M1-M3

Industrial display units for dimensional measurement with 1 or 2 channels

Metro

Manufacturer of precision measuring devices since 1986

M1 and M3 displays are designed to make various dimensional controls from 1 or 2 measuring input, including:
- Half bridge or LVDT Inductive probes from Metro (Example M804S), Tesa (Example GT21), Mahr (Example P2004M), etc...
- Air gages. Compatible with all brands.
- Incremental probes from Heidenhain (Example MT12), Magnescale (Example DK812) or Mitutoyo (LG
- Linear scales and encoders TTL, 1 Vpp or 11µA
- Capacitive probes from Sylvac (Example P25) - available from the Sylvac sales network

Depending on the application, it is possible to connect additionally:
- Up to 4 modules with 8 inputs/outputs isolated by optocouplers (ref MB-IO)
- 1 module with relay outputs for new installations or retrofit of old Metro Monocote displays fitted with the relay board. (ref MB-RL)
- Each input of the display can be replaced by a channel from an external module or from a Solartron Orbit probe. Example to combine air gage and contact probe.

The M1&M3 can be used on very simple manual applications up to the most complex ones in fully automated machines.
These display units are extremely easy to use and to program with a user-friendly interface and intuitive measuring principle.
The robust construction make these displays usable on the most severe industrial environment.
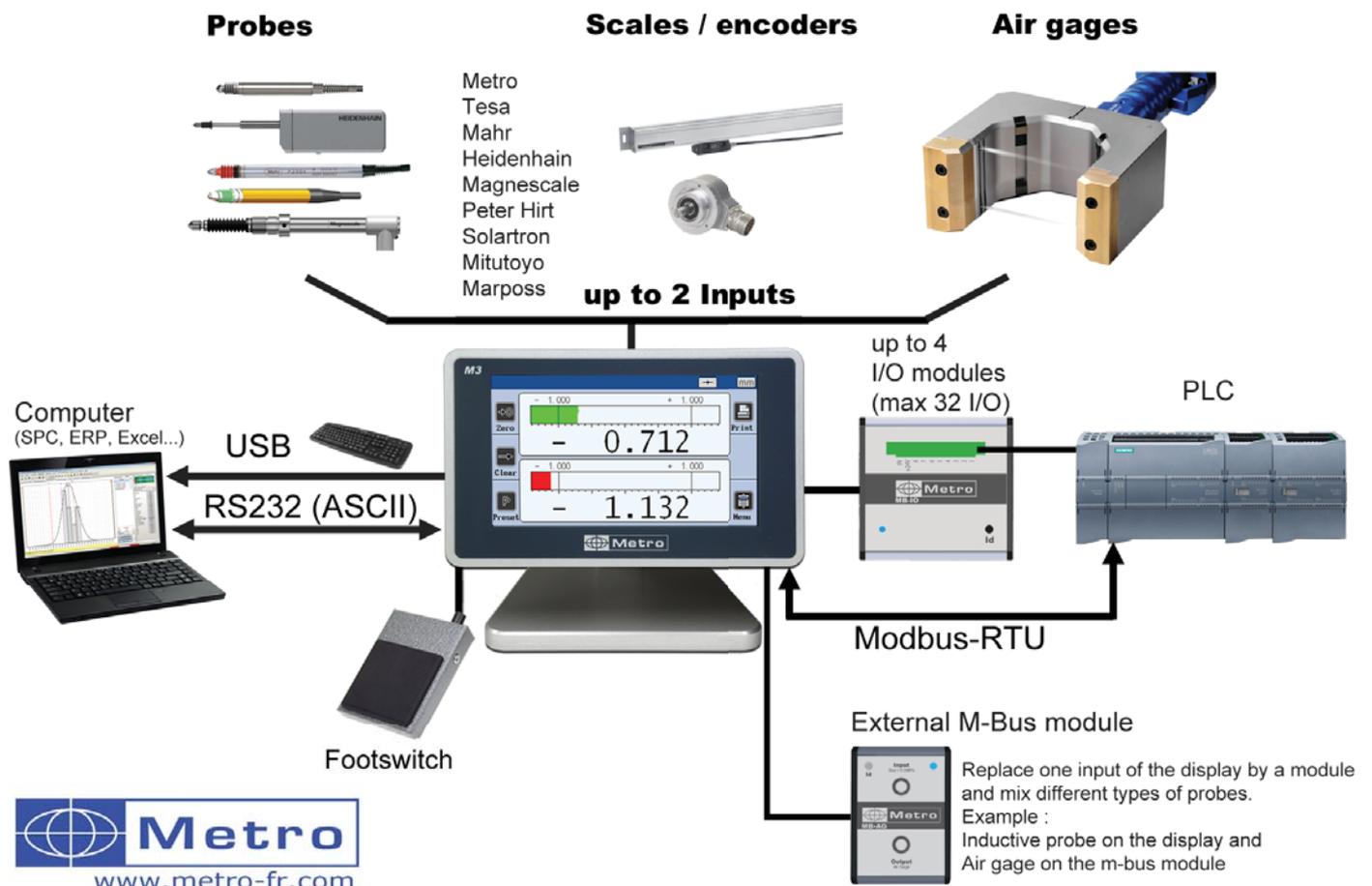
The M1, M2 and M3 are fitted with 4''3 (~11 cm) touch screen displays.

The measurements can be displayed with different types of bargraphs and needle indicators. Depending on the display, 1 or 2 characteristics can be displayed simultaneously. Most of European languages are available and Asian language like Chinese, Japanese and Korean.
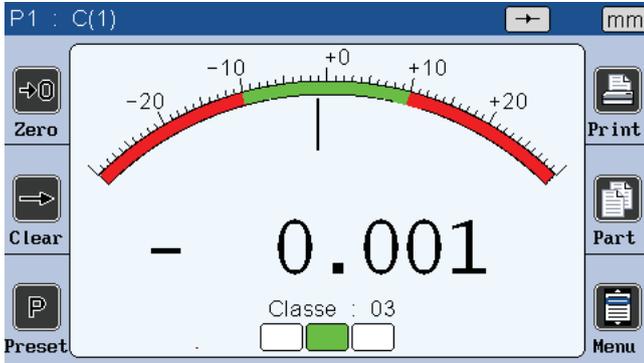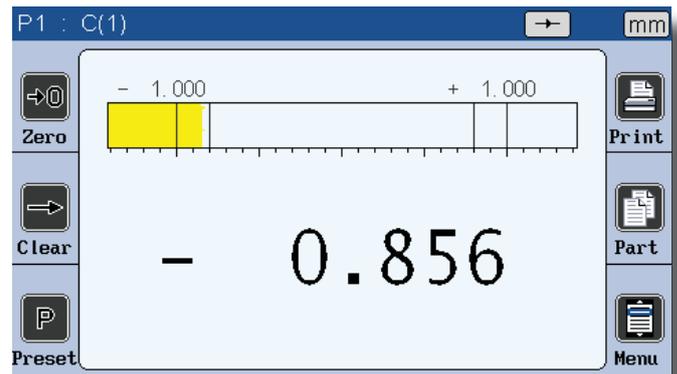
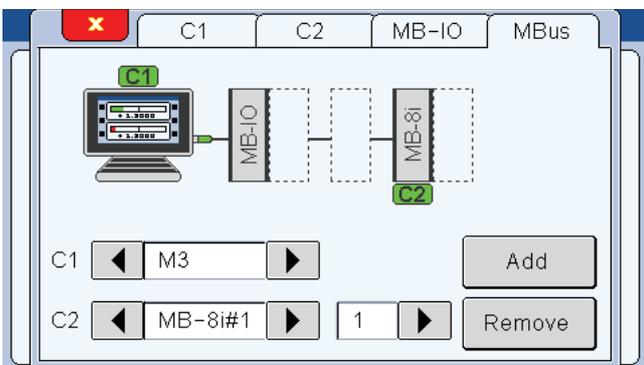Analogue display type with classes indication
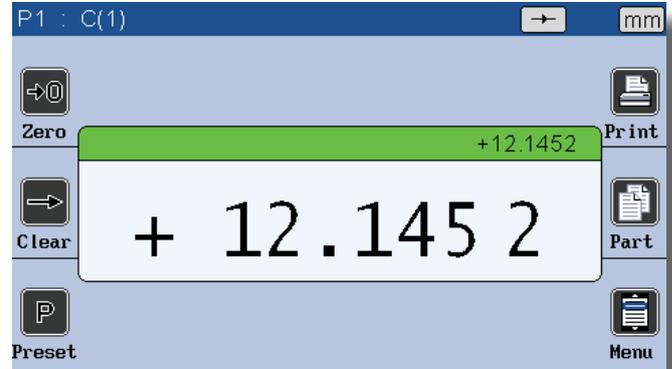
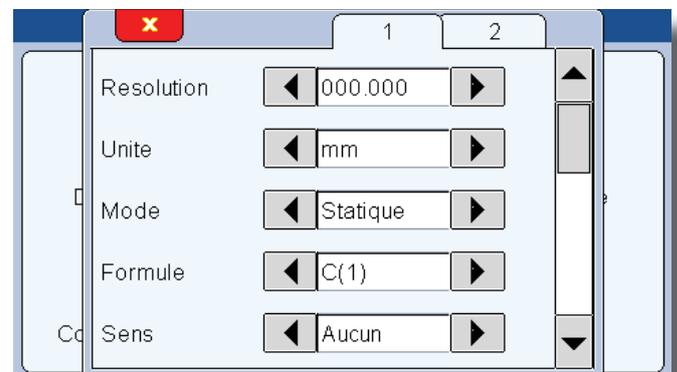Value only with direct access to preset value modification
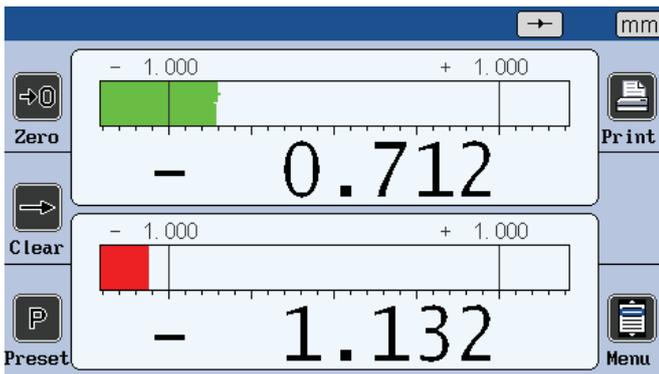
Double characteristics display

Display with warning indication

M-Bus management windows

Configuration window example

The M1 and M3 are running on our own operating system (not on Windows CE or similar). This feature allows to have high performances in terms of display, continuity of the hardware, absence of software license and absence of virus risk.

The optionnal MB-IO module is fitted with 8 inputs / outputs isolated by opto-couplers. MAx 4*MB-IO modules can be connected on a M1/M3 display.
A visual interface allows to easily assign each pin of the module to a function on a list :
- Output for Part 1 / 2 OK or NOK
- Input for preset
- Input to trigger the measurement transfert
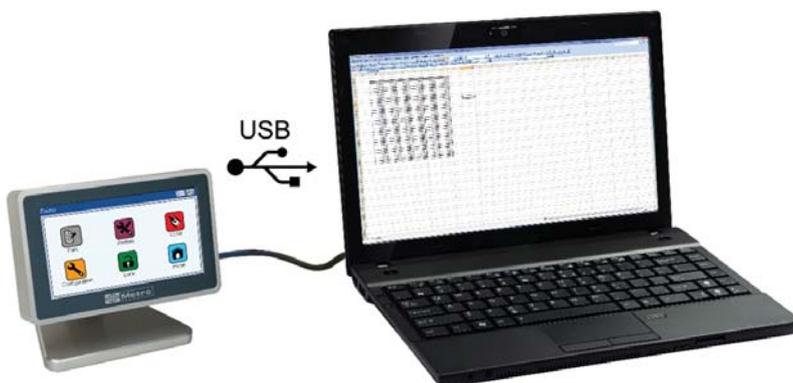- Input to start and stop a dynamic measurement
- Output for classes
- etc.

MB-IO management windows

On the M1 and M3 for air gages only, this is possible to save measurements on a USB stick.
A .CSV file is then available and can be used with Excel or other.

USB

The M1 and M3 hardware are configured as a USB keyboard. When the displays are connected to a computer with USB, it is automatically detected as an additional keyboard.

When the operator transfers the measurement, the values appears on the PC like if they would have been typed with a keyboard. Works everywhere (Excel, SPC softwares, ERP, etc.) on any operating system (Windows, Linux...). **No need to install a special software or any specific driver.**

RS232 with ASCII protocol or modbus RTU

Footswitch input

USB for power supply and/or data transmission (USB keyboard emulation mode)

Version for TTL, 11µA or 1Vss probes

Inputs for Air or Probes

M-Bus connection for optionnal modules

Version for inductive probes (HBT or LVDT)

USB sticks (CSV file) - available on M1 and M3 for air gages only

24VDC power supply

Version for air gages

Communication between a M3 display and a Proface PLC with the Modbus RTU protocol. The HMI from Proface has been programmed with differents buttons and indicators allowing to control and bring back informations from the M3.

In the case of connection with an automated machine, the M3 manages the measuring tasks (tolerances, mastering, probe combination...), and the PLC just reads the measurement result.
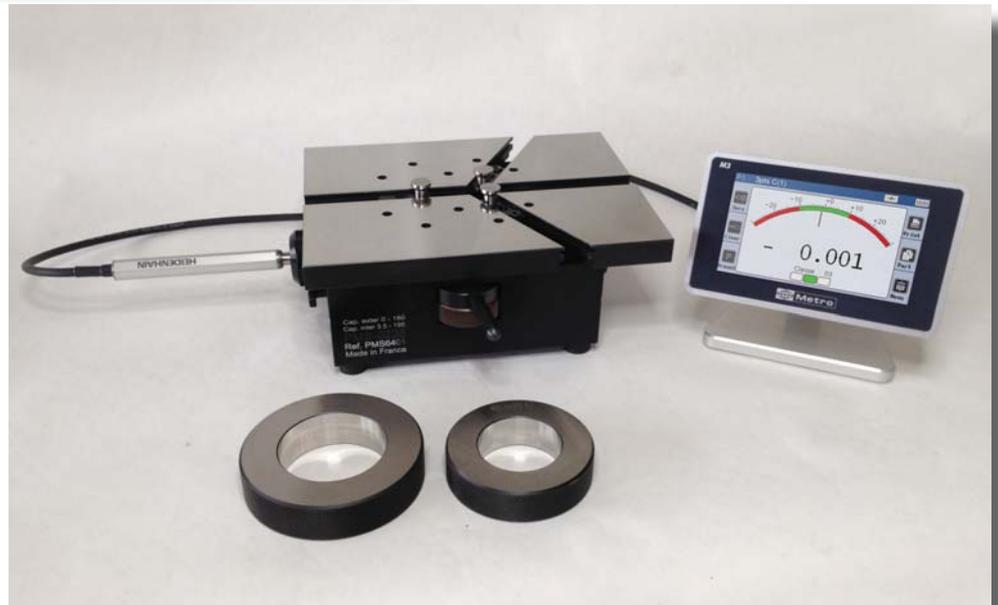
3 points diameter measurement

The M3 has a special measuring mode for 3 points tables, taking into account the tip diameter.

The operator can then easily read the part diameter (internal or external), and / or rotate the part to get the TIR (Max-Min).
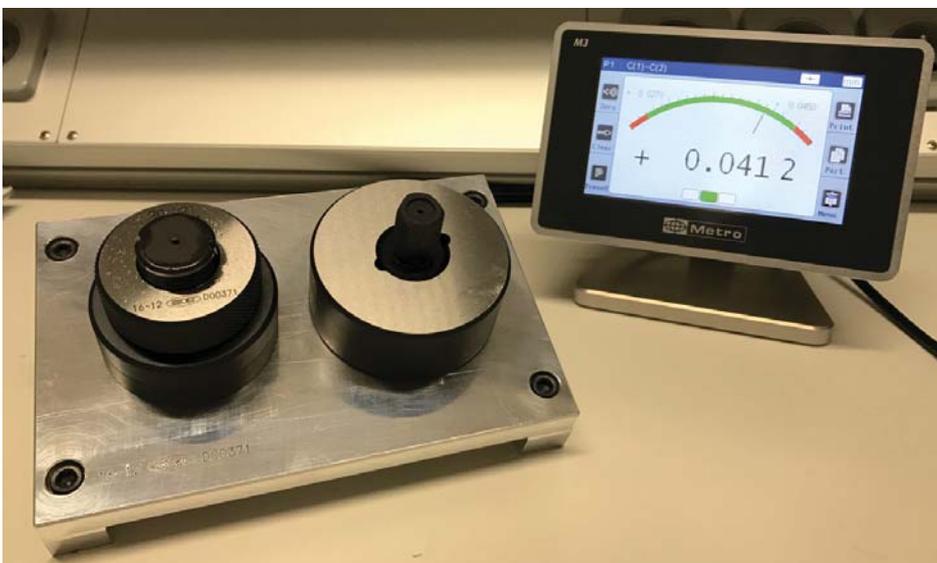
The M3 displays the difference between :

20H7 air plug and 20g6 air ring.

16N7 Internal diameter measurement on a air plug gage directly connected on a M3 display

The M1/M3 for air gages are compatible with all the air gages available on the market, but we can also supply full solution including electronic and air gage according to your drawing.

Retrofit of a gauging fixture that was mounted with needle indicators on a 100% sorting working place:

TIR (Max-Min) measurement on 2 points of a cylindrical part. Start measurement with a footswitch.

Customer benefit: Accuracy increased, instantaneous reading of the 2 characteristics without the risk of wrong reading of the needles. Measurement transmission to a central SPC/ERP software. Significant time saved on this control place.

Measurement of very small watch parts. Here the M2 is connected with a Heidenhain SPECTO probe, mounted on a Sylvac PS15 measuring bench.

Metro displays are not only compatible with the entire Heidenhain's range of probes and scales (Certo, MT12, MT25, MT101, Specto...) but it offers a great flexibility and a wide panel of functions with a user friendly interface.
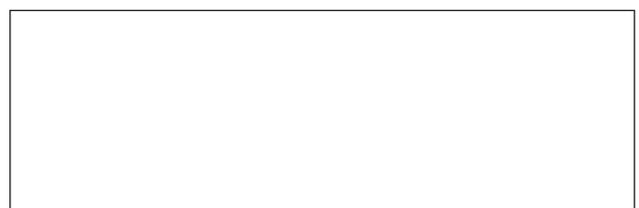
DIMENSIONS

136

120
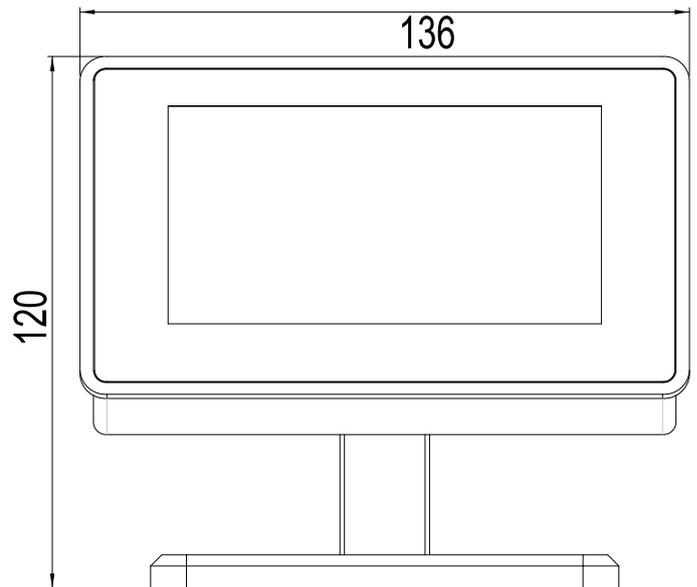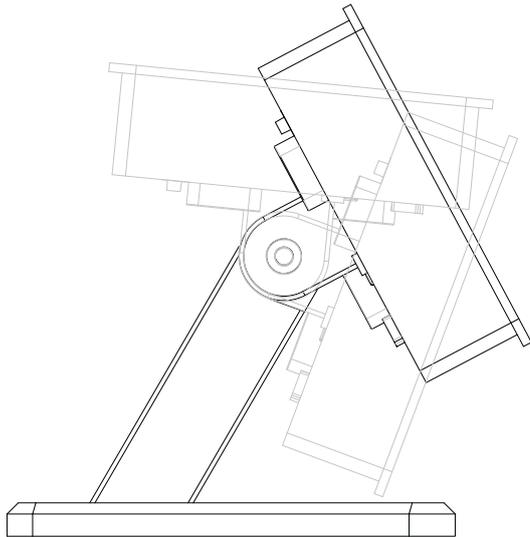
REFERENCES

Reference	M1	M2	M3
Display with 1 input for air gage (compatible with all brands of air gage)	11040	X	X
Display with 2 inputs for air gage (compatible with all brands of air gage)	X	X	13040
Display with 2 inputs for Metro inductive probes	X	15010	13010
Display with 2 inputs for Tesa compatible inductive probes	X	1501T	1301T
Display with 2 inputs for Mahr inductive probes	X	1501M	1301M
Display with 2 inputs for Heidenhain probes with 11µA or 1Vss output (subd-15)	X	15020	13020
Display with 2 inputs for encoder/scale TTL with Heidenhain subd15 pinout. Allows to connect the Magnescale DK and Mitutoyo LG with an adapter.	X	15000	13000
Optionnal module MB-IO (input/ouput TOR) for M1 and M3 only, including connection cable	X	X	MB-IO
Optionnal module MB-RL for M1 and M3 only, including connection cable	X	X	MB-RL
Optionnal module MB-TP (temperature compensation) for M3 only, including connection cable	X	X	MB-TP
Footswitch		18020	
Adapter for Magnescale probes on M2/M3 TTL		24062	
Rs232 communication cable		24060	
Adapter for Heidenhain M23/11µA connector		84100	
Air preparation (including filter + regulator) for M1/M3 air gage		ACS-PNE-003	
Optionnal accessory for panel mounting		ACS-AFF-001	
Digimatic cable between M1/M2/M3 and Metro Mux		18193	
RS232 to USB communication cable for M1/M2/M3/M400		45173	

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