO

## APPLICATION EXAMPLES

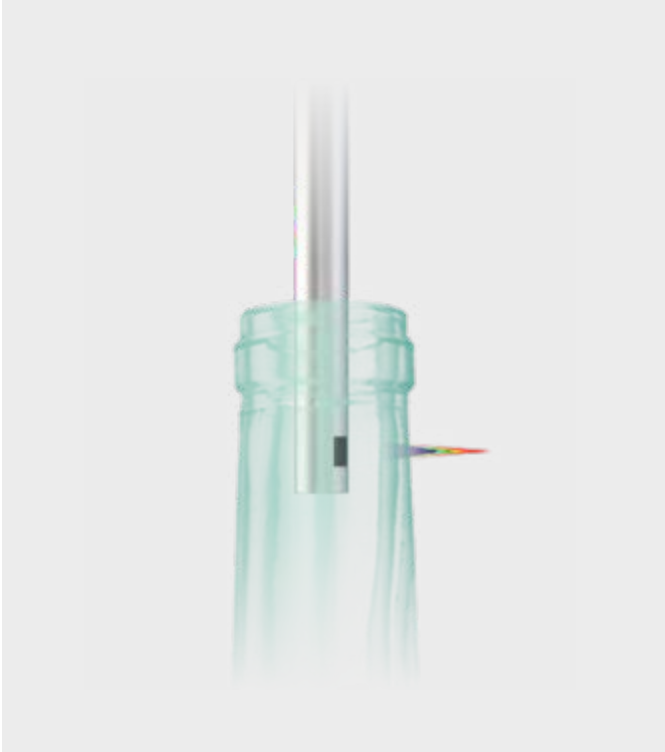


### VACUUM APPLICATION: PART POSITIONNING

Endo™ sensors are suitable to vacuum environment where space is limited, like CVD, PVD, EUV photolithography & E-beam chambers



Endo sensors are perfectly suitable for the Head Up Display inspection on windshields



### SMALL VOLUME MEASUREMENTS: BOTTLE NECK

Endo sensors perfectly suit measurements in small rooms like small diameter holes, bottle necks. They have been designed to measure inner diameters, thicknesses, roughness (Ra >= 150 nm), liquid height (volume) with nanometric resolution.

"T" handles available from Ø>200mm

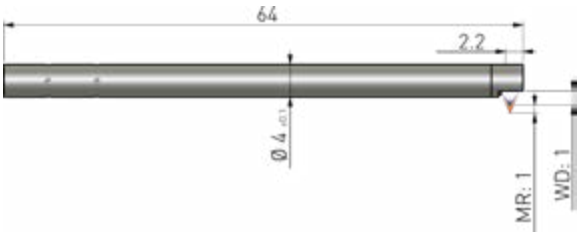
## DIMENSIONS (MM)

### ENDO 0.2/D8™

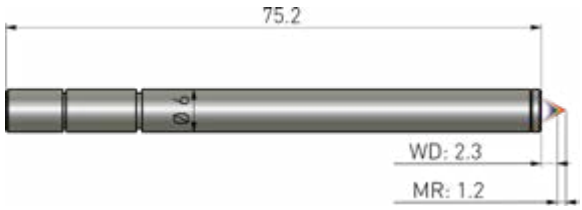

### ENDO 0.3/D6™


### ENDO 0.3/D6-R™


### ENDO 1/D4-R™

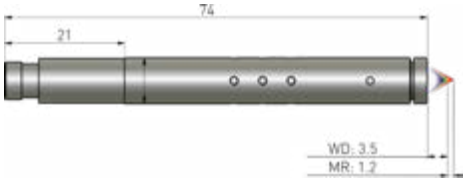



### ENDO 1.2/D6™

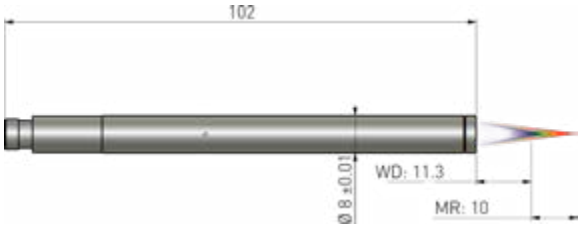



### ENDO 1.5/D6-R™

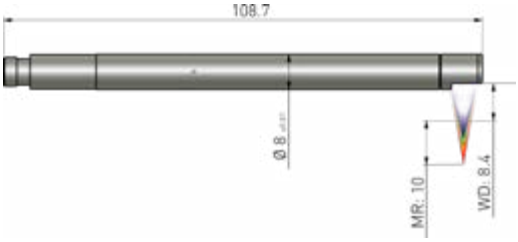

### ENDO 1.2/D8™




### ENDO 10/D8™




### ENDO 10/D8-R™



# MODELS AND ACCESSORIES
## OP

OP is the point sensor for applications where long working distances are required. In fact, the optical architecture of OP model allows to project the measuring spot on the measuring target up to 500mm far away from the sensor.

With a long working distance, the OP sensor can safely measure hot materials or in remote positions outside protective/safety barriers. OP is the perfect model for glass, bottles production or automotive applications.

Similar to its companion line CL-MG, OP heads are immune to shadow effects. OP heads work excellent on demanding materials, like black carbon, glass, ceramics or polished metals.

OP heads can be connected to ChromaPoint controllers, like Zenith or Lightmaster.

| MODEL | UNIT | OP 300VM | OP300-VM-R | OP 850-I | OP 850-T** | OP 1 000 | OP 2400-I |
|---|---|---|---|---|---|---|---|
| **ORDER CODE** | | O3PS1400021 | O3PS1400022 | O3PS1400813 | On demand | O3PS1400003 | O3PS1402401 |
| Measuring Range | mm | 0.22 | 0.22 | 0.85 | 0.85 | 1 | 2.4 |
| Working Distance | mm | 5 | 4.4 | 12.3 | 12.6 | 23.9 | 11.8 |
| Numerical Aperture | | 0.5 | 0.5 | 0.48 | 0.47 | 0.45 | 0.46 |
| Max. Slope Angle | ° | ±25 | ±25 | ± 28 | ±28 | ±24 | 27 |
| Axial or Radial model | | Axial | Radial | | | Axial | |
| Max. Linearity Error* | µm | ±0.04 | ±0.04 | ± 0.07 | ±0.08 | ±0.15 | ±110 |
| Static Noise* | nm | 12 | 12 | 45 | 25 | 30 | 43 |
| Axial resolution (Averaging 10)* | nm | 4 | 4 | 0.27 | 0.15 | 10 | 0.26 |
| Lateral Resolution | µm | 3.2 | 3.2 | 4.2 | 2 | 2.2 | 4.5 |
| Spot Size | µm | 6.4 | 6.4 | 7.5 | 3.9 | 4.4 | 10.1 |
| Photometric Efficiency | | 34 | 24 | 54 | TBD | 15 | 60 |
| Min. Measurable Thickness | µm | 25 | 25 | 50 | 40 | 25 | 60 |
| Length | mm | 127 | 128 | 149 | 161.5 | 254.1 | 107 |
| Diameter | mm | 15 | 15 | 35 | 35 | 50 | 27 |
| Weight | g | 27 | 39 | 180 | TBD | 753 | TBD |

| MODEL | UNIT | OP 2400-T | CL4-LWD | OP 6 000 | OP 8 000 | OP 10 000 | OP 10 000-R |
|---|---|---|---|---|---|---|---|
| **ORDER CODE** | | O3PS1402402 | O3PS014LWD0 | O3PS1400004 | O3PS1400005 | O3PS1400006 | O3PS1400007 |
| Measuring Range | mm | 2 | 4 | 6 | 8 | 10 | 10 |
| Working Distance | mm | 11.8 | 40 | 28 | 39 | 66.9 | 66.9 |
| Numerical Aperture | | 0.46 | 0.36 | 0.39 | 0.295 | 0.2 | 0.2 |
| Max. Slope Angle | ° | 27 | ±21 | ±22 | ±16 | ±11 | ± 11 |
| Axial or Radial model | | | | Axial | | | 90° folded |
| Max. Linearity Error* | µm | ±130 | ±0.3 | ±0.3 | ±0.35 | ±0.51 | ± 0.51 |
| Static Noise* | nm | 43 | 110 | 100 | 160 | 280 | 280 |
| Axial resolution (Averaging 10)* | nm | 0.26 | 660 | 33.333 | 53.333 | 93.333 | 93.333 |
| Lateral Resolution | µm | 2.5 | 4.3 | 6.25 | 16.5 | 25 | 25 |
| Spot Size | µm | 5.1 | 8.6 | 12.5 | 33 | 50 | 50 |
| Photometric Efficiency | | 15 | 25 | 43 | 145 | 156 | 138 |
| Min. Measurable Thickness | µm | 60 | 110 | 200 | 300 | 425 | 425 |
| Length | mm | 128 | 167.4 | 205.5 | 139 | 189 | 152 |
| Diameter | mm | 27 | 50 | 60 | 40 | 50 | 50 |
| Weight | g | TBD | 470 | 760 | 365 | 525 | 674 |

*With ZenithTM Controller

## OP 10 000R – OP 42 000

## NCTP

| MODEL | UNIT | OP 12 000 | OP 30 000 | OP 35 000 | OP 42 000 | OP 100 000 | NCTP*** |
|---|---|---|---|---|---|---|---|
| **ORDER CODE** | | O3PS1400010 | O3PS1400008 | O3PS1400011 | O3PS1400012 | O3PS1400014 | O3PS1400009 |
| Measuring Range | mm | 12 | 30 | 35 | 42 | 100 | 2 |
| Working Distance | mm | 46 | 220 | 62 | 530 | 451 | 54.5 |
| Numerical Aperture | | 0.25 | 0.095 | 0.33 | 0.052 | 0.08 | 0,35/0,17 |
| Max. Slope Angle | ° | ± 14 | ± 5 | ±17 | ±2.5 | ±5 | ±18/9 |
| Axial or Folded Model | | | | Axial | | | |
| Max. Linearity Error* | µm | ± 0.4 | ± 1.5 | ±1.65 | ±30 | ±16 | ±2 |
| Static Noise* | nm | 225 | 750 | 600 | 6000 | 5000 | 1000 |
| Axial resolution (Averaginng 10)* | nm | 75 | 250 | 200 | 2000 | 1666.667 | 6000 |
| Lateral Resolution | µm | 14 | 48 | 13 | 53 | 55 | 15 |
| Spot Size | µm | 32.5 | 96 | 26 | 106 | 110 | 30 |
| Photometric Efficiency | | 100 | 117 | 30 | 90 | >150 | 73 |
| Min. Measurable Thickness | µm | 550 | 2000 | 1200 | 2500 | 2500 | 500 |
| Length | mm | 58.3 | 168 | 300.3 | 327 | 348.9 | 210 |
| Diameter | mm | 36 | 59 | 80 | 85 | 120 | 80/35 |
| Weight | g | 130 | 405 | 2200 | 1700 | 4200 | 1025 |

*With ZenithTM Controller

** OP 850-T preliminary specifications

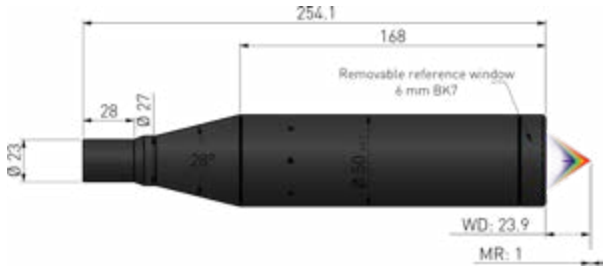
# MODELS AND ACCESSORIES
## OP

### DIMENSIONS (MM)

OP 300-VM™

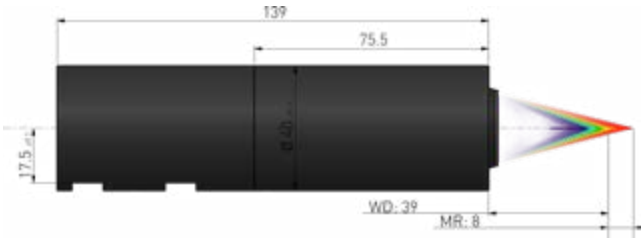

OP 300-VM-R™


OP 1000™

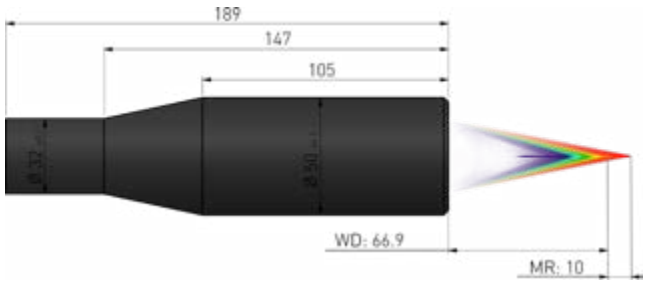



OP 6000™

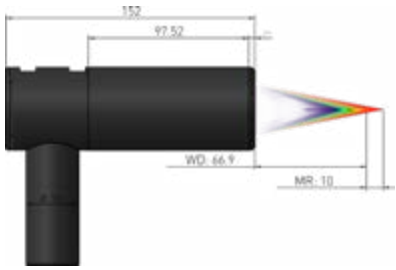
OP 8000™



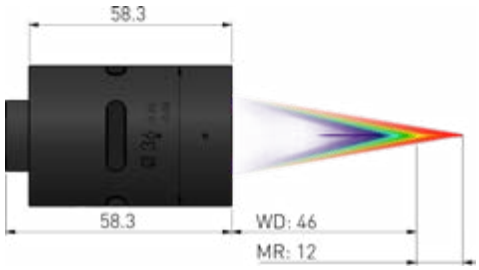

OP 10 000™



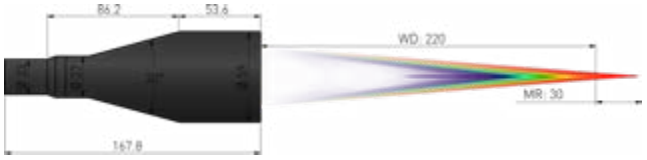

OP 10 000-R™



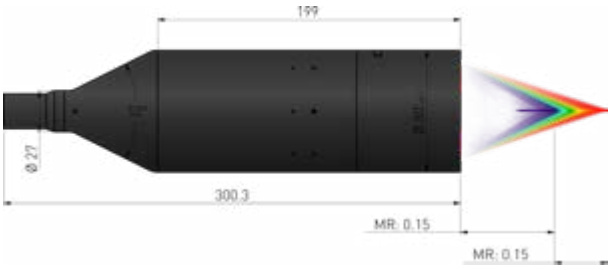

OP 12 000™



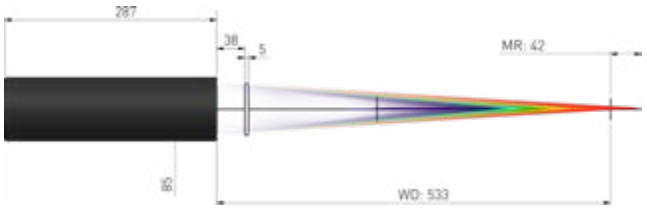
### OP 30 000™



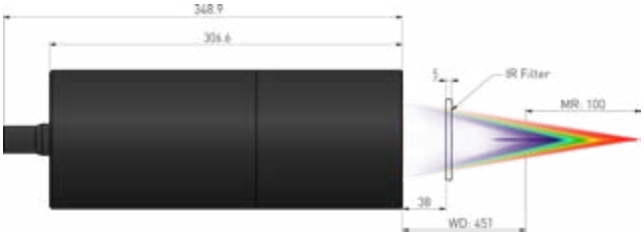

### OP 35 000™



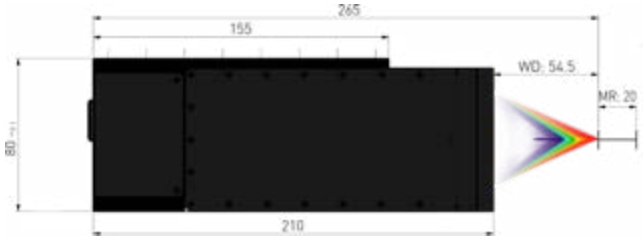

### OP 42 000™




### OP 100 000™




### NCTP™




### OP 850-T™


### OP 850-I™

# MODELS AND ACCESSORIES
## EVEREST

EVEREST is the premium performance point sensor, capable to accomplish high demanding tasks, like surface profile acquisition. In fact, it is designed to work at a short distance to the target material. Moreover, thanks to its super-large optic it can easily collect scattered light during roughness measurement or it is perfect for analysis of curved surfaces. In addition it is an excellent solution for application with high slope surfaces, up to 88°.

EVEREST is capable of measurement accuracy up tp ± 0.075 µm

EVEREST series is composed of three different models with a measuring range of 1 mm, 2 mm, 6 mm

| MODEL | UNIT | EVEREST K1 | EVEREST K2 | EVEREST K6 |
|---|---|---|---|---|
| **ORDER CODE** | | O3PS0470001 | O3PS0472001 | O3PS0461001 |
| Measuring Range | mm | 1 | 2 | 6 |
| Working Distance | mm | 18.5 | 19.2 | 13.7 |
| Numerical Aperture | | 0.7 | 0.67 | 0.55 |
| Max. Slope Angle | ° | ±44 | ±42 | ±32 |
| Axial or Radial model | | | Axial | |
| Max. Linearity Error* | µm | ±0.06 | ±0.12 | ±0.25 |
| Static Noise* | nm | 19 | 38 | 100 |
| Axial resolution (Averaginng 10)* | nm | 6.33 | 12.67 | 33.33 |
| Lateral Resolution | µm | 2.5 | 3.8 | 5.2 |
| Spot Size | µm | 5 | 7 | 10.4 |
| Photometric Efficiency | | 34 | 52 | 26 |
| Min. Measurable Thickness | µm | 50 | 100 | 150 |
| Length | mm | 260.5 | 243.4 | 136.3 |
| Diameter | mm | 82 | 82 | 47 |
| Weight | g | 1400 | 1250 | 360 |

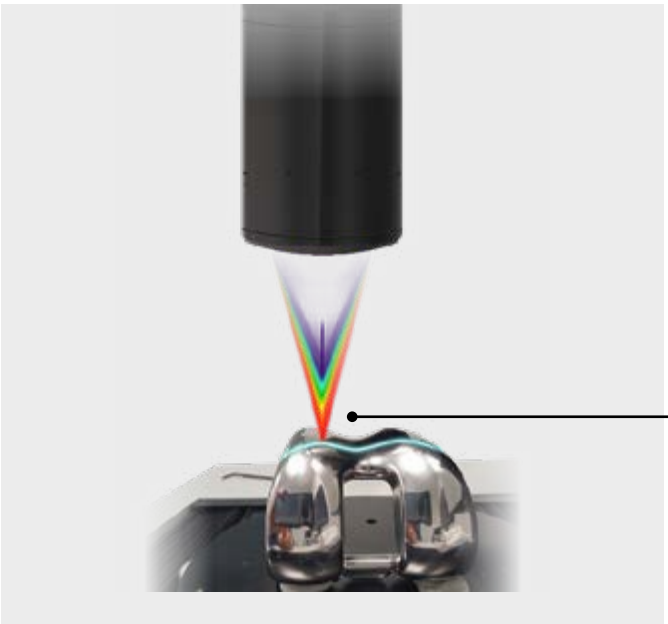
## APPLICATION EXAMPLES

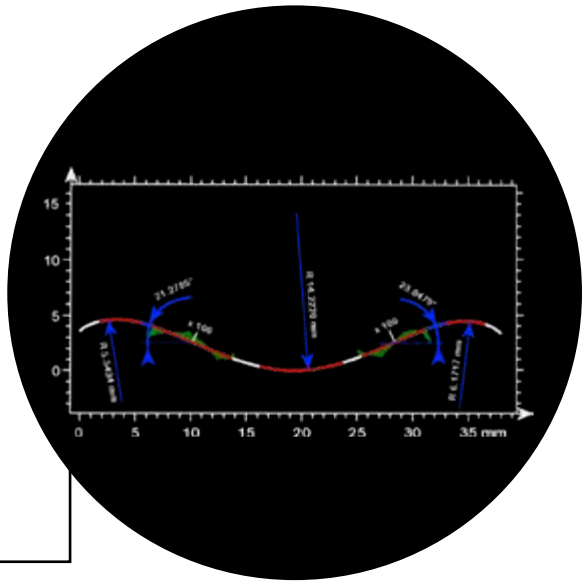
### MEMSENSORS & MEDICAL - MICROFLUIDIC CHANNELS

EVEREST™ sensors, thanks to their large Numerical Aperture (NA), the large Measuring Range (MR) & their lateral resolution in µm, can measure all dimensions of micro-fluidic channels, Lab-on-Chip, MEMS, Displays & Solid lighting (LED, OLED, TFT, Electronic ink ...), Integrated Optics, RF chips ...

### 3C - ELECTRONIC COMPONENTS

EVEREST™ sensors have been designed to measure components on boards, where their large Measuring Range, high accuracy & their ability to measure the largest set of materials without shadowing effect is key.






### MEDICAL - KNEE IMPLANTS

EVEREST™ sensors, thanks to their ability to measure steep slopes even if mirror polished, can measure medical implant shape even with simple set-up.

Everest can also measure roughness Ra ≥ 0.4 µm.

"T" handles available from Ø>200mm

# MODELS AND ACCESSORIES
## ZENITH

ZENITH Controller is the new and also pivotal model in the line. It is available with 1 or 2 channels and also with 2 different levels of performance, namely acquisition frequency 5 kHz and 10 kHz. ZENITH is compatible with any Confocal Point Head in the range, as CL-MG, OP, ENDO, EVEREST.

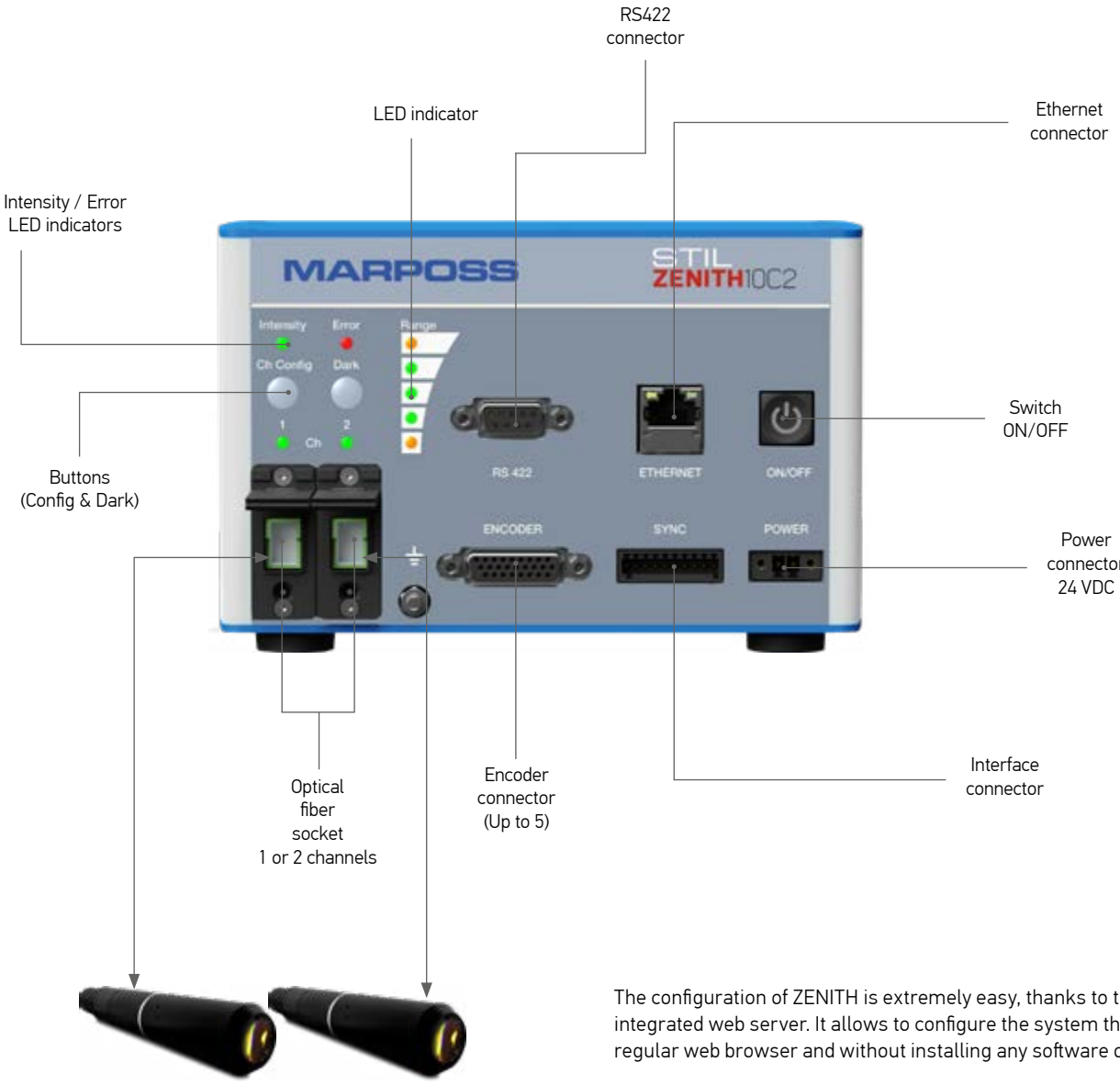
ZENITH comes with its dedicated software suite, composed by the ChromaPoint manager and a Software Development Kit, allowing both effective control of the sensor and a fast integration with the automation system.

Ethernet and RS422 communication as well as Profinet interfaces are integrated. This integration allows the system to communicate with a variety of different devices or networks, which is essential in environments that require flexibility and compatibility with diverse industrial systems. Ethernet interface is optimal for general networking and communication. RS422 is normally used for long-distance and reliable serial communication, while Profinet for high-speed, real-time communication in industrial automation systems. This kind of integration is particularly beneficial in industrial automation, robotics, and control systems, where multiple communication standards are needed to support a range of devices and ensure interoperability across different platforms.



| MODEL | ZENITH 5C1 | ZENITH 5C2 | ZENITH 10C1 | ZENITH 10C2 |
|---|---|---|---|---|
| **ORDER CODE** | 08ST17E1003 | 08ST17E1101 | 08ST17E1201 | 08ST17E1301 |
| Technology | Chromatic Confocal | | | |
| Source | White LED | | | |
| Number of channels | 1 | 2 (simultaneous) | 1 | 2 (simultaneous) |
| Acquisition Frequencies | Up to 5 kHz | | Up to 10 kHz | |
| Measuring range | Sensor head specifications | | | |
| Axial resolution | >0,25 µm* | | | |
| Calibration table memory | Up to 20 | | | |
| Distance Measurement | 1 peak among 4: First/Second/Third/Fourth/Last/Strongest | | 1 peak among 8: First/Second/.../Seventh/Eighth/Last/Strongest | |
| Thickness Measurement | 2 strongest peaks | | 2 peaks among 8 | |
| Multipeak Measurement | Not available | | First 5 peaks | |
| Advanced features | Web configurator/ AutoExposureTime/Computed data/ EncoderTrigger/ Master&Slave mode... | | Web configurator/ Multipeak / Network Discovery App/ AutoExposureTime/Computed data/EncoderTrigger/ Master&Slave mode... | |
| Digital Output | Ethernet (GigE) and RS422 | | | |
| Synchronization | Trigger in (5V TTL or -24Vdc or encoder) & Trigger out (5V TTL) | | | |
| Other Input/Output | Up to 5 encoder inputs (differential TTL) | | | |
| Fiber connection | E2000/APC | | | |
| Operating temperature | +5 to + 50°C | | | |
| Storage temperature | -20 to +70°C | | | |
| Relative humidity | 5 to 80% RH without condensation | | | |
| Protection type | IP 40 | | | |
| Compliance | -Electromagnetic compatibility (EN 61326-1)<br>-Cold operation at +5°C (CEI EN 60068-2-1 A)<br>-Stationary hot humid operation at +45°C and 93% RH (CEI EN 60068-2-78)<br>-Cold storage at -20°C (CEI EN 60068-2-1 A)<br>-Dry hot storage at +65°C (CEI EN 60068-2-2 B)<br>-5G Sinusoidal vibrations (CEI EN 60068-2-6 FC)<br>-Degree of tightness IP40 (CEI EN 60529) | | | |
| Power Supply | 24 VDC | | | |
| Maximum/Usual Consumption | 25W/10W | 25W/15W | 25W/10W | 25W/15W |
| Dimensions (mm) | 169 x 110 x 88 | | | |
| Weight | 1 kg | 1.2 kg | 1 kg | 1.2 kg |

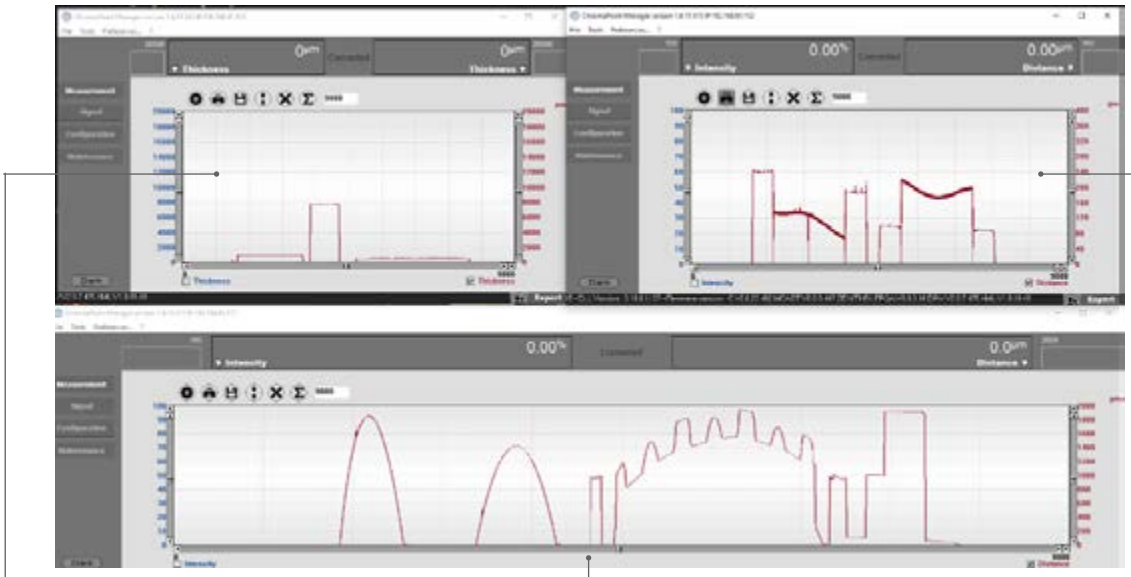
* Full resolution on request, please contact your local sales representative



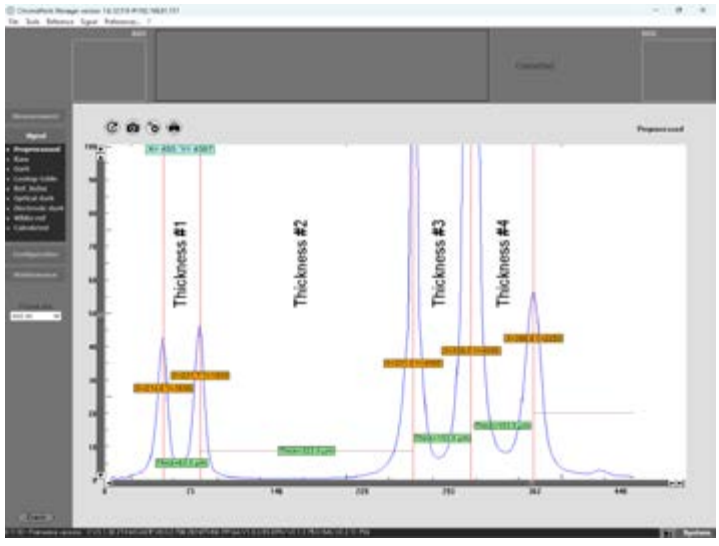

The configuration of ZENITH is extremely easy, thanks to the integrated web server. It allows to configure the system through a regular web browser and without installing any software on the PC.

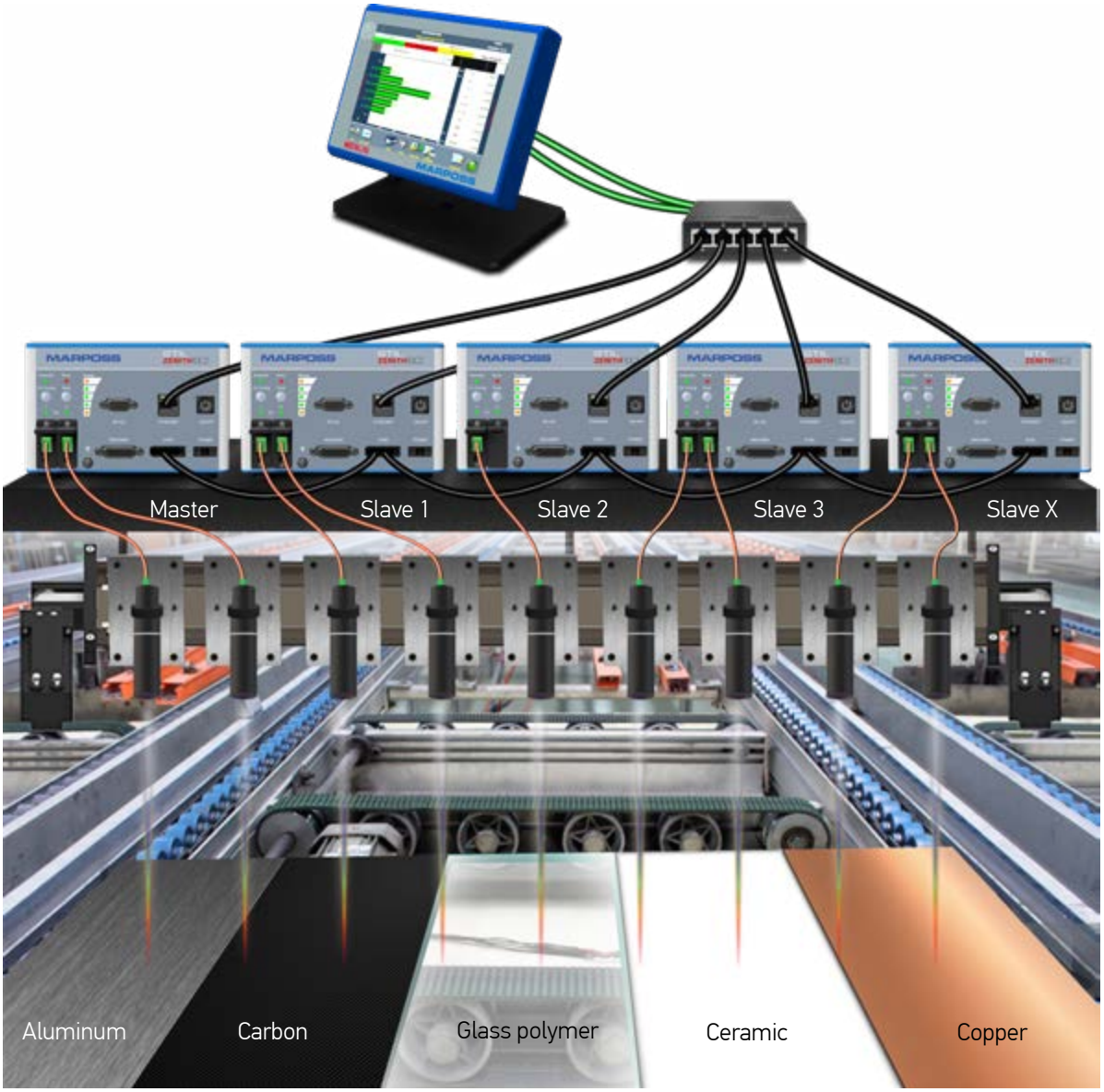

ZENITH SDK tool set had been developed with most valuable and efficient software environments C++, C, and C#, with state of the art software development technologies. Integration examples are available.

## APPLICATION EXAMPLES



Thickness Profile Roughness


Master
Slave 1
Slave 2
Slave 3
Slave X
Aluminum
Carbon
Glass polymer
Ceramic
Copper


MARPOSS


MARPOSS

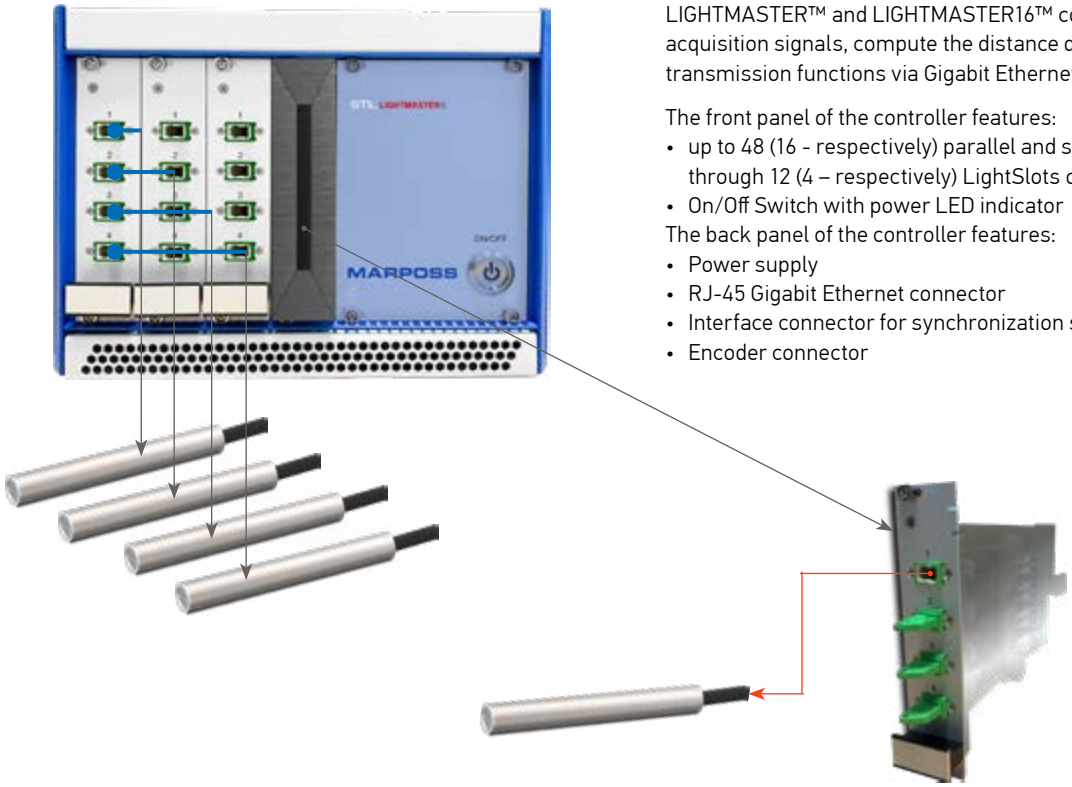
# MODELS AND ACCESSORIES
## LIGHTMASTER

The LightMaster is a multi-channel controller for large networks of chromatic confocal point-sensor heads, up to a maximum of 48 units.
Each single channel of the LightMaster can control and manage a single point-sensor head. The channels can be installed on the LightMaster through separate boards, having 4 channels each one.

The LightMaster standard version accommodates up to 12 separate slots, 4 channels each, for a total of 48 sensors. The lightMaster16 is the compact and cost-effective version, that accommodates up to 4 different slots, 4 channels each, for a total of 16 sensors.

LightMaster is available with 2 different levels of acquisition frequency, namely 1300Hz and 2000Hz. It also has a trigger input, Ethernet interface for easy integration, and can be easily mounted on a production line.

| MODEL | LIGHTMASTER S | LIGHTMASTER F | LIGHTMASTER16 S | LIGHTMASTER16 F |
|---|---|---|---|---|
| **ORDER CODE** | O8ST08M0001 | O8ST08M0002 | O8ST08M003 | O8ST08M004 |
| Technology | Chromatic Confocal | | | |
| Source | White LED | | | |
| Number of channels | Up to 48 (simultaneous) | | Up to 16 (simultaneous) | |
| Acquisition Frequency | Up to 1300 Hz | Up to 2000 Hz | Up to 1300 Hz | Up to 2000 Hz |
| Distance Measurement | First/Second/Third/Fourth/Last/Strongest peak | | | |
| Thickness Measurement | 2 Peaks among 5 | | | |
| Advanced features | Exposure time /Encoder trigger... | | | |
| Digital Output | Ethernet (GigE) | | | |
| Synchronization | Trigger in&out | | | |
| Other Input/Output | Encoder input (1) | | | |
| Fiber connection | E2000/APC | | | |
| Operating temperature | +5 to +50°C | | | |
| Storage temperature | -30 to +70°C | | | |
| Relative humidity | 5 to 80% RH without condensation | | | |
| Protection type | IP20 | | | |
| Compliance | EN 61010-1; EN 61326-1 | | | |
| Power supply | 100-240 VDC | | 24 VDC | |
| Maximum/Usual Consumption | 120W / 70W | | | |
| Dimensions | 502 x 440 x 184 mm | | 436 x 236 x 183 mm | |
| Weight | 11 kg | | 6.2 kg | |



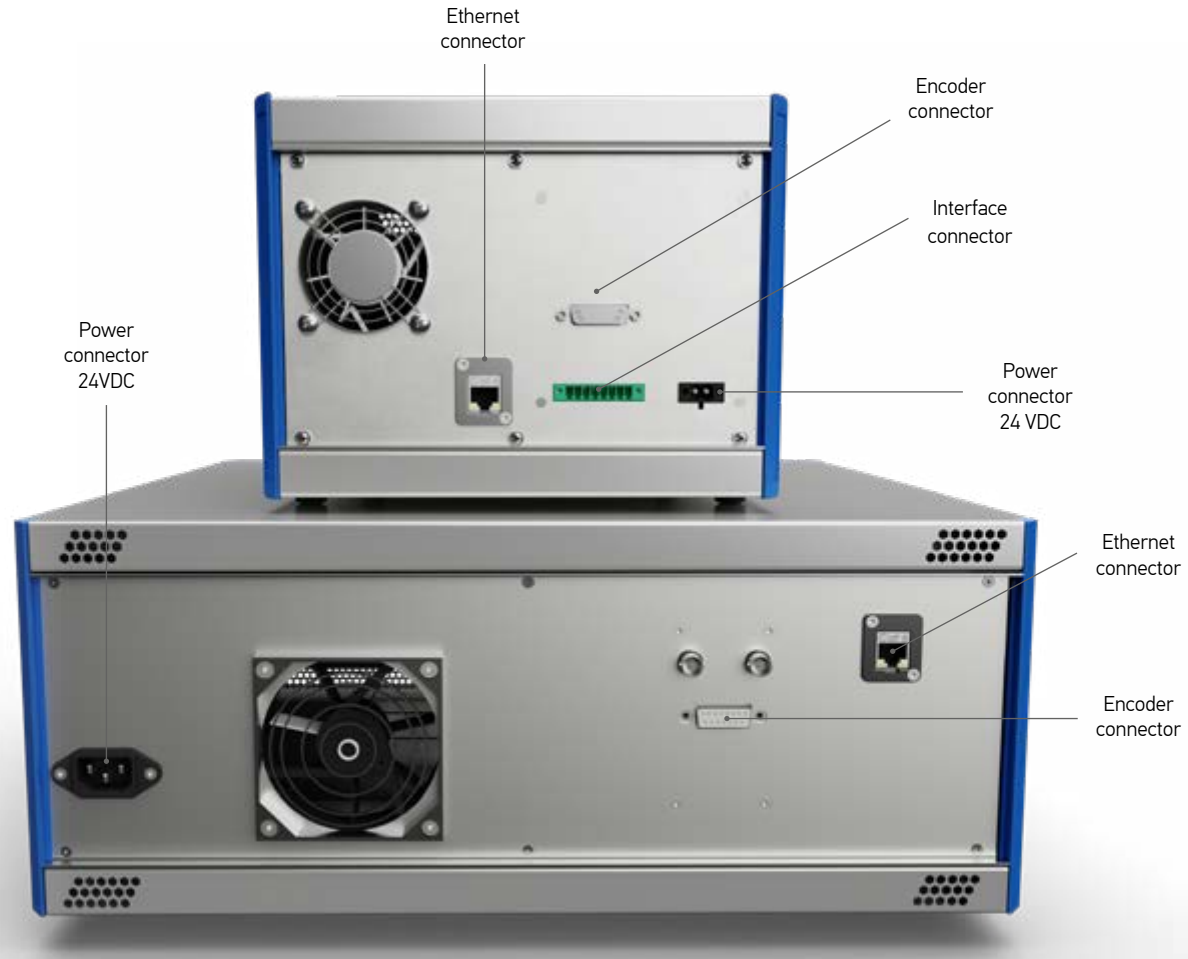

LIGHTMASTER™ and LIGHTMASTER16™ controllers manage acquisition signals, compute the distance data, and provide data transmission functions via Gigabit Ethernet link.

The front panel of the controller features:

- up to 48 (16 - respectively) parallel and simultaneous acquisitions through 12 (4 – respectively) LightSlots of 4 optical lines each
- On/Off Switch with power LED indicator

The back panel of the controller features:

- Power supply
- RJ-45 Gigabit Ethernet connector
- Interface connector for synchronization signals
- Encoder connector

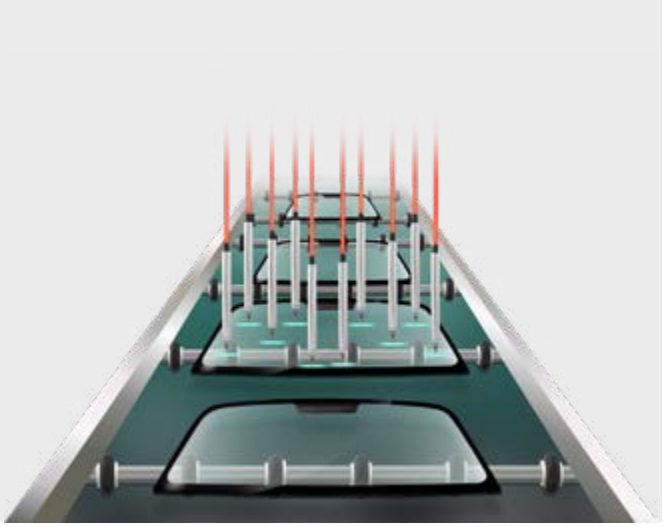


# ACCESSORIES
## LIGHTMASTER

| MODEL | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | E50-3 Optical fiber - standard cladding - Length: 3 m or 5 m or 10m; External Diam.: 2.8 mm<br>Minimum bending radius in : Static Mode: 25 mm - Dynamic Mode: 40 mm | 3 m - O67SE503001<br>5 m - O67SE505001<br>10 m - O67SE510001 |
|  | E50-3-MA Optical fiber - armored fiber - Length: 3 m or 5 m or 10 m; External Diam.: 3 mm<br>Minimum bending radius in : Static Mode: 30 mm - Dynamic Mode: 60 mm | 3 m - O67SE503M02<br>5 m - O67SE505M02<br>10 m - O67SE510M02 |
|  | E50-3-M Optical fiber - stainless steel cladding - Length: 3 m or 5 m or 10 m or 15 m or 20 m ; External Diam.: 6.2 mm<br>Minimum bending radius in : Static Mode: 40 mm - Dynamic Mode: 40 mm | 3 m - O67SE503M01<br>5 m - O67SE505M01<br>10 m - O67SE510M01<br>15 m - O67SE515M01<br>20 m - O67SE520M01 |

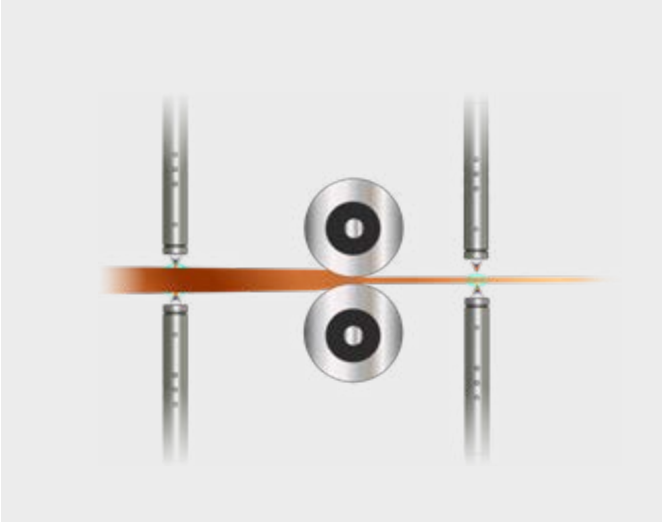
| MODEL | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | Optical connector cleaner for Chromapoint sensors | O15ST000028 |

## APPLICATION EXAMPLES



### AUTOMOTIVE - CAR GLASS QUALITY CONTROL

- Windshield shape and thicknesses measurements
- Glass shape & thickness measurements
- Screen's shape control measurements with single or multi-points sensor heads
- AIR GAP & PVB measurement



### R2R – ROLL ADJUSTMENTS

In cold calendering process, measuring thickness of foil after the rolls offers the ability to adjust in real time roll spacing & tilt in order to deliver better characteristics uniformity on final foil. Measuring before the rolls allows to anticipate foil thickness variations to better adjust roll pressure.

Similarly, in lamination processes, measuring films before & after the rolls allows a fine control of final product characteristics

### 3C – CELL PHONE CASE

- Dimensions & flatness,
- Thickness,
- Machined step heights,
- Roughness

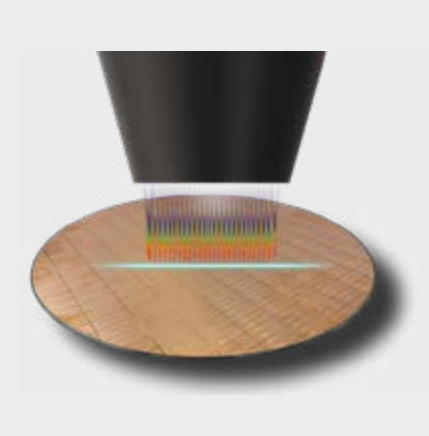
# CHROMATIC CONFOCAL LINE SENSORS

MPLS, standing for Multipoint Line System, is a controller dedicated to Line Sensor Heads in the Chromatic Confocal portfolio. As per its name, Line Sensors perform an optical line pattern, obtained by the projection of several separate optical points, on the target surface. Different models of line sensors are available, with an increasing number of side-by-side points, from 45 up to 180.

MPLS interconnects optical sensors through its 8 optical ports, named MP0, each one performing 45 separate optical channels. By using the different optical ports the MPLS Controller can operate with a variable number of sensors, from 1 to 4.

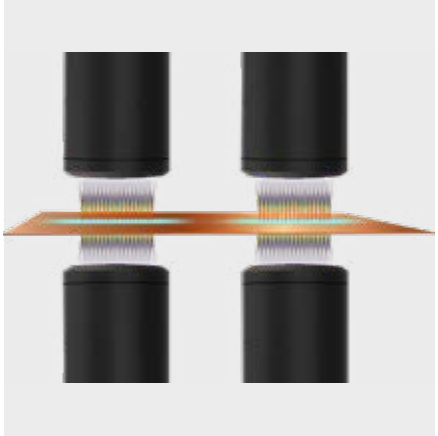
MPLS is provided of the necessary interfaces to develop demanding applications, like input and output signals, triggers and encoder for dynamic measurements. Gigabit Ethernet is also available.


**MPLS** allows multiple combinations on the same controller: 1 sensor with 180 points, or 2 sensors of 90 points each, or 4 sensors of 45 points each



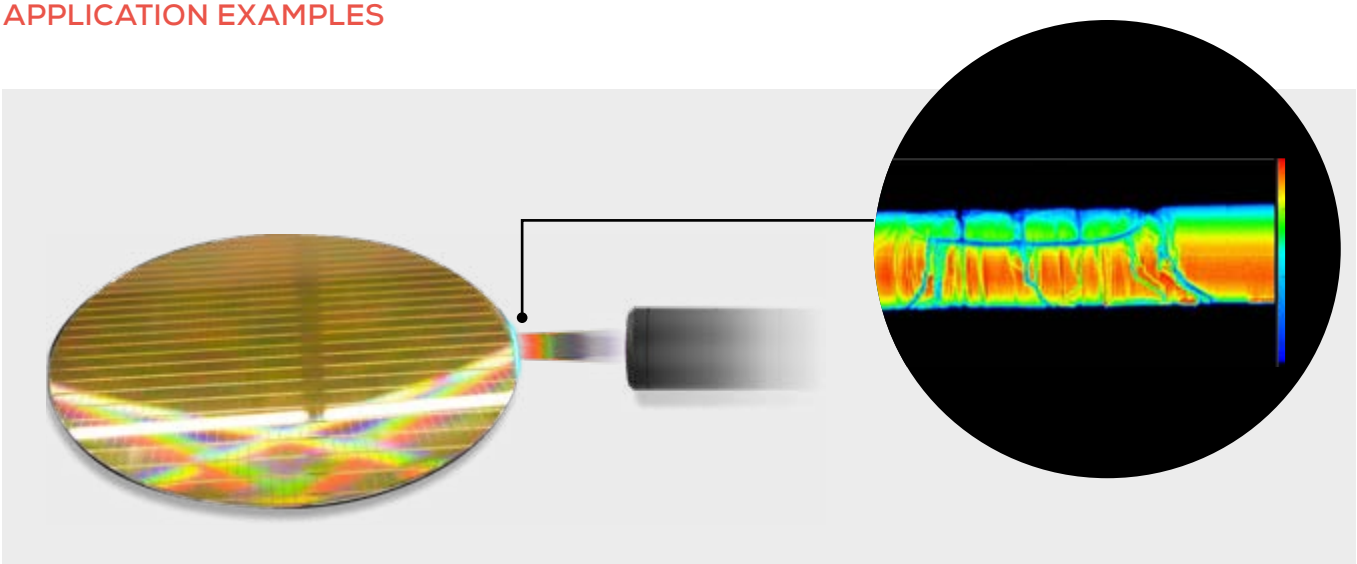
1 X 180 POINTS

2 X 90 POINTS



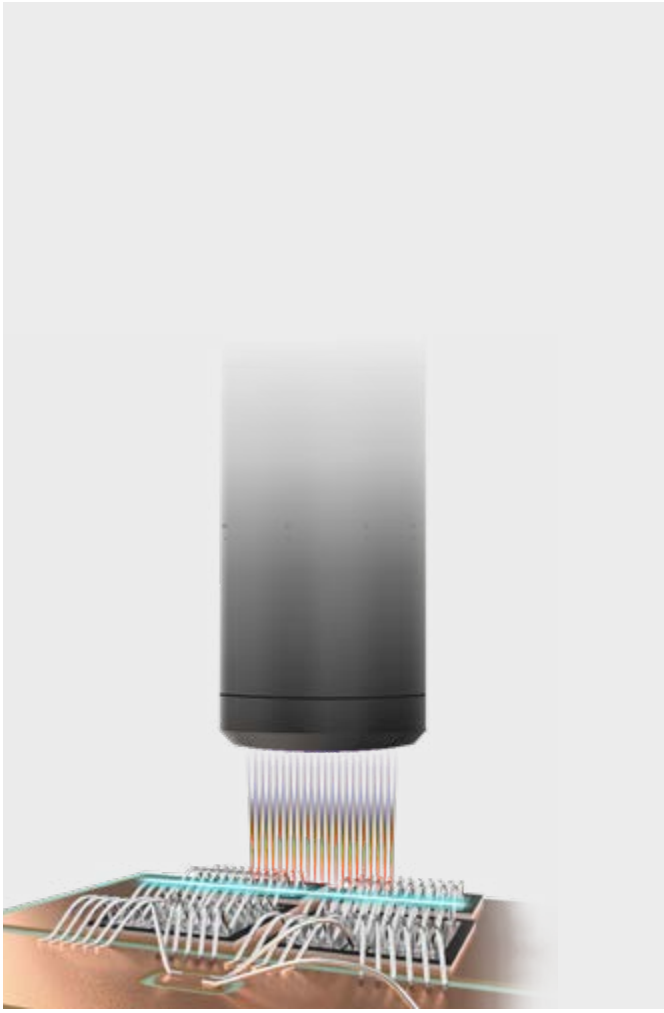
4 X 45 POINTS

## APPLICATION EXAMPLES



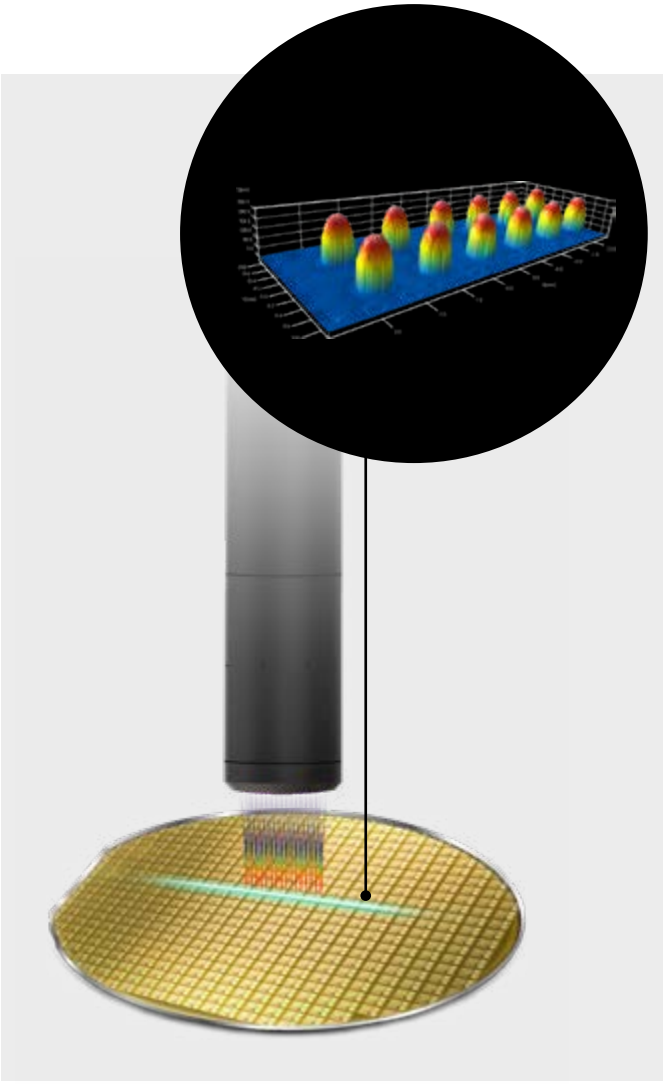
### EDGE KRACK CONTROL WITH MICROVIEWTM

MPLS is the right solution to measure edge shape & defects



### CONTROL OF GOLD WIRES OF COMPONENTS WITH MICROVIEWTM

MPLS with his high resolution allows wires measurements in order to detect and measure defective wires : missing wire, touching wires, mis-bent wires ...



### BUMPS INSPECTION WITH MICROVIEWTM

MPLS is the right tool to measure bumps height, bump top shapes, top flatness & measure any defect

# MODELS AND ACCESSORIES
## VIEW LINE

ChromaLine sensor is the sensor scanning through array of point allocated side-by-side and so generating a linear optical pattern. A range of models is available, featuring from 45 up to 180 separate points.

Being able to acquire multiple points simultaneously, it is the perfect solution for scanning and inspecting large surfaces at high speed.

With a maximum linear error of 0.04 µm, steep slope angle of +/- 88° and a 0.75 NA, these sensors offer high axial resolution. ChromaLine sensors are compatible with all MPLS versions. These advanced sensors provide reliable and durable control solutions for various industrial settings.

| MODEL | UNIT | WIREVIEW | MICROVIEW | DEEPVIEW | SUPERVIEW | MAGICVIEW |
|---|---|---|---|---|---|---|
| **ORDER CODE MPLS-DM** | | OPSTM710002 | OPSTM706002 | OPSTM707002 | OPSTM711002 | OPSTM712001 |
| **ORDER CODE 45 POINTS** | | O3PS1800451 | O3PS1200451 | O3PS0200451 | O3PS1700451 | O3PS2000451 |
| **ORDER CODE 90 POINTS** | | O3PS1800901 | O3PS1200901 | O3PS0200901 | O3PS1700901 | O3PS2000901 |
| **ORDER CODE 180 POINTS** | | O3PS1801801 | O3PS1201801 | O3PS0201801 | O3PS1701801 | O3PS2001801 |
| Line Length | mm | 1.51 | 1.8 | 4.2 | 12.85 | 4.2 |
| Measuring Range 2 kHz | mm | 0.9 | 0.5 | 2.6 | 2 | 6 |
| Measuring Range 4 kHz | mm | 0.45 | 0.23 | 1.15 | 0.9 | / |
| Measuring Range 6 kHz | mm | 0.24 | 0.12 | 0.65 | 0.5 | / |
| Working Distance | mm | 7.8 | 10.1 | 19.5 | 11.3 | 13.4 |
| Numerical Aperture | | 0.75 | 0.5 | 0.37 | 0.33 | 0.65 |
| Max. Sample Slope | ° | ± 46 | ± 30 | ± 20 | ± 17 | 38 |
| Pitch 45 pts | µm | 34 | 40.4 | 94 | 287.2 | 96 |
| Pitch 90 pts | µm | 17 | 20.2 | 47 | 143.6 | 48 |
| Pitch 180 pts | µm | 8.5 | 10.1 | 23.5 | 71.8 | 24 |
| Max. Linearity Error | µm | ± 0.1 | ± 0.08 | ± 0.12 | ± 0.12 | 0.35 |
| Static Noise | nm | 150 | 100 | 300 | 300 | 400 |
| Axial Resolution | µm | 0.9 | 0.6 | 1.8 | 1.8 | 2.4 |
| Spot Size | µm | 3.2 | 3.8 | 8.8 | 27.2 | 9.2 |
| Homogeneity | nm | 200 | 125 | 400 | 400 | 0.7 |
| Min. Measurable Thickness | µm | 110 | 50 | 250 | 300 | 300 |
| Length | mm | 480.7 | 425.6 | 428.3 | 397.8 | 537.3 |
| Diameter | mm | 70 | 50 | 60 | 60 | 118 |
| Weight | kg | 2.2 | 1.6 | 2.8 | 2.55 | 7.2 |

# MODELS AND ACCESSORIES
## MPLS

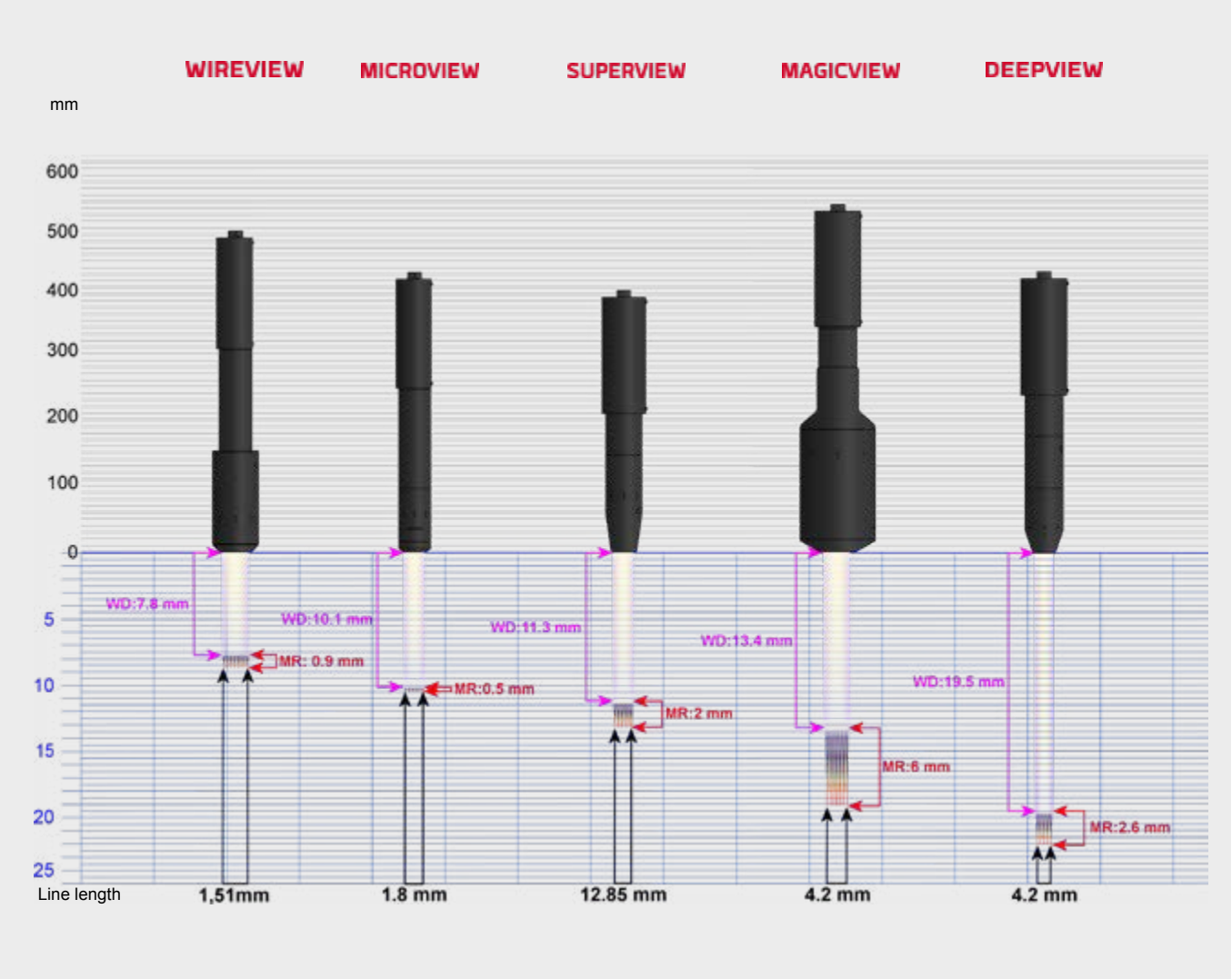

MPLS, standing for Multipoint Line System, is a controller dedicated to Line Sensor Heads in the Chromatic Confocal portfolio. As per its name, Line Sensors perform an optical line pattern, obtained by the projection of several separate optical points, on the target surface. Different models of line sensors are available, with an increasing number of side-by-side points, from 45 up to 180.

MPLS interconnects optical sensors through its 8 optical ports, named MP0, each one performing 45 separate optical channels. By using the different optical ports the MPLS Controller can operate with a variable number of sensors, from 1 to 4.

MPLS is provided of the necessary interfaces to develop demanding applications, like input and output signals, triggers and encoder for dynamic measurements. Gigabit Ethernet is also available.

| MODEL | MPLS-DM | MPLS |
|---|---|---|
| **ORDER CODE** | O8ST05M0003 | O8ST05M0004 |
| Technology | Chromatic Confocal | |
| Source | White LED | |
| Number of Points | 180 | (1) x 180 / (2) x 90 / (4) x 45 |
| Measuring Frequency | 200 Hz to 2000 Hz<br>(up to 6000 Hz decreasing MR) | |
| Distance Measurement | Highest/First/Second/Third/Fourth/Last Peak | |
| Thickness Measurement | 2 of 5 peaks | |
| Digital Output | GigaEthernet | |
| Synchronization | Trigger in&out | |
| Other Input/Output | Encoder Input (1) | |
| Sensor head connection | via fiber bundle 5 m long | Via optical connectors |
| Temperature In Use | +5 to + 50°C | |
| Storage Temperature | -30 to + 70°C | |
| Relative Humidity | 5 to 80% RH without condensation | |
| Protection Type | IP20 | |
| Compliance | EN 61010-1; EN 61326-1 | |
| Power Supply | 100-240 VAC | |
| Maximum/Usual Consumption | 120W/70W | |
| Dimensions (mm) | 497 x 448.9 x 184 | |
| Weight | 14.5 kg | |

# CHROMATIC CONFOCAL LINE SENSORS

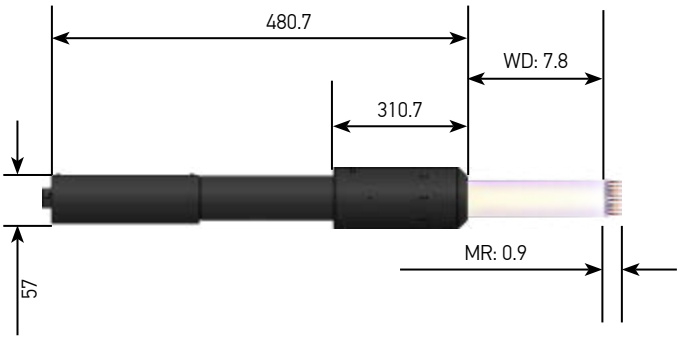



## ACCESSORIES

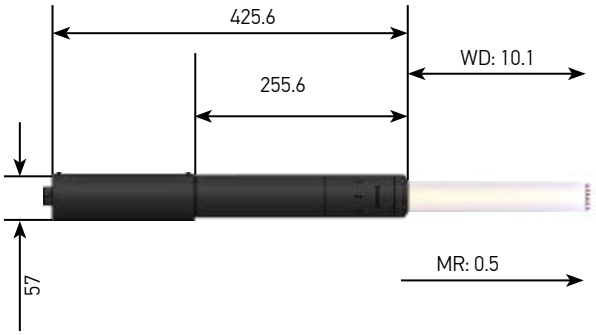
| MODEL | DESCRIPTION | ORDER CODE |
|---|---|---|
|  | Holder D50 for 50 mm Diameter probes (MicroView) | O15ST000005 |
| | Holder D60 for 60 mm Diameter probes (DeepView, Superview) | O15ST000006 |
| | Holder D70 for 70 mm Diameter probes (WireView) | O15ST000010 |
| | Holder D118 for 118 mm Diameter probes (MagicView) | O15ST000037 |

## DIMENSIONS (MM)

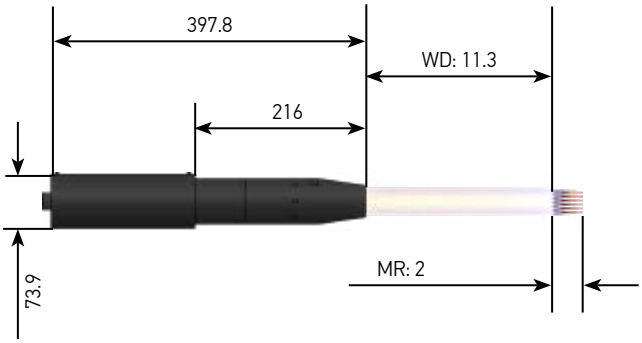
### WIREVIEW™



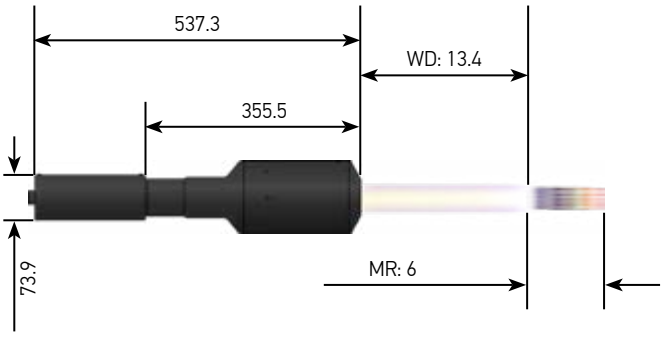

### MICROVIEWTM



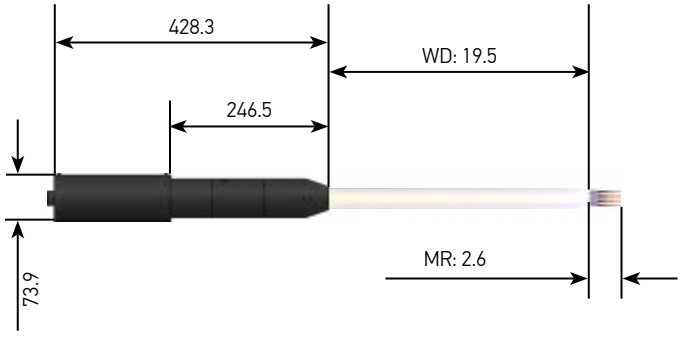

### SUPERVIEW™




### MAGICVIEW™




### DEEPVIEW™



# MODELS AND ACCESSORIES
## MC2

MC2 ChromaVision is a 3-dimensional camera, solution for high-precision microscopy and defect detection.

Based on Chromatic Confocal technology & optics, it offers 100x the Depth of Focus (DoF - also called Depth of Field) of similar microscopic magnifications, extended Field of View (FoV) with still high level lateral resolutions. Then, imaging with MC2 camera will require lower motion specifications and avoid auto-focus, saving valuable time. MC2 line varies from 1.34 mm up to 12.5 mm and lateral resolution from 0.43 µm up to 4.1 µm. This high speed 4K camera connectable with standard or private image treatment software is the ideal device for inline or near line quality controls for semiconductor wafers, consumer electronics and micromechanics components

Camera JAI SW-4000 high performance

Frame grabber

Combined camera and optical sensors adaptated to the frame grabber of choice

## WILL SUIT YOUR PREFERRED IMAGE PROCESSING SOFTWARE

| SELECT A FRAME GRABBER |
|---|
| Coaxlink Quad CXP-12 |
| Coaxlink Duo CPX-12 |
| Coaxlink Octo |
| Coaxlink Quad G3 DF |
| Coaxlink Quad G3 LH |
| Coaxlink Quad 3D - LLE |
| Coaxlink Quad |
| Coaxlink Quad CXP - 3 |
| Coaxlink Duo |
| Grablink Full |
| Grablink DualBase |
| Grablink Base |
| Grablink Value |
| Grablink Avenue |
| Grablink Express |
| Domino Melody |
| Domino Harmony |

**COMPATIBLE POWERFUL IMAGE PROCESSING SOFTWARE**

HALCON a product of MVTec

LabVIEW

COGNEX VisionPro pc-based vision

AI STUDIO KONICA MINOLTA

## COMPONENT SELECTION

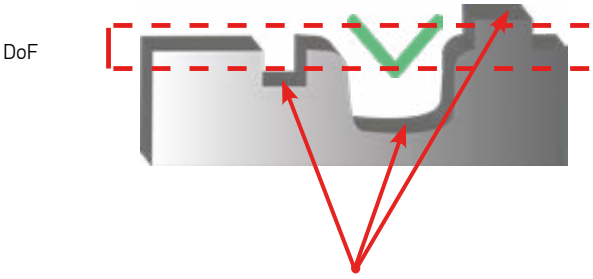
| BRAND | MODEL | DOWNLOAD | SUPPORTED FRAME GRABBER |
|---|---|---|---|
| Coaxlink Quad CXP-12 | SW-4000M-PMCL | JAI_SW-4000-PMCL.ZIP | Grablink Duo, Grablink Full, Grablink Full XR |

| MODEL | | MC2 |
|---|---|---|
| Technology | | Chromatic Confocal line camera |
| Source | | White LED in external box |
| Fiber bundle length | | 5 m |
| Temperature in use | | 0 to +65°C |
| Storage temperature | | -30 to +70°C |
| Relative humidity | | 5 to 80% RH without condensation |
| Protection type | | IP 20 (ChromaLight) IP50 (Body) |
| Line Detector | Camera | SW-4000M-PMCL |
| | Number of pixels | 4096 |
| | Number of used pixels | ≈ 3100 |
| | Pixel size | 7.5 µm |
| | Line rate | Up to 199.5 kHz |
| | Control and data | Camera Link (x2) |
| | Power supply | 5-24 VDC |
| | Power dissipation | 5W |
| Chromalight (LED source) | Power Supply | 100-240 VAC |
| | Maximum/Usual Consumption | 100W / 60W |
| | Dimensions (mm) | 235.5 x 184.2 x 255.5 |
| | Weight | 4 kg |

| MODEL | | WIREVIEW | MICROVIEW | DEEPVIEW | SUPERVIEW |
|---|---|---|---|---|---|
| ORDER CODE | | OPSTM708001 | OPSTM704001 | OPSTM706002 | OPSTM709001 |
| Line Length | mm | 1.51 | 1.8 | 4.2 | 12.85 |
| Depth of Field | mm | 0.9 | 0.5 | 2.6 | 2.0 |
| Working Distance | mm | 7.8 | 10.1 | 19.5 | 11.3 |
| Magnification | | 15.6 | 12.9 | 5.6 | 1.8 |
| Numerical Aperture | | 0.75 | 0.5 | 0.37 | 0.33 |
| Max. Sample Slope | ° | ± 46 | ± 30 | ± 20 | ± 17 |
| Pixel Size on the Sample | µm | 0.49 | 0.58 | 1.35 | 4.1 |
| Lenght | mm | 468 | 412.8 | 408.5 | 378 |
| Diameter | mm | 70 | 50 | 60 | 60 |
| Weight | kg | 5.8 | 5.2 | 5.85 | 5.6 |

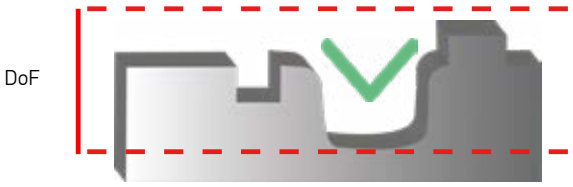
## PERMANENT FOCUS

### MICROSCOPE




OUT OF FOCUS AREAS WHERE
PATTERNS IN THE IMAGE LOOK BLURRED

### MC2




Depth of Focus, also called Depth of Field or DoF, is defined as the distance (on Z-axis) where all points are well resolved so that image elements are distinguished, understandable & usable.

Any point within the surface and out of the DoF appears blurred the DoF appears blurred.

MC2 offers 100x the DoF of a microscope for the same magnification maintaining same lateral (X-Y) resolution preventing any focus adjustement

## MAGNIFICATION 50X

### MICROSCOPE

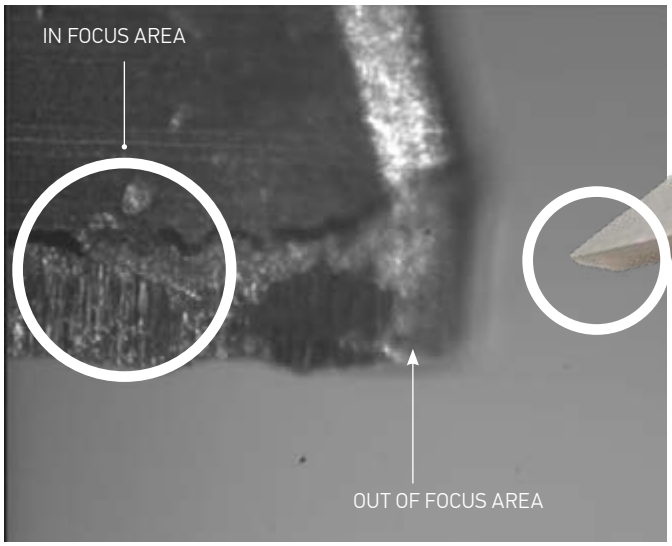



Image X-Y size (µm/mm) Resolution X-Y

### MC2

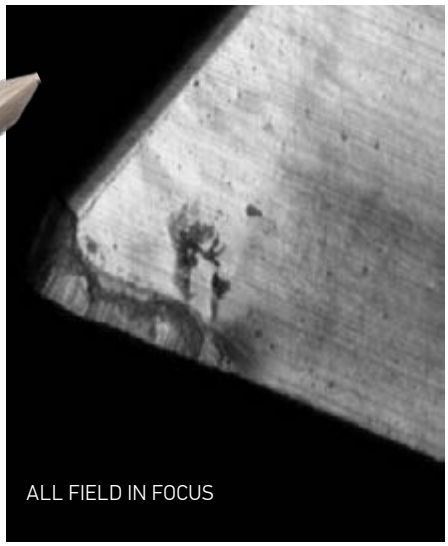
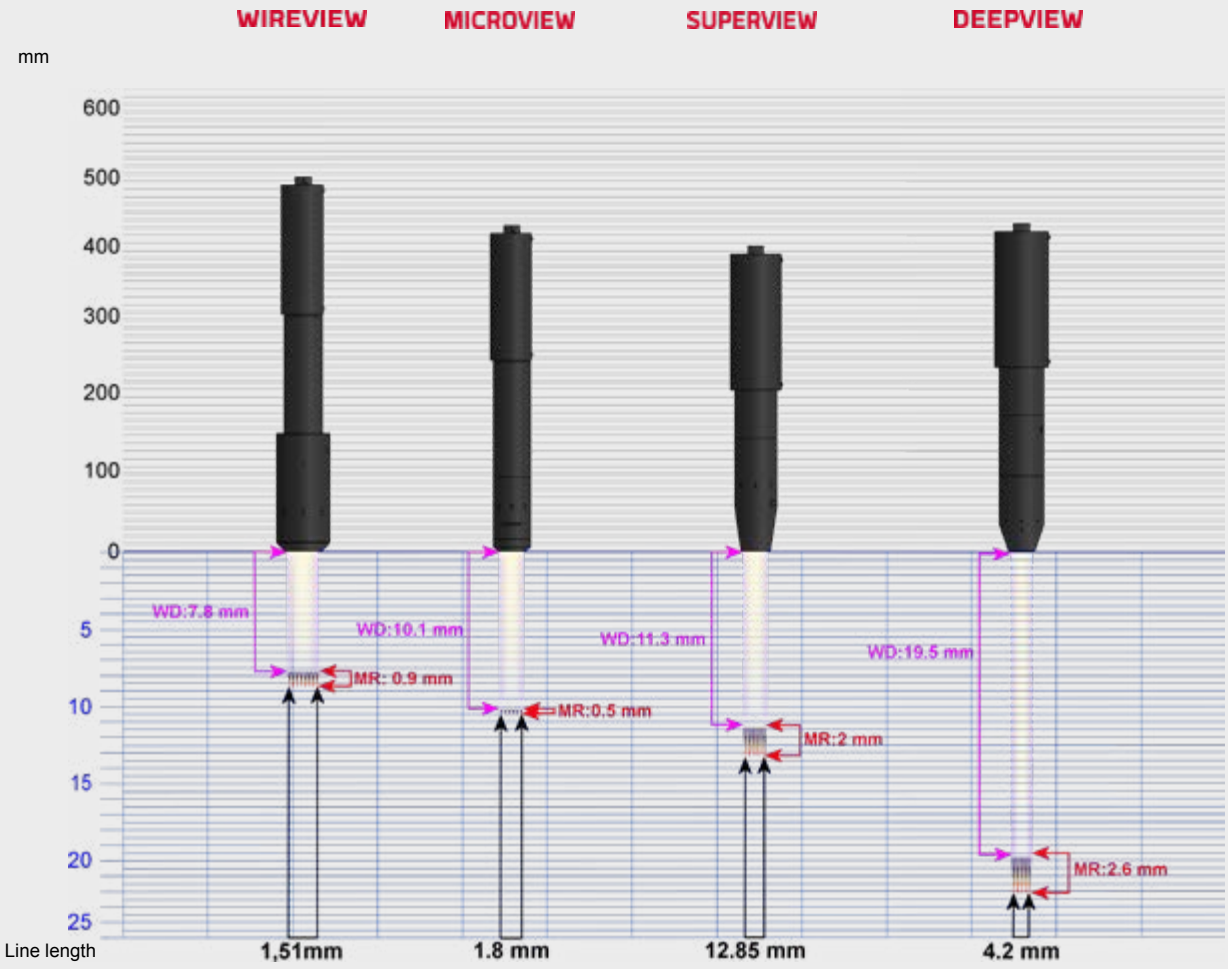
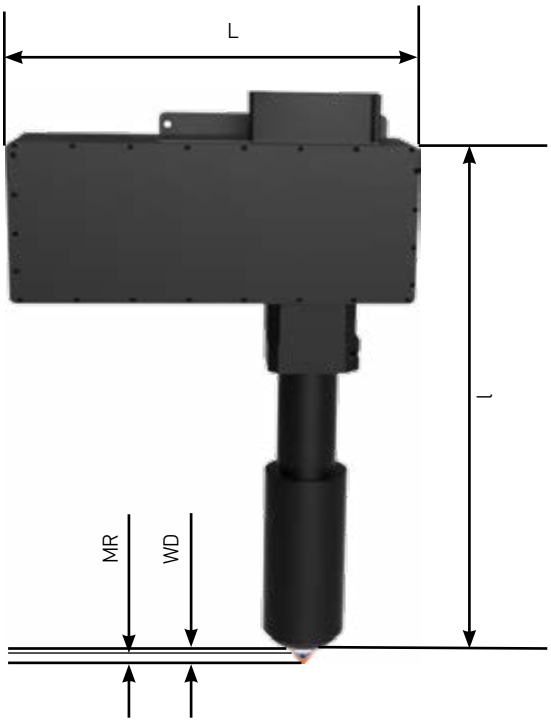



Image X-Y size (µm/mm) Resolution X-Y


WIREVIEW
MICROVIEW
SUPERVIEW
DEEPVIEW
mm
600
500
400
300
200
100
0
5
10
15
20
25
Line length
WD:7.8 mm
MR: 0.9 mm
WD:10.1 mm
MR:0.5 mm
WD:11.3 mm
MR:2 mm
WD:19.5 mm
MR:2.6 mm
1,51mm
1.8 mm
12.85 mm
4.2 mm

MC2™

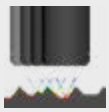

L
MR
WD

# INTERFEROMETRIC SOLUTIONS


- Marposs interferometric is a line of industrial solutions based on the optical technology, perfect to measure delicate and transparent components with tenth of micron precision and without touching them.
  This is a unique advantage of the optical technology that makes it perfect for applications in the semiconductor and medical industries, where the optical technology is the only one that has zero-risk of damaging the part.
- Marposs is capable to offer complete measurement workstations, integrating the interferometric optical heads, the electronic controller and the software, to visualize and manage the measurement results in stand-alone or in line solution.

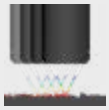
The interferometric optical head incorporates precision lenses housed in industrial-grade mechanical components, specifically designed to be installed close to the target surface to be inspected. The optical heads are engineered to deliver high performance while withstanding harsh production environments.

The optical sensor is designed to generate a tightly focused spot of light.



**DISTANCE**
0.15 µm --> 100 mm

**THICKNESS**
5 µm --> +00



**ROUGHNESS**
Ra = 0.05 µm -->700 µm

**INSPECTION**
Defect size > 1 µm

Marposs offers a wide range of optical heads, differentiated by working distance, spot size, optical output pattern, and mechanical orientation (axial or 90°). Various mechanical housing options are also available to meet the required waterproof protection grade.

Using FFT (Fast Fourier Transform) analysis, the system displays the absolute thickness of the target with nanometer-level precision.

This level of accuracy in measuring thickness and distance makes the product family particularly well suited for the semiconductor industry, including applications such as layer thickness, surface position, and roughness measurement).

In addition, by selecting the appropriate controller, it is possible to measure the thickness of materials with different optical properties (e.g., silicon, sapphire, SiC, thick or thin Si, dropped Si).

A broad combination of controllers (with different light sources and sensors) and optical heads (varying in working distance, spot diameter, numerical aperture, and protection grade – IP40 or IP67) is available to meet the needs of your specific application.

## WORKING PRINCIPLE

The interferometric working principle is as simple as it is effective for high-precision measurements.

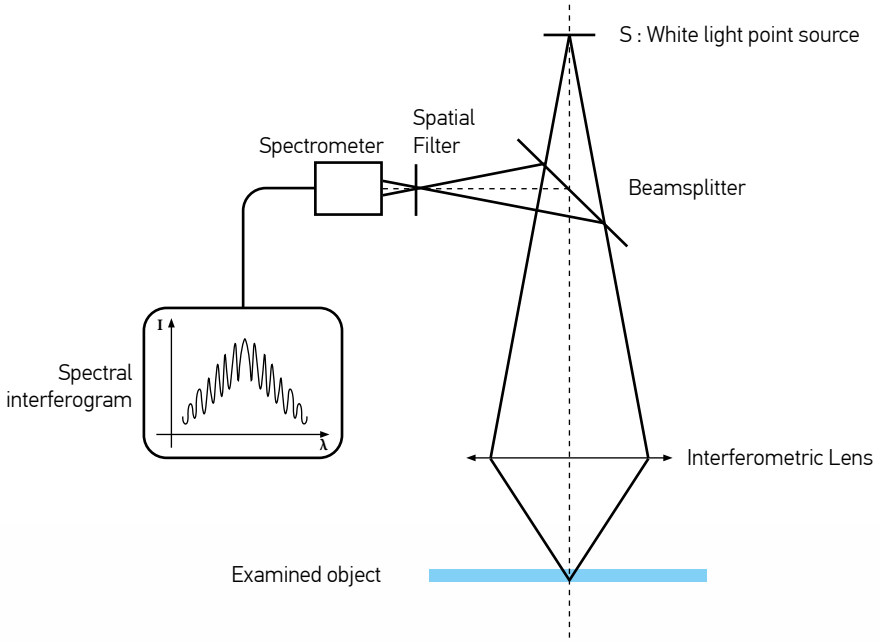
A light source (typically near-infrared, NIR) passes through a diffractive lens to be focused onto the target surface.

Part of the light is reflected from the top surface of the material (S1), while another portion penetrates the material and is reflected back from the bottom surface (S2).

Since S1 and S2 travel different optical paths, they exhibit an optical path difference (OPD) that depends directly on the material's thickness.

The combination of S1 and S2 generates an interference pattern. When these two reflected beams are in phase, they constructively interfere.

By applying a Fast Fourier Transform (FFT) to the interference signal, the system can determine the precise optical path difference, and therefore the absolute thickness of the sample, with nanometer-level resolution.




# MODELS AND ACCESSORIES
## HORIZON


HORIZON™ is the next-generation interferometric controller, the perfect solution for semiconductor, electronics, medical, automotive, and EV applications - anywhere that demands speed, reliability, and absolute precision. Built to work seamlessly with optical sensor heads, HORIZON™ brings sub-micron measurement accuracy to a wide range of surfaces, from transparent films to reflective metals. Whether you're measuring thickness or distance, HORIZON™ delivers unmatched performance - reliably, repeatably, and without touching the part.

Compact and OEM-friendly, HORIZON™ integrates effortlessly into your existing systems, offering a clean 1-channel configuration, flexible hardware interfaces, and full compatibility with Marposs and Stil sensor heads. Its modular design and open architecture make it a powerful ally for custom automation and Industry 4.0 environments.

From real-time inline inspection to dynamic 3D profiling, HORIZON™ adapts to your needs. It comes fully equipped with analog outputs, encoder inputs, Ethernet, USB, and an Anybus slot supporting major industrial protocols like Profinet, EtherCAT, Modbus TCP, and CANopen.

To streamline deployment, each unit includes MIC Tool, an intuitive configuration platform, along with the MIC Tool SDK for custom software integration. Need more? The optional Quick SPC™ suite provides a complete, modular system for process and quality control - scalable to match your workflow.

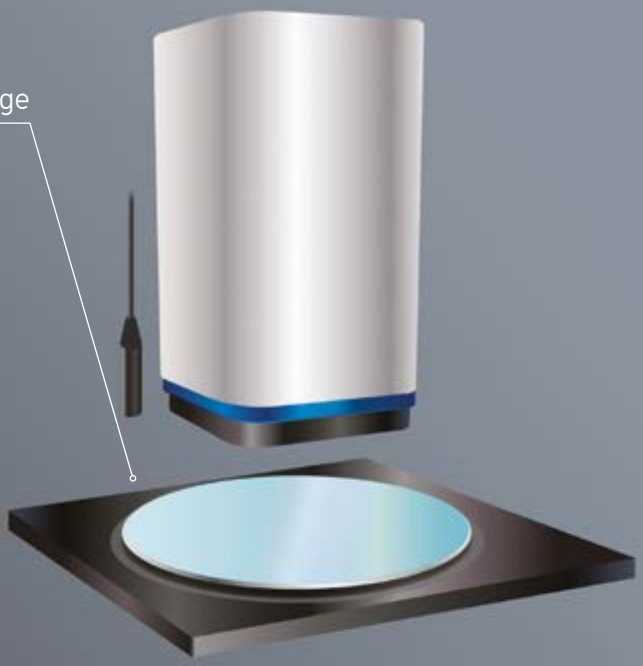
| MODEL | | HORIZON S1 | HORIZON 90S1 | HORIZON S2 | HORIZON 90S2 | HORIZON T1 | HORIZON 90T1 | HORIZON W1 | HORIZON L2 |
|---|---|---|---|---|---|---|---|---|---|
| **ORDER CODE** | | B830T400000 | B830T410000 | B830T401000 | B830T411000 | B830T404000 | B830T414000 | B830T406000 | B830T405000 |
| Measuring principle | | interferometric | interferometric | interferometric | interferometric | interferometric | interferometric | interferometric | interferometric |
| Channels | | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| Measure type | [µ] | Thickness, distance | Thickness, distance | Thickness, distance | Thickness, distance | Thickness, distance | Thickness, distance | Thickness, distance | Thickness, distance |
| Sampling rate | hz | 2000 | 90000 | 2000 | 90000 | 2000 | 90000 | 2000 | 2000 |
| Light source | | SLED | SLED | SLED | SLED | SLED | SLED | LED | LED |
| Wave lenght | [nm] | 1310 | 1310 | 1310 | 1310 | 1020 | 1020 | 350 ÷ 700 | 750 |
| Measuring range* | [µ] | 37 ÷ 1850 | 37 ÷ 1850 | 74 ÷ 3700 | 74 ÷ 3700 | 15 ÷ 850 | 15 ÷ 850 | 2,25 ÷ 225 | 60 ÷ 3000 |
| Accuracy | [µ] | ≤ 1 µm | ≤ 1 µm | ≤ 2 µm | ≤ 2 µm | ≤ 1 µm | ≤ 1 µm | ≤ 0.5 µm | ≤ 1 µm |
| Axial resolution | [nm] | 30 nm | 30 nm | 30 nm | 30 nm | 30 nm | 30 nm | 30 nm | 30 nm |
| Measuring mode | | Distance Thickness | Distance Thickness | Distance Thickness | Distance Thickness | Distance Thickness | Distance Thickness | Distance Thickness | Distance Thickness |
| Encoder input | | 3 digital (TTL/HTL Differential/Single Ended) | | | | | | | |
| Digital port | | USB / ETH / RS442 | | | | | | | |
| Analog output | | 2 (0-10Vdc) | | | | | | | |
| Synchronization | | 1 Synchro input (TTL) / 1 Synchro output (TTL) | | | | | | | |
| Interfaces | | Ethernet (10/100 Mbit) [ RS232 / RS422 as option ] | | | | | | | |
| Network connection | | YES | | | | | | | |
| Power supply | | 12 ÷ 24 Vdc (+20% / - 15%) | | | | | | | |
| Power consumption | | 30 W | | | | | | | |
| Protection degree | | IP40 | | | | | | | |
| Weight | | 2,8 Kg | | | | | | | |
| Dimension | [mm] | 239 (w) x 157,5 (h) 131,15 (d) | | | | | | | |

* In air with refractive index = 1

## APPLICATION EXAMPLES

### AOI machine - Silicon Wafer thickness and warpage

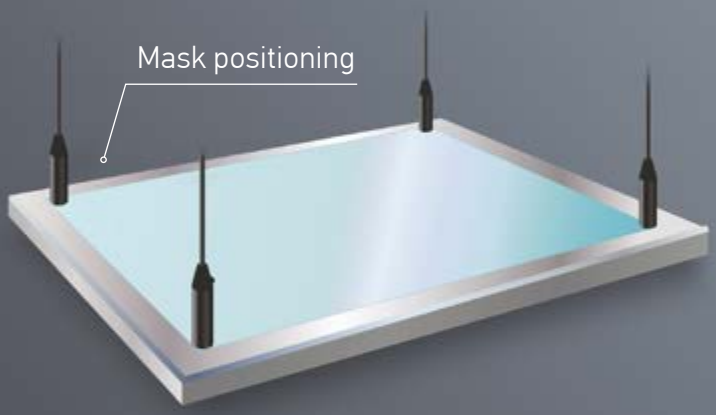
HORIZON (interferometry) combined with ZENITH (chromatic confocal) controller are the proper solutions for a precise wafer thickness and shape control.

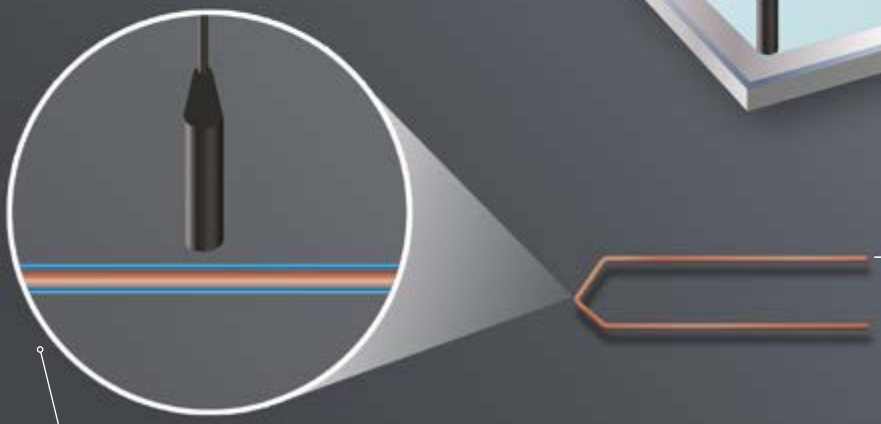


### Wafer thickness measurement

HORIZON can supply an accurate to measure not only for silicon but even for the new compound semiconductor wafers (like SiC and GaN)

### Mask positioning





### Coating thickness measurement of magnet wire

HORIZON has the capability to control the uniformity of both transparent and opaque coatings. Controlling the thickness of the insulation coating is essential in the manufacturing of magnet wire, particularly in the rectangular section versions used in the production of hairpin stators for traction e-motors.
The interferometric technology used in Horizon guarantees the possibility of measuring the thickness of the insulating coating even on magnet wire with extruded PEEK, which are not transparent to white light.

# MODELS AND ACCESSORIES
## PROBES

| MODEL | | PROBE IF-S1-S2 10 MM | PROBE IF-T1 100 MM | PROBE IF-L2 50 MM | PROBE IF-L2 50 MM | PROBE IF-S1-S2 100 MM |
|---|---|---|---|---|---|---|
| **ORDER CODE** | | B3PITS20A01 | B3PITT10A00 | B3PITL20A01 | B3PITL20A00 | B3PITS20A00 |
| Distance | | - | - | - | - | - |
| Tickness | | • | • | • | • | • |
| Axial | | • | • | • | • | • |
| Stand off (SO) | [mm] | 10 | 100 | 50 | 50 | 100 |
| Max. Slope Angle | [°] | 2.6 | 1.5 | 5 | 2.6 | 1.5 |
| Spot size | µm | 20 | 15 | 70 | 180 | 25 |
| Dimensions [mm] | Ø<br>L | 18<br>69 | 18<br>80,7 | 22<br>86 | 22<br>77 | 18<br>74,3 |
| Controller | HORIZON**S1/90S1** | • | | | | • |
| | HORIZON**S2/90S2** | • | | | | • |
| | HORIZON**T1/90T1** | | • | | | |
| | HORIZON**W1** | | | | | |
| | HORIZON**L2** | | | • | • | |

| MODEL | | PROBE IF-WL 28 MM | PROBE IF-S1-S2-REF 15 MM | "OPILB-LWD-D +MG140" | "OPILB-LWD-T +MG70" | "OPILB-LWD-T +MG35" | OPILB |
|---|---|---|---|---|---|---|---|
| **ORDER CODE** | | B3PITW10A00 | B3PIRS20A01 | O3PS05D1401 | O3PS05T7001 | O3PS05T3501 | O3PS0500001 |
| Distance | | - | • | • | - | - | - |
| Tickness | | • | • | • | • | • | • |
| Axial | | • | • | • | • | • | • |
| Stand off (SO) | [mm] | 28 | 15 | 4,6 | 9,2 | 9,2 | 42 |
| Max. Slope Angle | [°] | 7 | 2,6 | 17 | 17 | 17 | 5,4 |
| Spot size | µm | 70 | 20 | 5,7 | 11,4 | 22,9 | 32 |
| Dimensions [mm] | Ø<br>L | 20<br>138 | 30<br>147 | 27<br>191,3 | 27<br>153,4 | 27<br>122,7 | 15<br>127,2 |
| Controller | HORIZON**S1/90S1** | | • | | | | |
| | HORIZON**S2/90S2** | | • | | | | |
| | HORIZON**T1/90T1** | | | | | | |
| | HORIZON**W1** | • | | • | • | • | • |
| | HORIZON**L2** | | | | | | |

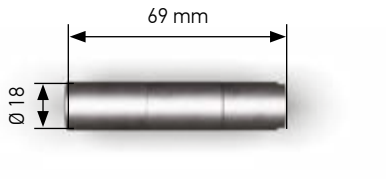
### OPTICAL FIBER

| MODEL | SM9/125_3M_ E2000/APC-FC/ APC_PP | SM9/125_4M_ E2000/APC-FC/ APC_PP | SM5.3/125_3M_ E2000/APC-FC/ APC_PP | SM5.3/125_4M_ E2000/APC-FC/ APC_PP | MM50/125_3M_ E2000/APC-FC/ APC_PP | MM50/125_4M_ E2000/APC-FC/ APC_PP | MM50/125_3M_ E2000/APC-FC/ APC_PP |
|---|---|---|---|---|---|---|---|
| **ORDER CODE** | B2974000142 | B2974000123 | B2974000140 | B2974000126 | B29T5016320 | B2974000128 | B29T5016330 |
| Lenght [m] | 3 | 4 | 3 | 4 | 3 | 4 | 3 |
| Type | Not armored 3mm | Not armored 3mm | Not armored 3mm | Not armored 3mm | Not armored 3mm | Not armored 3mm | Not armored 3mm |
| Ø [mm] | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| HORIZON**S1/90S1** | • | • | | | | | |
| HORIZON**S2/90S2** | • | • | | | | | |
| HORIZON**T1/90T1** | | | • | • | | | |
| HORIZON**W1** | | | | | | • | • |
| HORIZON**L2** | | | | | • | • | |

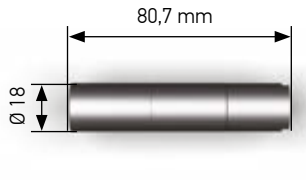
# MODELS AND ACCESSORIES
## PROBES

### DIMENSIONS (MM)

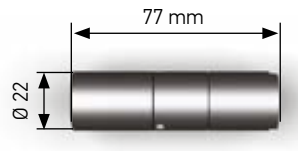
PROBE IF-S1-S2 10 MM



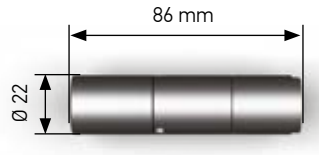

PROBE IF-T1 100 MM




PROBE IF-L2 50 MM

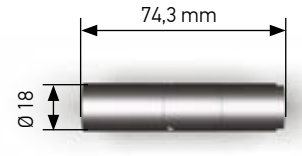



PROBE IF-L2 50 MM




PROBE IF-WL 28 MM

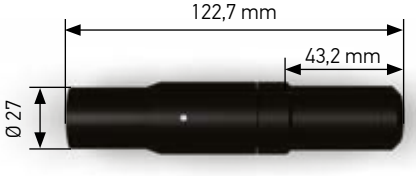

PROBE IF-S1-S2 100 MM



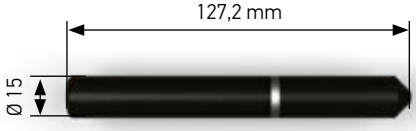

OPILB-LWD-D+MG140


OPILB-LWD-T+MG70


OPILB-LWD-T+MG35




OPILB



# MODELS AND ACCESSORIES
## NCG-R

The NCG-R™ family combines interferometric and reflectometric technologies to measure ultra-thin layers at nanometric scale - without touching the part. Paired with a dedicated software suite, it offers outstanding accuracy and repeatability across a wide range of materials, including reflective and transparent surfaces.

Ideal for both post-process and in-process applications, NCG-R ensures reliable results even in the most demanding industrial environments.

NCG-R Controllers – Compact, High-Performance Solutions for OEMs.

NCG-R controllers provide high-resolution, non-contact measurement of thin films, coatings, and nanolayers - with no risk of damaging delicate components. Optimized for integration, they offer:

• Multi-material compatibility (including reflective and transparent surfaces)

• IP-rated options for use in harsh environments

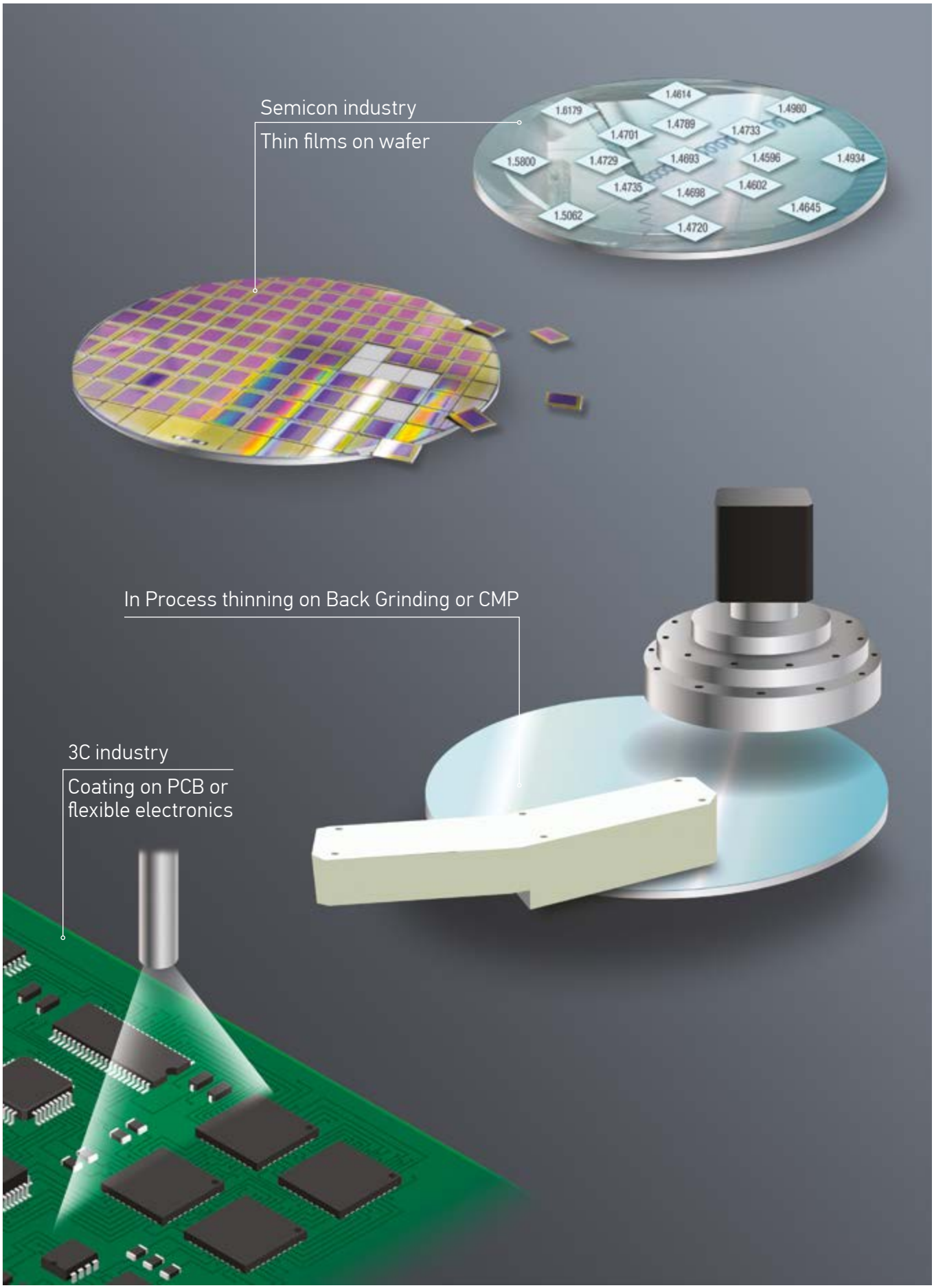
• Ethernet connectivity and SDK libraries for easy integration

• 1-channel version ideal for OEM applications

Perfectly suited for sectors such as semiconductors, electronics, medical devices, and research, NCG-R delivers premium performance with excellent price-to-performance ratio.

| MODEL | | NCG R1 | NCG R2 |
|---|---|---|---|
| **ORDER CODE** | | B830I010S00 | B830I011S00 |
| Measuring principle | | reflectometric | reflectometric |
| Channels | | 1 | 1 |
| Measure type | [µ] | Thickness | Thickness |
| Sampling rate | hz | 100 | 100 |
| Light source | | Halogen Lamp | Halogen Lamp |
| Wave lenght | [nm] | 400÷1000 | 450÷1050 |
| Measuring range* | [µ] | 0.025 ÷ 110 | 0.035÷220 |
| Accuracy | [µ] | 0,2 (min 1nm) | 0,2 (min 1nm) |
| Axial resolution | [nm] | 0,1 | 0,1 |
| Measuring mode | | Thickness | Thickness |
| Digital port | | USB / ETH | |
| Interfaces | | Ethernet (10/100 Mbit) | |
| Network connection | | YES | |
| Power supply | | 12÷24 Vdc (+20%/-15%) | |
| Power consumption | | 30 W | |
| Protection degree Standard IEC 60529 | | IP40 | |
| Weight | | 2,8 Kg | |
| Dimension | [mm] | 210 (w) x 75 (h) x 259,4 (d) | |

## APPLICATION EXAMPLES

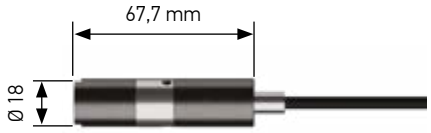


# MODELS AND ACCESSORIES
## PROBES

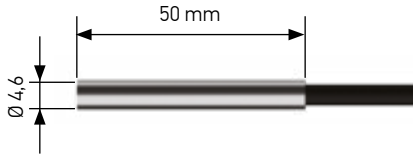
| MODEL | | PROBE RF RX SOA4 CL02 | PROBE RF RX SOA15 | PROBE RF RX 90 SOA3 WP CL04 |
|---|---|---|---|---|
| **ORDER CODE** | | B3PITR10A02 | B3PITR10A04 | B3PITR21W00 |
| Thickness measurement | | • | • | • |
| Axial | | • | • | – |
| Radial | | – | – | • |
| Cable | | Integrated | Separated | Integrated |
| Stand off (SO) | [mm] | 4 | 15 | 3 if the measurement is carried out in water, 2 mm if it is carried out in air |
| Max. Slope Angle | [°] | 2 | 2 | 2 |
| Spot size | µm | 600 | 600 | 600 |
| Dimensions [mm] | Ø<br>L<br>H<br>W | 6,3<br>50<br>-<br>- | 18<br>67,7<br>-<br>- | -<br>105<br>50<br>30 |
| Controller | NCG**R1** | • | • | • |
| | NCG**R2** | • | • | • |

## DIMENSIONS (MM)

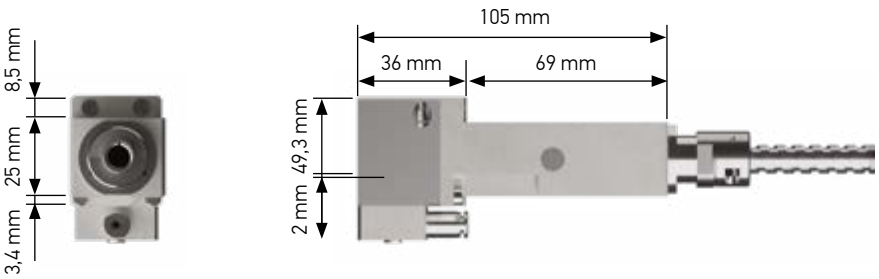
### PROBE RF RX SOA4 CL02




### PROBE RF RX SOA15




### PROBE RF RX 90 SOA3 WP CL04

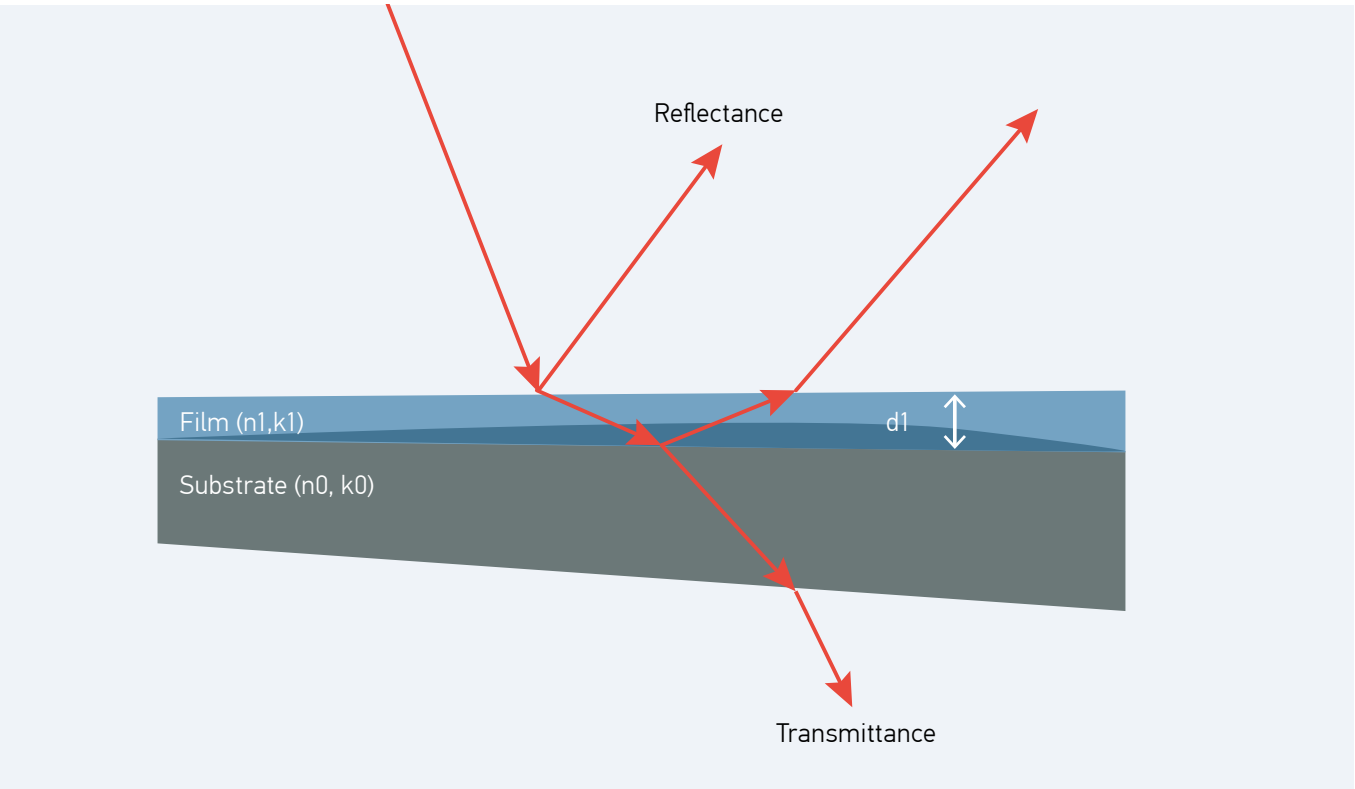



## OPTICAL FIBER

| MODEL | MM400/420_2,0M_2XSMA905-SMA905_PP |
|---|---|
| **ORDER CODE** | B4132344103 |
| Lenght [m] | 2 |

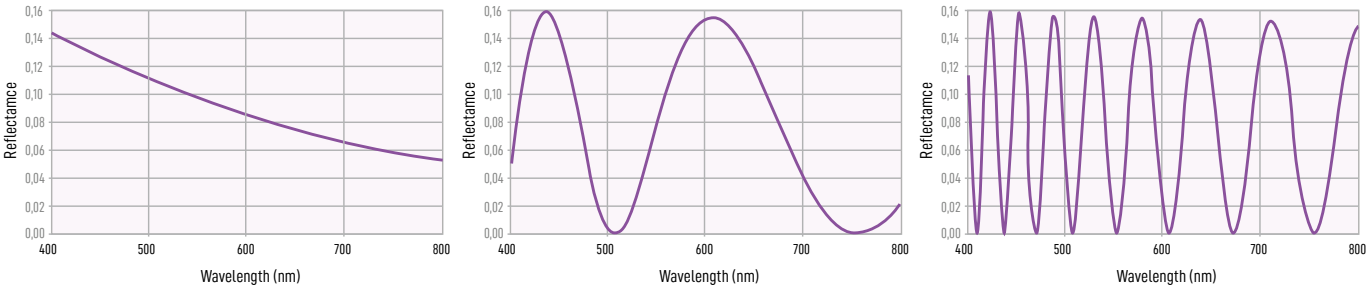
When light encounters an interface between two materials with different refractive indices, part of the light is reflected while the rest is transmitted.

Due to the wave nature of light, multiple reflections within the sample structure can interfere with each other.




This interference results in constructive and destructive patterns, which appear as oscillations in the wavelength-dependent reflectance spectrum.

These oscillations are characteristic of the optical thickness of the film.




D= 500 Å D= 5000 Å D= 20.000 Å

Two primary data analysis methods are employed to extract the layer thickness.

In curve-fitting method, the system accurately determines the film thickness by fitting the measured spectral reflectance to a theoretical model that incorporates the material's optical coefficients.

In the FFT method, the system extracts the thickness using a Fourier Transform algorithm.

# DIGITAL INDICATORS


- Quick Digit™ is a line of digital indicators based on a highly accurate capacitive measuring system, designed to resolve several different applications.
- QuickDigit is a cost effective solution since it integrates into its structure a high precision measuring sensor and a display for real time measurement visualization.
- Moreover it integrates essential computational capabilities, for setup of its measuring functionalities, like data format or tolerance barriers preset.
- Quick Digit is available with a standard measuring range of 12,5 mm / 0.5 inches or an extended measuring range of 25 mm / 1.0 inch, (50 mm/2.0", 100 mm/4.0" only on request). The large digits of the LCD display allow immediate and error-free reading of the measurement result. Measuring values can be classified through the tolerance indicator lights (green, yellow, red), and transmitted by cable or by Bluetooth® transmission technology

## APPLICATION EXAMPLES

- Configurable functionalities, by the three buttons:
  - Direct metric / inch conversion
  - Preset
  - Dynamic Min./Max./TIR measuring mode
  - Memory HOLD
  - Input of a multiplicative coefficient
  - Zero setting at any point within the measuring range
  - Choice of measurement sign (positive or negative)
  - Automatic switch-off into standby mode without loss of the origin value
- The central button selects the favorite function.
- Large digits for ease-of-visualization
- M 2,5 interchangeable stainless steel contact

# MODELS AND ACCESSORIES
# QUICK DIGIT

## QUICK DIGIT

- Quick DIGIT 12.5 Advanced is a digital indicator with a large display for an easy reading. It features aluminum case and can rotate 270° for the best ease-of-use during measurement execution.
- Setting and display of tolerance limits. Measurement value classification through tolerance indicator lights (green, yellow, red). 'Proximity' and 'Power' data outputs; the Power output allows the use of the indicator without battery, when connected through the specific cable to an electronic unit/PC.

| MODEL | MEAS. RANGE | RESOLUTION | ACCURACY | REPEATABILITY (± 2Σ) | PROT. DEGREE | MEAS FORCE [N] (± 20%) | WEIGHT [GR] | ORDER CODE |
|---|---|---|---|---|---|---|---|---|
| 12,5 S Advanced | 12,5 (.49 in) | 0,001 (.00004 in) | 3 (.00012 in) | 2 (.00008 in) | IP54 | 0,65 - 0,90 | 120 | B0E21201012 |
| 12,5 S Advanced HR | 12,5 (.49 in) | 0,0001 (.000004 in) | 1,2 (.000047 in) | 0,3 (.000012 in) | IP54 | 0,65 - 0,90 | 120 | B0E21200000 |
| 12,5 S Advanced Bluetooth® | 12,5 (.49 in) | 0,001 (.00004 in) | 3 (.00012 in) | 2 (.00008 in) | IP54 | 0,65 - 0,90 | 120 | B0E21201022 |
| 12,5 S Advanced HR Bluetooth® | 12,5 (.49 in) | 0,0001 (.000004 in) | 1,2 (.000047 in) | 0,3 (.000012 in) | IP54 | 0,65 - 0,90 | 120 | B0E21200003 |
| 12,5 S Advanced HRA Bluetooth® with digital and analog display | 12,5 (.49 in) | 0,0001 (.000004 in) | 1,8 (.00071 in) | 0,5 (.00002 in) | IP51 | 0,65 - 0,90 | 120 | B0E21200002 |

## QUICK DIGIT COMPACT

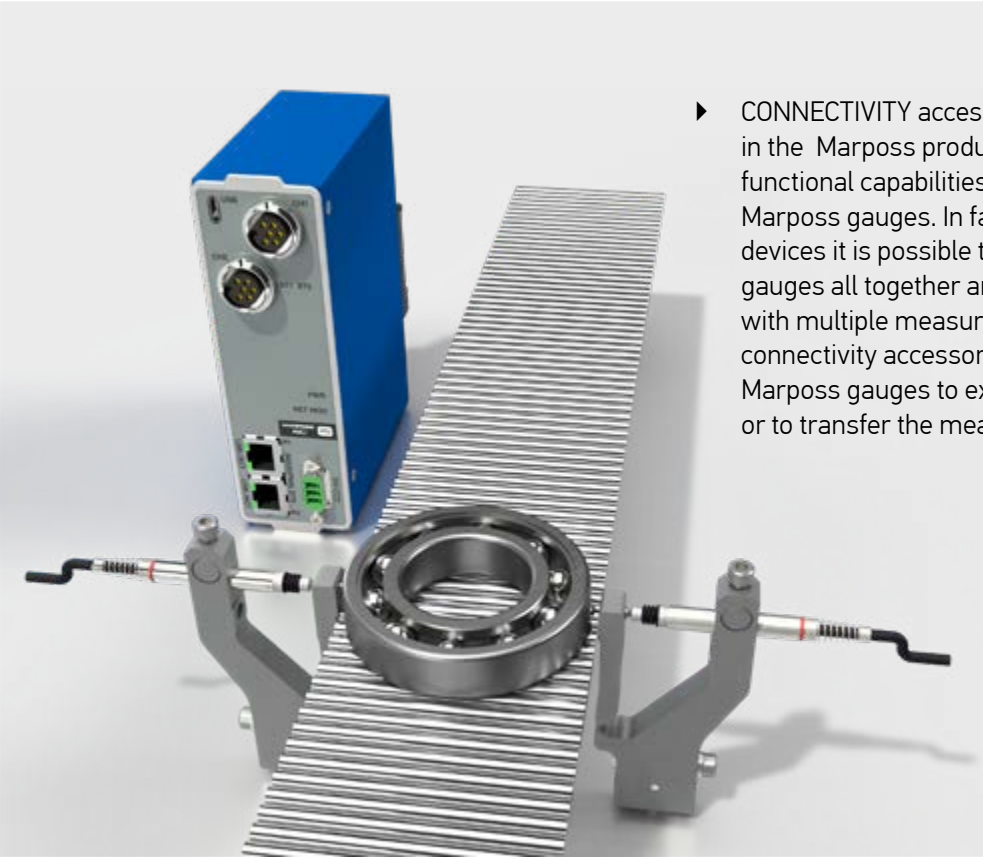
- Quick Digit Compact is Ø 45 mm non-rotating, solution for applications with limited space.
- It features aluminum case and can rotate 270° for the best ease-of-use during measurement execution.
- Setting and display of tolerance limits. Measurement value classification through tolerance indicator lights (green, yellow, red). 'Proximity' and 'Power' data outputs; the Power output allows the use of the indicator without battery, when connected through the specific cable to an electronic unit/PC.

| MODEL | MEAS. RANGE | RESOLUTION | ACCURACY | REPEATABILITY (± 2Σ) | PROT. DEGREE | MEAS FORCE [N] (± 20%) | WEIGHT [GR] | ORDER CODE |
|---|---|---|---|---|---|---|---|---|
| 5S with lifting cap | 12,5 (.49 in) | 0,001 (.00004 in) | 4 (.00016 in) | 2 (.00008 in) | IP67 | 0,50 - 0,9 | 70 | B0E20501000 |
| 5S with lifting cap Bluetooth® | 12,5 (.49 in) | 0,001 (.00004 in) | 4 (.00016 in) | 2 (.00008 in) | IP67 | 0,50 - 0,9 | 70 | B0E20501001 |
| 5S with fixed cap | 12,5 (.49 in) | 0,001 (.00004 in) | 4 (.00016 in) | 2 (.00008 in) | IP67 | 0,50 - 0,9 | 70 | B0E20501003 |
| 5S with fixed cap Bluetooth® | 12,5 (.49 in) | 0,001 (.00004 in) | 4 (.00016 in) | 2 (.00008 in) | IP67 | 0,50 - 0,9 | 70 | B0E20501002 |

## ACCESSORIES

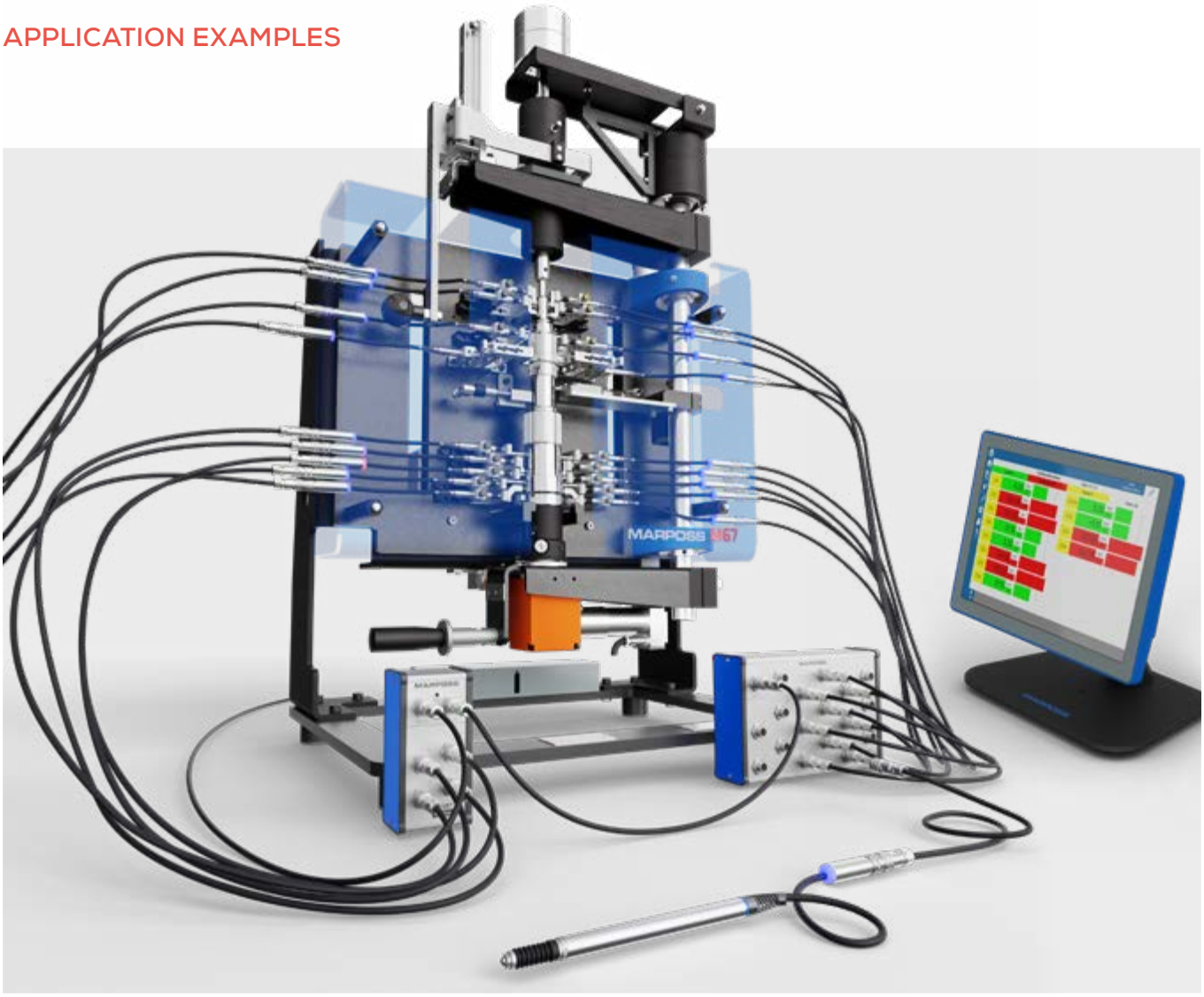
| MODEL | ORDER CODE |
|---|---|
| Contact extension 5S to M1 Star MBG mini indicator handle M2,5 thread | B1024017105 |
| Contact extension 5S to M1 Star MBG mini indicator handle = 4-48 UNF thread | B1024017115 |
| Power – RS232 cable for bidirectional data transmission (L = 3 m) | B4420240001 |
| Proximity – RS232 cable for bidirectional data transmission (L = 3 m) | B4420240002 |
| Power – USB cable for bidirectional data transmission (L = 3 m) | B4420240003 |
| Proximity – USB cable for bidirectional data transmission (L = 3 m) | B4420240004 |
| Power – DIGIMATIC cable for bidirectional data transmission (L = 3 m) | B4420240005 |
| Proximity – DIGIMATIC cable for bidirectional data transmission (L = 3 m) | B4420240006 |

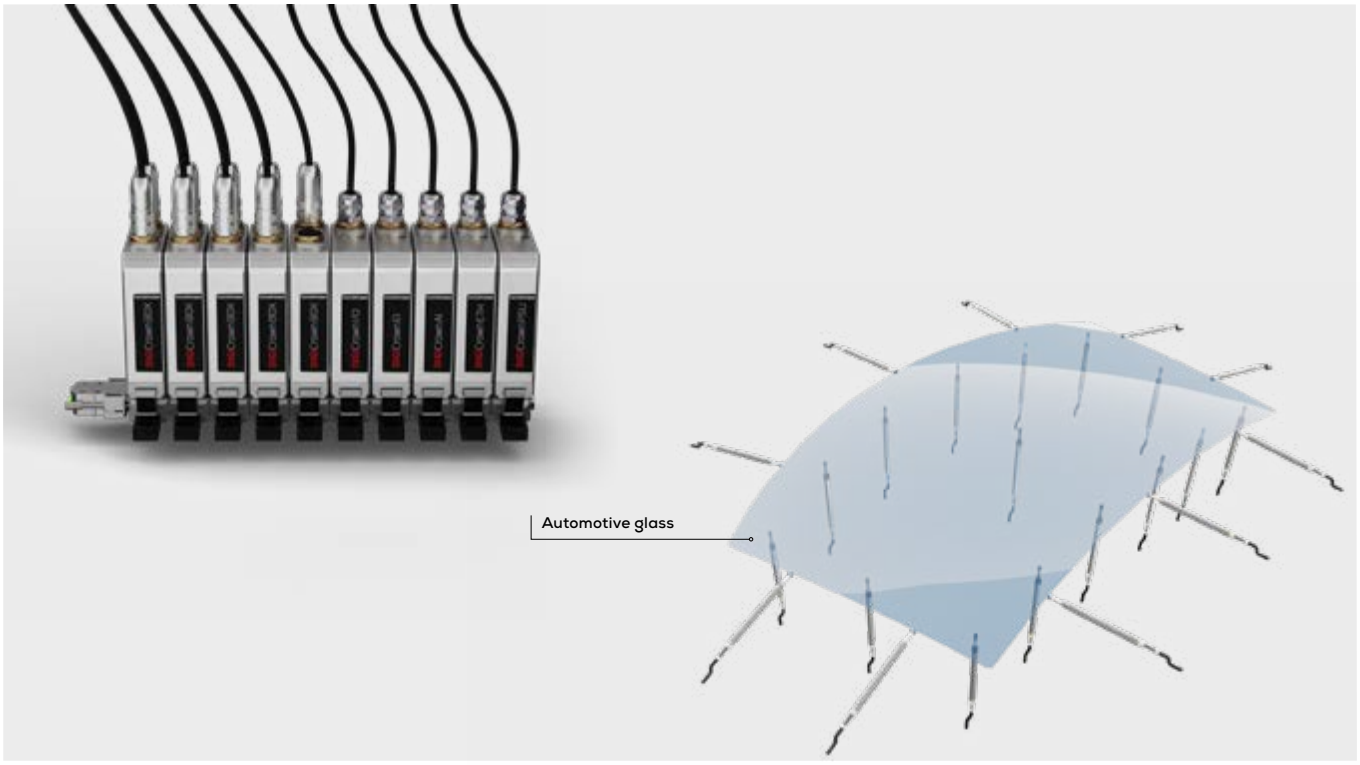
# CONNECTIVITY SOLUTIONS

- CONNECTIVITY accessories are pivotal elements in the Marposs products portofolio, elevating the functional capabilities and effectiveness of the Marposs gauges. In fact, through the connectivity devices it is possible to interconnect multiple gauges all together and to create gauging solutions with multiple measuring sensors inside. Moreover connectivity accessories allow to interface the Marposs gauges to external controls by fieldbus or to transfer the measuring data to servers.

## APPLICATION EXAMPLES



# CONNECTIVITY SOLUTIONS

## EASYBOX AND EASYBOX AIR

- EasyBox is the connectivity block to create networks of gauges, up to the limit of 32 units.
- EasyBox works with the Industrial Control Units of the Marposs portfolio or even with regular PC. EasyBox integrates USB communication type, where data captured by each single sensors are conveyed and transfer to the controlling system.
- EasyBox is available in different configurations, among which a model dedicated to MARPOSS standard full-bridge (LVDT) transducers and a model for MARPOSS standard half-bridge transducers (HBT). Another model is available for half-bridge transducers (HBT) compatible with amplifiers of TESA.
- EasyBox Air is the interfacing module dedicated to the connection of air gauges. EasyBox Air is capable to distribute air to the sensors and integrates controls to adjust sensitivity and zeroing nozzles. There are different models to interface one, three or four air transducers simultaneously.

## DUO AIR

- Duo Air is the interfacing box for small workstations with up to 2 air gauges. Duo Air is designed purposely to work in combination with the Marposs Duo Control unit.
- Duo Air is capable to distribute air to the sensors and integrates controls to adjust sensitivity and zeroing nozzles.
- Duo Air D is the interfacing box for small workstations with up to 4 air gauges. Duo Air D is designed purposely to work in combination with the Marposs Duo Control unit.
- Duo Air D is equipped with high-speed digital air-to-electronics converters with fixed sensititvity nozzles. It is ideal for measurements with very tight tolerances requiring high resolution.


## GAGEPOD

- GagePod is the premium connectivity line in the Marposs connectivity portfolio. The GagePod is dedicated to complex industrial applications, with several sensors interconnected, speed performance requirements or functionalities for automation.
- Multiple GagePods can be chained in order to interconnect up to 250 sensors. At the same time, the GagePod network can integrate modules for interfacing encoders, DC motors or to implement industrial fieldbus communications.
- GagePod network is extremely flexible, being able to support different control architectures. For instance, it can interface to Marposs E9066™ industrial computer as well as to any regular commercial PC. It is sufficient to install and to run the Marposs QuickSPC™ software suite, incorporating a complete toolkit of native functionalities.
- USB and Ethernet interfaces are available on the GagePod.

## SMARTNET

- SMARTNET is the newest connectivity solution, designed for the implementation of large networks of displacement sensors. SmartNet is using a proprietary Marposs technology for networking, that elevates the ease-of-use and it delivers a superior level of performance. SmartNet can operate with the latest generation Marposs Controllers, as Merlin CORE, or with the dedicated SmartNet Bridge, that is a cost-effective solution for a direct connection to a PLC, without any industrial PC in the middle
- SMARTNET requires the newest versions of RedCrown probes, called RedCrownSmart.

## DIGICROWN

- DIGINet is the unique Marposs connectivity solution for the high level of modularity and high performance level. The main element is the DigiCrownBox, a module capable to power and connect 2 sensors. Multiple DigiCrownBoxes can be chained in order to create large sensor networks. Like GagePod, DigiNet portfolio offers a large number of functional modules, like DC motor control, Input/Output signals, Ethernet or industrial fieldbus communication.

## ASC

- ASC, meaning Automation Signal Controller, is the interfacing unit capable to acquire the measuring signals from multiple gauge sensors and to transform them into a digital data stream, ready for immediate elaboration on line controls.
- ASC is the perfect solution for small gauges networks, up to 4 sensors, and for direct interconnection to PLC over the standard Industrial Network Protocols or RS-232.
- It is available with 2 and 4 channels for the gauges and with RS232 or Profinet for the PLC interfacing.

## TCI

- TCI, meaning Transducer Conditioning Interface, is a Marposs accessory to convert the structured signal from a transducer, both LVDT or HBT, into a traditional analog signal, ready to be elaborated on standard electronics for data acquisition. Thanks to the built-in connectors and the power supply distribution, TCI makes easy the implementation of small gauging networks and their interfacing to third party electronics.

## U-FAMILY

- U-modules is the easiest and cost-effective solution to interface Marposs sensors to a regular PC. There are different models of this accessory line, specifically dedicated to connect Input/Output sensors, incremental sensors like encoders, pencil probes. U-modules are the perfect solution for simple application in a laboratory environment.

# MODELS AND ACCESSORIES
# EASYBOX


## EASYBOX U4F-HR/U4H-HR/U4T

- U4F-HR to connect up to 4 MARPOSS standard full-bridge (LVDT) transducers, for applications requiring a very high measurement resolution.
- U4H-HR to connect up to 4 MARPOSS standard half-bridge transducers (HBT), for applications requiring a very high measurement resolution
- U4T to connect up to 4 half-bridge transducers (HBT) compatible with amplifiers of TESA.

| TECHNICAL SPECIFICATIONS | U4F-HR | U4H-HR | U4T |
|---|---|---|---|
| ORDER CODE | B6871250022 | B6871250002 | B6871250030 |
| Number of input channels | 4 | 4 | 4 |
| Type of input channels | MARPOSS standard Full-Bridge (LVDT) | MARPOSS standard Half-Bridge (HBT) | Half Bridge (HBT) compatible with Tesa amplifiers |
| Programmable measuring range - REGULAR | up to ±1000 µm (0.04") | up to ±1000 µm (0.04") | up to ±2000 µm (0.08") |
| Programmable measuring range - LONG | up to ±5000 µm (0.20") | up to ±5000 µm (0.20") | up to ±5000 µm (0.2") |
| Output type | 1 x USB (connector type B) | 1 x USB (connector type B) | 1 x USB (connector type B) |
| Output transmission speed | 12 MBit / sec. | 12 MBit / sec. | 12 MBit / sec. |
| Sampling rate | max 40 samples /s<br>max 1000 samples /s<br>with Quick SPC | max 40 samples /s<br>max 1000 samples /s<br>with Quick SPC | max 40 samples /s<br>max 1000 samples /s<br>with Quick SPC |
| Accuracy at 20° C | ± 0.5% of the measuring value ± resolution | ± 0.5% of the measuring value ± resolution | ± 0.5% of the measuring value ± resolution |
| Power supply source | from USB port | from USB port | from USB port |
| Current requirement | <350 mA (§) | <350 mA (§) | <350 mA (§) |
| Number of Easy Box connectable to one USB port | Max 16 | Max 16 | Max 16 |
| Data triggering modes | external footswitch or host command | external footswitch or host command | external footswitch or host command |
| Footswitch option | 1 input / box<br>(female ø 3.5 mm stereo Jack on box rear side) | 1 input / box<br>(female ø 3.5 mm stereo Jack on box rear side) | 1 input / box<br>(female ø 3.5 mm stereo Jack on box rear side) |
| Protection degree | IP40 (on front panel)<br>IP30 (on rear panel) | IP40 (on front panel)<br>IP30 (on rear panel) | IP40 (on front panel)<br>IP30 (on rear panel) |
| Storage temperature | -40 to +70 °C | -40 to +70 °C | -40 to +70 °C |
| Operating temperature | 0 to +50° C | 0 to +50° C | 0 to +50° C |
| Dimensions W x D x H | 157 x 90 x 45 mm<br>(6.2" x 3.5" x 1.8") | 157 x 90 x 45 mm<br>(6.2" x 3.5" x 1.8") | 157 x 90 x 45 mm<br>(6.2" x 3.5" x 1.8") |
| Weight | approx. 0.6 kg | approx. 0.6 kg | approx. 0.6 kg |

(§) To connect more than one box to a HUB a self-powered HUB is required.

## EASYBOX U4E

- U4E to connect up to three incremental transducers such as linear probes, linear and rotary encoders, etc

| TECHNICAL SPECIFICATIONS | U4E |
|---|---|
| **ORDER CODE** | B6871250090 |
| Number of input channels | 3 |
| Type of input channels | Digital and analog incremental transducers(*) |
| Programmable measuring range | depending on the transducer used |
| Output type | 1 x USB (connector type B) |
| Output transmission speed | 12 MBit / sec. |
| Sampling rate | max 40 samples /s (max 1000 samples /s with Quick SPC) |
| Accuracy at 20° C | depending on the transducer used |
| Power supply source | from USB port or external power supply |
| Current requirement | <300 mA (§) |
| Number of Easy Box connectable to one USB port | Max. 16 |
| Data triggering modes | external footswitch, host command, RS422/485, 24V optoInsulated input |
| Footswitch option | common with data control (9-pin D-Sub connector on the rear side) |
| Protection degree | IP40 (on front panel) IP30 (on rear panel) |
| Storage temperature | -40 to +70 °C |
| Operating temperature | 0 to +50° C |
| Dimensions W x D x H | 157 x 90 x 45 mm (6.2" x 3.5" x 1.8") |
| Weight | approx. 0.6 kg |

(*) Any digital encoder or linear scale featuring differential Line Driver output, 6.4 MHz max. frequency, requiring 5 V power supply.
Any voltage analog encoder or linear scale featuring 1 Vpp sinusoidal output, 250 kHz max. frequency, requiring 5 V power supply.
Any current analog encoder or linear scale featuring 11 µA output, 250 kHz. max. frequency, requiring 5V power supply, by means of a specific adapter (not included in the supply).

(§) To connect more than one box to a HUB a self-powered HUB is required.

# MODELS AND ACCESSORIES
## EASYBOX


### EASYBOX U4D

- U4D to connect up to 4 Digimatic gauges (such as Mitutoyo calipers, digital indicators, etc..).

| TECHNICAL SPECIFICATIONS | U4D |
|---|---|
| **ORDER CODE** | B6871250012 |
| Number of input channels | 4 |
| Type of input channels | Mitutoyo Digimatic compatible |
| Programmable measuring range | depending on the Digimatic gauge used |
| Output type | 1 x USB (connector type B) |
| Output transmission speed | 12 MBit / sec. |
| Sampling rate | max. 40 samples /s (depending on the Digimatic gauge used) |
| Accuracy at 20° C | depending on the Digimatic gauge used |
| Power supply source | from USB port or external power supply (*) |
| Current requirement | <100 mA (§) |
| Number of Easy Box connectable to one USB port | Max. 16 |
| Data triggering modes | external footswitch/ host command/ Data send button on gauge |
| Footswitch option | 1 input / box (female ø 3.5 mm stereo Jack on box rear side) |
| Protection degree | IP30 (on both front and rear panel) |
| Storage temperature | -40 to +70 °C |
| Operating temperature | 0 to +50° C |
| Dimensions W x D x H | 157 x 90 x 45 mm (6.2" x 3.5" x 1.8") |
| Weight | approx. 0.6 kg |

(*) For any gauge other than Mitutoyo requiring an external power supply

(§) Max. 4 boxes of this type can be connected to a HUB powered by a USB port. For connection of more than 4 boxes a self-powered HUB is required.

## EASYBOX U4S

- U4S to connect up to 4 gauges with RS232 output (cable shall feature Cannon 9-pin female connector).

| TECHNICAL SPECIFICATIONS | U4S |
|---|---|
| ORDER CODE | B6871250060 |
| Number of input channels | 4 |
| Type of input channels | RS232 |
| Programmable measuring range | depending on the serial gauge used |
| Output type | 1 x USB (connector type B) |
| Output transmission speed | 12 MBit / sec. |
| Sampling rate | max. 40 samples /s (depending on the serial gauge used) |
| Accuracy at 20° C | depending on the serial gauge used |
| Power supply source | from USB port |
| Current requirement | <150 mA (§) |
| Number of Easy Box connectable to one USB port | Max. 16 |
| Data triggering modes | external footswitch / host command |
| Footswitch option | 1 input for each box (female connector ø 3.5 mm stereo Jack plug on box rear side) |
| Protection degree | IP40 (on front panel) IP30 (on rear panel) |
| Storage temperature | -40 to +70° C |
| Operating temperature | 0 to +50° C |
| Dimensions W x D x H | 157 x 90 x 65 mm (6.2" x 3.5" x 2.6") |
| Weight | approx. 0.6 kg |

(§) To connect more than one box to a HUB a self-powered HUB is required.


## EASYBOX U1/U3/U4 AIR

- U1AIR, U3AIR, U4AIR with adjustable sensitivity and zeroing nozzles to connect one, three, four air transducers respectively.

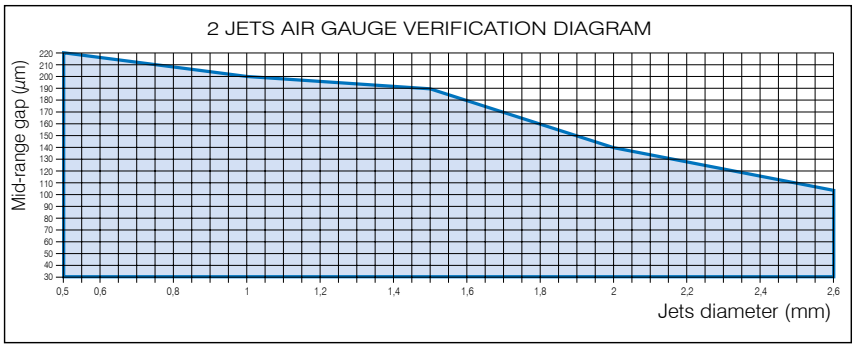
| TECHNICAL SPECIFICATIONS | U1AIR(#) | U3AIR(#) | U4AIR(#) |
|---|---|---|---|
| **ORDER CODE** | B6871250101 | B6871250111 | B6871250122 |
| Number of input channels | 1 | 3 | 4 |
| Type of input channels | Air | Air | Air |
| Programmable measuring range | ±500 µm (0.02") | ±500 µm (0.02") | ±500 µm (0.02") |
| Output type | 1 x USB (connector type B) | 1 x USB (connector type B) | 1 x USB (connector type B) |
| Output transmission speed | 12 MBit / sec. | 12 MBit / sec. | 12 MBit / sec. |
| Sampling rate | max. 40 samples /s (up to 1000 samples/s if used with Quick SPC) | max. 40 samples /s (up to 1000 samples/s if used with Quick SPC) | max. 40 samples /s (up to 1000 samples/s if used with Quick SPC) |
| Accuracy at 20° C | ±0.5% of the measuring value ±resolution | ±0.5% of the measuring value ±resolution | ±0.5% of the measuring value ±resolution |
| Power supply source | from USB port | from USB port | from USB port |
| Current requirement | <350 mA (§) | <350 mA (§) | <350 mA (§) |
| Number of Easy Box connectable to one USB port | Max. 16 | Max. 16 | Max. 16 |
| Data triggering modes | external footswitch / host command | external footswitch / host command | external footswitch / host command |
| Footswitch option | 1 input for each box (female connector ø 3.5 mm stereo Jack plug on box rear side) | 1 input for each box (female connector ø 3.5 mm stereo Jack plug on box rear side) | 1 input for each box (female connector ø 3.5 mm stereo Jack plug on box rear side) |
| Protection degree | IP40 (on front panel) IP30 (on rear panel) | IP40 (on front panel) IP30 (on rear panel) | IP40 (on front panel) IP30 (on rear panel) |
| Storage temperature | -40 to +70° C | -40 to +70° C | -40 to +70° C |
| Operating temperature | 0 to +50° C | 0 to +50° C | 0 to +50° C |
| Dimensions W x D x H | 157 x 103 x 65 mm (6.2" x 4.05" x 2.6") | 224 x 159 x 150 mm (8.82" x 6.26" x 5.90") | 224 x 159 x 150 mm (8.82" x 6.26" x 5.90") |
| Weight | approx. 1 kg | approx. 2.8 kg | approx. 3.8 kg |

(#) Air supply: air must be dry and unoiled, filtered to 5 µm and at a pressure of 3 bar (the working range of the converter is 1,5 to 4 bar).
(§) To connect more than one box to a HUB a self-powered HUB is required.

## U1AIR / U3AIR / U4AIR APPLICATION RANGE

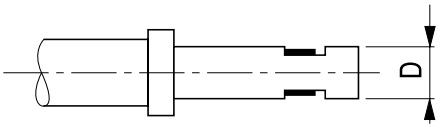
The MARPOSS and/or non-MARPOSS air gauges, with specifications inside the blue area of the diagram, can be easily and immediately connected to these models.The parameters to be considered are the following:

- air supply pressure
- number of air gauge jets
- diameter of air gauge jets
- "mid-range gap", as to the difference between the mid-tolerance diameter of the part to be measured and the distance between the air gauge jets.




## EXAMPLE OF MEASUREMENT WITH AIR-PLUG

- air supply pressure: 3 bar ± 0.1
- number of jets : 2
- diameter of jets: 2mm (.0787")
- diameter of the part to be measured = 10 mm ± 0.030 (.3937" ± .0012")
- mid tolerance diameter = 10 mm (.3937")
- distance between the jets D = 9.90 mm (.3898")




**We obtain:**

- "mid tolerance gap": (10 - 9.90) = 0.10 mm = 100 µm

As shown in the diagram the intersection between the value of the "mid-range gap", 100 µm (.0039"), and the diameter of the jet, 2 mm (.0787"), stays inside the blue area: the application can be therefore realized.

## EASYBOX U4TP-E/TP-K

- U4TP-E, U4TP-K to connect up to four thermocouples type E, K respectively

| TECHNICAL SPECIFICATIONS | U4TP-E | U4TP-K |
|---|---|---|
| ORDER CODE | B6871250080 | B6871250086 |
| Number of input channels | 4 | 4 |
| Type of input channels | Thermocouples type E | Thermocouples type K |
| Programmable measuring range | 0 - 100 °C | 0 - 100 °C |
| Output type | 1 x USB (connector type B) | 1 x USB (connector type B) |
| Output transmission speed | 12 MBit / sec. | 12 MBit / sec. |
| Sampling rate | max. 40 samples /s | max. 40 samples /s |
| Accuracy at 20° C | ±[0.6° + 0.2% (Tmeas.-T amb.)] | ±[0.6° + 0.2% (Tmeas.-T amb.)] |
| Power supply source | from USB port | from USB port |
| Current requirement | <200 mA (§) | <200 mA (§) |
| Number of Easy Box connectable to one USB port | Max. 16 | Max. 16 |
| Data triggering modes | external footswitch / host command | external footswitch / host command |
| Footswitch option | 1 input for each box (female connector ø 3.5 mm stereo Jack plug on box rear side) | 1 input for each box (female connector ø 3.5 mm stereo Jack plug on box rear side) |
| Protection degree | IP40 (on front panel) IP30 (on rear panel) | IP40 (on front panel) IP30 (on rear panel) |
| Storage temperature | -40 to +70° C | -40 to +70° C |
| Operating temperature | 0 to +50° C | 0 to +50° C |
| Dimensions W x D x H | 157 x 90 x 45 mm | 157 x 90 x 45 mm |
| | (6.2" x 3.5" x 1.8") | (6.2" x 3.5" x 1.8") |
| Weight | approx. 0.5 kg | approx. 0.5 kg |

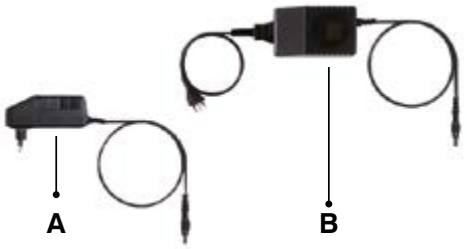
## EASYBOX U8I/O

- B6871250050
  U8I/O managing 8 Input/Output powered 24Vdc.

## EASYBOX U4P

- B6871250071
  U4P pushbutton box for remote control of data acquisition, zeroing, etc.

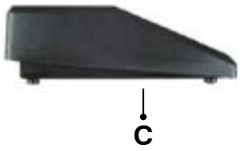
# ACCESSORIES
# EASYBOX




## POWER SUPPLY

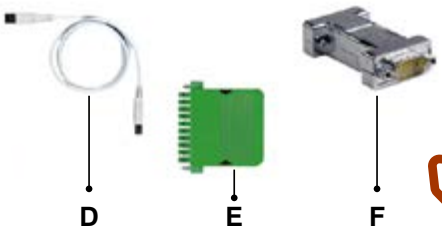
| MODEL | VERSION | ORDER CODE |
|---|---|---|
| POWER SUPPLY FOR EASY BOX U4D | EU PLUG | B6871140155 |
| POWER SUPPLY FOR EASY BOX U4D | USA PLUG | B6871140156 |
| POWER SUPPLY FOR EASY BOX U4D | UK PLUG | B6871140157 |
| POWER SUPPLY FOR EASY BOX U8I/O | EU PLUG | B6871140238 |
| POWER SUPPLY FOR EASY BOX U8I/O | USA PLUG | B6871140239 |
| POWER SUPPLY FOR EASY BOX U8I/O | UK PLUG | B6871140240 |
| POWER SUPPLY UNIT FOR EASY BOX U4E, with EU mains cable | | B6871140170 |
| POWER SUPPLY UNIT FOR EASY BOX U4E, with U.S.A. mains cable | | B6871140171 |
| POWER SUPPLY UNIT FOR EASY BOX U4D, with EU mains cable (*) | | B6871140158 |
| POWER SUPPLY UNIT FOR EASY BOX U4D, with U.S.A. mains cable (*) | | B6871140159 |
| POWER SUPPLY UNIT FOR EASY BOX U8I/O, with EU mains cable (**) | | B6871140238 |
| POWER SUPPLY UNIT FOR EASY BOX U8I/O, with U.S.A. mains cable (**) | | B6871140239 |

(*) For any gauge other than Mitutoyo requiring an external power supply.
(**) This power supply is required if the Easy Box U8I/O is not connected to an alternative 24V power supply.




## FOOTSWITCH

| MODEL | VERSION | ORDER CODE |
|---|---|---|
| Footswitch with 2 m cable for data triggering function (not for Easy Box U8I/O) | | B6131000110 |




## CABLES AND TERMINATORS

| | WHERE USED | ORDER CODE |
|---|---|---|
| USB cable L= 1 m (type A-B) | Easy Box to PC | B4701300229 |
| USB cable L= 3 m (type A-B) | Easy Box to PC | B6871140239 |
| Cable terminal for 10 pin connector of Easy Box U8I/O (*) | | B6872010015 |
| Interface adapter | Connecting analog current transducers feat. 11 µA output to Easy Box U4E | B6303540800 |

(*) One piece is always supplied in the packaging with the Easy Box


## PROTECTIVE CASE

| MODEL | VERSION | ORDER CODE |
|---|---|---|
| Protective and fixing case for 1 Easy Box | type U4F-HR, U4H, U4T, U4E, U4D, U4TP-E, U4TP-K, U8I/O | B1502050600 |
| Protective and fixing case for 1 Easy Box | type U1AIR or U4S | B1502050601 |
| Protective and fixing case for 2 Easy Box | type U4F-HR, U4H, U4T, U4E, U4D, U4TP-E, U4TP-K, U8I/O | B1502050610 |
| Protective and fixing case for 3 Easy Box | type U4F-HR, U4H, U4T, U4E, U4D, U4TP-E, U4TP-K, U8I/O or 2 Easy Box type U1AIR or U4S | B1502050620 |


EASYBOX

# MODELS AND ACCESSORIES
# DUO AIR

Duo Air is the interfacing box for small workstations with up to 2 air gauges. Duo Air is designed purposely to work in combination with the Marposs Duo Control unit. Duo Air is capable to distribute air to the sensors and integrates controls to adjust sensitivity and zeroing nozzles

## ALL-IN-ONE BUNDLES


| DESCRIPTION | ORDER CODE |
|---|---|
| Duo Air 1 ch.+ Duo Basic (standard 0.3 m connecting cable from Duo Air to Duo included in the supply) | BPSDUD01201 |
| Duo Air 1 ch.+ Duo Ethernet/IP (standard 0.3 m connecting cable from Duo Air to Duo included in the supply) | BPSDUD01211 |
| Duo Air 1 ch.+ Duo Profibus (standard 0.3 m connecting cable from Duo Air to Duo included in the supply) | BPSDUD01221 |
| Duo Air 1 ch.+ Duo Profinet (standard 0.3 m connecting cable from Duo Air to Duo included in the supply) | BPSDUD01231 |
| Duo Air 2 ch.+ Duo Basic (standard 0.3 m connecting cables from Duo Air to Duo included in the supply) | BPSDUD01200 |
| Duo Air 2 ch.+ Duo Ethernet/IP (standard 0.3 m connecting cables from Duo Air to Duo included in the supply) | BPSDUD01210 |
| Duo Air 2 ch.+ Duo Profibus (standard 0.3 m connecting cables from Duo Air to Duo included in the supply) | BPSDUD01220 |
| Duo Air 2 ch.+ Duo Profinet (standard 0.3 m connecting cables from Duo Air to Duo included in the supply) | BPSDUD01230 |

## STAND ALONE UNITS

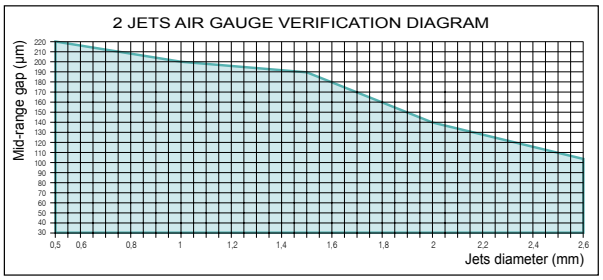
| DESCRIPTION | ORDER CODE |
|---|---|
| Duo Air with 1 air transducer input | B830DUOA001 |
| Duo Air with 2 air transducer inputs | B830DUOA000 |

| DESCRIPTION | ORDER CODE |
|---|---|
| Connecting cable from Duo Air to Duo (L = 0.3 m) | B6735932033 |
| Connecting cable from Duo Air to Duo (L = 1.0 m) | B6735932026 |
| Connecting cable from Duo Air to Duo (L = 2.0 m) | B6735932015 |
| Connecting cable from Duo Air to Duo (L = 5.0 m) | B6735932016 |
| Connecting cable from Duo Air to Duo (L = 10.0 m) | B6735932017 |

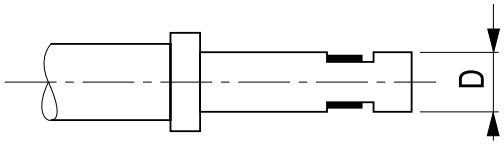
## APPLICATION RANGE

The MARPOSS and non-MARPOSS air gauges, with specifications inside the blue area of the diagram, can be easily and immediately connected to Duo Air.

- The parameters to be considered are the following:
- air supply pressure (3 bar ± 0.1)
- number of air gauge jets
- diameter of air gauge jets
- "mid-range gap", as to the difference between the mid-tolerance diameter of the part to be measured and the distance between the air gauge jets.




## EXAMPLE OF MEASUREMENT WITH AIR-PLUG




- number of jets: 2
- diameter of jets: 2 mm (.0787")
- mid tolerance diameter of the part to be measured = 10 mm (.3937")
- distance between the jets D = 9.90 mm (.3898")

We obtain:

- "mid tolerance gap": (10 - 9.90) = 0.10 mm = 100 µm

As shown in the diagram the intersection between the value of the "mid-range gap", 100 µm (.0039"), and the diameter of the jet, 2 mm (.0787"), stays inside the blue area: the application can be therefore realized.

# MODELS AND ACCESSORIES
## DUO AIR D

Duo Air D is the interfacing box for small workstations with up to 4 air gauges. Duo Air D is designed purposely to work in combination with the Marposs Duo Control unit.

Duo Air D is equipped with high-speed digital air-to-electronics converters with fixed sensititvity nozzles. It is ideal for measurements with very tight tolerances requiring high resolution.

# DUO AIR D

## ALL-IN-ONE BUNDLES



| DESCRIPTION | ORDER CODE |
|---|---|
| Duo Air D 1 ch. K type + Duo Basic (standard 0.35 m connecting cable from Duo Air D to Duo included in the supply) | BPSDUD01301 |
| Duo Air D 1 ch. K type + Duo Ethernet/IP (standard 0.35 m connecting cable from Duo Air D to Duo included in the supply) | BPSDUD01311 |
| Duo Air D 1 ch. K type + Duo Profibus (standard 0.35 m connecting cable from Duo Air D to Duo included in the supply) | BPSDUD01321 |
| Duo Air D 1 ch. K type + Duo Profinet (standard 0.35 m connecting cable from Duo Air D to Duo included in the supply) | BPSDUD01331 |
| Duo Air D 2 ch. K type + Duo Basic (std. 0.35 m conn. cable from Duo Air D to Duo and 0.2 m conn. cable between converters included in the supply) | BPSDUD01300 |
| Duo Air D 2 ch. K type + Duo Ethernet/IP (std. 0.35 m conn. cable from Duo Air D to Duo and 0.2 m conn. cable between converters included in the supply) | BPSDUD01310 |
| Duo Air D 2 ch. K type + Duo Profibus (std. 0.35 m conn. cable from Duo Air D to Duo and 0.2 m conn. cable between converters included in the supply) | BPSDUD01320 |
| Duo Air D 2 ch. K type + Duo Profinet (std. 0.35 m conn. cable from Duo Air D to Duo and 0.2 m conn. cable between converters included in the supply) | BPSDUD01330 |
| Duo Air D 3 ch. K type + Duo Basic (std. 0.35 m conn. cable from Duo Air D to Duo and 2 x 0.2 m conn. cable between converters included in the supply) | BPSDUD01303 |
| Duo Air D 3 ch. K type + Duo Ethernet/IP (std. 0.35 m conn. cable from Duo Air D to Duo and 2 x 0.2 m conn. cable between converters included in the supply) | BPSDUD01313 |
| Duo Air D 3 ch. K type + Duo Profibus (std. 0.35 m conn. cable from Duo Air D to Duo and 2 x 0.2 m conn. cable between converters included in the supply) | BPSDUD01323 |
| Duo Air D 3 ch. K type + Duo Profinet (std. 0.35 m conn. cable from Duo Air D to Duo and 2 x 0.2 m conn. cable between converters included in the supply) | BPSDUD01333 |
| Duo Air D 4 ch. K type + Duo Basic (std. 0.35 m conn. cable from Duo Air D to Duo and 3 x 0.2 m conn. cable between converters included in the supply) | BPSDUD01302 |
| Duo Air D 4 ch. K type + Duo Ethernet/IP (std. 0.35 m conn. cable from Duo Air D to Duo and 3 x 0.2 m conn. cable between converters included in the supply) | BPSDUD01312 |
| Duo Air D 4 ch. K type + Duo Profibus (std. 0.35 m conn. cable from Duo Air D to Duo and 3 x 0.2 m conn. cable between converters included in the supply) | BPSDUD01322 |
| Duo Air D 4 ch. K type + Duo Profinet (std. 0.35 m conn. cable from Duo Air D to Duo and 3 x 0.2 m conn. cable between converters included in the supply) | BPSDUD01332 |

## STAND ALONE UNITS

| DESCRIPTION | ORDER CODE |
|---|---|
| Duo Air D with 1 air transducer input for K type air gauges | B830DUOADK1 |
| Duo Air D with 2 air transducer input for K type air gauges | B830DUOADK0 |
| Duo Air D with 3 air transducer input for K type air gauges | B830DUOADK3 |
| Duo Air D with 4 air transducer input for K type air gauges | B830DUOADK2 |
| Connecting cable from Duo Air D to Duo (L = 0,35 m) | B6739696775 |
| Connecting cable between digital converters in the Duo Air D 2 ch (L = 0,2 m) | B4159ABDUEF |

# MODELS AND ACCESSORIES
# U-FAMILY

## U1-E ENCODER INTERFACE

Adapter Encoder to USB

| MODEL | U1-E |
|---|---|
| ORDER CODE | B687126E000 |
| USB connector | Type 'A' |
| Encoder connector | Male 9 poles SUB D connect or |
| Protection Degree | IP40 |
| Current requirement | < 500 mA < 2.5 mA in suspend mode |
| USB interface | USB 2.0 |
| Power supply USB | 4,40 ÷ 5,25 Vdc from USB bus |
| Power supply Encoder | 5V from USB bus with 400mA max available for the encoder |
| Resolution | Depending on connect ed device |
| Band width | 300KHz analog encoder 4MH z digita l encoder |
| Input | differential (A+, A-, B+, B-, Z+, Z-) |
| Input type | RS 422 (TTL) / Incrementa l signal 1Vpp<br>Analog signal / 11µA with MARPOSS adapter 6303540800 |
| Cable length | 50cm / 20 inches* |
| Storage temperature | -20°C / +70°C |
| Operative temperature | 0°C / +60°C |

## U2-I/O INPUT/OUTPUT INTERFACE

- Adapter I/O digital signal to USB.
- One adapter can manage up to 2 separate I/O lines.
- The lines can be programmed separately, as one input-one output, or 2 inputs, or 2 outputs.

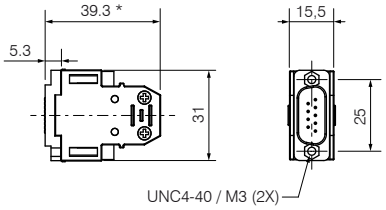
| MODEL | U2-I/O |
|---|---|
| ORDER CODE | B687126I000 |
| USB connector | Type 'A' |
| I/O connect or | M12 type, female straight connect or |
| Protection Degree | IP40 |
| Current requirement | < 100 mA (max) < 500 µA (max, in suspend mode) |
| USB interface | USB 2.0 |
| Power supply USB face | 4,40 ÷ 5,25 Vdc from USB bus |
| Power supply I/O face (isolated) | 24 V nominal voltage |
| Cable length | 50cm / 20 inches* |
| Storage temperature | -20°C / +70°C |
| Operative temperature | -10°C / +40°C |

## U1-FS FOOTSWITCH INTERFACE

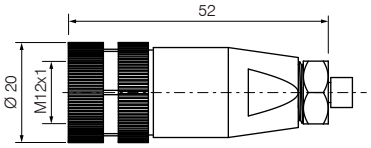
Pedal trigger via USB

| MODEL | U1-FS |
|---|---|
| ORDER CODE | B687126E000 |
| USB connector | Type 'A' |
| I/O connect or | M12 type, female straight connect or |
| Protection Degree | IP40 |
| Current requirement | < 100 mA (max) < 500 µA (max, in suspend mode) |
| USB interface | USB 2.0 |
| Power supply USB face | 4,40 ÷ 5,25 Vdc from USB bus |
| Power supply I/O face (isolated) | 24 V nominal voltage |
| Cable length | 50cm / 20 inches* |
| Storage temperature | -20°C / +70°C |
| Operative temperature | -10°C / +40°C |

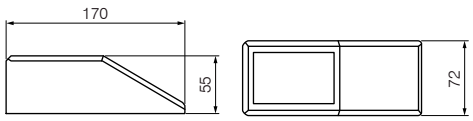
**U1E Encoder interface**

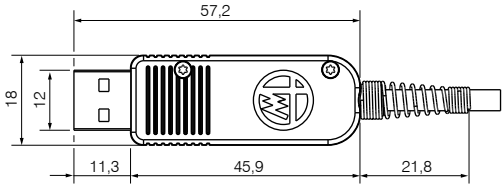


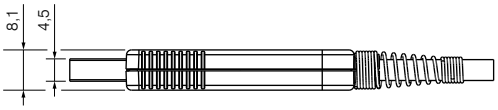

**U2-I/O I/O interface**




**U1-FS Footswitch interface**



# MODELS AND ACCESSORIES
# GAGEPOD

## SENSORS

- DAQ modules, acronym for Data acquisition.
- It implements 16 separated channels, so it connects up to 16 sensors.
- There are 2 versions of this device, differentiating for connector layout.

| TECHNICAL SPECIFICATIONS | 16 DAQ | 4X4 DAQ |
|---|---|---|
| NUMBER OF CHANNELS | 16 | 16 |
| CONNECTORS TYPE | Lumberg SV50/6 (female) | 4 male VEAM (4 channels each) |
| CHANNEL INPUT TYPE | LVDT, HBT, HBT TESA, MG (Microcontrol), DIGI (Digicrown) | LVDT, HBT |
| A/D CONVERTER RESOLUTION | 24 bit | 24 bit |
| DATA SYNCHRONIZATION | YES (all modules) | YES (all modules) |
| COMPUTER CONNECTIVITY | Ethernet and USB | Ethernet and USB |
| SAMPLING | Synchronous sampling on all 16 channels | Synchronous sampling on all 16 channels |
| POWER SUPPLY | 24Vdc-SELV compliant. +20 -15 % / M12 male connector | 24Vdc-SELV compliant. +20 -15 % / M12 male connector |
| PORTS (depending on module) | 2 x Ethernet 100Mbps / RJ45 connector 2 x USB device; 1 x USB host. USB 2.0 Full Speed RS232 - 422 - 485 (multi-standard) / DSUB-9 | 2 x Ethernet 100Mbps / RJ45 connector 2 x USB device; 1 x USB host. USB 2.0 Full Speed RS232 - 422 - 485 (multi-standard) / DSUB-9 |

## INPUT OUTPUT

- These modules manage 16 or 32 opto-insulated, 24Vdc digital input/output signals. The version with 32 I/O is also available with a single connector.
- Any number of digital input/outputs can be managed simultaneously.
- There are 2 versions of this accessory, differentiating for connector layout.

| TECHNICAL SPECIFICATIONS | 16 IO | 32 IO | 32 IO - BLIND |
|---|---|---|---|
| NUMBER OF CHANNELS | 16 | 32 | 32 |
| CONNECTORS TYPES | 8 x M12 (female) 1 x DSUB-25 (female) | 16 x M12 (female) 2 x DSUB-25 (female) 1 x DSUB-37 (female) | 1 x DSUB-37 (female) |
| I/O ASSIGNMENT | Each pin definable as Input or Output (via software) | Each pin definable as Input or Output (via software) | Each pin definable as Input or Output (via software) |
| POWER SUPPLY FOR I/O | Internal/External. SELV-compliant. Selectable via dip-switch The PS of the output signals can be interrupt separatly from inputs | Internal/External. SELV-compliant. Selectable via dip-switch The PS of the output signals can be interrupt separatly from inputs | Internal/External. SELV-compliant. Selectable via dip-switch The PS of the output signals can be interrupt separatly from inputs |
| MAX OUT CURRENT | M12 100mA on each pin. Connectors 7 and 8 provide up to 250mA on each pin (500mA on each connector) | M12 100mA on each pin. Connectors 7, 8, 15 and 16 provide up to 250mA on each pin (500mA on each connector) | 100mA on each pin. some of them can provide up to 250mA |
| INPUT ABSORPTION (ACTIVE HIGH) | 15mA | 15mA | 15mA |
| OUT INTERFACE TYPE | Source/Sink selectable in groups of 16I/O IEC 61131-2 | Source/Sink selectable in groups of 16I/O IEC 61131-2 | Source/Sink selectable in groups of 16I/O IEC 61131-2 |

## HYBRID MODULES

- These modules are multi-functional, designed to manage simultaneously sensors, motors control with/without an integrated motion controller and encoder, 8 digital input/output and an emergency circuit to interrupt power supply on the Outputs and motor rotation.

| TECHNICAL SPECIFICATIONS | 4M8 | MC8 |
|---|---|---|
| NUMBER OF CHANNELS (SENSORS) | 4, Lumberg SV50/6 (female) | 4, 26 pin connector (motor interface, I/O) |
| CHANNEL INPUT TYPE | LVDT, HBT, HBT TESA, MG (Microcontrol), DIGI (Digicrown) | HBT |
| NUMBER OF I/O | 8, 4 x M12 (female) | 8, 4 x M12 (female) |
| OUT INTERFACE TYPE | Source | Source |
| DC MOTOR - OUTPUT CURRENT | Max 2,6A (refer to HW manual for more details) | 2,5A (refer to HW manual for more details) |
| DC MOTOR - SAFETY POWER SUPPLY INTERRUPTION | With emergency circuit | With emergency circuit |
| DC MOTOR - V OUT | SW regulated: 0Vdc to 24Vdc | Adjustable in speed and position |

## ENCODER

- This module manages up to 9 linear and rotary encoders, providing a synchronization input/output for external devices as well

| TECHNICAL SPECIFICATIONS | 9E |
|---|---|
| NUMBER OF CHANNELS | 9 |
| CONNECTORS | DSUB-9 for encoder and synchronization |
| SENSOR TYPES | Incremental analogue 1V pp Digital RS422 |
| TRIGGER INPUT/OUTPUT | Logical Input 5V TTL Logical Input (fast) – optocupled<br>RS485 bus to share measurement synchronism (bi-directional) |

## FIELDBUS

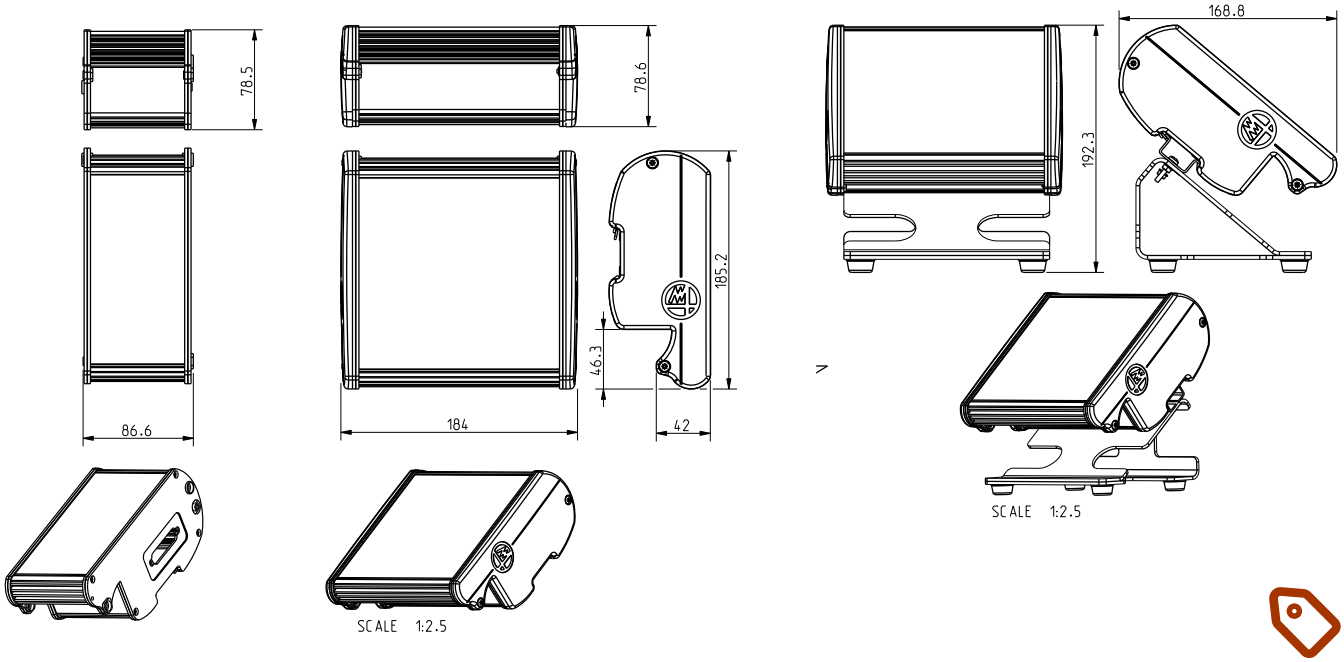
- This module implement Industrial fieldbus interfaces: Profibus®, Profinet® and Ethernet/IP™ protocols.

# MODELS AND ACCESSORIES
## GAGEPOD

### BRIDGE

- The Bridge is a blind-panel module and is used as a “line repeater”, typically in conjunction with Extension modules (e.g. I/O and Fieldbus).
- It must be used when splitting a configuration in two or more groups and the first module of the new group is an Extension module.
- The Bridge is NOT necessary if the first module of the new group is a master or a slave unit.

| TECHNICAL SPECIFICATIONS | 4M8 |
|---|---|
| PROTECTION DEGREE | Up to IP54 |
| STORAGE TEMPERATURE | -20-60°C |
| OPERATING TEMPERATURE | 5-45°C (41 – 113 °F) |
| RELATIVE HUMIDITY | 5-80% non condensing |
| DIMENSIONS | H185 - W184 - D78,6 mm |
| MOUNTING SOLUTIONS | DIN rail mounting integrated, benchmount stand (option) |
| WEIGTHT (SINGLE MODULE) WITHOUT STAND | 1.3Kg |




| | DESCRIPTION | ORDER CODE |
|---|---|---|
| Mounting | GAGEPOD BENCHTOP STAND | B6134700030 |
| | DIN RAIL 1-MODULES L=165MM | B1502047910 |
| | DIN RAIL 1.5-MODULES L=250MM | B1502047920 |
| | DIN RAIL 2-MODULES L=330MM | B1502047930 |
| | DIN RAIL 2.5-MODULES L=415MM | B1502047940 |
| | DIN RAIL 3-MODULES L=495MM | B1502047950 |
| | DIN RAIL 3.5-MODULES L=580MM | B1502047960 |
| | DIN RAIL 4-MODULES L=660MM | B1502047970 |
| | DIN RAIL 4.5-MODULES L=745MM | B1502047980 |
| | DIN RAIL 5-MODULES L=825MM | B1502047990 |
| | DIN RAIL 5.5-MODULES L=910MM | B1502048000 |
| | DIN RAIL 6-MODULES L=990MM | B1502048010 |
| | DIN RAIL 6.5-MODULES L=1075MM | B1502048020 |

| | DESCRIPTION | ORDER CODE |
|---|---|---|
| Power supply | AC/DC POWER SUPPLY UNIT 24VDC - 3.5A | B6871140180 |
| | M12 BINDER CONNECTOR | B4140K04307 |
| | POWER SUPPLY SPLITTER (LUMBERG T-CONNECTOR) | B4159ALMT74 |
| | 1M CABLE EXTENSION FOR POWER SUPPLY SPLITTER | B4159ALMUEH |
| | 2M CABLE EXTENSION FOR POWER SUPPLY SPLITTER | B4159ALMUEJ |
| | 3M CABLE EXTENSION FOR POWER SUPPLY SPLITTER | B4159ALMUFJ |
| | 5M CABLE EXTENSION FOR POWER SUPPLY SPLITTER | B4159ALMUES |
| Cables | GAGEPOD INTERCONNECT CABLE 0.3M | B6734620021 |
| | GAGEPOD INTERCONNECT CABLE 0.5M | B6734620022 |
| | GAGEPOD INTERCONNECT CABLE 1M | B6734620015 |
| | GAGEPOD INTERCONNECT CABLE 1.5M | B6734620025 |
| | GAGEPOD INTERCONNECT CABLE 3M | B6734620016 |
| | GAGEPOD INTERCONNECT CABLE 5M | B6734620024 |
| | GAGEPOD INTERCONNECT CABLE 10M | B6734620018 |
| | GAGEPOD INTERCONNECT CABLE 15M | B6734620020 |
| | GAGEPOD LOOPBACK CABLE 3M | B6734620017 |
| | ETHERNET CABLE 1M - IP54 CONNECTOR | B6739696465 |
| | ETHERNET CABLE 3M - IP54 CONNECTOR | B6739696466 |
| | ETHERNET CABLE 5M - IP54 CONNECTOR | B6739696467 |
| | ETHERNET CABLE 10M - IP54 CONNECTOR | B6739696468 |
| | ETHERNET CABLE 15M - IP54 CONNECTOR | B6739696469 |
| | ETHERNET CABLE 20M - IP54 CONNECTOR | B6739696470 |
| | ETHERNET CABLE 25M - IP54 CONNECTOR | B6739696549 |
| | 3M ETHERNET CABLE / CAT6-SFTP/(BLACK) | B47013D0277 |
| | 5M ETHERNET CABLE / CAT6-SFTP/(BLACK) | B47013D0278 |
| | 10M ETHERNET CABLE / CAT6-SFTP/(BLACK) | B47013D0270 |
| | 15M ETHERNET CABLE / CAT6-SFTP/(BLACK) | B47013D0275 |
| | 20M ETHERNET CABLE / CAT6-SFTP/(BLACK) | B47013D0268 |
| | ADAPTER CABLE FOR E9066 FOOTSWITCH DB9 --> M12 | B6739659001 |
| | USB CABLE L=1M (TYPE A-B) TO CONNECT EASY BOX TO THE PC USB PORT | B4701300229 |
| | USB CABLE L=3M (TYPE A-B) | B4701300230 |
| Other accessories | LEFT-SIDE GASKET | B1502046480 |
| | RIGHT-SIDE GASKET | B1502046485 |
| | CANNON GASKET | B1502046490 |
| | GAGEPOD LVDT MINICARD | B6840041268 |
| | GAGEPOD DIGICROWN MINICARD | B6840041269 |
| | GAGEPOD HBT MINICARD | B6840041270 |
| | GAGEPOD HBT-13 MINICARD | B6840041271 |
| | GAGEPOD MG MINICARD | B6131640064 |
| | GAGEPOD FASTENING SCREWS KIT (3) | B6134704400 |
| | BLUE PROTECTION COVERS (RIGHT+LEFT) - BLIND | B6134704500 |
| | PASS-THRU PROTECTION COVERS (RIGHT+LEFT) | B6134704600 |
| | GAGEPOD COVER PLATES + GASKETS | B6134720400 |
| | ACCESSORY KIT (LABELS, MINICARDS, SCREWS) FOR SPARE GAGEPOD MODULES | B6871992254 |
| | HARDWARE MANUAL ENGLISH | BD2660018UG |

# MODELS AND ACCESSORIES
# SMARTNET

## JUNCTION BOX

- System that fits any application layout.
- It will be available in two sizes — for 4 or 16 probes, depending on the specific requirements of your application.
- Each box is equipped with two connectors: Bus In and Bus Out, allowing the connection to additional junction boxes and enabling a daisy chain configuration throughout (FRU-AUT) the network.

| TECHNICAL SPECIFICATIONS | JB4 | JB16 |
|---|---|---|
| ORDER CODE | B76KS040000 | B76KS160000 |
| Number of channels | 4 | 16 |
| Connectors type | Push-Pull connector | Push-Pull connector |
| Channel input type | SMART sensors | SMART sensors |
| Data synchronization | YES (all modules) | YES (all modules) |
| Protection degree | IP 54 | IP 54 |
| Storage temperature | -20-60°C | -20-60°C |
| Operating Temperature | 5-45°C (41 – 113 °F) | 5-45°C (41 – 113 °F) |
| Relative Humidity | 5-80% non condensing | 5-80% non condensing |
| Dimensions | H123,5 – W64 – D43,2 mm | H123,5 – W189 – D43,2 mm |
| Mounting solutions | DIN rail mounting integrated, benchmount stand (option) | DIN rail mounting integrated, benchmount stand (option) |

## INPUT OUTPUT

- This module manages 8 opto-insulated, 24 Vdc digital input/output signals.
- Any number of digital input/outputs can be managed simultaneously.

| TECHNICAL SPECIFICATIONS | 8 IO |
|---|---|
| ORDER CODE | B76KI080000 |
| Number of input/output | 8 |
| Connectors type | Phoenix PCB header MCV 1,5/10-GF-3,81 |
| I/O assignment | Each pin programmaable as Input or Output (via software) |
| Power supply for I/O | External 24Vdc |
| Max output current | 100mA on each pin. |
| Input absorption (active high) | 15mA |
| Output interface type | Source |
| Protection Degree | IP40 |
| Storage temperature | -20-60°C |
| Operating temperature | 5-45°C (41 – 113 °F) |
| Relative humidity | 5-80% non condensing |
| Dimensions | H123,5 – W64 – D43,2 mm |
| Mounting solutions | DIN rail mounting integrated, benchmount stand (option) |

## BRIDGE

- The bridge handles auto-addressing and firmware alignment.
- It provides Ethernet connection to a PC and fieldbus connectivity to PLCs (e.g., Profinet, EtherCAT,...)
- The network can handle up to 250 probes per line.

| TECHNICAL SPECIFICATIONS | BRIDGE | BRIDGE - PN |
|---|---|---|
| ORDER CODE | B76KB000000 | B76KBPN0000 |
| CONNECTIVITY | Ethernet | Ethernet and ProfiNet |
| MAX NUMBER OF MANAGEABLE SENSORS | 250 | 250 |
| POWER SUPPLY | 24 Vdc | 24 Vdc |
| PROTECTION DEGREE | IP40 | IP40 |
| OPERATING TEMPERATURE | 5-45°C (41 – 113 °F) | 5-45°C (41 – 113 °F) |
| RELATIVE HUMIDITY | 5-80% non condensing | 5-80% non condensing |
| DIMENSIONS | H123,5 – W94,2 – D43,2 mm | H123,5 – W94,2 – D43,2 mm |
| MOUNTING SOLUTIONS | DIN rail mounting integrated, benchmount stand (option) | DIN rail mounting integrated, benchmount stand (option) |

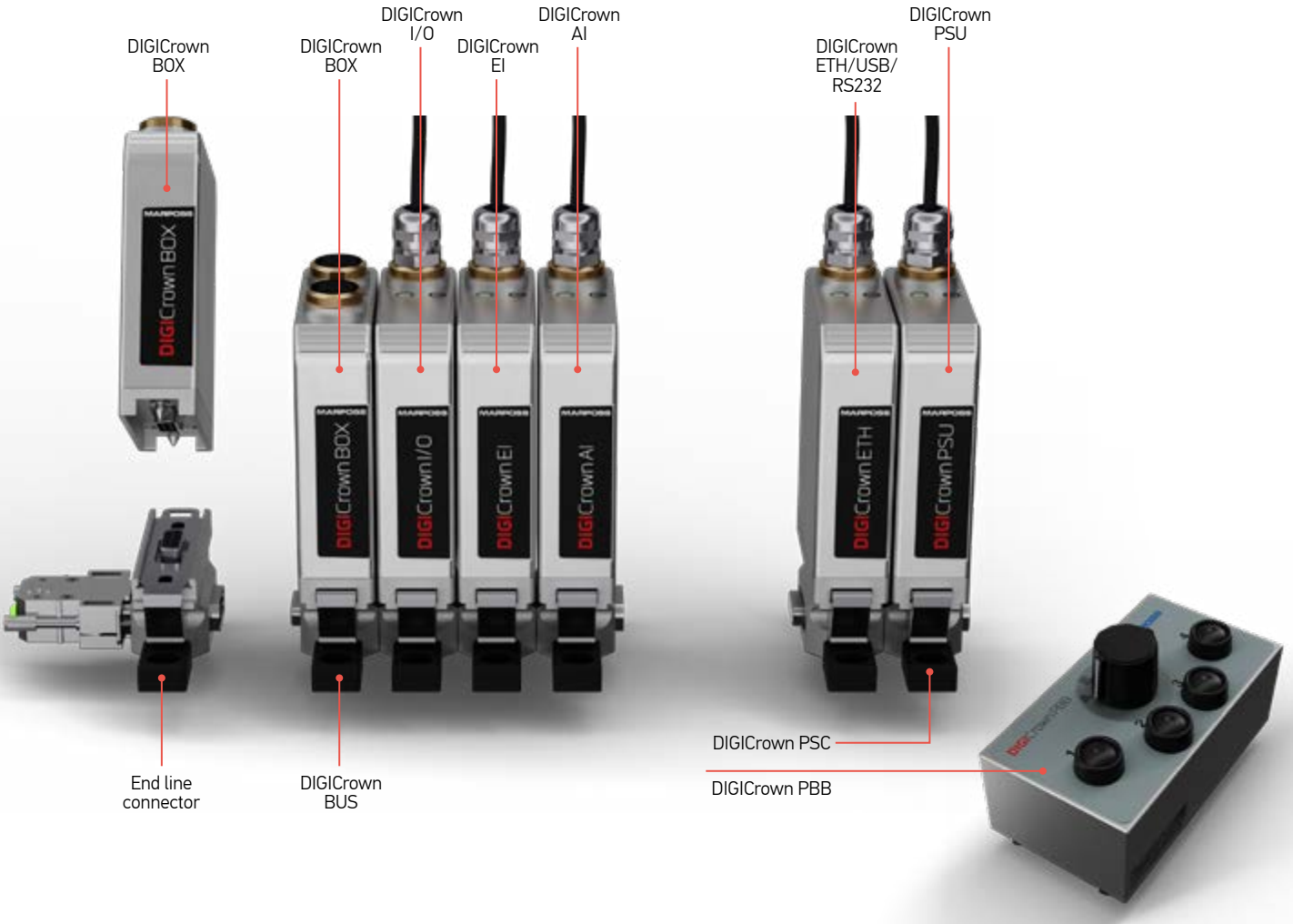
| | DESCRIPTION | ORDER CODE | ORDER CODE |
|---|---|---|---|
| Mounting | BENCHTOP STAND | | B6134700030 |
| | DIN RAIL 1-MODULE | L=165MM | B1502047910 |
| | DIN RAIL 1.5-MODULES | L=250MM | B1502047920 |
| | DIN RAIL 2-MODULES | L=330MM | B1502047930 |
| | DIN RAIL 2.5-MODULES | L=415MM | B1502047940 |
| | DIN RAIL 3-MODULES | L=495MM | B1502047950 |
| | DIN RAIL 3.5-MODULES | L=580MM | B1502047960 |
| Power supply | AC/DC POWER SUPPLY UNIT 24VDC - 3.5° | | B6871140180 |
| Mounting | SMARNET CABLE JB TO JB | 0,2 M | B6736A6B020 |
| | SMARNET CABLE JB TO JB | 1 M | B6736A6B100 |
| | SMARNET CABLE JB TO JB | 2 M | B6736A6B200 |
| | SMARNET CABLE JB TO JB | 5 M | B6736A6B500 |
| | SMARNET CABLE JB TO JB | 10 M | B6736A6BA00 |
| | SMARNET CABLE JB TO PROBE | 1 M | B6736B6C100 |
| | SMARNET CABLE JB TO PROBE | 2 M | B6736B6C200 |
| | SMARNET CABLE JB TO PROBE | 3 M | B6736B6C300 |
| | ETHERNET CABLE – IP54 CONNECTOR | 1 M | B6739696465 |
| | ETHERNET CABLE – IP54 CONNECTOR | 3 M | B6739696466 |
| | ETHERNET CABLE – IP54 CONNECTOR | 5 M | B6739696467 |
| | ETHERNET CABLE – IP54 CONNECTOR | 10 M | B6739696468 |
| | ETHERNET CABLE – IP54 CONNECTOR | 15 M | B6739696469 |
| | ETHERNET CABLE – IP54 CONNECTOR | 20 M | B6739696470 |
| | ETHERNET CABLE – IP54 CONNECTOR | 25 M | B6739696549 |

# MODELS AND ACCESSORIES
# DIGICROWN NETWORK SYSTEM

## SENSORS - DUAL CHANNEL BOX

- It allows the management of the entire Marposs DIGICrown probing line and all Marposs digitized sensors (A/E converter, D124, etc.). Please refer to REDCrown2 line catalogue.
- The DIGICrown BOX can acquire up to 4000 samples/s.

| MODEL | BOX 2CHANNELS |
|---|---|
| **ORDER CODE** | B767X200400 |
| NUMBER OF CHANNELS | 2 |
| Max number of modules per net | 31 |
| Power supply | +7,5Vdc (-10/+30%) - from bus |
| Current consumption | 90 mA |
| Input (sensor) | Two DIGICrown2 probes |
| Output (BUS) | Serial communication toward bus, by DIGICrown protocol |
| Input type | 1 / 2 / 5 / 10 / 20 mm |
| Resolution | 0,05µm (1-2mm) / 0,2µm (4-10mm) / 0,5µm (20mm) |
| Sampling rate [Samples/s] | up to 4000 |
| Operating temperature [°C] | 0 to +60 |
| Storage temperature [°C] | -20 to +70 |
| Protection degree | IP43 |
| Connection | Lumberg SV50/6 female connector |
| Network position | from the 3rd to the 33th |
| Connection to the DIGICrown net | DIGICrown BUS |



## PC/PLC INTERFACES

- The system can be connected to PC or PLC with three different interfaces. All these modules allow static or dynamic measurements acquisitions with synchronisation, for performance details please refer to the technical specifications table.
- ETHERNET Interface (ETH) . The bus network baud rate is 2083 Kbps. In case of configuration with more than one network, the synchronization signal can be also extended to other networks (external synchronisation).
- RS232 Interface (232) . The COM port baud rate is programmable up to 115.2 Kbps and the bus network baud rate is 625 Kbps.

| MODEL | BOX ETHERNET | BOX RS232 |
|---|---|---|
| ORDER CODE | B767Y020500 | B767Y000100 |
| Max. number of networks for application | 12 | 12 |
| Number of interface x network | 1 | 1 |
| PC operative system | WINDOWS 7® / WINDOWS 8® / WINDOWS 10® | WINDOWS 7® / WINDOWS 8® / WINDOWS 10® |
| Power supply | +7,5 Vdc (-10 / +30%) external by DIGICrown PSU | +7,5 Vdc (-10 / +30%) external by DIGICrown PSU |
| Current consumption | 90 mA | 40 mA |
| Communication [toward pc] | ETH (10/100) | 1 RS232 channel, full duplex hardware handshake (RTS/CTS) |
| Internal network baud rate [Kbaud] | 2083 | 625 |
| Max managed sampling rate [samples/s] | up to 4000 | - |
| Operating temperature [°C] | 0 to +60 | 0 to +60 |
| Storage temperature [°C] | -20 to +70 | -20 to +70 |
| Protection degree | IP43 | IP43 |
| Connection | RJ45 | 9 pin D-Sub female connector |
| Network position | 2nd | 2nd |
| Connection to the DIGICrown net | DIGICrown BUS | DIGICrown BUS |

## POWER SUPPLY UNITS

- Power Supply Unit (PSU) is always the first module and supplies voltage to the complete network. It is available in 3 models, 2 types for 100-240Vac (with or without box) and 1 type for 24Vdc.

| MODEL | PSU 100-240 VAC WITH BOX | PSU 100-240 VAC WITHOUT BOX | PSU 24 VDC |
|---|---|---|---|
| ORDER CODE | B767W000001 | B767W000011 | B767W010000 |
| Max number of modules x net | up to 31 DIGICrown BOX (*) | up to 31 DIGICrown BOX (*) | up to 18 DIGICrown BOX (*) |
| Current consumption | - | - | 0,8 A |
| Input | 100-240 Vac | 100-240 Vac | 24 Vdc |
| Output | 7,5 Vdc / 3 A | 7,5 Vdc / 3 A | 7,5 Vdc / 1,7 A |
| Operating temperature [°C] | 0 to +40 | 0 to +40 | 0 to +40 |
| Storage temperature [°C] | -20 to +70 | -20 to +70 | -20 to +70 |
| Protection degree | IP41 | IP41 | IP41 |
| Connection | cable | cable | jack |
| Network position | 1st | 1st | 1st |
| Connection to the DIGICrown net | DIGICrown PSC | direct to DIGICrown BUS of the selected interface. DIGICrown PSC not needed. | DIGICrown PSC |

(*) please refer to the current consumption value in the next tables to evaluate how many modules of different types can be managed.

# MODELS AND ACCESSORIES
# DIGICROWN NETWORK SYSTEM

## INPUT / OUTPUT

- DIGICrown I/O interface is available in 3 versions with 8 Input/Output (sink or source) and only input (8 inputs). The inputs/outputs are opto-coupled, they can be singularly programmed as in or out. With this module it is possible to manage: solenoid valves (through power relays), acquisition of input signals by local cycle

| MODEL | SINK | SOURCE | ONLY INPUT |
|---|---|---|---|
| ORDER CODE | B767I000500 | B767I010500 | B767I020500 |
| Max number of modules per net | 31 | 31 | 31 |
| Power supply | +7,5Vdc (-10/+30%) - from bus | +7,5Vdc (-10/+30%) - from bus | +7,5Vdc (-10/+30%) - from bus |
| Current consumption | 70 mA | 70 mA | 80 mA |
| Input (sensor) | 8 in/out opto-insulated<br>Voff (min)= (Vio-5V)<br>Von (max)= (Vio-15V)<br>Every bit can be programmed as IN or OUT | 8 in/out opto-insulated<br>Voff (min)= (Vio-5V)<br>Von (max)= (Vio-15V)<br>Every bit can be programmed as IN or OUT | 8 IN for switch box<br>Off: Rswitch > 500 kohm Ω<br>On: Rswitch < 3300 ohm Ω |
| Output (BUS) | serial communication toward bus, by DIGICrown protocol | serial communication toward bus, by DIGICrown protocol | serial communication toward bus, by DIGICrown protocol |
| Input type | 200mA for out (700mA max total) | 200mA for out (700mA max total) | - |
| Sampling rate [Samples/s] | up to 4000 | up to 4000 | up to 4000 |
| Operating temperature [°C] | 0 to +60 | 0 to +60 | 0 to +60 |
| Storage temperature [°C] | -20 to +70 | -20 to +70 | -20 to +70 |
| Protection degree | IP43 | IP43 | IP43 |
| Connection | 15 pin D-SUB male connector | 15 pin D-SUB male connector | 15 pin D-SUB male connector |
| Network position | from the 3rd to the 33rd | from the 3rd to the 33rd | from the 3rd to the 33rd |
| Connection to the DIGICrown net | DIGICrown BUS | DIGICrown BUS | DIGICrown BUS |

## ENCODER INPUT

- Encoder Input (EI) is available in 2 models for analogue or digital, linear or rotary type encoders; spatial and temporal synchronisation are managed.

| MODEL | DIGITAL | ANALOGUE |
|---|---|---|
| ORDER CODE | B767E010500 | B767E100500 |
| Max number of modules per net | 31 | 31 |
| Power supply | +7,5Vdc (-10/+30%) - from bus | +7,5Vdc (-10/+30%) - from bus |
| Current consumption | 115 mA (without encoder connected) | 115 mA (without encoder connected) |
| Input (sensor) | single ended (A,B,Z, ER) or differential (A+,A-,B+,B-, Z+,Z-,ER) | Phases A, B, M and error |
| Output (BUS) | serial communication toward bus, by DIGICrown protocol | serial communication toward bus, by DIGICrown protocol |
| Input type | TTL, HTL, RS422 push pull or open-collector | 1Vpp or 11µApp |
| Resolution | depending on the device connected | depending on the device connected |
| Sampling rate [Samples/s] | up to 4000 | up to 4000 |
| Operating temperature [°C] | 0 to +60 | 0 to +60 |
| Storage temperature [°C] | -20 to +70 | -20 to +70 |
| Protection degree | IP43 | IP43 |
| Connection | 9 pin D-SUB male connector | 9 pin D-SUB male connector |
| Network position | from the 3rd to the 33rd | from the 3rd to the 33rd |
| Connection to the DIGICrown net | DIGICrown BUS | DIGICrown BUS |

## ANALOGUE INPUT

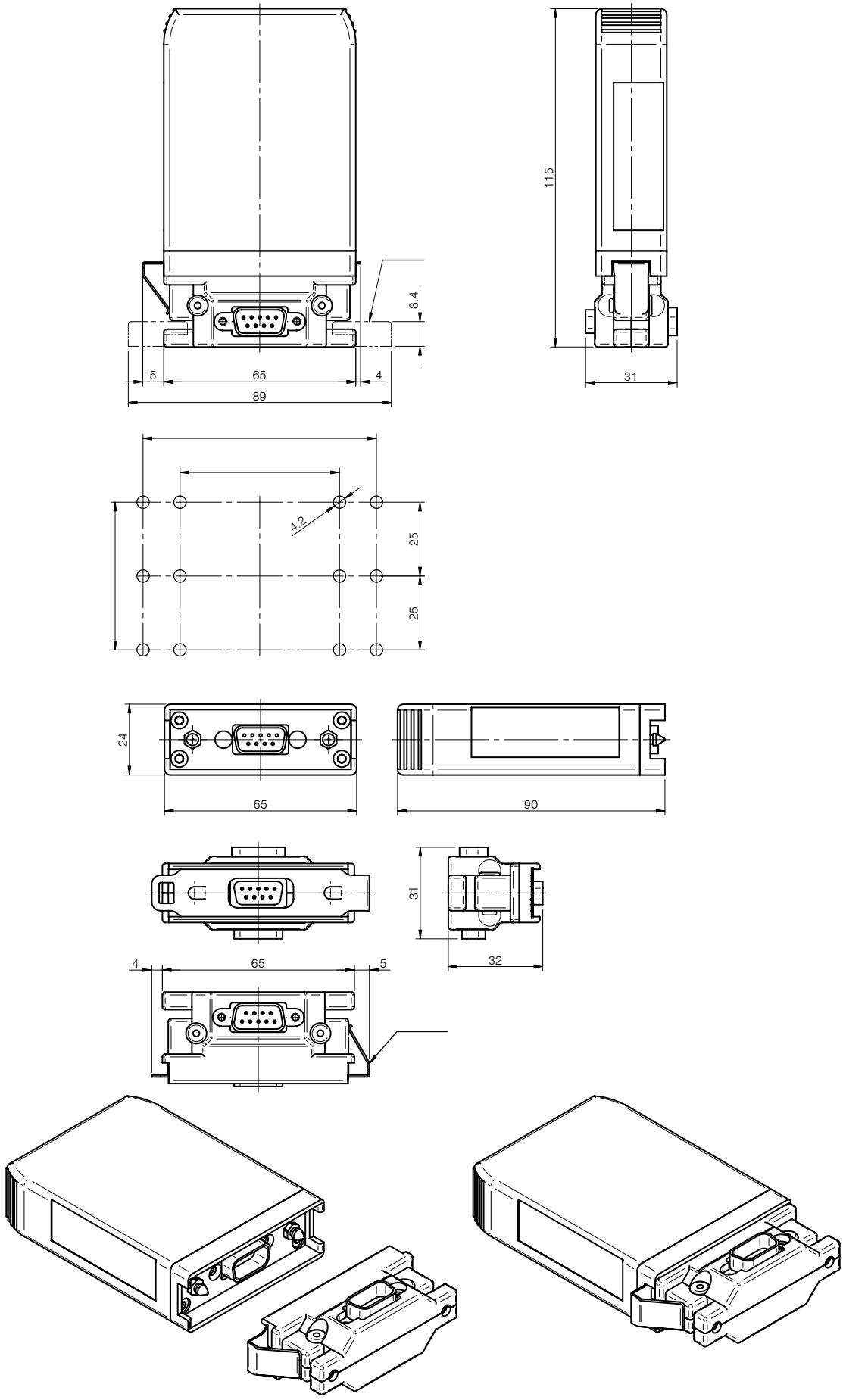
- Analogue Input (AI). It allows to interface any third party sensor with voltage or current analogue signal.

| MODEL | ANALOGUE INPUT | | |
|---|---|---|---|
| **ORDER CODE** | B767A000400 | | |
| Max number of modules per net | 31 | | |
| Power supply | +7,5Vdc (-10/+30%) - from bus | | |
| Current consumption | 100 to 150 mA depending on input type | | |
| Input (sensor) | voltage / current input | | |
| Output (BUS) | serial communication toward bus, by DIGICrown protocol | | |
| Input type | voltage (±10V / ±5V / 0-10V) | current (±20mA / 4-20 mA) | resistance |
| Resolution | 0,02mV (±5V range) or 0,05mV (±10V) | 0,0001 mA | 0,1 Ω (range 50÷3.000 Ω)<br>0,01 Ω (range 50÷500 Ω) |
| Sampling rate [Samples/s] | up to 4000 | | |
| Operating temperature [°C] | 0 to +60 | | |
| Storage temperature [°C] | -20 to +70 | | |
| Protection degree | IP43 | | |
| Connection | wires | | |
| Network position | from the 3rd to the 33rd | | |
| Connection to the DIGICrown net | DIGICrown BUS | | |

## ACCESSORIES

| | DESCRIPTION | ORDER CODE |
|---|---|---|
| Accessories | End line connector | B6355200000 |
| | DIGICrown BUS | B6872030020 |
| | DIGICrown PSC (for DIGICrown PSU only) | B6872030021 |
| | DIGICrown PBB (Push Button Box) | B6139013200 |
| | EU cable | B4147000016 |
| | USA cable | B4147000017 |
| Cables | Connection cable 2 m | B6738057027 |
| | Connection cable 3,5 m | B6738057029 |
| | 9 Connection cable 6 m | B6738057031 |
| | Connection cable 10 m | B6738057033 |

## DIMENSIONS (MM)




MARPOSS
DIGICrown BOX
DIGICrown BOX
DIGICrown I/O
DIGICrown EI
DIGICrown AI
DIGICrown ETH
DIGICrown PSU

# MODELS AND ACCESSORIES
## ASC

### RS232

- ASC acquires the measuring signals from both LVDT (full bridge) and HBT (half bridge with LVDT pinout) multiple gauge sensors and automatically transforms them into a digital data stream, ready for immediate elaboration on line controls.
- ASC is the perfect solution of small gauges networks, up to 4 sensors, and direct interconnection to PLC.
- This version has RS-232 interface embedded.
- ASC RS232 accepts Marposs standard LVDT analog sensors and LVDT/HBT with LVDT pinout digital sensors.

| MODEL | MEASURING RANGE | 2 CH BAUDRATE=9600BPS | 2 CH BAUDRATE=115200BPS | 4 CH BAUDRATE=9600BPS | 4 CH BAUDRATE=115200BPS |
|---|---|---|---|---|---|
| ANALOG LVDT (Standard Marposs) | ±0.5mm | B768231AL00 | B768231AL01 | B768232AL00 | B768232AL01 |
| | ±1mm or ±2mm | B768231AL20 | B768231AL21 | B768232AL20 | B768232AL21 |
| | ±2,5mm | B768231AL40 | B768231AL41 | B768232AL40 | B768232AL41 |
| | ±5mm | B768231AL60 | B768231AL61 | B768232AL60 | B768232AL61 |
| | ±10mm | B768231AL80 | B768231AL81 | B768232AL80 | B768232AL81 |
| DIGITAL (LVDT/HBT pinout LVDT) | ALL | B768231DL00 | B768231DL01 | B768232DL00 | B768232DL01 |

| TECHNICAL SPECIFICATIONS | |
|---|---|
| Power supply Vdc | Nominal value +24 ; Input range -15/+20 % |
| Output type | 1 RS-232 channel, full duplex; hardware handshake (RTS/CTS) |
| Baudrate [bps] | 9600 / 19200 / 38400 / 57600 / 115200 |
| Data bit | 8 |
| Stop bit | 1 |
| Parity | even |
| Sampling rate [sample/s] | up to 400 (depending on net configuration) |
| Electrical absorption [mA] | ASC 2: 90 ASC 4: 200 |
| Protection degree | IP40 |
| Storage temperature [°C] | -20 to 70 |
| Operating temperature [°C] | 0 to 55 |
| Weight [g] | 555 |

## PROFINET

- ASC acquires the measuring signals from multiple gauge sensors and automatically transforms them into a digital data stream, ready for immediate elaboration on line controls.
- ASC is the perfect solution of small gauges networks, up to 4 sensors, and direct interconnection to PLC.
- This version implements Profinet connectivity.
- ASC PROFINET accepts Marposs standard LVDT analog sensors and LVDT/HBT with LVDT pinout digital sensors.

| MODEL | MEASURING RANGE | 2 CH | 4 CH |
|---|---|---|---|
| ANALOG LVDT (Standard Marposs) | ±0.5mm | B768PN1AL00 | B768PN2AL00 |
| | ±1mm or ±2mm | B768PN1AL20 | B768PN2AL20 |
| | ±2,5mm | B768PN1AL40 | B768PN2AL40 |
| | ±5mm | B768PN1AL60 | B768PN2AL60 |
| | ±10mm | B768PN1AL80 | B768PN2AL80 |
| DIGITAL (LVDT/HBT pinout LVDT) | ALL | B768PN1DL00 | B768PN2DL00 |

| TECHNICAL SPECIFICATIONS | |
|---|---|
| Power supply [Vdc] | Nominal value +24 ; Input range -15/+20 % |
| Conformance Class | B |
| Number of Connections | 2 |
| Compliant Protocol | SNMP, LLDP, DCP |
| Minimum update time [ms] | 1 |
| Profinet Version | Profinet RT |
| Device Type | Data I/O Communication Record Data Communication |
| GSDML Version | 2.41 |
| Profinet Device Connectors Type | 2x RJ-45, 100 Mbit/s ports, available simultaneously |
| Netload Class | III |
| Ethernet features | Device configuration via Ethernet<br>Secure Firmware update via Ethernet<br>IT functions web server |
| Electrical absorption [W] | ASC2 PN<br>P(typ) = 1.40 [W]<br>P(max) = 2.35 [W]<br>ASC4 PN<br>P(typ) = 2.30 [W]<br>P(max) = 3.40 [W] |
| Protection degree | IP20 |
| Storage temperature [°C] | -20 to 70 |
| Operating temperature [°C] | 0 to 55 |
| Weight [g] | 594 |

| ACCURACY SPECIFICATIONS | | | | | | | |
|---|---|---|---|---|---|---|---|
| Measuring range [mm] | | ±0,5 | ±1 | ±2 | ±2,5 | ±5 | ±10 |
| Resolution [µm] | | 0,05 | 0,05 | 0,2 | 0,2 | 0,2 | 0,5 |
| Sensitivity [mV/V/mm] | | 230 | 230 | 230 | 115 | 115 | 23 |
| Accuracy pencil probes | REDCrown2 [µm] | ±MAX (0,5 + 2*\|K\|; 7*\|K\|) | ±(0,3 + 5*\|K\|) | ±(0,3 + 7*\|K\|) | ±MIN (0,3 + 10*\|K\|; 11 + 2*\|K\|) | ±MAX (5,0 + 2*\|K\|;7*\|K\|) | ±MAX (10 + 2*\|K\|;7*\|K\|) |
| | DIGICrown2 [µm] | ±(0,2+1*\|K\|) | ±(0,2+1*\|K\|) | ±(0,3+7*\|K\|) | ±(0,6+2*\|K\|) | ±(0,6+2*\|K\|) | ±(1,2+2*\|K\|) |
| Accuracy ASC | | ±(0,1+0,2*\|K\|) | ±(0,2+0,2*\|K\|) | ±(0,4+0,2*\|K\|) | ±(0,5+0,2*\|K\|) | ±(1+0,2*\|K\|) | ±(2+0,2*\|K\|) |

NOTE: K= Reading [mm]

# MODELS AND ACCESSORIES
## TCI

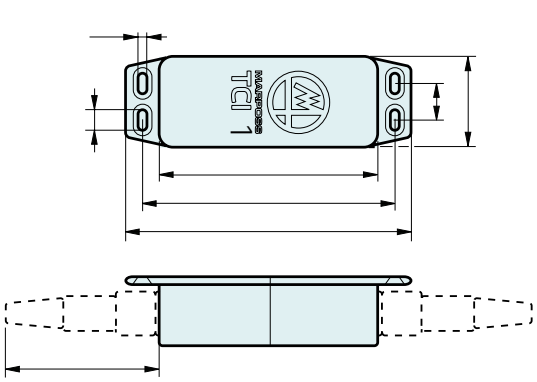
- TCI, meaning Transducer Conditioning Interface, is a Marposs accessory to convert the structured signal from a transducer, both LVDT or HBT, into a traditional analog signal, ready to be elaborated on standard electronics for data acquisition. Thanks to the built-in connectors and the power supply distribution, TCI makes easy the implementation of small gauging networks and their interfacing to third party electronics.

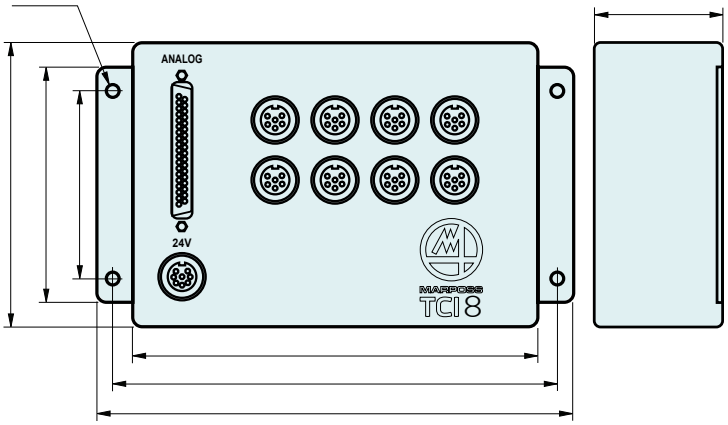
| MODEL | TCI1 | TCI4 | TCI8 |
|---|---|---|---|
| ORDER CODE | To be configured (see table below) | To be configured (see table below) | To be configured (see table below) |
| Protection degree (with connectors plugged in) | IP52 | IP54 | IP54 |
| Weight | 0,14 kg | 0,8 kg | 0,8 kg |
| Operating temperature | 0°+ 50 °C | 0°+ 50 °C | 0°+ 50 °C |
| Storing temperature | -25°+ 75 °C | -25°+ 75 °C | -25°+ 75 °C |
| Operating relative humidity (not condensing) | 20% - 80% | 20% - 80% | 20% - 80% |
| Storing relative humidity (not condensing) | 10% - 95% | 10% - 95% | 10% - 95% |
| Linearity error | max 0.05% of the end scale | max 0.1% of the end scale | max 0.1% of the end scale |
| Gain drift | max 0.02% °C of the end scale | max 0.02% °C of the end scale | max 0.02% °C of the end scale |
| Offset drift | max 0.02% °C of the end scale | max 0.01% °C of the end scale | max 0.01% °C of the end scale |
| Power supply rejection ratio (gain+offset) | max 0.04% / V of the end scale (voltage: ±15V) | max 0.04% / V of the end scale (voltage: ±15V) | max 0.04% / V of the end scale (voltage: ±15V) |
| Output ripple (AF spike excluded) | 20 µA rms current output | 15 µA rms current output | 15 µA rms current output |
| Transducer frequency | Typical 5.1 KHz | Typical 5.0 KHz | Typical 5.0 KHz |
| Transducer voltage supply | Typical 3.3 Vrms | Typical 3.4 Vrms | Typical 3.4 Vrms |
| Transducer current supply | Max 30 mA | Max 30 mA | Max 30 mA |
| Bandwidth | Typical 500 Hz | Typical 500 Hz | Typical 500 Hz |
| Voltage supply: ±15 V | Dual filtered and stabilised ±15 Vdc ±5% Max. ripple allowed at 100/120 Hz: 50 mVpp | Dual filtered and stabilised ±15 Vdc ±5% Max. ripple allowed at 100/120 Hz: 50 mVpp | Dual filtered and stabilised ±15 Vdc ±5% Max. ripple allowed at 100/120 Hz: 50 mVpp |
| Typical consume with transducer connected | Voltage output: ±20 mA Current output: ±40 mA | Voltage output: ±270 mA max. Current output: ±450 mA max. | Voltage output: ±270 mA max. Current output: ±450 mA max. |
| Voltage supply: ±12 V (if configured with a tension output signal) | ±12 Vdc ±5% Max. ripple allowed at 100/120 Hz: 50 mVpp | ±12 Vdc ±5% Max. ripple allowed at 100/120 Hz: 50 mVpp | ±12 Vdc ±5% Max. ripple allowed at 100/120 Hz: 50 mVpp |
| Typical consume with transducer connected | Voltage output: ±20 mA Not available with current output | Voltage output: ±270 mA max. Current output: ±450 mA max | Voltage output: ±270 mA max. Current output: ±450 mA max |
| Voltage supply: +24 V | Single 24 Vdc ±10% Max. ripple allowed at 100/120 Hz: 200 mVpp | Single 24 Vdc ±10% Max. ripple allowed at 100/120 Hz: 200 mVpp | Single 24 Vdc ±10% Max. ripple allowed at 100/120 Hz: 200 mVpp |
| Typical consume with transducer connected | Voltage output: 45 mA Current output: 65 mA | Voltage output: 300 mA max. Current output: 500 mA max | Voltage output: 300 mA max. Current output: 500 mA max |
| Output signal, tension mode ±5V | Maximum output current ±1 mA | Maximum output current ±1 mA | Maximum output current ±1 mA |
| Output signal, tension mode ±10V | Maximum output current ±1 mA | Maximum output current ±1 mA | Maximum output current ±1 mA |
| Output signal, tension mode 0-10V | Maximum output current ±1 mA | Maximum output current ±1 mA | Maximum output current ±1 mA |
| Output signal, current mode 4/20 mA | Load impedance max. 250 ohm, min. 100 ohm | Load impedance max. 250 ohm, min. 100 ohm | Load impedance max. 250 ohm, min. 100 ohm |

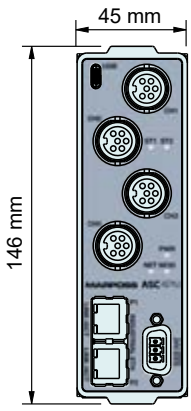
## HOW TO ORDER

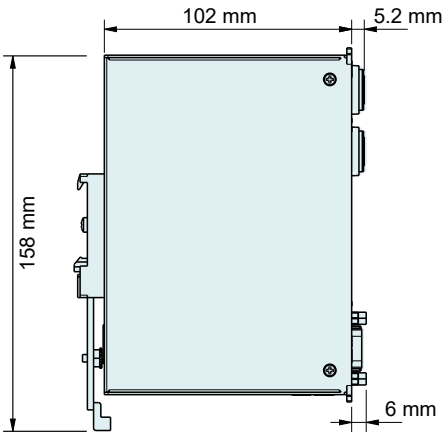
| | B 6 7 4 6 | T | N | X | A | C | U |
|---|---|---|---|---|---|---|---|
| **TRANSDUCER TYPE** | LVDT | 0 | | | | | |
| | HBT | 1 | | | | | |
| **NUMBER OF CHANNELS** | 1 CH | | 0 | | | | |
| | 4 CH | | 2 | | | | |
| | 8 CH | | 3 | | | | |
| **MEASURING RANGE** | ±0,5 | | | 0 | | | |
| | ±1 | | | 1 | | | |
| | ±1,5 | | | 2 | | | |
| | ±2,5 | | | 3 | | | |
| | ±5 | | | 4 | | | |
| **POWER SUPPLY** | ±15 V / ±12 V | | | | 0 | | |
| | 24 V | | | | 1 | | |
| **COMPATIBILITY (*)** | MARPOSS | | | | | 0 | |
| | MICROCONTROL | | | | | 1 | |
| | SOLARTRON | | | | | 2 | |
| | MERCER | | | | | 3 | |
| | TESA | | | | | 4 | |
| **OUTPUT SIGNAL** | ±5 V | | | | | | 0 |
| | ±10 V | | | | | | 1 |
| | 4-20 MA | | | | | | 2 |
| | 0 - 10 V | | | | | | 3 |

Note. (*) If the transducer type is not included in the list, please contact your nearest Marposs office to define the specific order code.



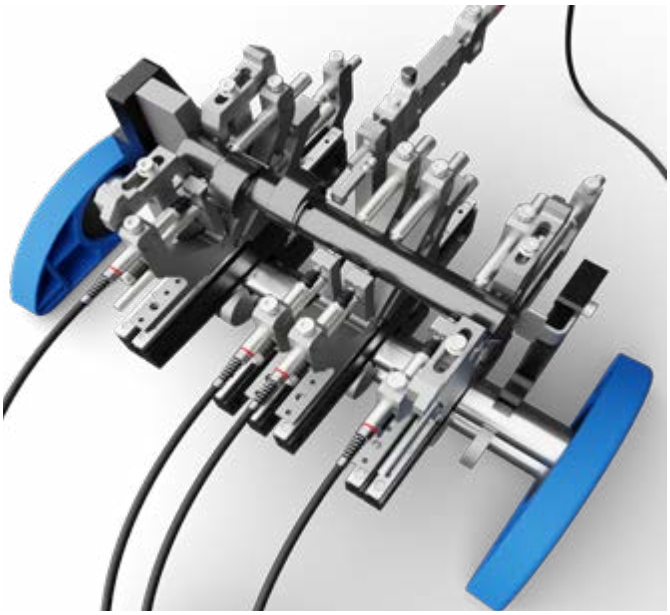




The dimensions are the same for all versions.

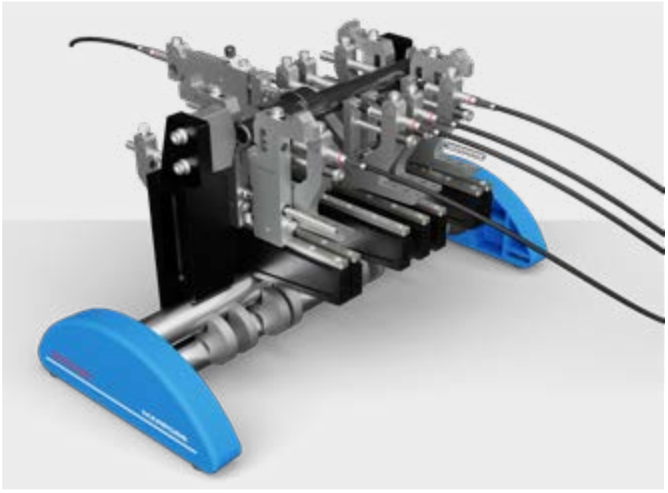
# QUICK SET


- QuickSet™ is a measuring solution for quality control of shafts-like workpieces. Designed to integrate multiple Marposs measuring probes in its structure, it is perfect for multi-dimensional and geometrical controls. QuickSet is available in different gauging configurations, in order to match the specific workpiece geometries and its clamping constraints into the measuring system.
- QuickSet horizontal and vertical configurations are dedicated to shafts with clamping centers; QuickSet chuck is the version dedicated to parts that cannot be referenced horizontally with Vees or held between centers, such as bushings, bearings, pistons and cylindrical parts that are manufactured with a flange.

## APPLICATION EXAMPLES



## GAUGE CONFIGURATIONS



### QUICKSET HORIZONTAL

QuickSet horizontal can be configured with V-support structures or with live centers, depending on the shaft clamping features.

### QUICKSET CHUCK

Parts can be supported and referenced through the serrated plate and a Vee.

### QUICKSET VERTICAL

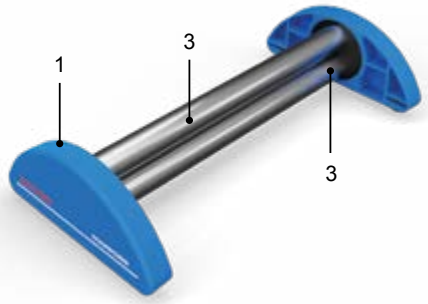
QuickSet vertical is the configuration with clamping centers for shaft having centering holes. Shaft is kept in measurement position through the integrated live centers.
Two versions are available, Single and Dual station; the second is used when a large number of measurements is required

## TECHNICAL SPECIFICATIONS

| GAUGE CONFIGURATION | QUICK SET-HORIZONTAL | QUICK SET-VERTICAL | QUICK SET-CHUCK |
|---|---|---|---|
| Measurable Diameter | 5 - 160 mm (0.02" - 6.30") | 5 - 160 mm (007 - 6.30°) | 5 - 160 mm (0.02" - 6.30*) |
| Max. Non-measurable Diameter | 260 mm (10.24") | 260 mm (10.24") | 260 mm (10.24") |
| Max. Measurable Length | 700 mm (27.56") | 840 mm (33.07") | 250 mm (9.84") |
| Weight | up to 14 kg | up to 8 kg (*) | - |

(*) Special versions are available to measure heavier parts.

# QUICK SET HORIZONTAL




▸ BASE STRUCTURE ASSEMBLY

**IN CASE OF CONFIGURATION WITH 2 AXIAL INTRODUCTION AXIAL LIMITERS (B3024017214)**

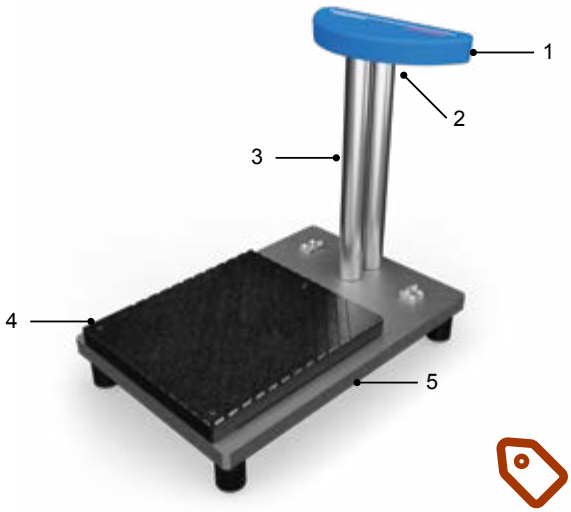
**IN CASE OF CONFIGURATION WITH 1 INTRODUCTION AXIAL LIMITER (B3024017214) + 1 MEASURING AXIAL LIMITER (B3024017218)**

**IN CASE OF CONFIGURATION WITH PIVOTING CENTERS**

| REF | BARS NOMINAL LENGTH | PART LENGTH | PART LENGTH | PART LENGTH | ORDER CODE |
|---|---|---|---|---|---|
| 3 | 200 mm (7.87 in) | 100 mm (3.94 in) | 70 mm (2.76 in) | 80 mm (3.15 in) | B2924017010 |
| 3 | 300 mm (11.81 in) | 200 mm (7.87 in) | 170 mm (6.69 in) | 180 mm (7.08 in) | B2924017020 |
| 3 | 400 mm (15.75 in) | 300 mm (11.81 in) | 270 mm (10.63 in) | 280 mm (11.02 in) | B2924017030 |
| 3 | 500 mm (19.69 in) | 400 mm (15.75 in) | 370 mm (14.57 in) | 380 mm (14.96 in) | B2924017040 |
| 3 | 600 mm (23.62 in) | 500 mm (19.69 in) | 470 mm (18.50 in) | 480 mm (18.89 in) | B2924017050 |
| 3 | 800 mm (31.50 in) | 700 mm (27.56 in) | 670 mm (26.38 in) | 680 mm (26.77 in) | B2924017070 |

| REF | STRUCTURE ELEMENTS | ORDER CODE |
|---|---|---|
| 1 | SUPPORT FEET (PAIR) | B2924017005 |
| 2 | CLAMPING DEVICES (PAIR) | B2924017115 |

# QUICK SET CHUCK

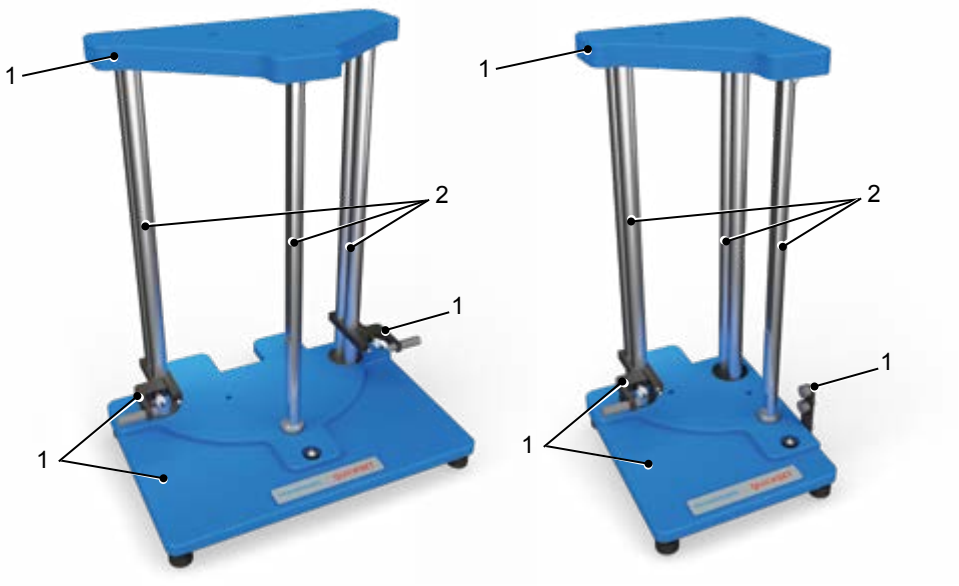



▸ BASE STRUCTURE ASSEMBLY

| REF | STRUCTURE ELEMENTS | ORDER CODE |
|---|---|---|
| 1 | Support Feet | B2924017005 |
| 2 | Clamping Device | B2924017115 |
| 3 | BARS L = 300 mm (PAIR) | B2924017880 |
| | BARS L = 500 mm (PAIR) | B2924017882 |
| 4 | Serrated Referencing Plate (220 x 250 mm) | B2924017885 |
| | Chromed Serrated Referencing Plate (220 x 250 mm, hrc 68) | B2924017886 |
| 5 | Support Plate (Inclusive of Rubber Feet) | B2924017890 |

# QUICK SET VERTICAL

## BASE STRUCTURE ASSEMBLY




**IN CASE ON CONFIGURATION WITH STATIC LIVE CENTERS**

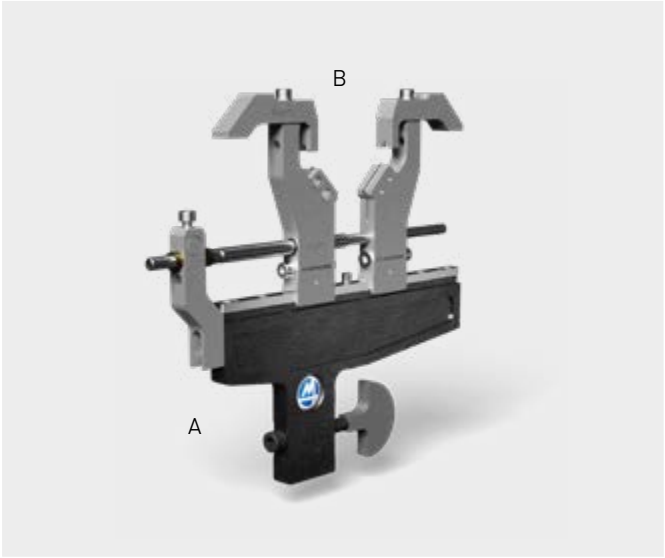
**IN CASE ON CONFIGURATION WITH DINAMIC LIVE CENTERS**

| REF | BARS NOMINAL LENGTH | PART LENGTH | PART LENGTH | ORDER CODE |
|---|---|---|---|---|
| 2 | 500 mm (19.69 in) | 190 mm (7.48 in) | 100 mm (3.94 in) | B3024025025 |
| 2 | 600 mm (23.62 in) | 290 mm (11.41 in) | 200 mm (7.87 in) | B3024025026 |
| 2 | 700 mm (27.56 in) | 390 mm (15.35 in) | 300 mm (11.81 in) | B3024025027 |
| 2 | 800 mm (31.50 in) | 490 mm (19.29 in) | 400 mm (15.75 in) | B3024025028 |
| 2 | 900 mm (35.43 in) | 590 mm (23.22 in) | 500 mm (19.69 in) | B3024025029 |
| 2 | 1000 mm (39.37 in) | 690 mm (27.16 in) | 600 mm (23.62 in) | B3024025030 |
| | 1150 mm (45.28 in) | 840 mm (33.07 in) | 750 mm (29.53 in) | B3024025031 |

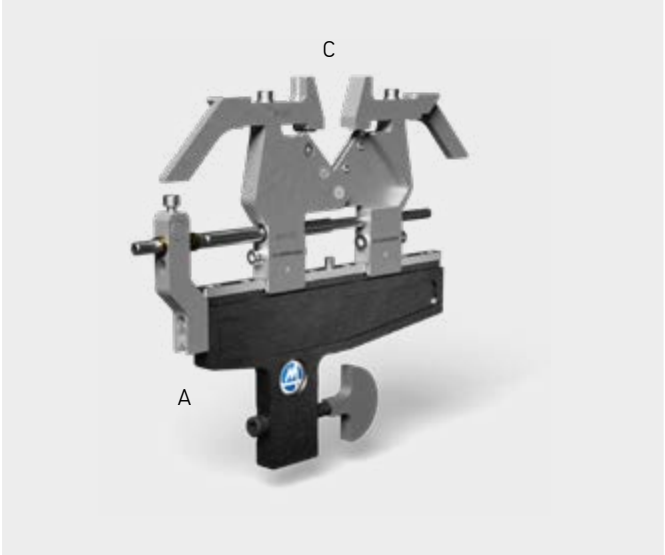
Part length values are referred to bench gauges equipped with:
- Standard interchangeable centers for static measurements
- Cone center L = 100 mm, diameter 18 mm, for dynamic measurements

| REF | STRUCTURE ELEMENTS | ORDER CODE |
|---|---|---|
| 1 | SINGLE STATION BASE (includes upper and lower plates and stoppers) | B3024025503 |
| 1 | DUAL STATION BASE (includes upper and lower plates and stoppers) | B3024025003 |

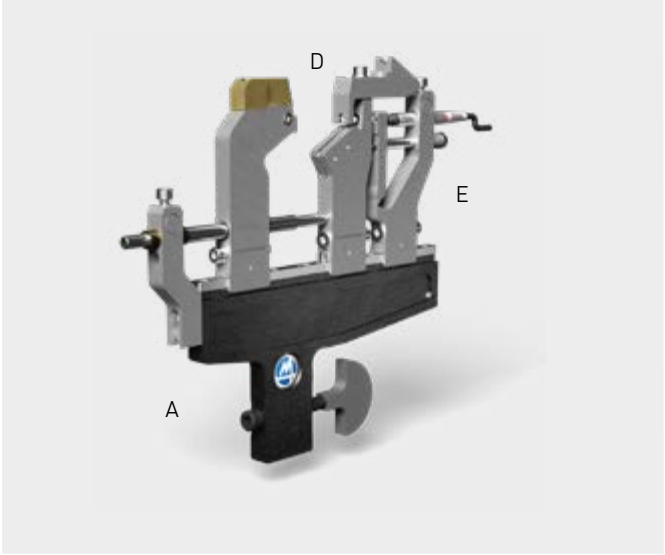
# PART SUPPORT ELEMENTS




- **FRONTAL V-shape** for Horizontal and Chuck QuickSet.
- It accurately defines the measuring mechanical axis of the part.
- An assembly is composed of one support bracket [A] and one frontal V-shape [B]. Available with or without self-centering screw




- **CROSSED V-shape** for Horizontal and Chuck QuickSet.
- It is used for very frequent retooling and when a large retooling range is needed.
- An assembly is composed of one support bracket [A] and one crossed "V" [C]. Available with or without self-centering screw.




- **MEASURING V-shape** for Horizontal and Chuck QuickSet.
- It is used when both part reference and part diameter measurement have to be carried out in the same section.
- An assembly is composed of one support bracket [A] one measuring "V" [D], and one single transmission unit [E] or one direct sensor unit [F] Available with or without self-centering screw.

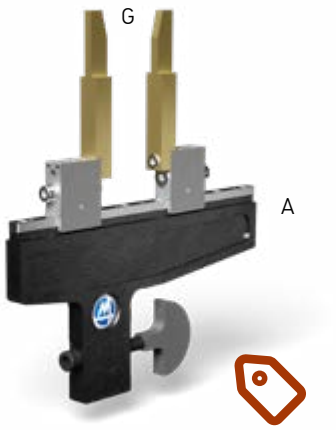
| MODEL | ASSEMBLY MODE | SUPPORT BRACKET [A] LENGTH | SUPPORT BRACKET [A] ORDER CODE | FRONTAL V-SHAPE [B] RANGE | ORDER CODE |
|---|---|---|---|---|---|
| FRONTAL V-shape | with self-centering screw | 200 mm (7.87 in) | B3024017540 | 5 - 10 mm (0.19 - 0.39 in) | B3024017633 |
| | | | | 10 - 15 mm (0.39 - 0.59 in) | B3024017643 |
| | | | | 15 - 24 mm (0.59 - 0.94 in) | B3024017653 |
| | | | | 24 - 40 mm (0.94 - 1.57 in) | B3024017663 |
| | | | | 40 - 70 mm (1.57 - 2.76 in) | B3024017673 |
| | | | | 55 - 100 mm (2.16 - 3.94 in) | B3024017693 |
| | without self-centering screw | 200 mm (7.87 in) | B3024017000 | 5 - 10 mm (0.19 - 0.39 in) | B3024017632 |
| | | | | 10 - 15 mm (0.39 - 0.59 in) | B3024017642 |
| | | | | 15 - 24 mm (0.59 - 0.94 in) | B3024017652 |
| | | | | 24 - 40 mm (0.94 - 1.57 in) | B3024017662 |
| | | | | 40 - 70 mm (1.57 - 2.76 in) | B3024017672 |
| | | | | 55 - 100 mm (2.16 - 3.94 in) | B3024017692 |
| | | 250 mm (9.84 in) | B3024017050 | 100 - 150 mm (3.94 - 5.91 in) | B3024017695 |

| MODEL | ASSEMBLY MODE | SUPPORT BRACKET [A] LENGTH | SUPPORT BRACKET [A] ORDER CODE | CROSSED V-SHAPE [C] RANGE | ORDER CODE |
|---|---|---|---|---|---|
| CROSSED V-shape | with self-centering screw | 200 mm (7.87 in) | B3024017540 | 5 - 100 mm (0.19 in - 3.94 in) | B3024017553 |
| | without self-centering screw | 200 mm (7.87 in) | B3024017000 | 5 - 100 mm (0.19 in - 3.94 in) | B3024017552 |

| MODEL | ASSEMBLY MODE | SUPPORT BRACKET [A] LENGTH | SUPPORT BRACKET [A] ORDER CODE | MEASURING V-SHAPE [D] RANGE | ORDER CODE |
|---|---|---|---|---|---|
| MEASURING V-shape | with self-centering screw | 200 mm (7.87 in) | B3024017540 | 5 - 35 mm (.19 in - 1.39 in) | B3024017524 |
| | | | | 35 - 65 mm (1.39 in - 2.56 in) | B3024017526 |
| | without self-centering screw | 200 mm (7.87 in) | B3024017000 | 5 - 35 mm (.19 in - 1.38 in) | B3024017520 |
| | | | | 35 - 65 mm (1.38 in - 2.56 in) | B3024017522 |

| SENSOR SUPPORT | CLAMPING Ø FOR SENSOR | ORDER CODE |
|---|---|---|
| SINGLE TRANSMISSION UNIT [E] | 8 mm | B3024017155 |
| | 3/8" | B3024017157 |
| DIRECT SENSOR UNIT [F] | 8 mm | B3024017145 |
| | 3/8" | B3024017147 |

# LIMITERS



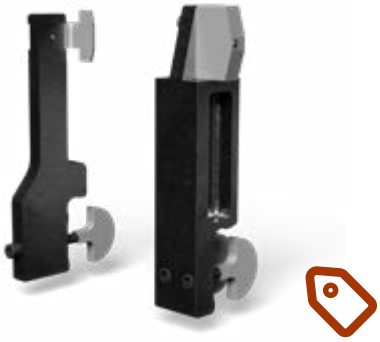

## RADIAL LIMITER

- **RADIAL LIMITER** for Horizontal and Chuck QuickSet. It ensures the correct part introduction into the bench.
- An assembly is composed of one support bracket [A] and one pair of radial limiters [G].
  Limiters contacts are available in steel material or brass material for low hardness workpieces.

| ASSEMBLY MODE | SUPPORT BRACKET [A] LENGTH | ORDER CODE |
|---|---|---|
| with radial limiter | 200 mm (7.87 in) | B3024017000 |
| | 250 mm (9.84 in) | B3024017050 |

| RADIAL LIMITER [G] | ORDER CODE |
|---|---|
| Steel Radial Limiters (Pair) | B3024017200 |
| Brass Radial Limiters (Pair) | B3024017210 |

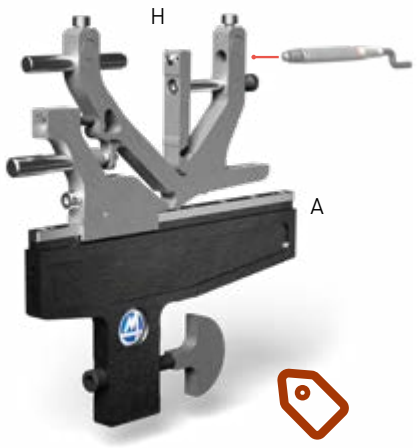
## AXIAL LIMITER



- **AXIAL LIMITER** for Horizontal QuickSet. It ensures the correct part positioning into the bench.
- Two versions are available:
  - Introducing axial limiter to limit part position
  - Measuring axial limiter. Beyond limiting part position, it works as mechanical reference for a distance measurements.
- Differently from other limiters, this component is fixed directly on the two-bars of the horizontal bench.

| AXIAL LIMITER | ORDER CODE |
|---|---|
| Introducing Axial Limiter | B3024017214 |
| Measuring Axial Limiter | B3024017218 |

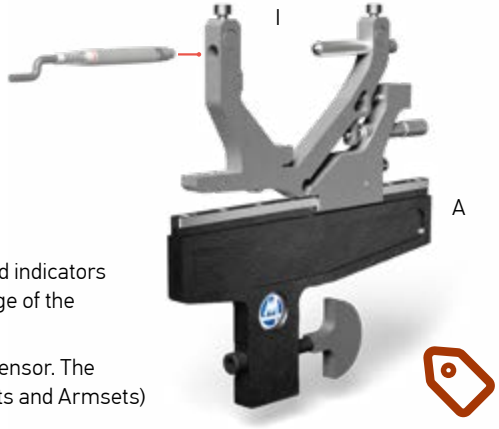
# MEASURING ASSEMBLIES




## SELF-CENTERING UNIT WITH TRANSMISSION

- It is used to carry out diameter measurements only. It can accommodate pencil probes and indicators with diameter 8 mm or 3/8". The sensor is not in direct contact with the part, therefore it is preserved during part loading/unloading operations. The working range of the transmission unit is 1.150 mm.
- An assembly is composed by one support bracket and one self-centering unit with transmission. The sensor and the two contacts to be mounted on the unit must be ordered separately (see Contacts and Armsets).

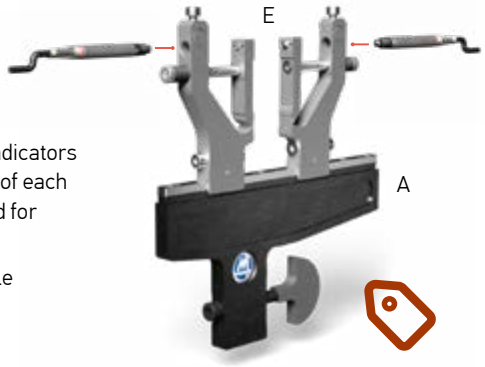
| SUPPORT BRACKET [A] LENGTH | ORDER CODE | SELF-CENTERING UNIT [H] RANGE | CLAMPING Ø FOR SENSOR | ORDER CODE |
|---|---|---|---|---|
| 200mm (7.87 in) | B3024017000 | 5 - 80 mm (0.20 in - 3.15 in) | 8 mm | B3024017460 |
| | | | 3/8" | B3024017462 |




## SELF-CENTERING UNIT WITH DIRECT SENSOR

- It is used to carry out diameter measurements only. It can accommodate pencil probes and indicators with diameter 8 mm or 3/8". The sensor is in direct contact with the part. The working range of the transmission unit is 1.150 mm.
- An assembly is composed of one support bracket and one self-centering unit with direct sensor. The sensor and the contact to be mounted on the unit must be ordered separately (see Contacts and Armsets)

| SUPPORT BRACKET [A] LENGTH | ORDER CODE | SELF-CENTERING UNIT [I] RANGE | CLAMPING Ø FOR SENSOR | ORDER CODE |
|---|---|---|---|---|
| 200mm (7.87 in) | B3024017000 | 5 - 80 mm (0.20 in - 3.15 in) | 8 mm | B3024017470 |
| | | | 3/8" | B3024017472 |



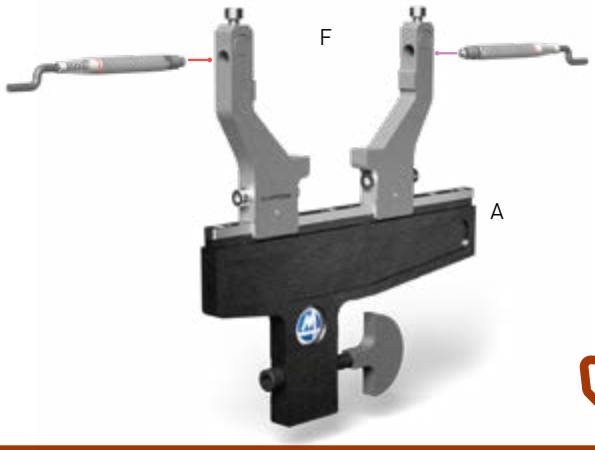

## SINGLE TRANSMISSION UNIT

- It is used to carry out diameter and form measurements. It can accomodate pencil probes and indicators with diameter 8 mm or 3/8". The sensor is not in direct contact with the part. The working range of each transmission unit is 1.150 mm. The assembly with only one transmission unit is particularly used for T.I.R. measurements.
- An assembly is composed of one support bracket (L=200 mm or 250 mm) and one or two single transmission units. The sensor and the contact to be mounted on each unit must be ordered separately (see Contacts and Armsets).

| SUPPORT BRACKET [A] LENGTH | SUPPORT BRACKET [A] RANGE (MEASURABLE DIAMETER) | ORDER CODE |
|---|---|---|
| 200 mm (7.87 in) | 3 - 118 mm (0.12 in - 4.64 in) | B3024017000 |
| 250 mm (9.84 in) | 3 - 160 mm (0.12 in - 6.30 in) | B3024017050 |

| SENSOR SUPPORT [E] | CLAMPING Ø FOR SENSOR | ORDER CODE |
|---|---|---|
| Single Transmission Unit | 8 mm | B3024017155 |
| | 3/8 in | B3024017157 |

# MEASURING ASSEMBLIES

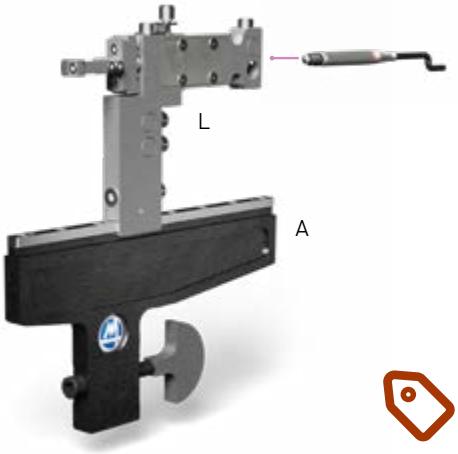



## WITH DIRECT SENSOR UNIT

- It is used to carry out diameter and form measurements. It can accomodate pencil probes and indicators with diameter 8 mm or 3/8".
- An assembly is composed of one support bracket (L=200 mm or 250 mm) and one or two direct sensor units.
  The sensor to be mounted on each unit must be orderd separately

| SUPPORT BRACKET [A] LENGTH | SUPPORT BRACKET [A] RANGE (MEASURABLE DIAMETER) | ORDER CODE |
|---|---|---|
| 200 mm (7.87 in) | 3 - 118 mm (0.12 in - 4.64 in) | B3024017000 |
| 250 mm (9.84 in) | 3 - 160 mm (0.12 in - 6.30 in) | B3024017050 |

| SENSOR SUPPORT [F] | CLAMPING Ø FOR SENSOR | ORDER CODE |
|---|---|---|
| Direct Sensor Unit | 8 mm | B3024017145 |
| | 3/8" | B3024017147 |




## WITH SHOULDER TRANSMISSION UNIT

- It is used to carry out distance measurements. It can accomodate pencil probes and indicators with diameter 8 mm or 3/8". The working range of this transmission unit is 1.50 mm.
- The sensor is not in direct contact with the part, therefore it is preserved during part loading/unloading operations. Distance measurements can be carried out by using two assemblies or one assembly and a measuring axial limiter.
- An assembly is composed of one support bracket and one shoulder transmission unit. The sensor, the armset and the contact to be mounted on the unit must be ordered separately (see Contacts and Armsets).

| SUPPORT BRACKET [A] LENGTH | ORDER CODE |
|---|---|
| 200 mm (7.87 in) | B3024017000 |
| 250 mm (9.84 in) | B3024017050 |

| SHOULDER TRANSMISSION UNIT [L] | CLAMPING Ø FOR SENSOR | ORDER CODE |
|---|---|---|
| | 8 mm | B3024017330 |
| | 3/8" | B3024017331 |

# ARMS FOR CENTERS SUPPORT

## STATIC CENTERS FOR VERTICAL QUICKSET

- These arms are suitable for static measurement acquisitions and accept standard, interchangeable universal and short center with cylindrical shank.
- An assembly is composed of the two arms. Centers must be ordered separately or provided by the customer.

| DESCRIPTION | ORDER CODE |
|---|---|
| Upper arm without center for single and dual station, for static measurements | B2924017190 |
| Lower arm without center for single station, for static measurements | B2924017220 |
| Lower arm without center for dual station, for static measurements | B2924017221 |
| Universal Center (see page 204) | B1024017753 |
| Short Center (see page 204) | B1024017755 |

## MOTORIZED CENTERS FOR VERTICAL QUICKSET

- These arms are suitable for dynamic measurement acquisitions (the lower arm is equipped with a brushless motor) and accept standard MK2 cone centers.
- An assembly is composed of the two arms. Centers must be ordered separately or provided by the customer

| DESCRIPTION | ORDER CODE |
|---|---|
| Upper arm without center for single and dual station, for dynamic measurements | B2924017170 |
| Lower arm without center for single station, with Faulhaber motor for dynamic measurements | B2942441808 |
| Lower arm without center for single station, with commercial motor for dynamic measurements | B2942441809 |
| Lower arm without center for dual station, with Faulhaber motor for dynamic measurements | B2942441813 |
| Lower arm without center for dual station, with commercial motor for dynamic measurements | B2942441814 |

## PIVOTING CENTERS UNIT FOR HORIZONTAL QUICKSET

- This unit is needed when the part to be measured is provided with center holes. The part is loaded between the centers and then introduced into the measuring station.
- It is recommended for small parts [max. part weight 3 kg and max. flywheel overall diameter 170 mm (6.69")].
- An assembly is composed of one pair of pivoting supports and their connecting shaft, whose length depends on the length of the bars of the base structure assembly.The centers, their supports and the dampers must be ordered separately.Dampers are available to avoid impacts during part introduction in the measuring station.

| BASE BARS LENGTH | MAX PART LENGTH | PIVOTING SUPPORTS (PAIR) ORDER CODE | CONNECTING SHAFT LENGTH | CONNECTING SHAFT ORDER CODE |
|---|---|---|---|---|
| 200 mm (7.87 in) | 80 mm (3.15 in) | B3024017355 | 360 mm (14.17 in) | B1024017369 |
| 300 mm (11.81 in) | 180 mm (7.08 in) | B3024017355 | 460 mm (18.11 in) | B1024017371 |
| 400 mm (15.75 in) | 280 mm (11.02 in) | B3024017355 | 560 mm (22.04 in) | B1024017373 |
| 500 mm (19.69 in) | 380 mm (14.96 in) | B3024017355 | 660 mm (25.98 in) | B1024017375 |
| 600 mm (23.62 in) | 480 mm (18.89 in) | B3024017355 | 760 mm (29.92 in) | B1024017377 |
| 800 mm (31.50 in) | 680 mm (26.77 in) | B3024017355 | 960 mm (37.79 in) | B1024017379 |

## FIXED CENTER SUPPORT

| ORDER CODE |
|---|
| B1024017567 |

## IDLE CENTER SUPPORT

| ORDER CODE |
|---|
| B3024017325 |

### IDLE CENTER RELOADING SUPPORT

| ORDER CODE |
|---|
| B3024017315 |

### UNIVERSAL CENTER

| ORDER CODE |
|---|
| B1024017753 |

### SHORT CENTER

| ORDER CODE |
|---|
| B1024017755 |

### DAMPER (FOR MAX. PART WEIGHT 3 KG)

| ORDER CODE |
|---|
| B44331AC108 |

## ACCESSORIES

### PART PUSHER

– The part pusher ensures the contact between the part and the "V" supports. It is particularly useful for parts with weight lower than 200 gr. It is suitable for part diameters from 5 to 50 mm (0.19" - 1.97").

| DESCRIPTION | ORDER CODE |
|---|---|
| Part Pusher | B3024017980 |

### SUPPORT BRACKET WITH BACK HOLES

– This support bracket is used with the Vertical version; it is equipped with two holes in the bottom that allow the use of the specific retooling tool to setup it horizontally.

| DESCRIPTION | ORDER CODE |
|---|---|
| Support bracket with back holes | B2924025255 |

### RETOOLING TOOL (ONLY FOR BRACKET WITH BACK HOLES)

This tool allows to setup the support bracket code B2924025255 horizontally

| DESCRIPTION | ORDER CODE |
|---|---|
| Retooling tool (only for bracket with back holes) | B2924025050 |

## WRENCH SET - B2924017990

| DESCRIPTION | ORDER CODE |
|---|---|
| Wrench set | B2924017990 |

## STANDARD CONTACTS

– To be used with:
  • Self-centering unit with transmission (Q.ty = 2)
  • Self-centering unit with direct sensor (Q.ty = 1)
  • Single transmission unit (Q.ty = 1)

| RADIUS R | THREAD | MATERIAL | ORDER CODE |
|---|---|---|---|
| 10 mm (0.39") | M 2.5 | Carbide | B3392401702 |
| 50 mm (1.97") | M 2.5 | Carbide | B3392401705 |
| 100 mm (3.94") | M 2.5 | Carbide | B3392401706 |
| 10 mm (0.39") | M 2.5 | Diamond | B3392401722 |
| 50 mm (1.97") | M 2.5 | Diamond | B3392401725 |
| 100 mm (3.94") | M 2.5 | Diamond | B3392401726 |

## CONTACTS FOR MEASURING 'V'

– Special carbide contacts to be mounted on the single transmission unit or directly on the sensor.

| RADIUS R | THREAD | MATERIAL | ORDER CODE |
|---|---|---|---|
| 10 mm (0.39") | M 2,5 | Special Carbide | B3392401701 |
| 50 mm (1.97") | M 2,5 | Special Carbide | B3392401720 |
| 100 mm (3.94") | M 2,5 | Special Carbide | B3392401721 |

## CONTACT EXTENSION

– To be used with:
  • Self-centering unit with transmission or direct sensor
  • Single transmission unit
  • Direct sensor unit
  • Indicators

| LENGTH | THREAD | ORDER CODE |
|---|---|---|
| 10 mm (0.39") | M 2.5 | 1024017105 |
| 15 mm (0.59") | M 2.5 | 1024017106 |
| 20 mm (0.79") | M 2.5 | 1024017107 |
| 25 mm (0.98") | M 2.5 | 1024017108 |
| 30 mm (1.18") | M 2.5 | 1024017109 |
| 10 mm (0.39") | 4 - 48 UNF | 1024017115 |
| 15 mm (0.59") | 4 - 48 UNF | 1024017116 |
| 20 mm (0.79") | 4 - 48 UNF | 1024017117 |
| 25 mm (0.98") | 4 - 48 UNF | 1024017118 |
| 30 mm (1.18") | 4 - 48 UNF | 1024017119 |

## ARMSET FOR SELF-CENTERING UNIT WITH TRANSMISSION

- It is needed to carry out measurements very close to each other and close to a shoulder (min. 3 mm) by offsetting the contact.
- Min. distance between two measuring sections: 5,2 mm

| DESCRIPTION | ORDER CODE |
|---|---|
| Armset + fixing screw | B2924017405 |

## ARMSET FOR SINGLE TRANSMISSION UNIT

- For contact off-set when measurements close to each other must be carried out.
- Min. distance between two measuring sections: 5,2 mm

| DESCRIPTION | OFFSET LENGTH | ORDER CODE |
|---|---|---|
| Armset + fixing screw | 8.5 mm (0.33 in) | B2924017150 |
| Armset + fixing screw | 10 mm (0.39 in) | B2924017151 |

## ARMSETS FOR SHOULDER TRANSMISSION UNIT

It is the interface for mounting the contact on the unit.

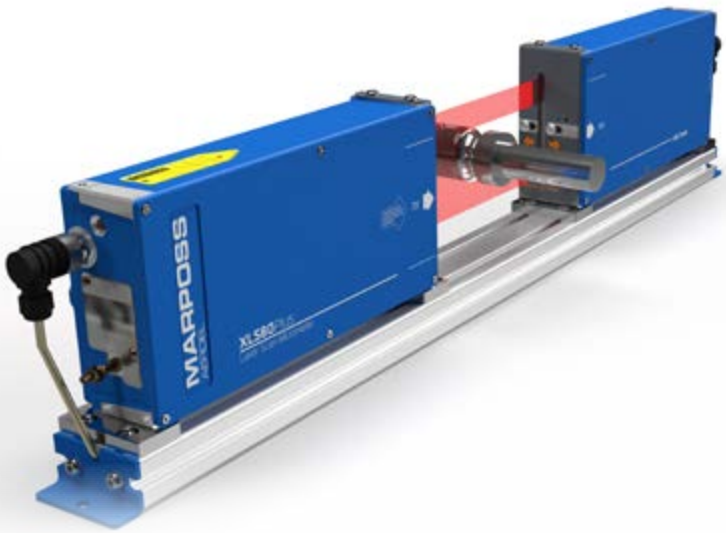
## CONTACT FOR SHOULDER TRANSMISSION UNIT

## ARMSETS FOR SHOULDER TRANSMISSION UNIT. CONTACT FOR GROOVES

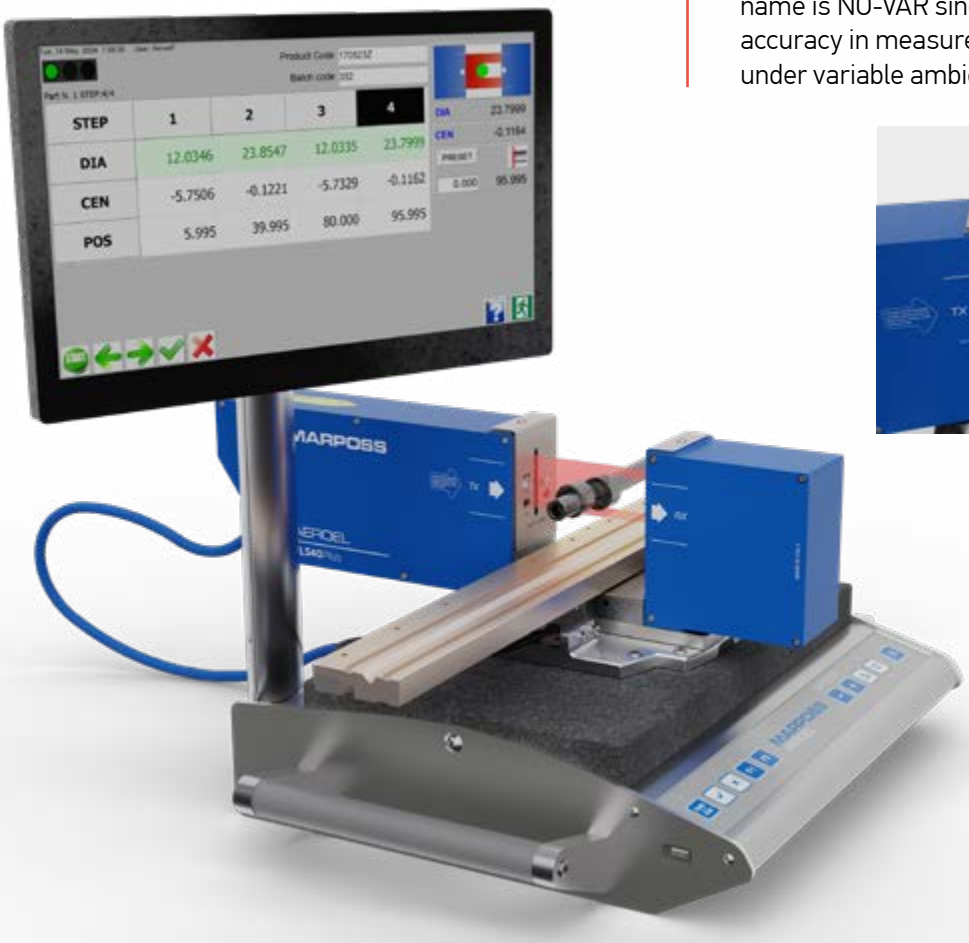
| DESCRIPTION | ORDER CODE |
|---|---|
| Armset | B2924017302 |
| Carbide Contact | B3292401702 |
| Diamond Contact | B3292401712 |
| Armset For Grooves | B3292401705 |

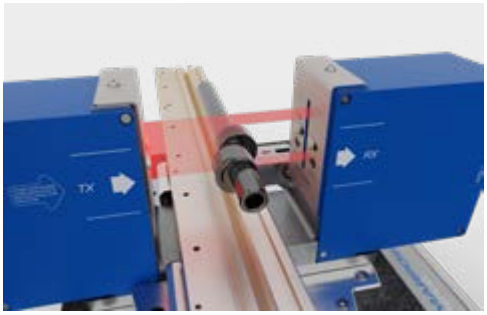

QUICKSET
MERLIN
MARPOSS

# MARPOSS AEROEL LASER MICROMETER




- Marposs Aeroel micrometers are super-accurate measuring systems for diameters of shaft-like workpieces. The measuring head is called XLS, meaning eXactum Laser Scan Micrometer. Its technical architecture is laser-based, purposely implemented to deliver accuracy and flexibility at the same time. For instance, the measuring repeatability of diameters is up to ± 0.07 µm and its laser beam generates measuring field up to 80 millimeters that makes the system super-flexible to different part diameters.
- The XLS measuring head can be combined with a number of standard accessories and interfaces, to perfectly fit different application requirements. For instance, the system can be configured with a range of different displays and control units, for an increasing level of measuring functionalities, data management and result visualizations.
- Marposs Aeroel micrometers are industrial-grade solutions, capable to deliver the highest measuring performance even in harsh environments, like in the shop floor. An exclusive thermal compensation technology is available as option on the XLS system. Its name is NO-VAR since it guarantees a perfect level of accuracy in measurement, without variations, even under variable ambient temperature conditions.



# LASER OPTICAL MEASUREMENT


## TABLE GAUGE

This is the base system for diameters measurement on shaft-like workpieces. The table gauge integrates the XLS measuring head and a compact display DM200 for the immediate result visualization.

This configuration comes with a remote control device usable for the product setup in line. The product also supports webpage configuration, thanks to an effective webserver integrated.

It is available in two different versions: XLS40 for diameters up to 40mm and XLS80 for diameters up to 80mm.


## MECLAB X

MECLAB X is the advanced diameters measuring station, integrating a multi-functional display CE200 that has a number of measuring function abilities. For instance, touch keyboard, multiple language menus for easy programming, different measurement units and visualization of 3 measured values in the display.

It is available in two different versions: XLS40 for diameters up to 40mm and XLS80 for diameters up to 80mm.

## MECLAB X S

MECLAB X S is the configuration of the MECLAB X for multiple diameters measurements at controlled Z position of the part. In fact, it integrates a linear slide that allows moving the part and an optional precision scale directly connected to the control display CE200.

It is available in two different versions: XLS40 for diameters up to 40mm and XLS80 for diameters up to 80mm.

# LASER OPTICAL MEASUREMENT

## SUPERMECLAB X

This is the premium version in the line, extending the basis functionalities of diameters measurement with a number of functionalities of data management.

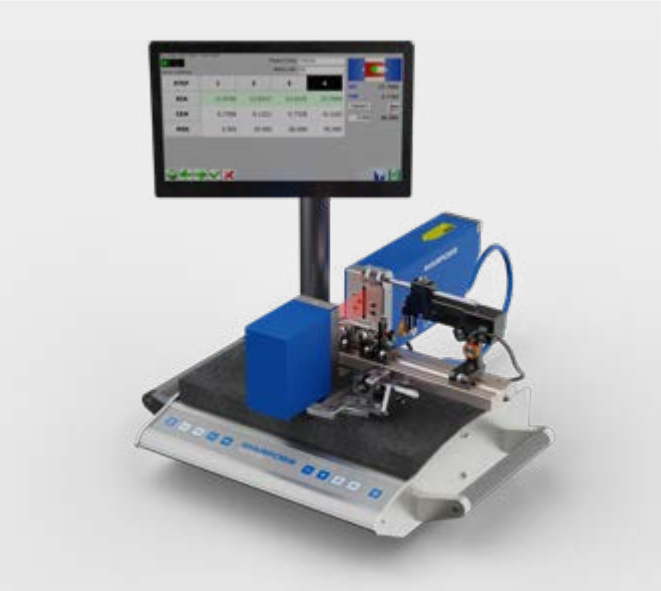
The SUPERMECLAB X comes with a 15" Full HD display and a PC embedded In the structure. Multi-touch that increase the ease-of-use in the line since mouse and keyboard is no longer use. The embedded PC runs exclusive data processing software. For instance, SUPERMECLAB X can store all the measuring data, export to external devices or print reports. It can also calculate online statistic of the measurement on a display charts for immediate detection of trends.

It is available in two different versions: XLS40 for diameters up to 40mm and XLS80 for diameters up to 80mm.

## MECLAB T

MECLAB T is the extended version of MECLAB X, implementing special functionalities for cutting tool measurements. Cutting tools are normally complicated items to measure since they have discontinue surface and a tight tolerance. MECLAB T makes easy and fast the validation of the cutting tools since the automatic specialized measurements.

It is available in one version: XLS40 for diameters up to 40mm.



## SUPERMECLAB T

This version is the top of the range.

In addition to the SUPERMECLAB X configuration, the SUPERMECLAB T version implements a toolkit of functionalities for cutting tool measurements. Cutting tools are normally complicated items to measure since they have discontinue surface and a tight tolerance. SUPERMECLAB T makes easy and fast the validation of the cutting tools since the automatic specialized measurements. For instance, quick tolerance check and multiple measurements on the same part that allows to check the taper or the bending of the part.

It is available in one version: XLS40 for diameters up to 40mm.

# MODELS AND ACCESSORIES
## TABLE GAUGE


Base system, including compact display and remote control, for applications of diameters measurement on shaft-like workpieces.

The version XLS40 is for diameters up to 40mm.

| DESCRIPTION | ORDER CODE |
|---|---|
| TABLE-GAUGE.X40/B | O3PX0710008 |

### ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| NO-VAR thermal compensation software option for Table-Gauge.X. | OSMA071Z001 |
| Fixed "V" block in hardened steel for XLS40, angle 140°. Part diameter from 1 to 36 mm. L = 80 mm. | O30X0001212 |
| Fixed "V" block in plastic (insulated) for XLS40, angle 140°. Part diameter from 1 to 36 mm. L = 80 mm. | O30X0001213 |
| Fixed "V" block in hardened steel for XLS40, angle 140°. Part diameter from 1 to 36 mm. L = 180 mm. | O30X0001209 |
| Vertically adjustable "V" block to hold gage pins, to be used with XLS40. Part diameter from 0.5 to 38 mm. | O30X0001041 |
| Foot switch for CE200/DM200/NCB | O61AX000012 |


Base system, including compact display and remote control, for applications of diameters measurement on shaft-like workpieces.

The version XLS80 is for diameters up to 80mm.

| DESCRIPTION | ORDER CODE |
|---|---|
| TABLE-GAUGE.X80/B | O3PX0710012 |

### ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| NO-VAR thermal compensation software option for Table-Gauge.X. | OSMA071Z001 |
| Fixed "V" block in hardened steel for XLS80, angle 140°. Part diameter from 1 to 75 mm. L = 106 mm. | O30X0001039 |
| Foot switch for CE200/DM200/NCB | O61AX000012 |

# MECLAB X

MECLAB X is the advanced diameters measuring station, integrating a multi-functional display CE200 that has a number of measuring function abilities.

The version XLS40 id for diameters up to 40mm.

| DESCRIPTION | ORDER CODE |
|---|---|
| MECLAB.X40/B | O3PX0610035 |

## ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| NO-VAR thermal compensation software option for Meclab.X. | 500VXXLXXZ7 |
| Fixed "V" block in hardened steel for XLS40, angle 140°. Part diameter from 1 to 36 mm. L = 80 mm. | O30X0001212 |
| Fixed "V" block in plastic (insulated) for XLS40, angle 140°. Part diameter from 1 to 36 mm. L = 80 mm. | O30X0001213 |
| Fixed "V" block in hardened steel for XLS40, angle 140°. Part diameter from 1 to 36 mm. L = 180 mm. | O30X0001209 |
| Vertically adjustable "V" block to hold gage pins, to be used with XLS40. Part diameter from 0.5 to 38 mm. | O30X0001041 |
| Foot switch for CE200/DM200/NCB | O61AX000012 |

MECLAB X is the advanced diameters measuring station, integrating a multi-functional display CE200 that has a number of measuring function abilities.

The version XLS80 is for diameters up to 80mm.

| DESCRIPTION | ORDER CODE |
|---|---|
| MECLAB.X80/B | O3PX0610031 |

## ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| NO-VAR thermal compensation software option for Meclab.X. | 500VXXLXXZ7 |
| Fixed "V" block in hardened steel for XLS80, angle 140°. Part diameter from 1 to 75 mm. L = 106 mm. | O30X0001039 |
| Foot switch for CE200/DM200/NCB | O61AX000012 |

MECLAB X S is the configuration of the MECLAB X for multiple diameters measurements at controlled Z position of the part. In fact, it integrates a linear slide that allows moving the part and an optional precision scale directly connected to the control display CE200.

The version XLS40 is for diameters up to 40mm.

| DESCRIPTION | ORDER CODE |
|---|---|
| MECLAB.X40/B-S | O3PX0610036 |

## ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| Precision steel slide to hold the parts, length 400 mm; useful range 160 mm. | O30X0001073 |
| Precision steel slide to hold the parts, length 640 mm; useful range 400 mm. | O30X0001074 |
| Precision steel slide to hold the parts, length 820 mm; useful range 580 mm. | O30X0001075 |
| NO-VAR thermal compensation software option for Meclab.X. | 500VXXLXXZ7 |
| Digital scale, resolution 0.005 mm, to read the slide position | O30X0001069 |
| Optional device for the fine tuning of the slide position | O30X0001072 |
| Foot switch for CE200/DM200/NCB | O61AX000012 |

Accessories and part holder for the linear slide: please refer to the specific table

MECLAB X S is the configuration of the MECLAB X for multiple diameters measurements at controlled Z position of the part. In fact, it integrates a linear slide that allows moving the part and an optional precision scale directly connected to the control display CE200.

The version XLS80 is for diameters up to 80mm.

| DESCRIPTION | ORDER CODE |
|---|---|
| MECLAB.X80/B-S | O3PX0610040 |

## ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| Precision steel slide to hold the parts, length 400 mm; useful range 160 mm. | O30X0001073 |
| Precision steel slide to hold the parts, length 640 mm; useful range 400 mm. | O30X0001074 |
| Precision steel slide to hold the parts, length 820 mm; useful range 580 mm. | O30X0001075 |
| NO-VAR thermal compensation software option for Meclab.X. | 500VXXLXXZ7 |
| Digital scale, resolution 0.005 mm, to read the slide position | O30X0001069 |
| Optional device for the fine tuning of the slide position | O30X0001072 |
| Foot switch for CE200/DM200/NCB | O61AX000012 |

Accessories and part holder for the linear slide: please refer to the specific table

# MECLAB X

SUPERMECLAB X is the premium version in the line, extending the basis functionalities of diameters measurement with a number of functionalities of data management.

The integrated linear slide allows moving the part and the optional precision scale directly enables the possibility to control and associate the controlled Z position of the part where the diameter is measured.

The NO-VAR option thermal compensation is included in the software.

The version XLS40 is for diameters up to 40mm.

| DESCRIPTION | ORDER CODE |
|---|---|
| SUPER-MECLAB.X40/B-SR | O3PX0610036 |

## ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| Precision steel slide to hold the parts, length 400 mm; useful range 160 mm. | O30X0001073 |
| Precision steel slide to hold the parts, length 640 mm; useful range 400 mm. | O30X0001074 |
| Precision steel slide to hold the parts, length 820 mm; useful range 580 mm. | O30X0001075 |
| Digital scale, resolution 0.005 mm, to read the slide position | O30X0001069 |
| Optional device for the fine tuning of the slide position | O30X0001072 |
| Foot switch for CE200/DM200/NCB | O61AX000012 |

Accessories and part holder for the linear slide: please refer to the specific table

SUPERMECLAB X is the premium version in the line, extending the basis functionalities of diameters measurement with a number of functionalities of data management.

The integrated linear slide allows moving the part and the optional precision scale directly enables the possibility to control and associate the controlled Z position of the part where the diameter is measured.

The NO-VAR option thermal compensation is included in the software.

The version XLS80 is for diameters up to 80mm.

| DESCRIPTION | ORDER CODE |
|---|---|
| SUPER-MECLAB.X80/B-SR | O3PX0610062 |

## ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| Precision steel slide to hold the parts, length 400 mm; useful range 160 mm. | O30X0001073 |
| Precision steel slide to hold the parts, length 640 mm; useful range 400 mm. | O30X0001074 |
| Precision steel slide to hold the parts, length 820 mm; useful range 580 mm. | O30X0001075 |
| Digital scale, resolution 0.005 mm, to read the slide position | O30X0001069 |
| Optional device for the fine tuning of the slide position | O30X0001072 |
| Foot switch for CE200/DM200/NCB | O61AX000012 |

Accessories and part holder for the linear slide: please refer to the specific table

MECLAB T is the extended version of MECLAB X, implementing special functionalities for cutting tool measurements.

The version XLS40 is for diameters up to 40mm.

The integrated linear slide with integrated micrometric movement, allows moving the part and the precision scale directly enables the possibility to control and associate the controlled Z position of the part where the diameter is measured.

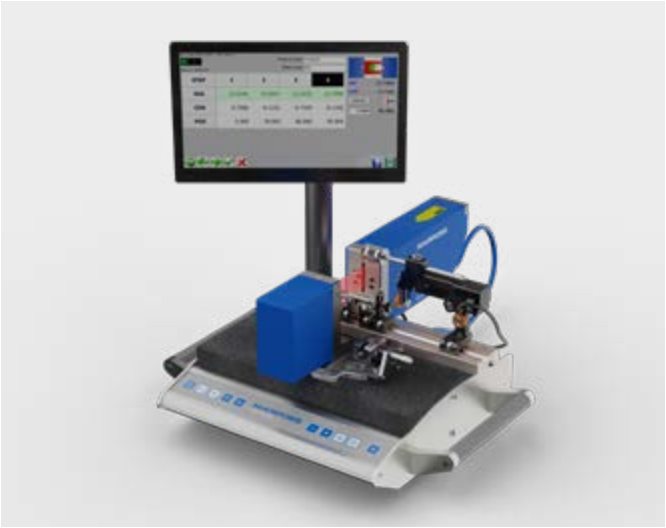
It also integrates the accessories for the manual rotation of the part during the measurement (diameters 1-28 mm).

| DESCRIPTION | ORDER CODE |
|---|---|
| MECLAB.T40 - MGM (manual tool rotation) | O3PX0610043 |

## ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| NO-VAR thermal compensation software option for Meclab.T. | OSMA061Z002 |
| Foot switch for CE200/DM200/NCB | O61AX000012 |

Accessories and part holder for the linear slide: please refer to the specific table



SUPERMECLAB T is the top of the range. In addition to the SUPERMECLAB X configuration, the SUPERMECLAB T version implements a toolkit of functionalities for cutting tool measurements.

The integrated linear slide with integrated micrometric movement allows moving the part and the precision scale directly enables the possibility to control and associate the controlled Z position of the part where the diameter is measured.

The NO-VAR option thermal compensation is included in the software.

It also integrates the accessories for automatic rotation of the part during the measurement (diameters 1-28 mm).

The version XLS40 is for diameters up to 40mm.

| DESCRIPTION | ORDER CODE |
|---|---|
| SUPERMECLAB.T40 - MGA - SLIDE 400 | O3PX0610064 |
| SUPERMECLAB.T40 - MGA - SLIDE 640 | O3PX061C011 |

## ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| Foot switch for CE200/DM200/NCB | O61AX000012 |

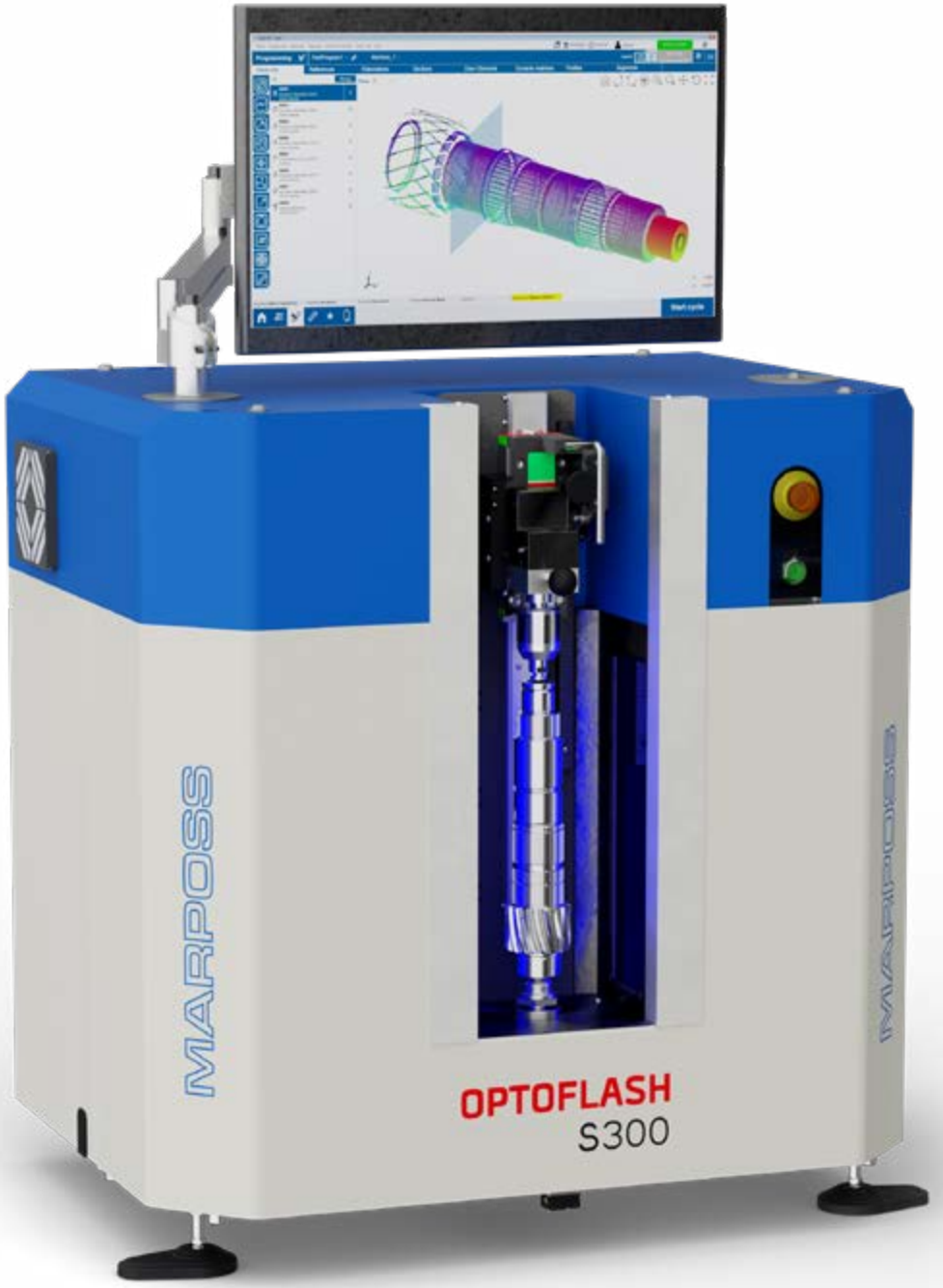
Accessories and part holder for the linear slide: please refer to the specific table

## ACCESSORIES

| DESCRIPTION | ORDER CODE |
|---|---|
| Pair of fixed 90° V blocks. XLS40 from 1 to 28 mm, XLS80 from 1 to 28 mm. | O30X0001043 |
| Pair of fixed 90° V blocks. XLS40 from 8 to 36 mm, XLS80 from 15 to 36 mm. | O30X0001045 |
| Pair of fixed 90° V blocks. XLS80 from 35 to 70 mm. | O30X0001047 |
| Pair of fixed 90° V blocks. XLS80 from 67 to 76 mm. | O30X0001048 |
| Pair of fixed 140° V blocks. XLS40: from 1 to 36 mm, XLS80 from 1 to 71 mm. | O30X0001046 |
| Pair of fixed 140° V blocks. XLS80 from 14 to 76 mm. | O30X0001049 |
| Pair of fixed 'knife like' 90° V blocks, 0.7 mm thick blade. Max. part diameter 10 mm. For XLS40 | O30X0001044 |
| Pair of fixed 'knife like' 90° V blocks, 0.7 mm thick blade. Max. part diameter 20 mm. For XLS40 | O30X0001138 |
| Pair of fixed 'knife like' 90° V blocks, 0.7 mm thick blade. Diameter 22-33 mm. For XLS40 | O30X0001139 |
| Pair of fixed 'knife like' 90° V blocks, 0.7 mm thick blade. Max. part diameter 10 mm. For XLS80 | O30X0001207 |
| Monolithic fixed V block. Diameter from 0.1 to 36 mm. For XLS40 | O30X0001050 |
| Pair of supports with free rolls. Diameters from 3 to 10 mm. For XLS40 and XLS80 | O30X0001051 |
| Pair of supports with free rolls. Diameters from 8 to 20 mm. For XLS40 and XLS80 | O30X0001052 |
| Pair of supports with free rolls. XLS40 diameter from 18 to 32 mm, XLS80 diameter from 18 to 50 mm. | O30X0001053 |
| Pair of supports with free rolls. Diameters from 47 to 75 mm. For XLS80 | O30X0001054 |
| Vertically adjustable "V" block to hold gage pins, For XLS40 | O30X0001055 |
| Pair of dead centers. For XLS40. | O30X0001056 |
| Pair of dead centers. For XLS80 (10 Kg) | O30X0001057 |
| Pair of dead centers. For XLS80 (5 Kg) | O30X0001058 |
| Set of two pairs of hollow cones to be used with dead centers. Diameter 6-20 mm (thickness 5 mm), diameter 18-38 mm (thickness 17 mm). For XLS40 and XLS80 | O30X0001060 |
| High precision pair of motorized centers to be mounted on linear slides. For XLS40. | O30X0001223 |
| Manual rotating chuck, min diameter 2 mm. For XLS40 and XLS80 | O30X0001137 |
| Manual rotating chuck, diameters from 0.5 to 6.5 mm. For XLS40 and XLS80 | O30X0001072 |
| Rotating chuck motor | ND |
| Motor driven device to rotate the part (rubber wheel). For XLS40. | O67AX000064 |
| Part stopper with reference cone/ball. For XLS40. | O30X0001062 |
| Part stopper with reference cone/ball. For XLS80. | O30X0001063 |
| Spring loaded clamp to lock the part on the V blocks. For XLS40. | O30X0001064 |
| Spring loaded clamp to lock the part on the V blocks. For XLS80. | O30X0001141 |
| Spring loaded clamp with free roll. For XLS40. | O30X0001065 |
| Spring loaded clamp with free roll. For XLS80. | O30X0001141 |
| Universal base to be mounted on linear slides. For XLS40 and XLS80 | O30X0001068 |


MARPOSS
AEROEL
XLS80Plus

# OPTOFLASH



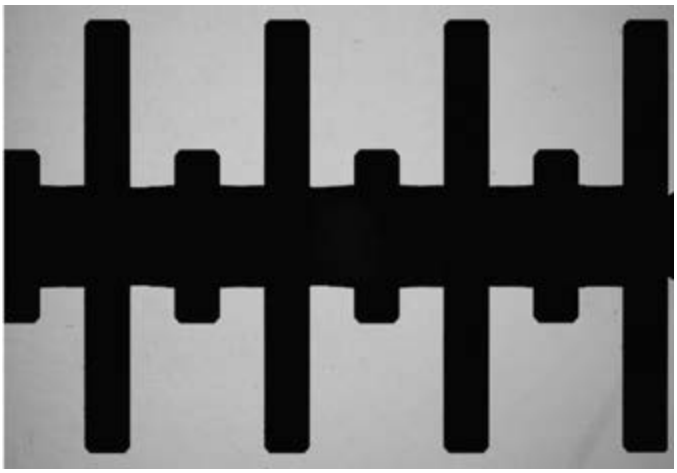

- End-of-Line is that stage during the manufacturing process where quality control means checking each single feature on the workpiece in order to validate the perfect compliance to specifications and so a perfect quality in output.
- Thanks to its unprecedented measuring speed and its capability to control the complete part surface in any possible detail, OptoFlash has definitively improved the quality control in the end of line. OptoFlash is so fast that it makes possible to control 100% of the production flow. Measurement output can be transferred to archives or servers at the end of each cycle, allowing operators to implement high-end traceability programs.

## MEASURING SPEED

The unrivalled speed of the OptoFlash is the result of its unique 2D optical architecture.

Thanks to fixed-position 2D sensors and the absence of axis in motion, this product is actually the first-in-its-class for speed in measurement. A complete measuring cycle takes typically 10 seconds, irrespective of the number of executed measurements.

The absence of moving axis has an additional advantage: the OptoFlash has a superior reliability and it needs actually a  minimum maintenance in the time.



## EACH SHAFT IS RECONSTRUCTED IN 3D

By synchronization of image acquisitions and workpiece rotation, OptoFlash is capable to digitally reproduce the workpiece in a 3D format. This unique capability of the OptoFlash has 2 crucial advantages in applications.

First, measurement results are visualized with a 3D style, so delivering a superior ease-of-use to line operators, that can visualize the actual workpiece in a realistic form and to navigate its features very intuitively.

Moreover, measurements are much more accurate since calculated on the super-precise reconstruction of the entire workpiece surface, that is the Point Cloud.

## MEASUREMENTS ARE CONFIGURED BY SOFTWARE

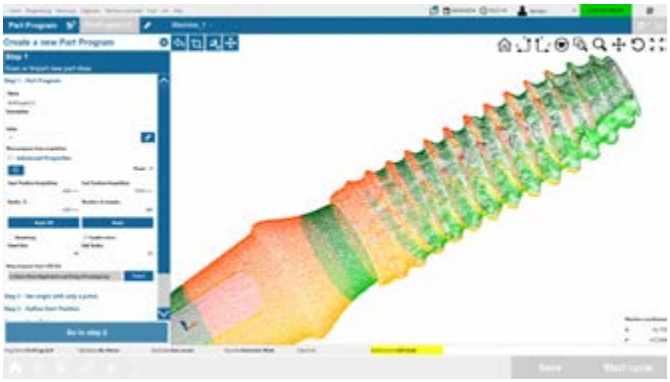
Through intuitive actions like “drag and drop”, it is extremely easy to create new measurement programs.

As result, a single OptoFlash can be used to validate different component typologies in a plant.

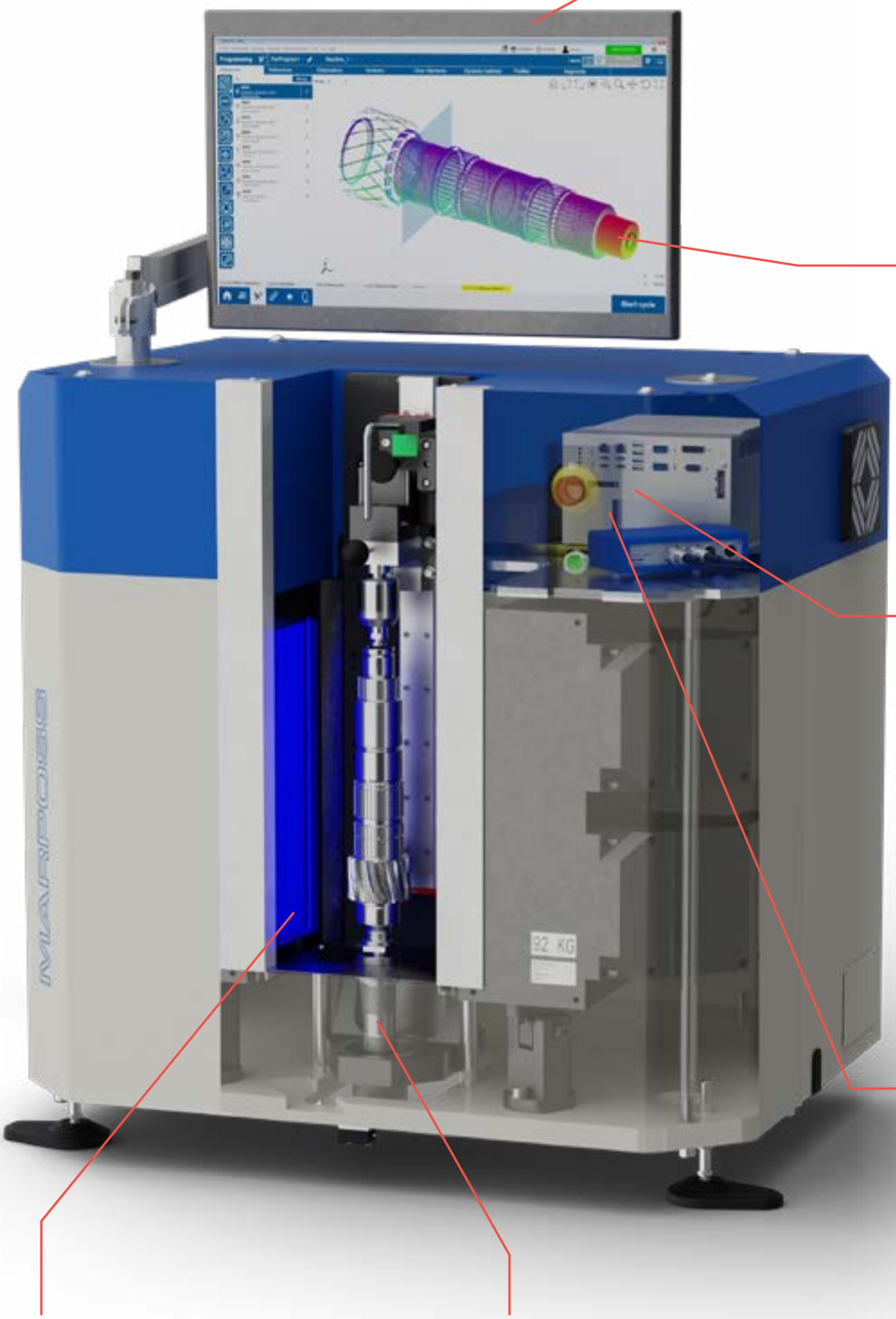
Through the OptoFlash software interface, it is sufficient to activate the appropriate measurement program, load a part and press the “Start” button.

So the OptoFlash is a durable product in the time, not just because its architecture is without moving parts.

Actually the product re-configurability via-software makes the product ready to meet changes in the production quality control and so to avoid extra costs for adaptations.



# MODELS AND ACCESSORIES
## OPTOFLASH



### INCLUDED SOFTWARE FEATURES

Not only the hardware is fully integrated. The Marposs software suite is pre-installed on the OptoFlash and it features thousands of different functionalities. For instance, there is a full-feature measuring engine including 2D and 3D functionalities, data management utilities, feedback functionalities to the machine tool.

### INTEGRATED THERMAL PROBES

Optoflash is designed to operate in the shopfloor environment and to deliver the highest accuracy in measurement. The integrated thermal probes in the structure allow automatic compensation of the measurements during the regular measuring operations.

### SOLUTION ALL-IN-ONE, HARDWARE & SOFTWARE

OptoFlash incorporates inside its structure everything is necessary for its use, from the setup operations to the regular use in the production. There is no separate peripheral around the product. As result, the installation at the shop-floor level is super easy and the product has a superior robustness to resist into harsh manufacturing environments.

### INDUSTRIAL GRADE PC.

Perfectlly integrated inside the structure , protected from external agents and purposely positioned to prevent termal influence with the measuring system.

### FIXED OPTICAL SYSTEM.

It is stable and fixed to the structure. The absence of movements guarantees a perfect Performance and no maintenance.

### HIGH PRECISION SPINDLE

Thanks to a full Marposs design, the spindle combine unprecedented performance, both in term of leading-edge rotational accuracy and robustness to the load up to 15 Kg.

# OPTOFLASH XS


OPTOFLASH XS is a precision measuring bench (Stand alone) based on 2D optical technology. It is available in 2 versions: XS30 and XS60 depending on the measuring range. The bench equipped with accessories allows to dynamically measure the size, position and shape of small shafts, screws, dental implants, etc. loaded/unloaded manually by the operator.

Optoflash XS60 can be used also in case of parts automatic load/unload by a cobot.

| DESCRIPTION | VERSION | MEASURING RANGE (mm) | MAX PART WEIGHT | ACCURACY | PRODUCT DIMENSIONS W X D X H (mm) | ORDER CODE |
|---|---|---|---|---|---|---|
| Optoflash XS30 | with upper tailstock | D 20 x L 30 | 2 Kg | D 1um + D mm/100<br>L 2um + L mm/100 | 626 x 667 x 806 | B0407477294 |
| Optoflash XS60 | with upper tailstock | D 20 x L 60 | 2 Kg | D 1um + D mm/100<br>L 2um + L mm/100 | 626 x 667 x 806 | B0407477295 |

# OPTOFLASH S


OPTOFLASH S is a precision bench gauge based on 2D optical technology. It is available in three versions: S100 – S200 – S300 depending on the measuring range. The differentt models and accessories are used to measure part dimensions, position and shape in both the static and dynamic modes. The equipment will test small shafts, screw fasteners and connectors; it is loaded and unloaded manually by the operator or automatically by a cobot.

The measurements are defined, configured and displayed on the graphic user interface shown on the touchscreen monitor.

OPTOFLASH S unit has an industrial class architecture which makes it ideal for precision quality control in both the workshop and the laboratory.

| DESCRIPTION | VERSION | MEASURING RANGE (mm) | MAX PART WEIGHT | ACCURACY | PRODUCT DIMENSIONS W X D X H (mm) | ORDER CODE |
|---|---|---|---|---|---|---|
| Optoflash S100 | with upper tailstock operated manually | D 20 x L 30 | 15 Kg | D 1um + D mm/100<br>L 2um + L mm/100 | 910 x 610 x 1040 | B0407480655 |
| Optoflash S200 | with upper tailstock operated manually | D 20 x L 30 | 15 Kg | D 1um + D mm/100<br>L 2um + L mm/100 | 910 x 610 x 1150 | B0407480656 |
| Optoflash S300 | with upper tailstock operated manually | D 20 x L 60 | 15 Kg | D 1um + D mm/100<br>L 2um + L mm/100 | 1000 x 610 x 1255 | B0407480657 |
| Optoflash S100 | with automatic upper tailstock | D 20 x L 30 | 15 Kg | D 1um + D mm/100<br>L 2um + L mm/100 | 910 x 610 x 1040 | B0407480740 |
| Optoflash S200 | with automatic tailstock | D 20 x L 30 | 15 Kg | D 1um + D mm/100<br>L 2um + L mm/100 | 910 x 610 x 1150 | B0407480741 |
| Optoflash S300 | with automatic tailstock | D 20 x L 60 | 15 Kg | D 1um + D mm/100<br>L 2um + L mm/100 | 1000 x 610 x 1255 | B0407480742 |

# ACCESSORIES OPTOFLASH

## CLAMPING TOOLS

Clamping tools are used to maintain the consistent positioning of the workpiece relative to the optical sensors. Selecting the most appropriate clamping tool is essential for achieving precise optical measurements in various applications, including mechanical fasteners, dental implants, and turnery. Each sector has specific requirements for the type and precision of clamping. Choosing the ideal clamping solution ensures reliable and repeatable measurement results in every context.

## LOWER CONICAL LIVE CENTRES

They are ideal for measuring diameters, lengths, and distances on cylindrical components, such as shafts and spindles, where precise rotation is essential for dimensional control.
The part is positioned on the lower centre ready for referencing.
To enhance friction between workpiece and clamping tool a surface tungsten carbide based coating is used.
The lower live centers can be customized on request according to specific needs by modifying parameters A (maximum diameter) and B (minimum diameter).

| DESCRIPTION | COMPATIBLE WITH | MIN DIAMETER mm | MAX DIAMETER mm | CONE ANGLE | SURFACE COATING | ORDER CODE |
|---|---|---|---|---|---|---|
| Conical lower live center | OF S100, S200, S300 | 3 | 30 | 60° | no | B2QE0010000 |
| Conical lower live center | OF S100, S200, S300 | 3 | 30 | 60° | yes | B2971421995 |
| Conical lower live center | OF S100, S200, S300 | 0 | 30 | 60° | yes | B2976151100 |
| Conical lower live center | OF XS30, XS60 | 3 | 20 | 60° | no | B2977279200 |

## UPPER CONICAL LIVE CENTRES

The upper centre unit slides up and down and clamps the part in position after that it has been inserted on the lower centre.
The upper center is suitable in case of workpiece with an upper hole, usually for tourneries applications.
The upper live centers can be customized on request.

| DESCRIPTION | COMPATIBLE WITH | MIN DIAMETER (mm) | MAX DIAMETER (mm) | CONE ANGLE | ORDER CODE |
|---|---|---|---|---|---|
| Conical upper live center | OF S100, S200, S300 | 0,2 | 16 | 60° | B4390040435 |
| Conical upper live center | OF XS30, XS60 | 0,2 | 16 | 60° | B2077131901 |

## MONITOR

The monitor can either be placed sideways on the right or left side of the Optoflash.

| DESCRIPTION | COMPATIBLE WITH | PRODUCT DIMENSIONS W X H (mm) | SCREEN | ORDER CODE |
|---|---|---|---|---|
| Monitor | OF XS 60<br>OF S100, S200, S300 | 571 x 392 | Touch screen 24" | B47016A6515 |

## PLATE CENTRE

The support plate is a robust and stable base that facilitates the positioning of components to be measured in the optical system. This support provides a wide, level area, making measurement operations easier in case of automatic loading for all types of applications.
This center can be customized on request, modifying both parameters A (hole width) and B (hole depth).

| DESCRIPTION | COMPATIBLE WITH | MAX DIAMETER PLATE (mm) | ORDER CODE |
|---|---|---|---|
| Plate center | OF S100, S200, S300 | 60 | B2QL0000000 |
| Plate center | OF XS30, XS60 | 30 | B2977279100 |

## SIX-JAW CLAMPING CHUCK

Clamping system with clamp chuck. It is suggested for cylindrical workpieces, axially symmetric or not. This chuck is also suitable for body implants, in biomedical sector and abutment, in dental application.

Note that this clamping doesn't allow the complete optical access to the workpiece so it can be used only in case a partial length of the workpiece has to be measured.

| DESCRIPTION | COMPATIBLE WITH | JAW NUMBER | MIN DIAMETER (mm) | MAX DIAMETER (mm) | ORDER CODE |
|---|---|---|---|---|---|
| 6 jaw clamping chuck | OF S100, S200, S300 | 6 | 0 | 70 | B2972583250 |
| 6 jaw clamping chuck | OF XS30, XS60 | 6 | 0 | 70 | B2977279030 |

## TWO-JAW CHUCK SPINDLE

The two-jaw configuration allows a stable and precise grip, capable of firmly blocking the piece without damaging it. The two jaws pins can be adjusted to adapt to different sizes and shapes of the workpiece to be measured.
Usually the 2-jaw self-centring gripper is used in case of screw measurement. It can be specifically designed where requested for specific applications.

| DESCRIPTION | COMPATIBLE WITH | ORDER CODE |
|---|---|---|
| 2 jaw chuck spindle | OF S100, S200, S300 | ON REQUEST |
| 2 jaw chuck spindle | OF XS30, XS60 | ON REQUEST |

## MANUAL THERMAL PROBE

The workpiece temperature must be the same as that of the bench.
The manual part temperature probe enables quick and accurate readings of the temperature of the workpiece or measurement environment, reducing the risk of errors caused by thermal variations. The device measures the temperature of the part to be tested before the dimensional test. The probe is easy to use and can be employed for frequent, rapid measurements without disrupting workflow.
This device is available but it is not a Marposs product.
The order number includes the manual thermal probe and also the Easy Box interface needed to the signals exchange.

| DESCRIPTION | PRODUCT VERSION | TIP CONTACT DIAMETER in mm | MAX LENGTH in mm | ORDER CODE |
|---|---|---|---|---|
| Part temperature probe | Manual | 2,4 | 60 | B297419544 |

# ACCESSORIES
# OPTOFLASH

## CALIBRATION MASTER

The calibration master serves as a "precision reference," a certified and known geometry against which measurements can be compared, ensuring that the instrument maintains its accuracy over time. It is used to perform a rapid check of the metrological quality of the equipment for diameter and distance measurements.

| DESCRIPTION | COMPATIBLE WITH | PRODUCT DIMENSIONS MAX DIAMETER X H (mm) | ORDER CODE |
|---|---|---|---|
| Calibration master | OF S100 | 60 x 100 | B2972632050 |
| Calibration master | OF S200 | 60 x 200 | B2972632060 |
| Calibration master | OF S300 | 60 x 300 | B2972632070 |
| Calibration master | OF XS30, XS60 | 24 x 101 | B2977299000 |

## SERVICE KEY SET

The service keys are used for the replacement of the lower and upper centres and allow for their removal without damaging them.

| DESCRIPTION | COMPATIBLE WITH | ORDER CODE |
|---|---|---|
| Service key set | OF XS 30, 60<br>OF S100, S200, S300 | B2972583750 |

## LENS CLEANING KIT

The optical cleaning kit is designed to remove dust, dirt, and fingerprints from the protective lenses. The set is optimally designed for gentle cleaning and ensures a streak-free, shiny, clean, and grease-free surface. The kit includes a spray bottle with cleaning fluid and a microfiber cloth.

| DESCRIPTION | COMPATIBLE WITH | ORDER CODE |
|---|---|---|
| Lens cleaning kit | OF XS 30, 60<br>OF S100, S200, S300 | B29T0447009 |

## FLEXIBLE MONITOR ARM

The monitor arm allows adjusting the screen according to the operator's needs.
It can either be placed on the right or left side of Optoflash.

| DESCRIPTION | COMPATIBLE WITH | ORDER CODE |
|---|---|---|
| Flexible monitor arm | OF S100, S200, S300 | B2980655205 |

## KEYBOARD

The touch keyboard is ideal for applications that require versatility, such as industrial environments.

| DESCRIPTION | COMPATIBLE WITH | PRODUCT DIMENSIONS W X D X H (mm) | LAYOUT | ORDER CODE |
|---|---|---|---|---|
| Keyboard | OF XS30, XS 60, S100, S200, S300 | 374 x 139 x 18 | touchpad with two mouse keys | B6871992392 |

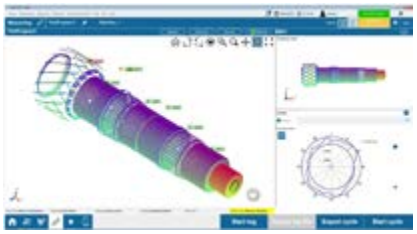
# ELECTRONICS

## A TOOLKIT OF SCALABLE FUNCTIONALITIES TO IMPROVE YOUR PRODUCTION PROCESS

### GAUGING PROCESS CONTROL

Each Control Unit of the range offers a wide toolkit of functionalities to manage the gauging process execution. There are specific functionalities to setup the measurement programs, to configure the digital input and output, to create formulas for custom-defined measurements. The standard software allows a large configurability of the system, aspect that represents a fundamental advantage since it helps to revolve quickly several different gauging applications.

### DATA VISUALIZATION



When a measurement cycle is executed, results are visualized on the display of the Control Unit. Visualizations are purposely using simple graphical layouts and colors in order to allow a fast and intuitive review of the results.
On high-end Control Unit models, there is a premium level of functionalities, as for instance navigation of the measurements history or custom-defined layouts. Those premium features guarantee the maximum ease-of-use also in complex applications and allow an effective monitoring of the production flow.

### DATA MANAGEMENT

Even when the primary function of a measuring station is to classify workpieces as “good/not good” for the assembly process, it is definitively not the only important functionality. In fact, measurement data contains precious information about the manufacturing process. Archiving those data is fundamental for traceability programs or analytic processing for manufacturing efficiency improvements. For that reason, at the end of each cycle, measurement data can be saved into the product memory or optionally transferred to remote locations, as networks folders or servers, by using the embedded Ethernet connectivity.

### PRODUCTION KPI


Statistical figures and KPI are calculated in real time during measurement execution and visualized on simple graphical charts in order to supply effective indications to production managers about the production process performance and its trend.
Among the main supported functionalities, there are Gauge Capability, Machine Tool Capability, Cp-Cpk calculation.

### ADVANCED APPLICATION SPECIFIC SETUP

High-end Control Unit are equipped with a wide toolkit of software functionalities to develop complex applications: guided sequences for manual step-by-step controls, interfacing to PLC for automatic loading, in-line thermal compensation basing on real temperature of part, feedback signal to machine tool.

| DUO | NEMO | MERLIN | MERLIN CORE | MERLIN PLUS | E9066 QUICKSPC |
|---|---|---|---|---|---|
| 2 sensors<br>100<br>part programs | 16 sensors<br>100<br>part programs<br>40<br>batch programs | 250 sensors<br>1000<br>part programs<br>1000<br>batch programs | 250 sensors<br>1000<br>part programs<br>1000<br>batch programs | 250 sensors<br>1000<br>part programs<br>1000<br>batch programs | 250 sensors<br>1000<br>part programs<br>1000<br>batch programs |
| Current Measurement result and current part status | Measurement history | Measurement history | Measurement history | Part history and measurement history<br>Custom page of results | Part history and measurement history<br>Custom page of results |
| Local storage and remote transfer | Local storage and remote transfer | Local storage and remote transfer | Local storage and remote transfer | Measurement reports<br>Local storage and remote transfer | Measurement reports<br>Local storage and remote transfer |
| | On-line essential statistics | On line statistics and statistical alarm management<br>Gauge Capabilities | On line statistics and statistical alarm management<br>Gauge Capabilities | On line advanced statistics and statistical alarm management<br>Gauge Capabilities | On line advanced statistics and statistical alarm management<br>Gauge Capabilities |
| | | | | Guided Sequences<br>Compensations<br>Machine feedback | Guided Sequences<br>Compensations<br>Machine feedback<br>Programmable interfacing to automation |

# MODELS AND ACCESSORIES
# ELECTRONICS

## DUO


- Marposs DUO is the compact and cost-effective Industrial Control Unit for workstations with 1 or 2 distinct gauging sensors. DUO has embedded inside the necessary electronics to connect directly the sensors, without any additional junction box.
- Its color touch-display is of industrial-grade and it allows easy interactions by line operators, simply by selecting items on the screen.
- In addition, fieldbus interfaces can be optionally integrated in the structure, so it can directly connect to PLC without external adaptors.
- Its mechanical compactness is not limiting the wide level of functionalities it delivers. For instance, it can accommodate simultaneously in the same workstation sensors of different technologies, like one electronic-gauge and one air-gauge. Or it can accomplish post-measurement tasks of data management, like data archiving inside the internal microSD card and also data transmission to external devices.
- USB, RS232 and RS485 interfaces are available by default.

| DISPLAY | DISPLAY PROTECTION GRADE | ARCHITECTURE | USB PORTS | SERIAL PORTS | CASE MATERIAL | INTERNAL STORAGE | POWER SUPPLY |
|---|---|---|---|---|---|---|---|
| 4.3" Color Touch-screen | IP54 | Fanless, diskless | 1 type B<br>1 type A | 1 RS232C<br>1 RS485 | Aluminium | 4GB MicroSD | 5VDC<br>1.4A |

Optional fieldbus interfaces


IN-OUT ports, USB port, RS232 and RS485 interfaces are embedded. Digital INPUT lines can be programmed via the software interface for cycle activation, for instance with a foot-switch. Conversely, OUTPUT lines can be configured to communicate the status (GOOD/NOT GOOD) of the measurement control.

## APPLICATION FUNCTIONS

### GAUGING CONTROLS

DUO is a compact control unit that integrates a toolkit of essential functionalities for creation of measurement programs, including creation of custom-defined.

## TECHNICAL FEATURES

- 2 Sensors and up to 4 distinct measurements
- 100 Part programs
- Static and dynamic measurements
- Acquisition command through external signal
- Measurement trigger via touch-screen or footswitch
- Basic mathematical and trigonometric formulas to elaborate the sensors acquisition into measurement values
- Collecting data from Marposs LVDT and HBT gauges: M1 and M1Star bore gauges, M3Star snap gauges. M4 and M4Star ring gauges, RedCrown and RedCrown2 sensors.

### DATA VISUALIZATION

When a measurement cycle is complete, results are visualized on the 4.3" display.
The intuitive graphical layout, the high display contrast, the use of colors allow all together a quick review of the results.

- Multi-language support: english, italian, german, french, spanish, portuguese, swedish, romanian, dutch, polish, magyar, czech, russian, taiwanese, turkish, japanese, chinese, korean.
- Measurement results visualization optimized for ease-of-reading for operators
- Programming interface optimized for touchscreen
- Password protected multi-user management

### DATA MANAGEMENT

DUO integrates a 4 GB MicroSD memory card usable to store measurement results after each cycle. Export format is CSV and DFQ. In addition to the local storage, it is possible to mirror the data on a PC directly connected to DUO by using the integrated Ethernet connectivity.

- Measurement data transmission through fieldbus (option), serial protocols or serial keyboard emulation.
- Remote data storage and export through removable USB memory device
- Data storage format: .Csv (Microsoft® Excel comma separated values), Dfq (k-fields)

| DESCRIPTION | ORDER CODE |
|---|---|
| DUO Basic for LVDT/HBT/Tesa HBT sensors | B830DUOD001 |
| DUO Bus for LVDT/HBT/Tesa HBT sensors, with Profibus module | B830DUOD043 |
| DUO Bus for LVDT/HBT/Tesa HBT sensors, with Profinet module | B830DUOD044 |
| DUO Bus for LVDT/HBT/Tesa HBT sensors, with Ethernet/IP module | B830DUOD045 |
| Footswitch with 2 m cable for data triggering function | B6131000110 |

# MODELS AND ACCESSORIES
# ELECTRONICS

## NEMO


- MARPOSS NEMO is the compact Control Unit to create gauging workstations of small size, with up to 16 sensors. Effective gauging networking is one of the distinctive elements of NEMO: it comes with embedded interfaces to interconnect gauging sensors. 2 or 8 separate USB ports or 3 MARPOSS Diginet connectors are available directly in the back panel of the unit.
- Moreover, NEMO delivers a superior ease-of-use to users: its 5.7" color display enables a comfortable visualization of the measurement results and the graphical layout is optimized to be intuitive during manufacturing operations. The display is a touch-sensitive and it has IP54 protection-grade, purposely designed to resist under harsh operating conditions in production.
- NEMO is much more than a measurement display. In fact, it runs functionalities to aggregate the history of the measuring values and to display that data on a summary chart, giving the operators clear information about trends of the manufacturing performance. In background, at the end of each cycle, measurement results are stored into the embedded 4GB memory. Optionally, data can be transferred to remote locations, as networks folders or servers, by using the integrated Ethernet connectivity.

| DISPLAY | DISPLAY PROTECTION GRADE | ARCHITECTURE | USB PORTS | ETHERNET PORTS | SERIAL PORTS | CASE MATERIAL | INTERNAL STORAGE | POWER SUPPLY |
|---|---|---|---|---|---|---|---|---|
| 5.7" Color Touch-screen | IP54 | Fanless, diskless | Up to 8x type B<br>1x type A | 2x 10/100, RJ45 | 1x RS232C | Aluminium | 4GB MicroSD | 24 VDC |

### 2 USB

This version allows the connection of two Easy Box interfaces or Red Crown2 USB probes or USB dongles for wireless gauges.

### DIGI CROWN BOX + 2 USB

This version features three serial bus connectors for Digi Crown boxes and 2 USB ports for Easy Box interfaces or USB dongles for wireless gauges.

### 8 USB

This version allows the connection of up to eight Easy Box interfaces or Red Crown2 USB probes or USB dongles for wireless gauges.

## APPLICATION FUNCTIONS

### GAUGING CONTROLS

With NEMO it is possible to create and manage structured measurement programs with a large number of controls inside. Moreover, NEMO implements functionalities to synchronize the execution of the measurements with production batches, collecting results and calculating statistics consistently with the specific batch in process.

## TECHNICAL FEATURES

- Up to 16 sensors and 8 characteritics
- Up to 8 measuring steps in a single cycle
- Up to 100 part programs
- Up to 100 batches
- Up to 32 tolerance classes
- Collecting data from Marposs LVDT and HBT gauges: M1 and M1Star bore gauges, M3Star snap gauges. M4 and M4Star ring gauges, RedCrown and RedCrown2 sensors.
- Collecting data from third parties devices over USB, RS232, RS485, Bluetooth

### DATA VISUALIZATION

NEMO features a 5.7" touch display, with IP54 protection grade. The best ease-of-use is obtained through the simple graphical layout, the high display contrast, the use of colors to classify events.
In addition to the visualization of the current measurement result, NEMO can display the history of the measuring values on a summary chart, giving the operators clear information of the manufacturing trends.

- Part counters
- Standard, pre-configured report pages
- Measurement results display: horizontal, vertical bargraphs, analog values
- Multi-language support: english, italian, german, french, spanish, portuguese, swedish, romanian, dutch, polish, magyar, czech, russian, taiwanese, turkish, japanese, chinese, korean.

### DATA MANAGEMENT

Measurement results, at the end of each cycle, can be stored into the embedded memory. Optionally those same data can be transferred to remote locations, as networks folders or servers, by using the integrated Ethernet connectivity.

- Measurement data export format: csv, dfq (q-das® qs-stat®)
- Remote measurement data storage: internal SD card, USB, network (smb 1.0)
- Statistics visualization: single value chart
- K-fields: part program basic data and measurement results

| DESCRIPTION | ORDER CODE |
|---|---|
| NEMO DIGI CROWN BOX + 2 USB | B830NA00002 |
| NEMO 2 USB | B8830NA00011 |
| NEMO 8 USB | B830NA00031 |
| FOOTSWITCH with 2 m cable for data triggering function | B6738099035 |

# MODELS AND ACCESSORIES
# ELECTRONICS

## MERLIN


- Marposs Merlin is the powerful control unit for demanding measurement applications. First, Merlin is based on a super-performing hardware platform and it is capable to control gauge networks with up to 250 sensors and to manage measuring tasks with up to 16 separate steps.
- The embedded software suite on Merlin integrates a number of functionalities to effectively support the stream of production operations. For instance, it can manage up to 1000 different part programs, it supports workpieces classification into up to 32 tolerance classes, it can aggregate data by production batches, with a wide limit of 500 different batches. It can export measurement data in CSV or DFQ format and calculate production statistics during the cycles execution.

| DISPLAY | DISPLAY PROTECTION GRADE | ARCHITECTURE | USB 2.0 | ETHERNET PORTS | SERIAL PORTS | CASE MATERIAL | INTERNAL STORAGE | POWER SUPPLY |
|---|---|---|---|---|---|---|---|---|
| 8.4" Touch-screen | IP54 | Fanless, diskless | 5x ports | 1 x 10/100, RJ45 | 1x RS232 | Industrial-grade Plastic | 4GB eMMC | 24 VDC |

## APPLICATION FUNCTIONS

### GAUGING PROCESS CONTROL

MERLIN is the right solution for gauging workstation with several measuring sensors. The large display makes comfortable the management of complex measurement programs with a large number of controls inside. Moreover, MERLIN implements functionalities to synchronize the execution of the measurements with production batches, collecting results and calculating statistics consistently with the specific batch in process.

## TECHNICAL FEATURES

- Up to 250 sensors and 16 characteritics
- Up to 16 measuring steps in a single cycle
- Up to 1000 part programs
- Up to 500 batches
- Up to 32 tolerance classes

### DATA VISUALIZATION

MERLIN features a 8.4" touch display, with IP54 protection grade. The best ease-of-use is obtained through the large display, the simple graphical layout, the high display contrast, the use of colors. In addition to the visualization of the current measurement result, MERLIN can display on a summary charts the history of the measuring values, giving the operators immediate information of the manufacturing trends.

- Standard, pre-configured report pages
- Measurement results display: horizontal, vertical bargraphs, analog values
- Password protected multi-user management

### DATA MANAGEMENT

Measurement results, at the end of each cycle, can be stored into the embedded memory. Optionally those same data can be transferred to remote locations, as networks folders or servers, by using the integrated Ethernet connectivity.

- Measurement data export format: csv, dfq
- Measurement data export on: internal SD card, USB, network (smb 2.0)
- K-fields: part program basic data, measurement results, cycle events

### STATISTICAL PROCESS CONTROL

On MERLIN there are functionalities dedicated to validate the efficiency of production process as the automatic calculation of the Gauge Capability and Machine Tool Capability.
In fact, MERLIN, is capable to elaborate in real time measurements into statistical parameters of the production process, as Cp and Cpk. On top of this, MERLIN implements functionalities for the active surveillance of the process: basing on the actual statistical figures, warnings and alarms are automatically generated.

- Statistics: single value line charts, histograms, control charts
- Alarms based on statistical figures
- Utilities for gauge capability and gauge r&r studies.

| DESCRIPTION | ORDER CODE |
|---|---|
| MERLIN - Windows CE7, True flat, Western Operating System | B830MEADD01 |
| MERLIN - Windows CE7, Western Operating System | B830MEADD00 |
| MERLIN - Windows CE7, Japanese Operating System | B830MECDD00 |
| MERLIN - Windows CE7, Korean Operating System | B830MEEDD00 |
| MERLIN - Windows CE7, Chinese Operating System | B830MEFDD00 |

# MODELS AND ACCESSORIES
# ELECTRONICS

## MERLIN CORE

- MERLIN Core is a high-performance, all-in-one industrial control and measurement unit designed by Marposs to meet the most advanced manufacturing requirements. Equipped with a state-of-the-art quad-core CPU and a 10.1" high-resolution touchscreen with IP54-rated protection, it delivers excellent computational power and an intuitive user experience. Available in both analog and digital versions, MERLIN Core ensures optimal cost-per-measurement efficiency for standard configurations and supports complex, high-level applications through its scalable sensor network.
- Together with its new hardware platform, MERLIN Core is powered by a next-generation Marposs software suite, developed to provide advanced functionalities combined with enhanced ease of use. Two software versions are available to address a broad range of application needs at the right cost. The Standard software version enables precise measurement operations, including batch processing and data export in CSV or DFQ format. It supports up to 20 measuring steps per part program, manages up to 1000 different part programs, and aggregates data into 1000 distinct batch statistics. It also allows classification of workpieces into up to 32 tolerance classes.
- The Advanced software version includes all the features of the Standard software while adding comprehensive statistical tools and advanced reporting capabilities to support in-depth monitoring and optimization of production processes.

| DISPLAY | DISPLAY PROTECTION GRADE | ARCHITECTURE | USB 2.0 | ETHERNET | SERIAL PORTS | CASE MATERIAL | INTERNAL STORAGE | POWER SUPPLY |
|---|---|---|---|---|---|---|---|---|
| 10.1" Touch-screen | IP54 | Fanless, diskless | 4x ports | 2x 10/100 | 1 | Aluminium | 16 GB eMMC | 24 VDC |

## APPLICATION FUNCTIONS

### GAUGING PROCESS CONTROL

MERLIN Core is the ideal solution for gauging workstations equipped with multiple measuring sensors. Its large display facilitates the management of complex measurement programs involving a high number of controls. Moreover, MERLIN Core includes features to synchronize measurement execution with production batches, collect results and calculating statistics consistent with the specific batch being processed.

## TECHNICAL FEATURES

- Up To 250 Sensors And 20 Characteritics
- Up To 20 Measuring Steps In A Single Cycle
- Up To 1000 Part Programs
- Up To 1000 Batches
- Up To 32 Tolerance Classes

### DATA VISUALIZATION

MERLIN Core features a 10.1" touch display with IP54 protection. Optimal ease of use is ensured by the large screen, intuitive graphical layout and effective use of colors.
In addition to displaying the current measurement result, MERLIN Core can show historical measurement data in summary charts, providing operators with immediate insight into manufacturing trends.

- Standard, pre-configured report pages
- Measurement results display: horizontal, vertical bargraphs, analog values
- Password protected multi-user management

### DATA MANAGEMENT

At the end of each cycle, measurement results can be stored on a removable SD card. Optionally, the same data can be transferred to remote locations, such as network folders or servers, using the integrated Ethernet connectivity.

- Measurement data export format: csv, dfq
- Measurement data export on: internal SD card, USB, network (smb 2.0)
- K-fields: part program basic data, measurement results, cycle events

### STATISTICAL PROCESS CONTROL

The advanced version of MERLIN Core includes dedicated features to validate the efficiency of the production process, such as the automatic calculation of Gauge Capability and Machine Tool Capability. It can process measurements in real time and convert them into key statistical parameters, such as Cp and Cpk.
In addition, MERLIN Core offers active process monitoring: based on real-time statistical data, it automatically generates warnings and alarms.

- Statistics: single value line charts, histograms, control charts
- Alarms based on statistical figures
- Utilities for gauge capability and gauge r&r studies.

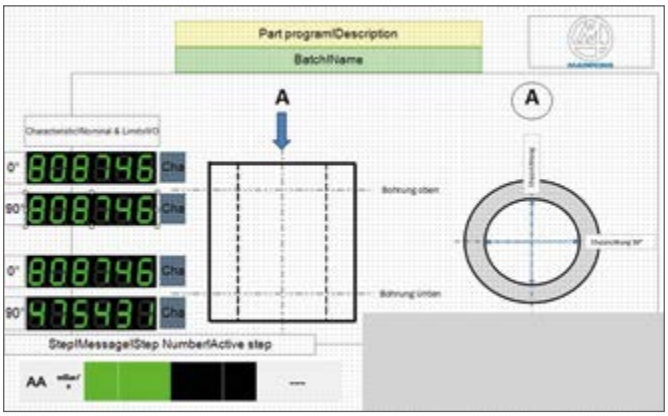
| DESCRIPTION | ORDER CODE |
|---|---|
| MERLIN Core analog with standard SW | B830MNA0000 |

# MODELS AND ACCESSORIES
# ELECTRONICS

## MERLIN PLUS


- Merlin plus is the premium model in the line of marposs control unit. On top of a superior performance level, Merlin Plus delivers a number of premium functionalities to create and to manage gauging workstations for demanding and articulated applications.
- For instance, it supports networks with up to 250 sensors and can manage dynamic acquisitions. It can classify parts into tolerance classes, up to 99, and can store up to 1000 different part programs.
- The human machine interface is purposely designed for applications with several sensors, several measurements and several operational steps: in fact, with Merlin Plus the page layout of the measurement results are customizable and it is possible to connect up to 3 different monitors, for a comfortable visualization of different pages simultaneously. It can also print measurement reports in pdf format or communicate with physical printers.

| DISPLAY | DISPLAY PROTECTION GRADE | ARCHITECTURE | USB 2.0 | ETHERNET | SERIAL PORTS | CASE MATERIAL | INTERNAL STORAGE | POWER SUPPLY |
|---|---|---|---|---|---|---|---|---|
| 12.1" Touch-screen | IP54 | Fanless, diskless | 6x ports | 2x 10/ 100/ 1000 RJ45 | 1x RS232 | Aluminium | MSATA Up to 240 Gb | 24 VDC |




Merlin Plus Designer is an extension of the base Merlin Plus Software. This utility allows creating user-defined pages for measurement results.

Thanks to the possibility to design the measurement result page around the specific application, it is a fundamental tool to increase the ease-of-use of operators and to avoid errors.

Among the available tools, Merlin Plus Designer makes available measuring bars, images, blinking objects, graphs, charts.

## APPLICATION FUNCTIONS

### GAUGING PROCESS CONTROL

Merlin Plus is the premium control unit offering, on top of the primary gauging application, a wide range of functionalities to support the manufacturing process and the quality control execution. The high level of configurability is one of the key advantages of the merlin plus, allowing a perfect fitting into existing applications.

## TECHNICAL FEATURES

- Up to 250 sensors and 250 characteritics
- Up to 250 measuring steps in a single cycle
- Up to 1000 part programs
- Up to 2000 batches
- Up to 99 tolerance classes
- Fast dynamic acquisitions (up to 4000 samples/s)

### DATA VISUALIZATION

With Merlin Plus, it is possible to create custom-defined pages for the visualization of the measurement results at the end of the cycle. Multiple displays can be connected to it in order to have a comfortable visualization in case of large control plans. Measurement results can also be printed in pdf format. Operator can access to part history, in order to visualize the results of previous parts. Moreover, summary charts with measurement history are available, normally used for graphical review of the trends.

- Standard, pre-configured report pages
- Measurement results display: horizontal, vertical bargraphs, analog values
- User-defined measurement result pages
- Password protected multi-user management
- Up to 3 different monitors for simultaneous pages visualizations

### DATA MANAGEMENT

Measurement results, at the end of each cycle, can be stored into the embedded memory. Optionally those same data can be transferred to remote locations, as networks folders or servers, by using the integrated Ethernet connectivity.

- Reports management in pdf format
- Printing capabilities
- Measurement data export format: csv, dfq
- Measurement data export on: internal SD card, USB, network (smb 1.0)
- K-fields: part program, batch data, measurement results, cycle events
- Configurable qr code management to select batches, to read kfields, to start cycle and more

### STATISTICAL PROCESS CONTROL

On MERLIN Plus there are functionalities dedicated to validate the efficiency of production process as the automatic calculation of the Gauge Capability and Machine Tool Capability.
In fact, Merlin Plus, is capable to elaborate in real time measurements into statistical parameters of the production process, as Cp and Cpk. On top of this, Merlin Plus implements functionalities for the active surveillance of the process: basing on the actual statistical figures, warnings and alarms are automatically generated.

- Statistics: single value line charts, histograms, control charts
- Alarms based on statistical figures
- Utilities for gauge capability and gauge r&r studies.

| DESCRIPTION | ORDER CODE |
|---|---|
| MERLIN PLUS – Windows 10 IoT multi-language 4GB RAM, 60 GB SSD | B830MPMFIC0 |
| MERLIN PLUS – Windows 10 IoT multi-language 8GB RAM, 120 GB SSD | B830MPMFJD0 |
| MERLIN PLUS BOX – Windows 10 IoT multi-language 4GB RAM, 60 GB SSD | B830MBBBBB0 |
| MERLIN PLUS BOX – Windows 10 IoT multi-language 8GB RAM, 120 GB SSD | B830MBBBCC0 |
| MERLIN PLUS BOX – Windows 10 IoT multi-language 8GB RAM, 240 GB SSD | B830MBBBDC0 |

**Merlin Plus Software and Merlin Plus Designer can be installed on 3rd party PC, not just on Merlin Plus hardware:**

| DESCRIPTION | ORDER CODE |
|---|---|
| Merlin Plus Software (License) | BCM7000000E |
| Merlin Plus Designer (License) | BCM7010000E |

# MODELS AND ACCESSORIES
# ELECTRONICS

## E9066E


- E9066E™ is the bench-top Industrial Computer dedicated to meet the demanding requirements of high-end applications in quality control.
- E9066E™ is purposely designed to operate into harsh industrial environments, like the production shop floor. It is totally fan-less and features a wide-screen 15.6", industrial-grade touch screen and protection grade IP65.
- E9066E™ integrates a CPU INTEL® quad-core 64-bit and comes with Microsoft® Windows 10-IoT Enterprise pre-installed. Marposs QuickSPC™ is the multi-functional software suite designed and optimized for the E9066 platforms and with a super-wide range of functionalities for quality controls and data management.
- QuickSPC™ speeds up the deployment of gauging systems based on E9066E, since it comes with software drivers to communicate with Marposs connectivity devices, like EasyBox or GagePod. Moreover, it offers a large number of optimized functionalities, ranging from the from measurement setup to data management and automation signals control.

| DISPLAY | DISPLAY PROTECTION GRADE | ARCHITECTURE | USB 2.0 | ETHERNET | SERIAL PORTS | CASE MATERIAL | INTERNAL STORAGE | POWER SUPPLY |
|---|---|---|---|---|---|---|---|---|
| 15.6" Touch-screen | IP54 | Fanless, diskless | 6x ports | 2x 10/ 100/ 1000 RJ45 | 1x RS232 | Aluminium | MSATA Up to 240 Gb | 24 VDC |

## APPLICATION FUNCTIONS

## TECHNICAL FEATURES

### GAUGING PROCESS CONTROL

E9066 control unit, with its software suite QuickSPC, is the top of the product range. It is purposely designed to cover demanding applications both in terms of configuration complexity and computational performance. It offers a toolkit of utilities and functionalities that can cover almost any need in industrial applications from measurement for quality controls, automation, traceability up to data management.

- Unlimited number of sensors and characteritics (*)
- Unlimited number of measuring steps (*)
- Unlimited number of part programs (*)
- Up to 999 tolerance classes per each single characteristic
- External devices easibly connectable

(*) Numerical amount limited only by the memory available

### DATA VISUALIZATION

The user interface is optimized to visualize control plans with a large number of measurements. Each single measurement can also be analyzed in detail, through a dedicated page with graphical illustration of the profiles. Multiple displays can be connected and custom-defined pages can be created, for a perfect adaptation to the customer application and use. Measurement results can be printed in pdf format, on request or automatically at the end of each cycle.

- Standard, pre-configured report pages
- Bargraphs and analog values
- Guided acquisition sequence via custom pages
- User-defined measurement result pages
- Password protected multi-user management

### DATA MANAGEMENT

Measurement results, at the end of each cycle can be transferred to remote locations. A deep level of configurability is supported, for instance data formatting or custom exportfile naming.

- Reports management in pdf format
- Printing capabilities with automatic printouts
- Measurement data export format: csv, txt, dfq or custom
- Opc-ua customizable server
- K-fields: certified for aqdef 4.1 B level

### STATISTICAL PROCESS CONTROL

On E9066 there are functionalities dedicated to validate the efficiency of production process as the automatic calculation of the Gauge Capability and Machine Tool Capability.
In fact, E9066 is capable to elaborate in real time measurements into statistical parameters of the production process, as Cp and Cpk. On top of this, it implements functionalities for the active surveillance of the process: basing on the actual statistical figures, warnings and alarms are automatically generated.

- Q-das made server for online spc analysis
- Q-das standard statistics pages
- Utilities for gauge capability, R&R studies and machine capability
- Export gauge capability studies, Q-das standard

### ADVANCED SETUP

E9066 and QuickSPC combine together computational power, configuration flexibility and a wide toolkit of functionalities. Advanced functionalities to develop complex applications are integrated: guided sequences for manual step-by-step controls, interfacing to PLC for automatic loading, in-line thermal compensation based on real part temperature, fine-tuning feedback for the machine tool.

- Additional tools for:
  alternative gauging fixtures creation, guided sequence page creation, groups & users definition

# MODELS AND ACCESSORIES
# ELECTRONICS

## E9066T


- Marposs E9066T is the Industrial PC at the top-of-the-range. This platform merges together industrial-grade features with high performance computational power. It is fan-less, it integrates INTEL® Core™-i 64-bit CPU and it runs Microsoft® Windows®10-IoT Enterprise. Its connectivity equipment is at a premium level: 4x GIGABIT ETHERNET, 6 USB ports, Serial port, fieldbus interface integrated.
- Such powerful hardware platform makes E9066T the right Industrial Control Unit for the most demanding applications, like when the gauging system is integrated in automatic lines. E9066T can run multiple applications on board: while coordinating with controls for automation, it can execute data acquisition from sensors, it can aggregate and collect data, calculate statistics and send real-time feedback signals to the machine tool.
- Marposs QuickSPC™ is the multi-functional software suite designed and optimized for the E9066T Industrial PC. First, QuickSPC™ incorporates software drivers to communicate with Marposs connectivity devices, like EasyBox or GagePod. Moreover, it offers a large number of functionalities, from measurement setup to data management or control of automation signals.

| DISPLAY | DISPLAY PROTECTION GRADE | ARCHITECTURE | USB 2.0 | ETHERNET | SERIAL PORTS | CASE MATERIAL | INTERNAL STORAGE | POWER SUPPLY |
|---|---|---|---|---|---|---|---|---|
| 15" to 24" TOUCH-SCREEN | IP66 | Fanless, diskless | 6x ports | 4x GIGABIT | 1x RS232 | Aluminium | MSATA Up to 240 Gb | 24 VDC |

E9066T is optionally integrated inside a sealed cabinet, perfect to integrate and to protect hardware peripherals and power supply.

## APPLICATION FUNCTIONS

### GAUGING PROCESS CONTROL

E9066 control unit, with its software suite QuickSPC, is the top of the product range. It is purposely designed to cover demanding applications both in terms of configuration complexity and computational performance. It offers a toolkit of utilities and functionalities that can cover almost any need in industrial applications from measurement for quality controls, automation, traceability up to data management.

## TECHNICAL FEATURES

- Unlimited number of sensors and characteritics (*)
- Unlimited number of measuring steps (*)
- Unlimited number of part programs (*)
- Up to 999 tolerance classes x each characteristic

(*) Numerical amount limited only by the memory available

### DATA VISUALIZATION

The user interface is optimized to visualize control plans with a large number of measurements. Each single measurement can also be analyzed in details, through a dedicated page with graphical illustration of the profiles. Multiple displays can be connected and custom-defined pages can be created, for a perfect adaptation to the customer application and use. Measurement results can be printed in pdf format, on request or automatically at the end of each cycle.

- Standard, pre-configured report pages
- Bargraphs and analog values
- Guided acquisition sequence via custom pages
- User-defined measurement result pages
- Password protected multi-user management

### DATA MANAGEMENT

Measurement results, at the end of each cycle can be transferred to remote locations. A deep level of configurability is supported, for instance data formatting or custom exportfile naming.

- Reports management in pdf format
- Printing capabilities with automatic printouts
- Measurement data export format: csv, txt, dfq or custom
- Opc-ua customizable server
- K-fields: certified for aqdef 4.1 B level

### STATISTICAL PROCESS CONTROL

On E9066T there are functionalities dedicated to validate the efficiency of production process as the automatic calculation of the Gauge Capability and Machine Tool Capability.
In fact, E9066T, is capable to elaborate in real time measurements into statistical parameters of the production process, as Cp and Cpk. On top of this, it implements functionalities for the active surveillance of the process: basing on the actual statistical figures, warnings and alarms are automatically generated.

- Q-Das Made Server For Online Spc Analysis
- Q-Das Standard Statistics Pages
- Utilities For Gauge Capability, R&R Studies And Machine Capability
- Export Gauge Capability Studies, Q-Das Standard

### ADVANCED SETUP

E9066 and QuickSPC combine together computational power, configuration flexibility and a wide toolkit of functionalities. Advance functionalities to develop complex applications are integrated: guided sequences for manual step-by-step controls, interfacing to PLC for automatic loading, in-line thermal compensation based on real part temperature, finetuning feedback for the machine tool based on measurement trends.

- Dedicated tools for:
  alternative gauging fixtures creation, guided sequence page creation, groups & users definition

## QuickSPC Software can be installed E9066 platforms as well as on 3rd party PC

| DESCRIPTION | ORDER CODE |
|---|---|
| QuickSPC Software License | CM2Z38MA00 |

# NOTE

**BD6W00208G0 - Edition 07/2025 - Specifications are subject to modifications.**



*Some models of the product line, or parts of them, may be subject to export restrictions if exported outside the European Union or may be subject to restrictive measures adopted by the competent national, supranational or international authorities.*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