

# MFT 4000 MODULAR CALIBRATOR WITH HART® COMMUNICATIONS



MFT 4000 is a break-through combination calibrator / digital communicator sure to become the instrument of choice for technicians in every industry. The MFT 4000 delivers the versatility of a modular calibrator and the convenience of HART communications in one hand-held unit. Users can view four different measurements simultaneously on the high resolution LCD or compare the HART PV and AO values to those actually measured by the MFT. Available sensor modules include a variety of differential, gauge, vacuum and absolute pressure as well as temperature. A voltage and current meter is integral to the base unit. All HART field devices can be configured, polled, and trimmed using HART communications. Device Specific commands for supported devices are included with MFT.

## FEATURES

**BASE UNIT** – injection molded ABS case with shock absorbing boot and hand strap / hanger loop. A 2.6” x 2.6” display, four soft keys and eight hard keys provide user interface. Three sensor bays, electrical connections, power jack and DB-9 connector are standard. 16 MB flash memory. Powered by 6 AA alkaline or NiMH batteries or optional auxiliary AC power adapter.

**MODULES** – select from a variety of positive-lock measurement modules for excellent versatility. All modules can be “hot swapped” – remove or install sensor modules at any time. Restrictions apply for Intrinsically Safe units.

**MEASUREMENT UNITS** – English and metric system units based on module option (ex. "H<sub>2</sub>O, PSI, kPa, kg/cm<sup>2</sup>, °F, °C, °R, °K, others)

**DISPLAY** –configure for 1 to 4 measurements.

**AUTO SHUT-OFF** - occurs after user-selected period of keypad inactivity.

**DAMPING** - selectable from 0.5 to 30 seconds to damp pulsation and stabilize the display using exponential averaging.

**MIN/MAX capture** - minimum and maximum measured values are captured. Capture speed equal to current damping rate setting.

**HOLD** - toggle function freezes display.

**ZERO** – simultaneous re-zeroing of all installed modules or re-zero individually.

**SECURITY LOCKOUT** – MFT 4000 settings can be locked out entirely or by specific feature.

**CONTRAST** – direct adjustment by user

**FIELD RECERTIFICATION** – sensor modules and integral V / I can be recalibrated for zero, span, linearity through the base unit.

**FIELD UPDATES** – uses Internet downloads to update and add capability / HART support

**DIAGNOSTICS** – MFT 4000 self-tests upon power up and upon installation of sensor modules. Advisories are posted on the display.

## MODELS & OPTIONS

**MFT 4000 CALIBRATOR** – Base unit for use with selected NIST traceable sensor modules.

**MFT 4010 CALIBRATOR with HART®** - Base unit for sensor modules and Device Specific HART communications.

**MFT 4020 CALIBRATOR / LOOP SUPPLY** – Base unit for use with sensor modules and integral loop supply to power field devices.

**DOCUMENTING** – Documenting capabilities pending. DB-9 connector for RS-232C comm.

**INTRINSIC SAFETY** – Approval for Class I, Division I hazardous areas per CSA 22.2 and UL 913 by MET Laboratories, Inc.; MFT 400X and MFT 401X only.



## SPECIFICATIONS

**BASE UNIT:** 9.00"L x 4.70"W x 3.58"D ABS plastic case with shock absorbing boot, 28 ozs. Three bays for measurement modules

**DISPLAY:** 128 x 128 pixel graphic display, 2.6" x 2.6" viewable area, 5-digit resolution

**POWER:** 6 AA alkaline or NiMH batteries; optional 100 – 240 Vac power adapter

**TEMPERATURE SPECIFICATIONS:**

Storage: -40° F to 140° F (-40° C to 60° C)  
Operating: 23° F to 122° F (-5° C to 50° C)

**CONNECTIONS:** Pressure: 1/8" FNPT, 316ss  
Electrical: Std. banana jacks (3/4" center) for ±50 mA/Volts, HART & Loop leads  
Data transfer: DB-9 for RS-232C

**NIST TRACEABLE ACCURACY:**

Pressure: ± 0.025% to ± 0.10% of F.S including all effects of linearity, repeatability, hysteresis and temperature over the range 23° F to 122° F.  
Current / Voltage: ± 0.025% of F.S. ± 0.001% of Span per ° F (ref. temp. 70° F).

**PRESSURE MODULE LIMITS / MEDIAS:**

GI / AI modules: 2X range / 316ss compatible  
DN modules: 2X range when pressurized on high side only, 150 PSI when applied simultaneously to high and low sides / dry gases only

**MODULES:** 2.3"L x 1.3"W x 2.6"D, 8.3 ozs or less. Positive-lock with spring latch. Depress latch to release. Electrical connections are PC board contacts to spring loaded receivers on base unit. Dummy modules protect any empty bay(s).

## ORDERING INFORMATION

**BASE UNIT MODEL No & DESCRIPTION:**

MFT 400X Calibrator–base unit for modules  
MFT 401X HART Communicator/Calibrator  
MFT 402X Loop Supply/Calibrator

**BASE UNIT OPTIONS** (replace "X" w/ code)

- 0 No additional base unit options
- 1 Documentation\* (includes DB-9 on base)
- 2 Intrinsic Safety (MFT 4002 or 4012 only)
- 3 Documentation\* & Intrinsic Safety

**SENSOR MODULES**

Acc.	Module	Pressure range / type
±.10%	FDN0020	0-20" H <sub>2</sub> O Differential
	xDN0100	0-100" H <sub>2</sub> O Differential
	xDN0200	0-200" H <sub>2</sub> O Differential
±.025%	xDN0400	0-400" H <sub>2</sub> O Differential
	xDN2000	0-2000" H <sub>2</sub> O Differential
OR	xGI0020	0-20 PSI Gauge
	xGI0200	0-200 PSI Gauge
±.025%	xGI0500	0-500 PSI Gauge
±.004%	xGI1000	0-1000 PSI Gauge
FS / °F	xGI1500	0-1500 PSI Gauge
	xGI2000	0-2000 PSI Gauge
	xAI2000	0-2000 mm Hg Absolute
	xAI0900	0-900 mm Hg Absolute
	RTD1000	RTD meas. module
	TIO0110*	T/C meas & sim module
RIO4000*	RTD meas & sim module	
VMA0050*	V/mA meas & sim module	

where x is replaced with letter code:

D for ±0.025% FS with full temp comp  
E for ±0.025% FS ±0.004% FS per °F

\* Pending

**ACCESSORIES**

Sensor Modules – see previous list  
P/N A36741 Protection module for open sensor bays  
P/N A36742 Power adapter, 100 - 240 Vac, US plug  
P/N A36755 International plug kit for A36742  
P/N A36821 250 ohm shunt required for HART<sup>®</sup> communication on low resistance loops (included with MFT 401X, 3/4" center)  
P/N A900529-00011<sup>†</sup> Std banana jack test lead kit (one included with each MFT 402X)  
P/N A900529-00014 HART<sup>®</sup> test lead kit (one included with each MFT 401X)  
P/N B34686<sup>†</sup> Pressure pump w/ variator, 145 PSI  
P/N B34700<sup>†</sup> Vac. pump w/ variator, -600 mm Hg  
P/N A34386<sup>†</sup> low pressure fittings and tubing kit – vacuum to 250 PSI; connectors, tees, adapters  
P/N A900020-90502 high pressure fittings and hose – up to 9000 PSI; 3' hose w/ 1/8" & 1/4" MNPT x quick connect fittings  
P/N A900028-90201 Class A, 100Ω platinum RTD probe, 1/4" OD, 10" length, SS sheath, 5' coiled cable and connector; use with RTD1000 module  
P/N A36749 Soft carrying case with shoulder strap for base unit, modules, pump & test lead kits  
P/N A36750<sup>†</sup> Hard carrying case with handle – foam insert for base unit with 3 installed modules and fittings, 4 additional modules, test leads, hand pump, RTD temperature probe, fittings and tubing  
<sup>†</sup> Kits – Various kits available with items above marked with a cross. Consult factory for details.  
Documenting Firmware – consult factory

