



F1 • F2 • F3

Industrial displays for strain gage sensors

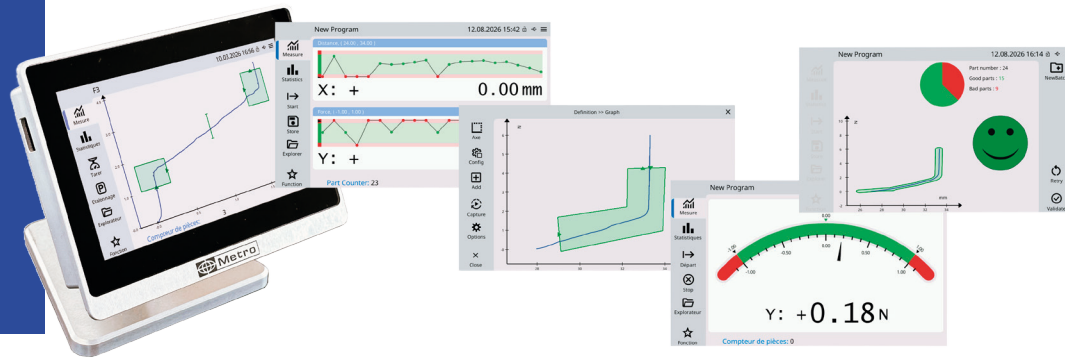
Different needs, same reliability.

F1 • F2 • F3

INDUSTRIAL DISPLAYS FOR STRAIN GAGE SENSORS

- Robust construction
- Touchscreen
- Intuitive use
- High precision

Metro displays can be used in a wide variety of applications.



AT A GLANCE

Inputs and measurements

- 1 input for 4- or 6-wire strain gage sensor
- 2 ± 10 VDC inputs → F2 and F3
- 1 potentiometer input → F2 and F3
- 1 TTL input → F2 and F3
- TEDS 0-wire and 1-wire compatible
- Direct reading and dynamic measurements (peak, etc.)
- 1 ± 10 VDC output and 4-20 mA → F3 only

Accuracy and performance

- Accuracy: 0.01% of full scale (display only)
- Sampling at 4,800 Hz with multiple filtering options

Interface and connectivity

- 5-inch capacitive touchscreen, highly intuitive interface
- Multilingual interface
- USB connectivity (keyboard emulation)
- RS232 connectivity (VCOM)
- Ethernet connectivity → F3 only
- USB connectivity, USB drive / QR Code → F2 and F3

Software functions

- Multi-program management, sequence programming, statistics, etc.
- Dry contact input for connecting a pedal or button

Three versions to suit your application

Metro displays can be adapted to a wide variety of measurement applications:



FORCE (Force and distance, force/time)



PRESSURE



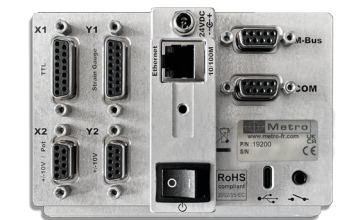
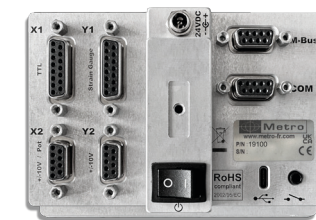
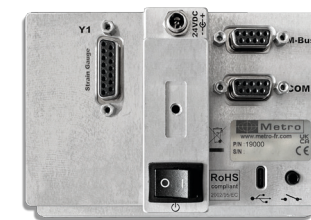
TORQUE (Torque and rotation)



WEIGHING

Our displays for strain gage sensors are designed to meet the most demanding testing and production requirements. They ensure reliable data transmission across a wide range of media.

Our displays are highly practical for manual measurements and are also essential tools on automated machines. Easy to use and configure. **Up and running in 3 minutes.**



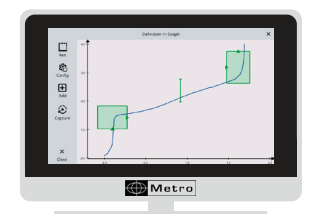
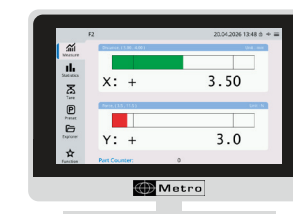
1 strain gage input
2 ± 10 VDC inputs
1 potentiometer input
1 TTL input
RJ45 network
Analog output (0-10 VDC & 4-20 mA)

Typical use

- Force measurement
- Weighing
- Pressure measurement
- Torque measurement

- Force/distance measurement (pressure, spring-based control, etc.)
- Torque/rotation measurement

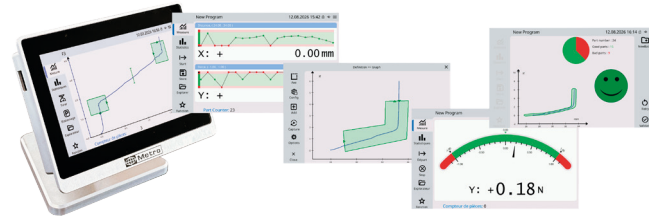
- Force/distance measurement with tolerance curve
- All F1 and F2 applications with value export to the network



Smart, powerful and easy to use

The **F1, F2 and F3** are equipped with a **12.7 cm (5-inch)** capacitive color touchscreen with an **800×480px resolution**. Its highly intuitive user interface allows for quick programming and easy handling for any operator. Measurements can be displayed as bar graphs, smileys, numeric values only, or even as a real-time graph history.

A **cycle editor** allows full control over the display and the measurement sequence.

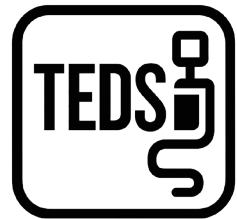


TEDS: plug-and-play sensors

TEDS (Transducer Electronic Data Sheet) is a technology that stores sensor-specific information, such as calibration data and model

details. When connected to the display, the sensor is automatically recognized and configured, eliminating manual configuration.

Key benefits:



Plug and play

Fast, error-free sensor installation

Improved accuracy

Built-in calibration ensures precise measurements

Simplified management

No need for external documentation or manual parameter entry

Data transfer

Our displays offer several data transfer options:

Port USB-C (device)

Enables very simple data transfer with no driver installation required.

F1 - F2 - F3

COM Port (SUBD-9)

Enables communication using an ASCII protocol and Modbus RTU for PLCs.

F1 - F2 - F3

USB-A Port (Host)

Allows CSV files to be created on a USB drive, and also allows connection of a QR code reader.

F1 - F2 - F3

Ethernet Port

Allows files to be generated on your network using the «MetroDataServer» software, and also enables communication with a PLC via Modbus TCP.

F3

SOLUTIONS FOR AUTOMATION

“Metro displays integrate seamlessly into machines or semi-automated stations”

I/O
Opto

Relay
Output

Modbus
RTU

Panel mounting for seamless integration

The F1-F2-F3 can be supplied with an **adjustable stand** or can be **panel-mounted**. M-BUS modules mount in an electrical cabinet on a **DIN rail**.



MB-IO and MB-RO modules

Thanks to its **8 optocoupler-isolated inputs/outputs**, the **MB-IO** module allows automation devices to interface with the F1/F2/F3. **Up to 4 MB-IO units**, i.e. 32 inputs/outputs, can be managed.

Each terminal is equipped with 2 optocouplers and can be very easily configured as an input or output from the touchscreen interface.

Simply select a terminal and assign it **a function** from around thirty available options, for example:

- Good/bad part
- Data transfer
- Cycle start

Operation is very flexible, allowing, for example, a warning light to flash during inspection, or a siren to sound if a force threshold is exceeded.

The **MB-RO**, meanwhile, has a **relay output** with the same programmable function principle.

MB-IO Module

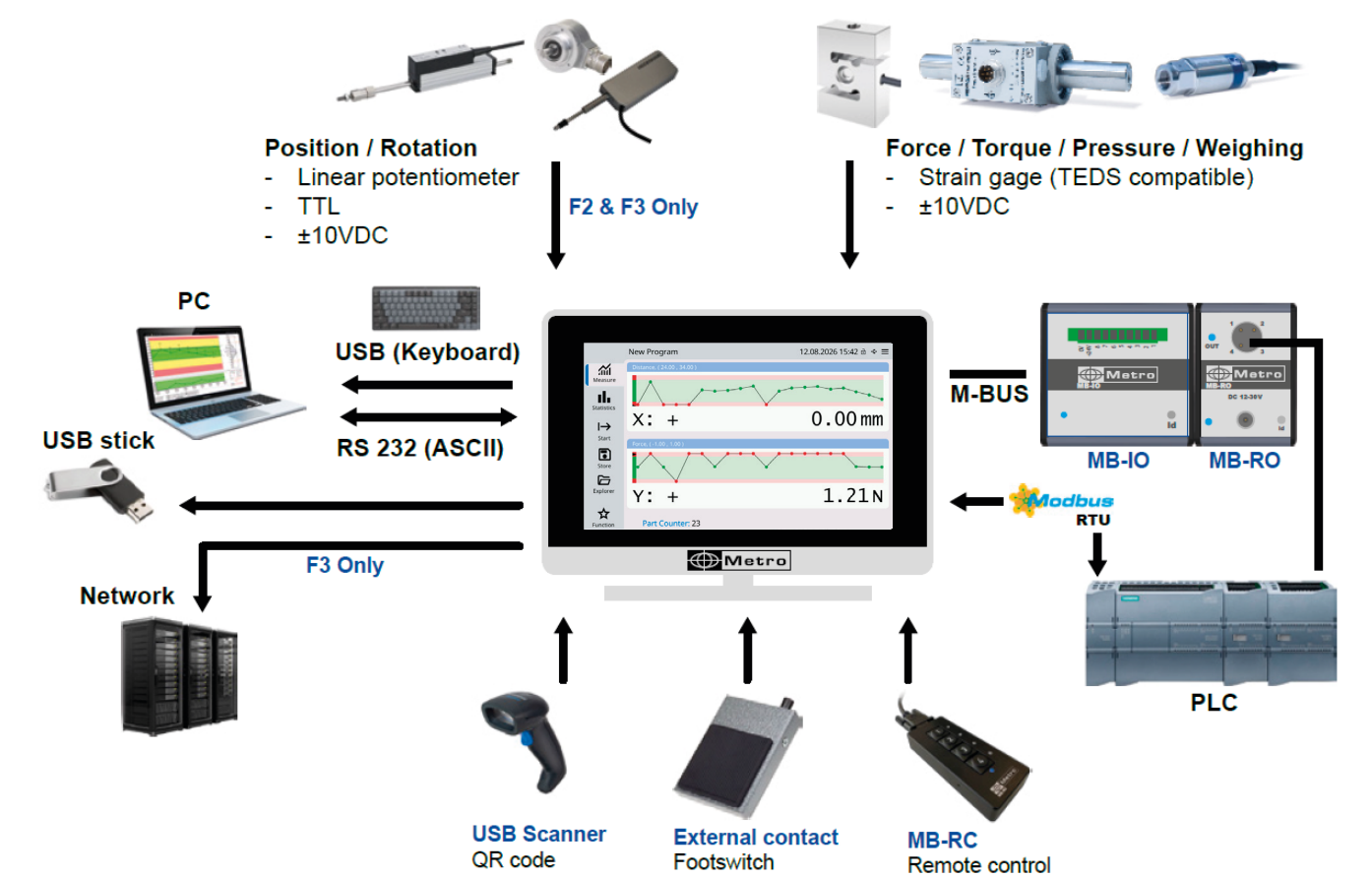


MB-RO Module



GENERAL CHARACTERISTICS

Display model	F1	F2	F3
Screen size	5" (12.7 cm) – Capacitive, 800×480px resolution		
Adjustable stand	Yes		
Panel mounting bracket	Optional		
Programmable buzzer	Yes		
Force units	N, kN, lbf, daN, Kgf		
Distance units	mm, µm, inch, mil		
Weighing units	g, kg, t, mg, lb, oz		
Torque units	N.m, lbf.ft, lbf.in		
Pressure units	Pa, kPa, bar, mbar, atm, mmHg, inHg, psi		
Storage capacity			
Number of programs in memory	1	6	6
Display and measurement evaluation	• Numeric values • Color bar graph • Smiley • Analog gauge	• Numeric values • Color bar graph • Smiley • Analog gauge	• Numeric values • Color bar graph • Smiley • Analog gauge
Measurement timestamps	–	Yes	Yes
Password protection	Yes		
Measurement cycle	Yes		
Basic statistics	–	Yes	Yes



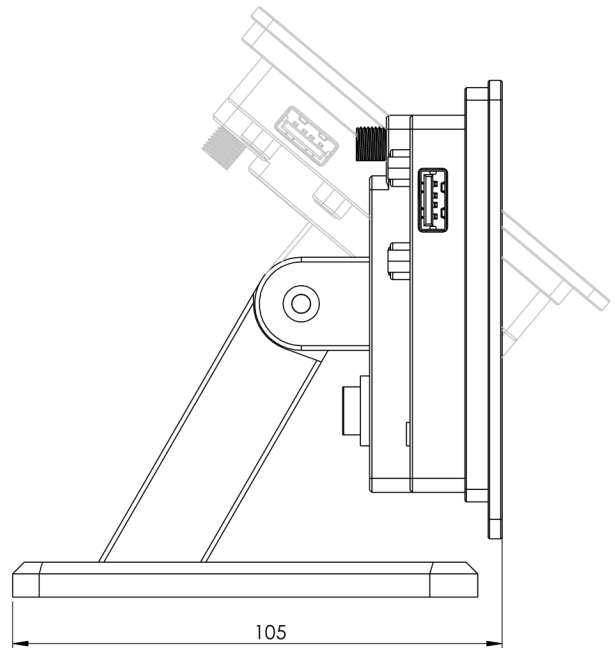
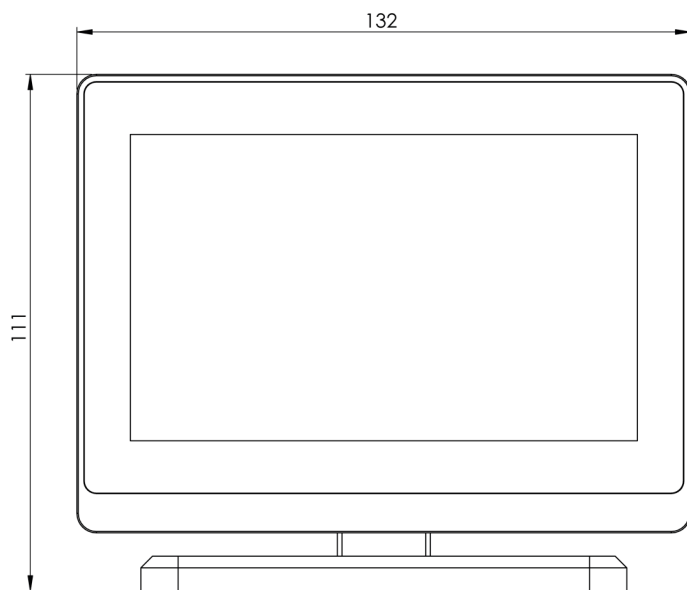
CONNECTORS

Display model	F1	F2	F3
Force measurement	4- or 6-wire strain gauge		
Force connector 1	SUBD-15 (HBK pinout)		
TEDS force 1	Yes		
Force connector 2	–	SUBD-9 (±10VDC)	
Distance measurement	–	Potentiometer, TTL or ±10VDC	
Distance connector 1	–	SUBD-15 (Potentiometer or ±10VDC)	
Distance connector 2	–	SUBD-15 (TTL – Heidenhain pinout)	
Power supply	24VDC		
Power connector	Locking jack 760K Switchcraft		
M-Bus extension	Yes, female SUBD-9		
Optocoupled inputs/outputs	Max. 32 via external M-Bus module (MB-IO) each module has 8 I/O		
RS232 connector	Female SUB-9 with ASCII and MODBUS RTU protocol		
USB-A connector	–	• USB drive (CSV file export, configuration export) • QR code reader input • Computer keyboard input	
RJ45 connector	–	–	Yes, with MODBUS TCP protocol or network measurement file generation system
External contact input	Jack 3.5 mm		
USB-C connector	Yes, for USB keyboard-emulation data output		
SD card	–	–	Yes, for measurement storage

MEASUREMENT PERFORMANCE

Display model	F1	F2	F3
Force measurement accuracy (strain gage)	0.01% of full scale (display only)		
Force measurement resolution (strain gage)	6 digits / 1,000,000 points		
Force measurement sampling rate (strain gage)	4,800 Hz		
Distance measurement accuracy (TTL)	N/A	up to ±0.2 µm over travel (depending on sensor)	
Distance measurement resolution (TTL)	N/A	up to 0.0001 mm (depending on sensor)	

Compact and robust



The machined aluminum housing combines a modern design with exceptional durability. The tiltable screen offers optimal viewing comfort.

Displays

	REF
F1 display (strain gage)	19000
F2 display (strain gage + distance)	19100
F3 display (strain gage + distance + with curve + Ethernet)	19200

Accessories

Flange for panel mounting	ACS-AFF-006
MB-IO module (8 inputs/outputs), with screw terminal block	MB-IO
MB-RO module (1 relay output, M12 connector) with 24VDC power supply, without mains cable	MB-RO
M-BUS cable between module and display (Length L=2, 5 or 10m)	81210(-L)
MB-RC remote control with 4 programmable buttons	MB-RC
Footswitch	18020
Ergonomic button in machined aluminum	18022
List of adapters (for connecting sensors with different types of connectors)	on demand



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