meriam
A SCOTT FETZER COMPANY

PRECISION HANDHELD CALIBRATOR / DATA LOGGER

BUILDING ON A STRONG FOUNDATION

In continuous production for nearly 25 years, the MeriCal™ digital pressure transmitter calibrator is one of the most successful instruments to ever serve the process industries. Meriam's **NEW M4 Series** Handheld Precision Calibrator / Data Logger builds on this reputation with an impressive array of new features, functions and improved accuracy specification! **The M400** includes one pressure sensor and one mA/V instrument. Chose from differential, gauge, compound or absolute pressure types and ranges from 10" H_2O to 3000 PSIG full scale. Need two ranges for wider utility? No problem!

The M402 can be configured with any two gauge, compound or absolute type sensors. See the table below for all the possibilities. Accuracy is **±0.025% of Full Scale.** Accuracy is maintained over operating temperatures from -20º to +50º C (-4º to +122º F). Data Logging is standard on all models.

All M4 Series handhelds provide convenient electrical signal measurement and sourcing. Measure ±50V or ±100mA, source 24VDC and measure mA, sink mA, or source precise VDC or mA DC values using the supplied test leads. Accuracy is ±(0.015% of Reading + 0.002 units) over the entire operating temperature range. Source or sink values are easily entered using the Adaptive Interface Wheel.

ADAPTIVE INTERFACE WHEEL

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NEW M4 Series Handheld Precision Calibrator / Data Logger

unit shown approximate size

Available Pressure Ranges

2.12/AP

Specify ZM400 for Single Sensor or ZM402 for Dual Sensors. NOTE: DN, DI and GI excluded from ZM402.
Examples: ZM400-DN0415 = M4 Series differential pressure sensor range 0 – 415" H2O
ZM402-CI0030-CI1000 = M4 Series dual compound pressure sensors, 0 – 30 and 0 – 1000 PSIG

Sensor	Application	Available Pressure Ranges	Wetted Parts
DNxxxx	Differential, Non-isolated	0010, 0028, 0200, 0415, 2000" H_2O	Brass, 316L SS, Silicon
DIxxxx	Differential, Isolated	0001, 0005, 0015, 0030, 0100, 0300, 0500 PSID	316L SS, Viton
GIxxxx	Gauge, Isolated	0015, 0030, 0050, 0100, 0300, 0500, 1000, 3000 PSIG	316L SS
CIxxxx	Compound, Isolated	-14.7 to 0015, 0030, 0050, 0100, 0300, 0500, 1000, 3000 PSIG	316L SS
AIxxxx	Absolute, Isolated	0017, 0028, 0100, 1000 PSIA	316L SS

M4 Series

Standard USB Port

over-molded Softflex® bumpers

Data Logging is standard on all M4 models. Select Data Logging from the Setup key menu and then enter the desired Interval and Duration parameters using the keypad controls. For M400 single pressure sensor units, pressure, VDC and mA DC values are saved to the SD card at each interval. M402 dual pressure sensor units log both pressure values plus VDC and mA DC values.

The supplied SD card is located under the battery compartment cover. Data can be moved to a host PC using the supplied USB cable and PC utility or by inserting the SD card in a compatible PC to copy the desired files. The M4 handhelds and SD card supports up to 100 different data log files.

ADAPTIVE INTERFACE WHEEL

All DC voltage and current measurements are made using the same two 1/8" banana jacks located in the lower end of the handheld. This reduces the amount of time it takes to perform the measurement and potential errors. These jacks can provide temporary 24V DC power and measure loop current simultaneously. Sourcing DC volts and current is also a standard feature. Use the Sensor key to highlight the sensor desired and then use the Setup key to select the desired function. The Adaptive Interface Wheel is used to set precise values or configure step or ramp sourcing programs to test receiving devices.

Pressure Measurement

M400: single pressure sensor (specified by customer)
M402: dual pressure sensors – any two compound or absolute sensors, mix and match as desired

Accuracy: ±0.025% of Full Scale
Temperature Performance: Accuracy includes all affects of temperature from -20º to +50º C (-4º to +122º F)
Resolution: Selectable, Accuracy or Precision: the number of places right of the decimal necessary to display the Accuracy or Precision (typically an extra digit) for the currently selected engineering unit.
Engineering Units: Configurable to display 1 to 32 industry-standard engineering units.

Pressure Limits
DN sensors:
> 2x range when pressurized on P1 (HI) side only, 150 PSI when applied simultaneously to P1 (HI) and P2 (LO) sides.

DI sensors:
> 3x range when pressurized on P1 (HI) side only, 3x range or 150 PSI (whichever is less) on P2 (LO) side only 1000 PSI when applied simultaneously to P1 (HI) and P2(LO) sides.

GI, CI, AI sensors: 2x range

Media Compatibility
DN sensors: Non-isolated for clean, dry, non-corrosive gases only (Brass, 316L SS, Silicon gel)
DI sensors: Isolated for fluids compatible with 316L SS and Viton GI, CI, AI sensors: Isolated for fluids compatible with 316L SS

Voltage & Current, Measurement, Sourcing, Sinking

DC Voltage: ±50 VDC measure, 0 – 24 VDC source
DC Current: ±100 mA DC measure, 0 – 24 mA DC source, 1 – 24 mA sink at 3-50 VDC external power

Accuracy: ±(0.015% of Reading +0.002 units)

Temperature Performance: Accuracy includes all affects of temperature from -20º to +50º C (-4º to +122º F)

Resolution (measure mode): Selectable, Accuracy or Precision; 0.001 V/mA or 0.0001 V/mA respecively

Loop Power
> 250Ω HART® resistor included
> 24 VDC @ 4mA, 18.5 VDC @ 20mA
> 20 mA output for 10 hours on batteries

Temperature
Operating: -4 to 122°F (-20 to 50°C)
Storage: -40 to 140°F (-40 to 60°C)

ACCURATE WITH NO TEMPERATURE ERROR -4°F 122°F

Connections
Pressure: 1⁄8" NPT (female)
Electrical: Standard banana jacks on ¾" centers Firmware updates, data retrieval: USB mini-B (female)

Power
Portable service: Four (4) 1.5 Volt AA alkaline batteries provides 30+ hours of continuous measurement service
Operation with PC: Power over USB using USB type A to mini-B cable (requires high power 500 mA port)

Display: 128 x 128 pixel (2" x 2" viewable) display with adjustable backlight (green) and attention backlight (red)

Keypad: Sealed membrane keypad with molded dome switches and integrated Adaptive Interface Wheel

ADAPTIVE INTERFACE WHEEL

Enclosure: 8.5" L x 3.75" W (max.) x 2.25" D (max.), polycarbonate case, Softflex® over-molded bumpers, IP40

Weight: M400 single sensor: 1.5 – 1.8 lbs, M402 dual sensor: 1.8 lbs

Firmware Features: Measurement Hold, Zero, Tare, Exponential or Smart Damping, Continuous Min/Max Display, Units Select and Configuration, Advanced Data Logging, Configurable Auto-Off Timer, Configurable Backlight Timer, Configurable Backlight Intensity, Configurable Display Contrast, Time Display Battery Monitor with Percent and Various Status Indicators

Field Recalibration: All sensors can be recalibrated in the field using suitable reference standards. M4 Series products may also be returned to Meriam for factory recertification / recalibration service

Standard Accessories

Part Number	Description
Z9A000003PN06	M4 Series Product CD ROM includes USB Drivers, Firmware Update Utility and Data Logging Utility
Z9P155	Test lead kit
Z9P273	USB Cable: type A to type mini-B, 6 ft.
Z9P148	Zippered soft case with Velcro pouch for test lead kit
Z9P272-1	SD memory card, 4GB (FAT32)
Z9A65	Table stand kit: mounting block, stand, screws
Z9A139	Hand strap kit: strap, mounting brackets, screws