MANUAL GAUGING COMPONENTS
QUICK GUIDE

TESTAR

MARPOSS

Marposs produces measuring systems designed to perform dimensional, geometrical and surface checks on manufactured mechanical components, and systems for monitoring machines and tools during the process. The company offers standard & customized solutions for each stage of the production process, before and during the manufacturing process as well as on finished parts, which allow for instant collection and processing of the measurement data. In particular: measurement and control for machine tools; dimensional and geometrical inspection of mechanical components; non-destructive and leak testing; integrated measurement and assembly systems; statistical process and quality control. Today the Marposs group has more than 2700 direct employees. Over 1000 work at the Italian headquarters and other Italian subsidiaries, 580 throughout Europe, 270 in America and 770 in Asia.

Testar is the division of Marposs whose mission is to develop and offer innovative measuring component products to end users and system integrators as well as fixture and gauge makers, whose final products are used in automotive, bearings, gears, compressors, electrical motors, aerospace, glass, energy, biomedical, electronics and hi-tech consumer products.

All Testar products originate in the Research and Development center within World Headquarters in Italy. Here the knowledge gained from both customer applications and our own internal manufacturing operations, is the basis for developing new ideas. Testar' product development process integrates Marketing, Research and Development, Engineering and Manufacturing through simultaneous engineering methodologies. As a result, all new product platforms use the latest production technologies available. Testar' manufacturing area operates with the most advanced equipment to assure the quality of its products is first class.

Headquarters - Bentivoglio (BO) Italy

TRANSDUCERS AND MEASUREMENT TRANSMISSIONS

Red Crown 2

New pencil probe line developed to meet industry's new global demands for improved performance in a measuring product.

The Red Crown 2 line and its digitalized versions Digi Crown 2 and Red Crown 2 USB, offer a variety of measuring solutions. The two main families, Standard (with Gaiter-IP 65) and Soft Touch (without Gaiter-IP 54), are available with the following options:

- HBT and LVDT type transducers
- Five standard measuring ranges: 1 mm, 2 mm, 5 mm,10 mm, 20 mm
- Actuation / retraction by Spring, Pneumatic, or Vacuum methods.
- Analogue connection: Marposs standard connector or compatible connectors for interfacing with competitor electronics
- Digital connection for Marposs DigiCrown network system
- Direct USB connector for simple interfacing to computers
- Cable only allows customer to connect using their preferred type of connector

AMA

Advanced Measuring Armsets developed to meet the requirements of fixture makers, gauge makers and measuring solutions where direct sensor contact is not recommended. The universal feature of the product line is to use the AMA between the workpiece and the transducer

This is achieved with:

- 15 different designs
- 8 mm or 3/8" clamping diameter for sensors
- high precision and reliability
- compact design (12 mm thickness)
- variety of mounting options
- wide range of contacts including offset types

They can be used with any pencil probe, as well as dial and digital indicators. Pneumatic actuation, available on some models, allowing contact retraction, to eliminate interference with the workpiece, during manual and automatic part loading and unloading.
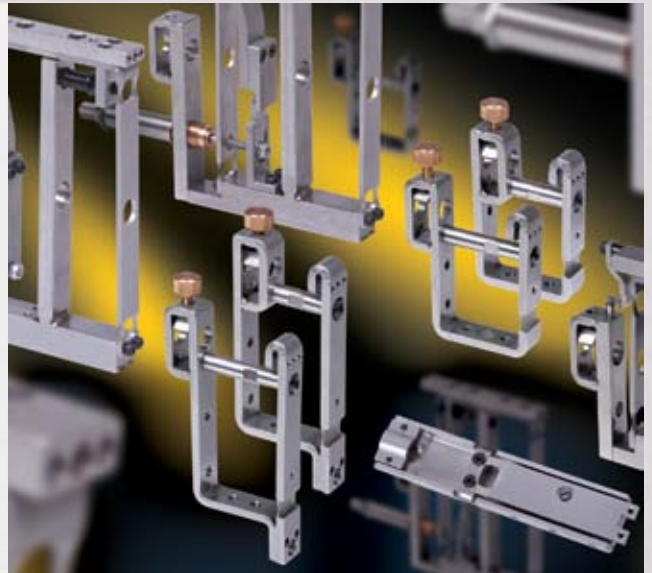
Quick Block 1000

Compact, universal, high accuracy measuring device available with ± 5 mm range. Supplied with built-in full-bridge (LVDT) or half-bridge (HBT) transducer, or user can install any Marposs Red Crown / Digi Crown probes device, or other measuring sensors, linear encoders with clamping diameter 8 mm or 3/8" for all third party electronic units.

Features a twin linear ball bushing mechanical transmission, spring activated with gaiters to protect the bearings - IP65. It is extremely robust, can be used in any position and can be equipped with pneumatic actuation to facilitate part loading/unloading in the measuring station.

Precision ring dowels ensure each unit can be located repeatably in any gauge or fixture assuring the measuring contact is precisely positioned every time, even when something is replaced on the system.

It is completely toolable / retoolable by the customer, using their own contact designs, or standard measuring arms and contacts can be supplied from stock.

BORE GAUGES LINE

M1 Star MBG & EBG

The Premier Line of Mechanical (MBG) & Electronic (EBG) Bore Gauges for precision measurement of inside diameter, ovality and taper.

Standard measurable diameters range from 3 mm to 300 mm with special super light versions for diameters up to 525 mm.

The MBG is easily interfaced to a handle with any pencil probe, dial / digital indicator or the ultimate iWave wireless handle.

The EBG can be supplied wired with connector or the M1Wave wireless handle. Retooling either model can be as simple as replacing the nosepiece and contacts.

Both models are completely robust and durable, with a measuring transmission system, capable of more than 10,000,000 measuring life cycles, delivering 1,0 μm accuracy for the MBG and 0,5 μm accuracy for the EBG.

Choose Through -T, Blind -B or Super Blind -SB nosepiece styles to suit your needs.

A full line of accessories is available to meet all customer requirements like depth stops, depth extensions, gauge storage and fixture adaptations.

iWave - Mini iWave

Wireless interface handles for Mechanical Bore Gauge heads, featuring Bluetooth® wireless technology, for data transmission to electronic displays. It can accommodate any mechanical gauge head with M10, M6 or M3,5 thread, while the robust and reliable Star-Lock system allows gauge head (MBG) changeover in just a few seconds, without any tools. The Wireless system offers users complete freedom with no cable breaks or entanglements, smooth ergonomic operations, measuring directly at, or inside the machine, without removing the part. Powered by standard "C" alkaline or Li-Ion inductive rechargeable batteries.
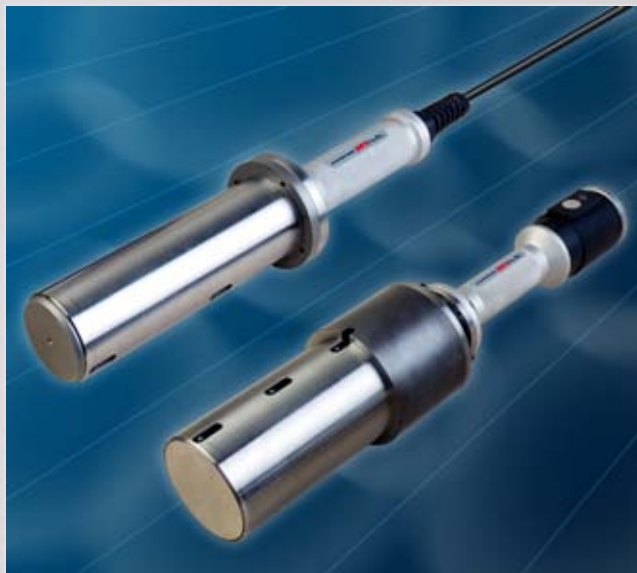
M1 Multi

Manual electronic multiple bore gauges for the measurement of diameter and geometry (ovality, taper, etc.) of machined bores in a number of sections, in one operation.

The plug gauge is composed of a nosepiece and measuring armsets featuring two or four contacts for each section to be measured. Each gauge is designed according to application or customer's specific requirements to position the measuring contacts precisely throughout the bore. Bores can be multiple (sizes), interrupted, or long and continuous.

The nosepiece is the guiding element ensuring the operator' action does not affect the result of the measurement.

The M1 Multi has been designed to be used in the harshest production environments, and features IP67 protection level (waterproof, dirt and dust sealed).

It is available in two versions:
- with cable, for connection to electronic interface units.
- wireless, featuring the Marposs "Wave" Bluetooth® transmission technology with Li-Ion batteries and inductive recharging system.

FORKS AND RING GAUGES, BENCH GAUGES

M3 Star

High technology, manual snap gauges for checking external diameters on round shaft type components.

The M3 Star is available with a slim line body design, only 10mm wide, as either a Mechanical Snap Gauge (MSG) or Electronic Snap Gauge (ESG).

Fully retoolable between diameter ranges 5-30 mm & 30-70 mm with a choice of a 10 mm or 20 mm wide, adjustable reference 'Vee'.

The 10 mm wide Vee allows the measurement to be taken within a narrow space or at a distance of only 5 mm from an edge or shoulder

The M3 Star has two versions to suit part tolerance requirements.

The Mechanical (MSG) system repeating to $< 2 \, \mu$m, with optional handles for dial/digital indicators; wired electronic pencil probes, or the Marposs wireless iWave device.

The Electronic (ESG) system repeating to $< 0.5 \, \mu$m, with optional handles for a cable connection, or the Marposs wireless Wave device.

M4 Star

Mechanical and electronic manual ring gauges for checking external diameters on pin and shaft type parts in the range 4 to 125 mm. The M4 Star design can measure, close to a shoulder, at minimum 1 mm distance and then variably up to 6 mm from a face in the standard version.

It can be used directly on the work piece, by sliding over the diameter to be measured, or be fixture mounted, allowing a short part to be checked.

Special design versions are available for larger diameters.

The Mechanical Ring Gauge (MRG) and Electronic Ring Gauge (ERG) uses the same handle arrangement as the M3Star Snap Gauges. MRG has handles for dial/digital indicators; wired electronic pencil probes or the Marposs wireless iWave device.

ERG has handles for a cable connection, or the Marposs wireless Wave device.

Quick Set Line

Modular measuring system conceived to allow rapid delivery of a mechanical gauging fixture without traditional design and build. Component modules are built for shop floor use, for easy assembly by any user. They are available from stock, off the shelf, for immediate fixture build, allowing simple to semi-complex fixtures to be created. Once assembled to suit the specific part gauging requirements, the system delivers and ensures consistent part quality. With no design & build time lines, the user achieves cost reductions and gains application flexibility (add or subtract modules as required). The system is available in three basic & different configurations of 1) horizontal and 2) vertical types for multidimensional and geometric checking of shaft-like parts; 3) chuck type for multidimensional and geometric checking on parts that cannot be referenced horizontally such as bushings, bearings, pistons and cylindrical parts that are manufactured with a flange.

INDICATORS AND ELECTRONIC DISPLAY UNITS

TD

High quality dial indicators, whose design, accurate components, precision engineered mechanism and robust construction offer accuracy, reliability, durability and long working life.

Standard features for all models are:
- Adjustable tolerance markers to set tolerance limits
- Hardened, stainless steel mounting shank and measuring spindle are corrosion proof
- Lapped spindle increasing resistance to wear
- Sturdy metal housing

Available types are:
- High precision dial indicators
- Dial comparator gauges
- Error free dial indicators

Quick Digit

Digital indicators with a highly accurate measuring system featuring:
- 12,5 mm measuring range (other ranges available only on request).
- 0,001 mm resolution.
- Large 11 mm digits for fast and error-free reading of the measuring value.
- Replaceable 3V lithium battery, with 8000h average battery life.
- External power supply using Power type cable for data transmission.
- RS232 compatible output for data transmission.

Basic functions:
- Preset
- Zero setting at any point within the measuring range
- Automatic switch-off without loss of the original value

Additional functions for advanced models:
- REF I / REF II dual reference point
- Dynamic Min./Max./TIR measuring mode
- Setting and display of tolerance limits
- Measuring value classification through tolerance indicator lights (green, yellow, red)
- Input of a multiplicative coefficient

Quick Read

Compact slim electronic display unit with a thickness of only 12 mm, complete with 3-colour (green, yellow and red) analogue display and 8-digit alphanumeric display providing clear definition and easy reading of the measurement results. Using the local keypad, the Quick Read can be easily programmed to set the digital display resolution, measuring unit, tolerance limits, full scale range and master deviations.

The unit will also provide:
- A coefficient when a reading is not 1 to 1.
- Absolute or comparative reading of the measurement result.
- The data format for serial transmission (ASCII or binary format).

It is available with a remote probe attached to the main display by means of a standard 2 metre cable or as a microcolumn version allowing to connect MARPOSS standard probes with half-bridge transducer ranging from ± 0,25 mm (.010") to ± 5 mm (.200").

Two microcolumn versions are available :
- For connection of one sensor to carry out one static measurement .
- For connection of one or two sensors to carry out one static or dynamic measurement [Hold, Max, min, Maxmin, (Max- min)/2, (Max+min)/2].

ELECTRONIC DISPLAY UNITS
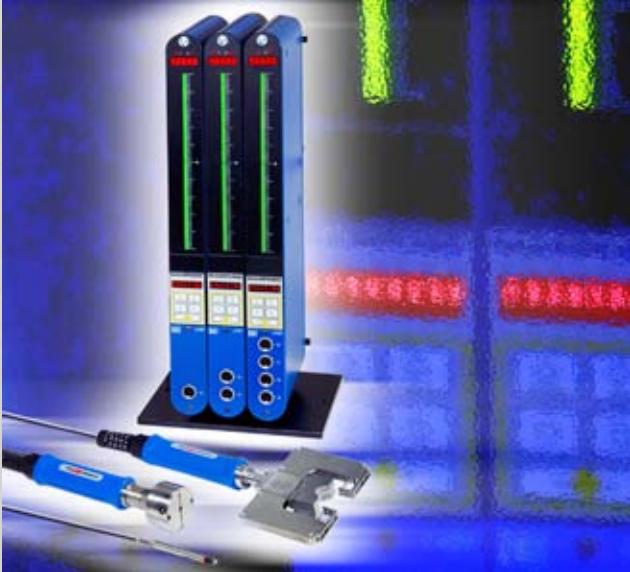
E4N

Microprocessor column designed to display a single dimensional or geometrical condition, featuring a 101-Led three colour bargraph scale and an eight-digit large display. It can accommodate
- different LVDT or HBT transducer modules provided with 1, 2 or 4 input channels
- a Wave module for connection of up to four wireless gauges
- a one channel air to electronic module

It is equipped with a wide range of interfaces, Digimatic and analog, RS232-C, Relay/BCD and for external push-buttons or foot-switches.

Nemo

Ultra compact embedded gauge computer with 5.7" LCD Display, designed for simple measuring applications up to 8 sensor inputs and 4 bargraph style measurement displays from traditional analogue & digital transducers and wireless measurement devices. Measurement data can be stored locally in a built-in Secure Digital micro card or uploaded to a LAN network. Its touch-screen human interface is designed to allow programming and acquire measurements without any additional input/command devices.

Merlin - Merlin Plus

Embedded gauge computers with 8.4"LCD Display, for data collection and basic statistical analysis from traditional analogue & digital transducers and wireless measuring devices. It is available as a basic version with Microsoft® Windows® CE operating system, designed for simple measuring applications up to 16 sensors/measurements. The Plus version features the Microsoft® Windows® XP Embedded operating system, designed for enterprise applications up to 32 sensors/ measurements and featuring enhanced data storage capabilities for the most demanding network environment.

INTERFACE BOXES

Easy Box

USB interface boxes designed for easy and economical management of inductive and incremental transducers, air gauges, Digimatic and serial gauges, I/O signals, thermocouples via a USB port. The power to the measurement devices and Easy Boxes™ is provided through a standard USB cable connection to a Marposs amplifier or PC. The measurement values are transmitted through the same USB cable from each box. Some models may require an external power supply according to the type of connected transducer or device being operated. A data trigger can be made with the external signal of a footswitch or with a data request from the host PC.

DigiCrown Network System

Modular digital network with easily assembled components to create your customized measurement system using a wide range of standard interfaces with different types of input signals.
DigiCrown2 sensors are automatically recognized by the system and can be changed without any reprogramming or errors. The system recognizes up to 744 inputs.
Modular interface modules accept various different types of sensors such as analogue LVDTs, incremental encoders, analogue signal devices and is able to manage INPUT / OUTPUT signals to any PLC.
The communication is based on RS485 serial protocols. The network interface to a PC (commercial or industrial) is through PCI cards, ISA, or RS232 interfaces (easily integrated with PLC controls) and USB High Speed.
Using USB HS guarantees a dynamic synchronized acquisition at a speed of 4,000 samples / sec. For applications with a PC, Marposs SW packages & SDK's are available for integration into 32 or 64 bit systems.

TCI

A line of Transducer Conditioning Interfaces available with 1, 4, or 8 inputs to accept LVDT or HBT pencil probe sensors. The input converts the measurement value into a signal, compatible with most analogue cards for data acquisition. The output of each unit provides a direct signal (Voltage: ± 5Vdc, ± 10Vdc, 0-10Vdc; Current: 4-20mA), proportional to the measurement value of the sensor at the input stage. The PLC analogue card can receive the output signal from the TCI in order to control and manage automatic processes and can be incorporated into SCADA controlled systems. TCI interfaces are PLUG&PLAY units. Each unit is calibrated specifically for the sensor being used. This offers quicker installation , lowers machine downtime and reduces maintenance operations.

SOFTWARE

Quick SPC

Statistical process and quality control software to display the results of gauging from simple measurement acquisitions to complex gauging applications.

The Microsoft platform using wizard driven tools, and a common user interface complements the base product by means of specific software add-ons purposely conceived for specialized metrology inspection tasks. Main characteristics are:
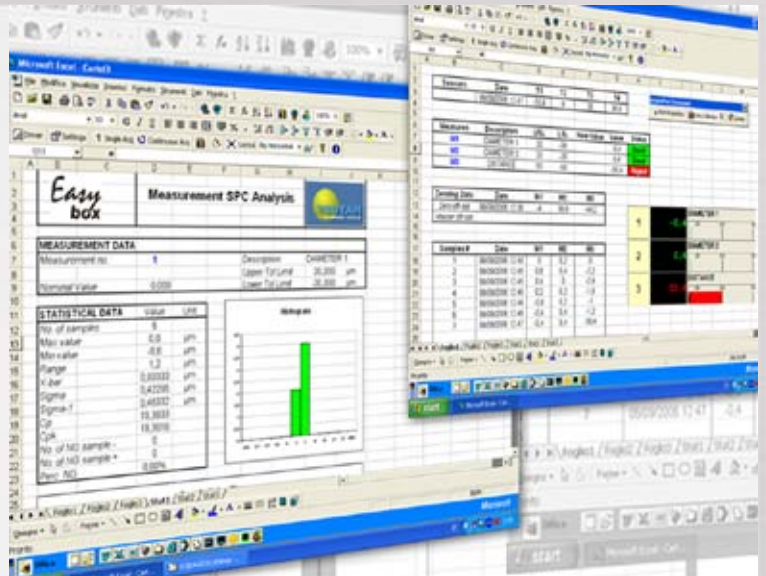
- Templates and wizard driven programming interfaces allow an easy, safe and ready to use software.
- Self explanatory with its spreadsheet programming interface, Explorer-like navigation and on-line manuals.
- Mouse-free Interface.
- Safe and reliable with checks on programmed data consistency, data back-up and restore utility, multi-level user security access.
- Fully customizable software environment matching current and future metrological and statistical needs: page layouts, short cuts, hot tabs, application templates, reports, customers' based statistical evaluations and more.
- Powerful and versatile: capable of connecting to a variety of analogue and digital measuring devices and machine tool CNC's.
- Native 32-bit Windows® software for shop floor applications: operator prompts with multimedia files (pictorials, drawings, photos, movies).
- Comprehensive fully integrated software modules for data acquisition, measurement elaboration, statistical analysis, machine tool compensation, network integration and data storage.

Easy Acquisition

Simple software package working on an Excel® platform and allowing to use a normal worksheet to carry out the following functions:

- acquisition of the measurement values
- creation and display of static and dynamic measurements with tolerance and status values
- management of measurement zero-setting (if required)
- data collection of the acquired measurement values
- statistical analysis of the measurement values stored in the data collection
- print-out of data collection and SPC values

A124	D124	QUICK BLOCK	DIGI BLOCK	HAND HELD GAUGES	RED CROWN 2	DIGI CROWN 2	RED CROWN 2 USB	INTERFACE TYPE	#CH	ACQUISITION TIME
		●		●	●			QUICK READ	1-2	2 ms
●		●		●	●	● (*)		E4N	1÷4	2 ms
●		●		●	●	● (*)		TCI1 TCI4 TCI8	1 4 8	2 ms
●	●	●	●	●	●	● (*)		GAGE POD	16	0,25 ms
●		●		●	●	● (*)		EASY BOX	4	1 ms
	●	● (***)	●	●	● (**)	●		DIGI NET	1÷744	0,25 ms
									1÷31	0,25 ms
									1÷8	0,25 ms
									1÷744	0,25 ms
		●					●		1	1 ms

(*) Digi Crown 2 probes can also be connected to any Marposs standard LVDT interfaces
(**) Red Crown 2 LVDT probes can be connected to Digi Crown Network System by dedicated programming
(***) Quick Block LVDT can be connected to Digi Crown Network System by dedicated programming

OUTPUT TYPE	ACQUISITION SW	DISPLAY UNIT	VISUALIZATION TYPE
SERIAL 232	EMBEDDED	QUICK READ	LED BARGRAPH + DIGITAL DISPLAY
SERIAL 232 / DIGIMATIC / BCD	EMBEDDED	E4N	LED BARGRAPH + DIGITAL DISPLAY
ANALOGUE (VOLTAGE / CURRENT)	-		PLC/CNC
USB ETHERNET WIFI	MARPOSS ACQ. SW	E9066 INDUSTRIAL PC / COMMERCIAL PC	LCD DISPLAY
USB	MARPOSS ACQ. SW	E9066 INDUSTRIAL PC / COMMERCIAL PC	LCD DISPLAY
USB	EMBEDDED	MERLIN	LCD DISPLAY
USB	EMBEDDED	NEMO	LCD DISPLAY
USB/232/PCI CARD/ISA CARD	MARPOSS ACQ. SW	E9066 INDUSTRIAL PC / COMMERCIAL PC	LCD DISPLAY
USB/232	EMBEDDED	MERLIN	8,4" LCD DISPLAY
DIRECT	EMBEDDED	NEMO	5,7" LCD DISPLAY
USB/232	MADE BY PROTOCOL COMMAND	PLC	PLC
USB	MARPOSS ACQ. SW	NEMO/MERLIN/E9066/INDUSTRIAL PC/PLC/ COMMERCIAL PC/ANY HOST USB	DEPENDING ON THE DISPLAY UNIT

TESTAR