

# 2019 MASTER CATALOG



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Pt





MODEL 3-50-7

## EZ-HART Calibration Communicator

FEATURES

- Full HART Device Description support of all HART devices
- Configure HART devices
- Perform HART trim on HART devices when used with a process calibrator
- Monitor device PV, SV, TV, QV and other measured HART variables
- Quarterly HART DD updates for free
- Convenient wireless connectivity to HART modem, Long range wireless communication up to 250 feet
- Easy to use, fast connect and view HART data
- Store HART device configurations

DESCRIPTION

The Winchester 3-50-7 is a standalone tablet based HART® communication tool. The tablet configured with the “EZ-HART” mobile app utilizes a wireless HART modem that connects directly to the HART transmitter being tested or configured. When you combine any process calibrator, you have a complete HART calibration and configuration solution.

The 3-50-7 puts HART device configuration at your fingertips. An Android™ based tablet user interface makes HART configuration easy. The external wireless modem allows you to connect the modem to the transmitter being tested so you can communicate to the device remotely. HART transmitters can often be found in confined spaces that are difficult to access, or are out of reach. The Model 3-50-7 helps reduce the need to stand right next to the device being tested or configured so you can work from a safer, more convenient location.

Multiple language support: Select language from the Android operating system. Hart communication commands are limited to English per the HART device descriptions.

**Wireless HART Modem:** Includes configurable connection cable that accepts either the hook clips for connecting to wires or the extended tooth alligator clips designed to connect to transmitter connection screw heads. Rechargeable lithium-ion battery lasts easily for several days of HART device configuration and testing activities. Rugged enclosure and test lead set designed for process environments.

**HART support:** Complete access to all features of the HART device’s DD including methods. Meets HART physical layer specification: HCF\_SPEC-54.

**DD updates:** Download free DD updates for 3-years. Updates available when DD updates released from the HART FieldComm group (approximately four times a year).

**Hard side case:** Protects and stores tablet, modem, test leads and connection cable in a lightweight durable tote that is easy to carry.





**MODEL 3-50-7**

**EZ-HART  
Calibration Communicator**

**Tablet**

Operating System:	Android 5.0 or newer
Processor:	ARM or Atom
Memory RAM:	1 GB
Memory ROM:	2 GB
Screen:	960 x 540 qHD
Communication Port:	Bluetooth

**Bluetooth**

Specification:	Bluetooth v2.0
Frequency:	2.4 GHz
Class 1 master distance:	275 ft (83.8 m)

**Battery**

Type:	Rechargeable Li-Ion
Life:	19 hours continuous use

**Cables**

HART Cable Length:	4 ft (1.2 m)
HART Cable Connector:	0.16 kg (0.36 lbs)

**Enclosure**

Material:	High strength ABS Plastic
Dimensions:	10.16 x 2.5 x 6.9 cm (4 x 1 x 2.75 in)
Unit Weight:	0.16 kg (0.36 lbs)

**Interface**

Interface:	Capacitive coupling
Output:	600 mVpp
Leakage:	< 10 uA
Connections:	Across loop resistor or HART field device
Specifications:	HART 4, HART 5, HART 6, HART 7
HART physical layer spec:	HCF_SPEC-54

**Environmental**

Operating Temp:	0 °C to 50 °C (32 °F to 122 °F)
Storage Temp:	-10 °C to 45 °C (-14 °F to 113 °F)
Humidity:	0% to 90% (non-condensing)

**MODEL 3-50-7.....\$2,999**

**MODEL 3-50-7 w/ Tablet.....\$4,999**

+ \$500 Bluetooth  
+ \$150 Protective Case





**MODEL 1**

**Auto Ranging Digital Gauge™**



**MODEL 2**

**Wide Range Digital Gauge**

FEATURES

Accuracy: 0.1% of reading from absolute zero to 3,000 psi  
 Units: psi, Bar, psia, inH2O, inHg, mmHg, Absolute  
 Temp Compensation: -10°C to +50°C (14-122°F)  
 Connections: 1/4" NPT Male  
 2 Year Quibble-Free Warranty  
 Weight: 2 lbs

Accuracy: 0.05% of full scale from 0 to 10,000 psi  
 Units: psi, Bar  
 Temp Compensation: -10°C to +50°C (14-122°F)  
 Connections: 1/4" NPT Male  
 2 Year Quibble-Free Warranty  
 Weight: 2 lbs

DESCRIPTION

The Model 1 replaces the need to use many gauges of different ranges to achieve and maintain high accuracy. Model 1 also functions as an absolute pressure gauge. The auto-ranging technology uses multiple piezoresistive sensors to read the entire range using just one gauge where it would otherwise require up to seven of our closest competitors digital gauges. Certification costs are lowered by reducing the number of gauges. It's rugged, shockproof design comes equipped with a protective rubber housing. Large, easy-to-read, one-line display with vibrant backlight is perfect for any light condition.

Like the Model 1, the Model 2 will replace the need to use many gauges of different ranges to achieve and maintain high accuracy (0.05% f.s.) throughout a wide span (2,500-10,000 psi). The need for multiple gauges is eliminated. The Model 2 is explosion proof and fully temperature compensated. It has a large, vibrant one line display. It is housed in a high impact, sturdy case with an optional rubber boot for additional protection. Model 2 runs on three AA batteries. This gauge is destined to become the standard of the industry!

MODELS / EXTRAS

**MODEL 1.....\$999**  
**MODEL 1KT.....\$1,197**  
 includes Gauge, NIST certification, case, versatile hook.  
**MVP-600WIN.....\$1,850**  
 includes Gauge, versatile hook, MVP-600 Pump, a black padded canvas case embroidered with orange thread, 2ft non-stretch hose, fittings, additional rubber bonded washers and (2) adaptors.  
**M-10WIN.....\$2,289**  
 includes Gauge, versatile hook, M-10 Pump, a black padded canvas case embroidered with orange thread, 3ft high pressure hose, fittings, 3 filters, test point, and fluid bottle.  
**M-80WIN .....\$2,650**  
 includes Gauge, M-80 Pressure chamber, (2) hoses, fittings, a portable handheld power drive, rechargeable lithium battery and charger.

**MODEL 2.....\$999**  
**MODEL 2KT.....\$1,124**  
 includes Gauge, NIST certification, rubber boot, case.  
**M-10WIN2.....\$2,289**  
 includes Gauge, M-10 Pump, a black padded canvas case embroidered with orange thread, 3ft high pressure hose, fittings, 3 filters, test point, and fluid bottle.  
**PP-4WIN2.....\$4,875**  
 includes everything in the PP-4KT plus Winchester Engineering Model 2 Wide Range Digital Gauge.  
 +\$49 Rubber Boot





**M SERIES**

**4"**

**Analog Gauge**

Accuracy: 0.5% Accuracy full Scale (ANSI Grade 2A)  
 All Stainless Steel with Rubber Boot  
 Liquid Fillable  
 Connections: 1/4" NPT Male  
 2 Year Quibble-Free Warranty \*  
 Weight: 1 lb

The M-4 analog gauge comes in a variety of display sizes and ranges to suit your exact needs. The protective rubber boot will ensure it the best protection from the rugged use in heavy duty industrial environments.

Its face is made of laminated safety glass and the pointer is adjustable. It is hermetically sealed and weather proof. All wet parts are 316SS.



**M SERIES**

**2.5"**

**Analog Gauge**

Accuracy: 0.5% Accuracy full Scale (ANSI Grade 2A)  
 All Stainless Steel with Rubber Boot  
 Liquid Fillable  
 Connections: 1/4" NPT Male  
 2 Year Quibble-Free Warranty\*  
 Weight: Under 1 lb

The M-2 analog gauge comes in a variety of display sizes and ranges to suit your exact needs. The protective rubber boot will ensure it the best protection from the rugged use in heavy duty industrial environments.

Its face is made of laminated safety glass and the pointer is adjustable. It is hermetically sealed and weather proof. All wet parts are 316SS.

FEATURES

DESCRIPTION

<b>M-2 Analog Gauge</b> .....	<b>\$.125</b>
2.5" display.	
<b>M-4 Analog Gauge</b> .....	<b>\$.145</b>
4" display with protective boot.	
<b>M-6 Analog Gauge</b> .....	<b>\$.225</b>
6" display with protective boot.	

+ \$50 NIST Calibration Certificate  
 + \$35 Glycerin Filled - \* 2 Year Quibble-Free Warranty only with this option added.

All models are available in the following RANGES:

30" -0 hg vac	30" -0-200	0-100 psi	0-800 psi
30" -0-15	30" -0-300	0-160 psi	0-1,000 psi
30" -0-30	30" -0-600	0-200 psi	0-1,500 psi
30" -0-60	0-15 psi	0-300 psi	0-2,000 psi
30" -0-100	0-30 psi	0-400 psi	0-3,000 psi
30" -0-150	0-60 psi	0-600 psi	0-5,000 psi

MODELS / EXTRAS





M-10

**Hydraulic Calibration Hand Pump**



MVP-600

**Pneumatic Calibration Combination Hand Pump**

FEATURES

Range: 0-10,000 PSI (700 Bar)  
 Compatible with most hydraulic fluids, oils, H<sub>2</sub>O  
 Connections: 1/4" NPT/BSP  
 2 Year Quibble-Free Warranty  
 Weight: 3 lbs

Range: Vacuum 28"Hg to Pressure 600 PSI (40 Bar)  
 Compatible with all gauges and calibrators  
 Connections: 1/4" and 1/8" NPT/BSP  
 2 Year Quibble-Free Warranty  
 Weight: 2 lbs

DESCRIPTION

Utilizes a fully adjustable stroke control for quick priming, easy pumping, and fast pressure generation up to 10,000 psi (700 bar). The ergonomic handles provide extra comfort and reduce hand fatigue. The patented triple filtration system ensures pump operation in dirty conditions. The shatterproof reservoir and stainless steel construction guarantee leak free operation. The pump has over-sized check valves to provide smooth controlled operation. It uses a patented protective cage around the vent knob to prevent damage when dropped.

Produces pneumatic pressure and vacuum to check calibration of gauges, switches, transmitters, and recorders. The contoured cushioned handles provide extra comfort while preventing the pump from sliding. The over-sized check valve provides smooth operation throughout the output range while the dual o-rings on all pistons ensure zero leakage. Patented Mash proof vent valve comes standard on all MVP-600s (No Needle Valve) and a non-oil based lubricant is used on all moving parts.

MODELS / EXTRAS

- M-10**.....\$999
- M-10KT**.....\$1,199  
includes Pump, a black padded canvas case embroidered with orange thread, 3ft high pressure hose, fittings, 3 filters, test point, adaptor, and fluid bottle.\*
- M-10WIN**.....\$2,289  
includes everything in the M-10KT plus Winchester Engineering Model 1 Auto Ranging Digital Gauge™ w/ N.I.S.T. certification and versatile hook.\*
- M-10WIN-FIT**.....\$2,899  
includes everything in the M-10WIN plus FasTest universal quick connect kit and coupler for Swagelok tube fittings.\*
- M-10RK**.....\$199  
Rebuild Kit for M-10.

- MVP-600**.....\$699
- MVP-600KT**.....\$829  
includes Pump, a black padded canvas case embroidered with orange thread, 2ft non-stretch hose, fittings, additional rubber bonded washers and (2) adaptors.
- MVP-600WIN**.....\$1,850  
includes everything in the MVP-600KT plus Winchester Engineering Model 1 Auto Ranging Digital Gauge™ w/ N.I.S.T. certification and versatile hook.\*
- MVP-600WIN-FIT**.....\$2,499  
includes everything in the MVP-600WIN plus FasTest universal quick connect kit and coupler for Swagelok tube fittings.\*
- MVP-600RK**.....\$150  
Rebuild Kit for MVP-600.

\*Note: Kits, hoses, and fittings can be customized upon request.

\*Note: Kits, hoses, and fittings can be customized upon request.





M-80

**Magnum Low Pro Volume Pressure Chamber**

Range: Near absolute vacuum (30”Hg to 80 PSI)  
 Resolution: 0.0001 PSI  
 Bench Mountable  
 2 Year Quibble-Free Warranty  
 Weight: 3.5 lbs

Capable of extremely high resolution (0.0001 psi) as it spans the range of near absolute vacuum to low pressures (30” Hg to 80 PSI). It’s rugged outer housing and dual o-ring design ensures zero leakage. Not only is the M-80 bench mountable, but it’s relative light weight (3.5 lbs) makes it perfect for field use as well. Optional power drive supplied to rotate the vernier at a quicker pace in-order to speed up your calibrations.



MP-P | MP-V

**Pressure • Vacuum Calibration Pump**

Range: 0 PSI to 100 PSI (7 Bar) | 28”Hg to 0 PSI  
 Compatible with all gauges and calibrators  
 Connections: 1/8” NPT/BSP  
 2 Year Quibble-Free Warranty  
 Weight: 1 lb

Features a Delrin® plastic handle that prevents body heat transfer from interfering with readings, as well as an oversized check valve for smooth operation. The dual o-rings on all pistons ensure zero leakage. MP-P and MP-V have been in service for over 10 years and can now be found in over one third of all power plants. Both models will out perform any manufactured pump in it’s category.

FEATURES

DESCRIPTION

- M-80**.....\$1,399
- M-80KT** .....\$1,497  
includes Pressure Chamber, ball valve, (2) 2ft non-stretch hoses w/ fittings, a portable handheld power drive, rechargeable lithium battery, and charger.
- M-80WIN** .....\$2,650  
includes everything in the M-80KT plus Winchester Engineering Model 1 Auto Ranging Digital Gauge™ (absolute vacuum to 3K PSI) w/ N.I.S.T. certification.
- M-80TH** .....\$3,649  
includes everything in the M-80KT plus a Thommen® differential pressure calibrator (0.1% accuracy full scale with a resolution of 0.001” H2O differential).

- MP-P | MP-V**.....\$399
- MP-PKT | MP-VKT**.....\$497  
includes Pump, a black padded canvas case embroidered with orange thread, 2ft non-stretch hose, fittings and Winchester Engineering M-2 stainless steel 2.5” analog gauge w/ protective rubber boot.\*
- MP-PKT-FIT | MP-VKT-FIT**.....\$1,100  
includes everything in the MP-PKT | MP-VKT plus FasTest universal quick connect kit and coupler for Swagelok tube fittings.\*
- +HK-1**.....+\$68  
adds a 2ft non-stretch hose kit w/ fittings for side port to any model.\*
- MP-PRK | MP-VRK**.....\$120  
Rebuild Kit for MP-P or MP-V.

MODELS / EXTRAS

\*Note: Kits, hoses, and fittings can be customized upon request.





PP-4

## Magnum Pro Pneumatic Power Pump

DESCRIPTION

Range: 0 to 3,000 PSI  
 Light weight  
 Easy to set up  
 Pump with hand or foot  
 No heavy nitrogen bottles necessary.

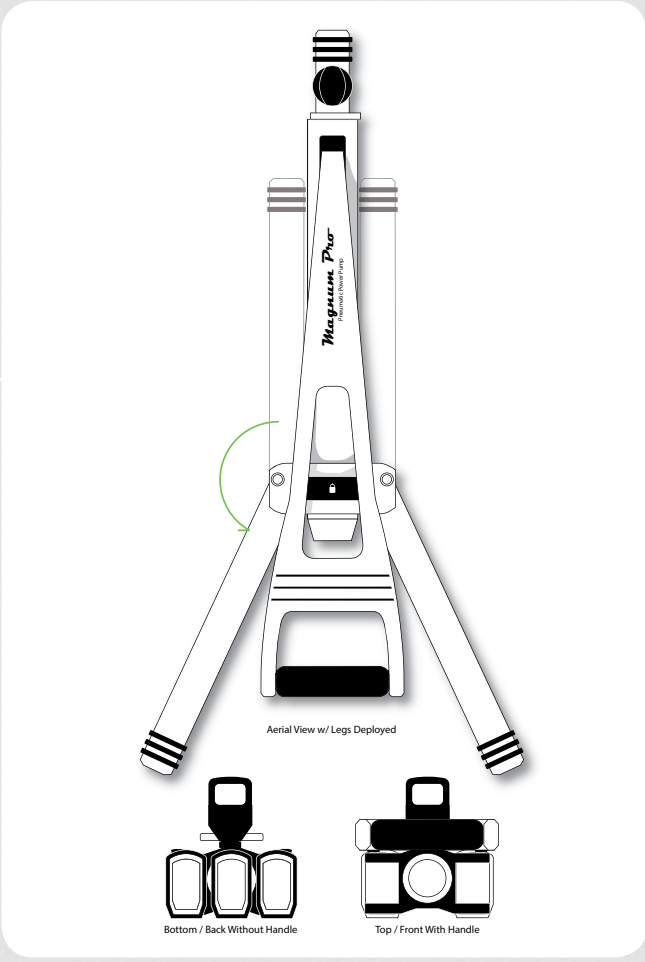
Has 2 ports, one for a gauge and one for a hose.  
 No contamination of process system with oils & water.  
 Won't freeze in low temp from water intrusion.  
 Can be used on a bench or taken out to the field.  
 2 Year "Quibble-Free" warranty.

FEATURES

Fluids in a transmitter or delicate system have always been a concern. Magnum Pro introduces the only fully versatile high pressure pneumatic pump capable of generating pressure up to 3,000 psi without liquid or the use of nitrogen. Two support legs fold out to stabilize the pump so it can be operated by either foot or hand. The vernier allows the pressure to be finely adjusted and sealed off to dial into the desired pressure.

MODELS / EXTRAS

- PP-4.....\$3,499**  
 includes Pump, Manifold, (2) 5ft high pressure hose, fittings.
- PP-4WIN.....\$4,499**  
 includes everything in the PP-4 plus Winchester Engineering Model 1 Auto Ranging Digital Gauge.
- PP-4WIN2.....\$4,499**  
 includes everything in the PP-4 plus Winchester Engineering Model 2 Wide Range Digital Gauge.







**F-Series**

**Individual Swivel Style  
Quick Disconnect Fittings**

- All fittings are rated to 5,000 psi
- Twist hand tight, no tools, no tape
- Eliminate thread damage to instruments
- Minimize contamination to process media
- All fittings are made of stainless steel
- Custom sizes by request



**HK-Series**

**Regular & High Pressure  
Calibration Hoses**

- 10,000 psi working pressure
- 32,000 psi burst pressure
- Pneumatic & hydraulic applications
- Small in diameter (3/16" OD)
- High Pressure Hose made of Kevlar & Steel
- Any length & any fitting configuration

FEATURES

In calibration, there has always been a need to make a quick, non-destructive and reliable connection. Leaks, re-taping, and re-tightening become time consuming. The Colt fitting was developed for volume production of refrigeration components, where only seconds are allowed for connection, pressurization, and testing.

Any connection is made without tape and without tools. Stripped transmitters and fittings become a thing of the past. These fittings are probably the most cost effective product in the instrument or calibration shop.

Colt calibration hoses are flexible, leak proof and stabilize quickly without stretching. The provided swivel fittings prevent kinking and will work with any calibrator, gauge or pump part. You can fully customize your length or fittings to make the Colt hoses positively the best connection you could have! Swagelok ends available.

The options for fittings are: 1/8" NPT male, 1/8" NPT female, 1/4" NPT male, 1/4" NPT female, 1/4" mini-mess female, Swagelok tube male.

DESCRIPTION

<b>F-15</b> .....	<b>\$115</b>
1/4" NPT Male, IEC Thread x 1/8"NPTF Input	
<b>F-16</b> .....	<b>\$145</b>
1/4" Swagelok Female x 1/8" NPTF Input	
<b>F-17</b> .....	<b>\$109</b>
1/4" NPT Male x 1/8" NPTF input	
<b>F-18</b> .....	<b>\$109</b>
1/8" Female x 1/8" NPTF input	
<b>F-19</b> .....	<b>\$109</b>
1/4" NPT Female x 1/8" NPTF	
<b>F-20</b> .....	<b>\$109</b>
1/8" NPT Male x 1/8" Female (input)	
<b>F-22 (Kit)</b> .....	<b>\$645</b>
Colt universal quick connect kit includes all of the above fittings inside a hard yellow pelican case.	

<b>HK-1</b> .....	<b>\$68</b>
2' Standard Hose for MP-P & MP-V. 1/8" NPT male x 1/8" NPT female.	
<b>HK-600</b> .....	<b>\$95</b>
2' Standard Hose for MVP-600 & M-80. 1/8" NPT male x 1/4" NPT female.	
<b>HK-HP</b> .....	<b>\$199</b>
3' High Pressure Hose.*	

The HP Hoses are available in the following FITTINGS:

- mini mess female                      1/4" NPT male
- 1/8" NPT male                            1/4" NPT female
- 1/8" NPT female

<b>TP-4</b> .....	<b>\$65</b>
Test point 1/4" - connects to mini mess fitting.	

\*Note: Please add \$20 per extra foot.

MODELS / EXTRAS





**Fluke 87v**

**Industrial True-RMS Multimeter with Temperature**



**Fluke 787**

**ProcessMeter**

FEATURES

Multiple Ranges  
 True-RMS AC voltage and current  
 0.05% DC accuracy  
 4.5 digit mode for precise measurements  
 Min/Max and average recording  
 Category III, 1000 V and Category IV, 600 V

Resolution: 0.1 mV to 1.0V  
 Accuracy: 0.1% R<sub>dg</sub> +1 LSD (VDC)  
 Resistance: up to 40 MΩ, 0.2% + 1 LSD  
 Overvoltage category: IEC 1010-1 CAT III  
 Current Measurement, Current Sourcing, & Voltage

DESCRIPTION

Fluke 87V multimeters feature a unique function for accurate voltage and frequency measurements on adjustable speed motor drives and other electrically noisy equipment. The Fluke 87V also has a built-in thermometer which conveniently allows you to take temperature readings without having to carry a separate instrument. All inputs are protected to Category III, 1,000V and Category IV 600 V. They can withstand impulses in excess of 8,000 V and reduce risks related to surges and spikes.

The Fluke 787 ProcessMeter features a 4,000 count (30,000 count for DC current) clear LCD with backlight; 1,000V overload protection on V, ohms and frequency; 150V overload protection on mA, backed up by 440 mA 1,000V fuse. The meter also has 25% manual step plus auto step and auto ramp on mA output. The Fluke 787 ProcessMeter is the ideal tool for troubleshooting and calibrating current loop applications and eliminates lugging around two tools and switching back and forth.

MODELS / EXTRAS

**Fluke 87v.....\$379**  
 includes TL75 test leads, AC72 alligator clips, holster, 9V battery, temperature probe, CD-ROM user's manual and operator's guide.

**ACCURACY AND DIAGNOSTIC FUNCTIONS FOR MAXIMUM INDUSTRIAL PRODUCTIVITY!**

**Fluke 787.....\$799**  
 includes alligator clips, test lead set, Holster & Flex-Stand, 9V alkaline battery, Quick reference guide, Manual.

**Fluke 789.....\$899**  
 includes alligator clips, test lead set, Holster & Flex-Stand, 4 AA alkaline batteries, Quick reference guide, Manual PLUS built-in 24V loop power supply and 250 Ω HART resistor.





Fluke 279FC

**Digital Multimeter With Built-in Thermal Imager**



Fluke 771

**Milliamp Process Clamp Meter**

15 measurement functions: AC voltage w/ low-pass filter, DC voltage, Resistance, Continuity, Capacitance, Diode test, Min/Max/Avg, AC current (iFlex), Frequency. Save measurements and images wirelessly with a smart phone up to 20 feet/6.1 m away (no obstructions)

Best in class 0.2% accuracy  
Resolution and sensitivity to 0.01 mA  
Dual display with both mA measurement and 0% to 100% of 4-20 mA span  
IEC-1010 Category II 300V rating

The Fluke 279 FC Thermal Multimeter is an industry-first combination multimeter and thermal imager. Diagnose underlying electrical problems quickly and more efficiently with this full-featured tool. The 279 helps you find, repair, validate, and report many electrical issues quickly so that you are confident problems are solved. Check hot spots of high-voltage equipment and transformers, detect heating of fuses, wires, insulators, connectors, splices and switches.

The Fluke 771 Milliamp Process Clamp Meter (“the Meter”) is a hand-held battery-operated clamp meter that measures 4-20 mA dc without breaking the electrical circuit. Unlike conventional clamp meters, the Meter features a remote jaw that is connected to the main body via extension cable. It can measure low level dc current, measure 10 to 50 mA signals in older control systems, and up to 99.9 mA range non-contact. Also, the 771 illuminates hard to see wires in dark enclosures and automatically powers off to ensure battery stays charged for when you really need it.

**Fluke 279FC.....\$899**  
includes Test Leads, Rechargeable Lithium Ion Battery and Charger.

**Fluke 771.....\$539**  
includes soft carrying case.

FEATURES

DESCRIPTION

MODELS / EXTRAS





**MFC 5150**

**HART Communicator**



**M200**

**Smart Manometer**

FEATURES

Reads manufacturers DDs in their native format  
 Enhanced 4.3" diagonal anti-glare touchscreen  
 Ergonomic, handheld design  
 Operating temp: 14 to 122°F (-10 to 50°C)  
 480 X 272 pixels display  
 Full QWERTY keyboard

Handheld, high-precision, digital manometer with an accuracy of up to ±0.025% of full scale  
 Document up to 240 readings (auto or manual)  
 Engineering Units: inH<sub>2</sub>O, PSI, mmHg, inHg, mBars, Bars, kPa, kg/cm<sub>2</sub>, cmH<sub>2</sub>O

DESCRIPTION

The Meriam MFC 5150 HART Communicator utilizes a Windows based system for faster processing and greater storage capacity. Plus, no subscriptions, and with all options standard at no extra cost. The device is supplied with a fast 1-GHz processor, 256 MB of RAM and 512 MB of flash memory. It is capable of supporting up to an 8-GB SD card, which gives it the ability to store every existing DD file. This enables communication to take place with any registered or unregistered HART device, ensuring that the HART transmitter will connect to the 5150 regardless of brand or model.

The Meriam M200 smart manometer brings high precision and value to handheld, digital manometer users. The Meriam M200 features NIST traceable accuracy of ±0.025% of FS, independent of temperature effect, at the lowest prices available. Pressure ranges from 10" H<sub>2</sub>O FS to 3,000 PSIG FS are available. The Meriam M200 smart manometer pressure sensors are available to measure gauge, differential or absolute pressure. The display can read out in any of eleven pressure units or can be linearly scaled for special user units.

MODELS / EXTRAS

**Meriam MFC 5150.....\$5,300**  
 includes HART Communicator, Docking Station & Power Adapter, universal plug kit, USB Cable communication from docking station to PC, Battery pack, rechargeable 9600 mAH Li-Ion, Soft Carrying Case, Hand Strap, and SD Card.

**Atex Certified Intrinsic Safety.....\$450**

**Meriam M200.....\$1,199**

The M200 is available in the following RANGES:

Differential: From 0 up to and including 2,000" H <sub>2</sub> O
Gauge: From 0 up to and including 3,000 PSI
Compound: From -15 up to and including +3,000 PSI
Absolute: From 0 up to and including 1,000 PSIA

The M200 Series is available in the following ACCURACY:

Standard ± .05%	Enhanced ± .025%*
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**Intrinsically Safe Certification.....\$232**

\*Note: Please add \$199 for this accuracy.





**M200-DI**

**Wet/Wet  
Smart Manometer**



**M201**

**Enhanced Rotary  
Gas Meter Tester**

Accuracy: up to  $\pm 0.025\%$  of Full Scale  
 7 Differential Pressure Ranges Available  
 Eleven user-selectable engineering units  
 Documents up to 240 readings for future recall  
 Field recalibration to zero, span and linearity  
 User-selectable 1-Point or 5-Point calibration procedure

The M200-DI is a handheld, intrinsically smart manometer for liquids with high accuracy for wet/wet differential pressure applications. Potentially corrosive or wet gasses can also be handled. All ranges are rated for 1000 PSI common mode pressure. The damping feature minimizes pulsation effects. The 'Hold' function freezes the display for convenient reading. Leak test allows users to view Min/Max pressure values and calculates leak rate per minute in pressure units. This is a valuable tool for troubleshooting or pressure testing pneumatic systems.

Recalibration for zero, span and linearity  
 1-point or 5-point calibration procedure  
 Enhanced or Legacy software mode  
 Pressure limits are twice range on differential units when pressurized on high side only and 150 PSI static when applied to both sides of sensor simultaneously

The M201 makes drop testing rotary gas meters even easier. Improved hardware options protect the M201 from one sided overpressure. 'Measure Mode' lets it be used as a conventional differential pressure measurement device. Users will appreciate the live pressure display as they check the handheld's zero or observe DP across rotary gas meters. The M201 uses an internal stop watch to measure the test length during a drop test. It reports both the test time and the average differential pressure measured during the test.

FEATURES

DESCRIPTION

**Meriam M200-DI.....\$1,600**  
 Includes protective red boot, batteries.

The M200-DI is available in the following RANGES:

0-1 PSID (0-28" H <sub>2</sub> O)*	0-100 PSID (0-2768" H <sub>2</sub> O)
0-5 PSID (0-138" H <sub>2</sub> O)	0-300 PSID
0-15 PSID (0-415" H <sub>2</sub> O)	0-500 PSID
0-30 PSID (0-830" H <sub>2</sub> O)	

The M200 Series is available in the following ACCURACY:

Standard $\pm .05\%$	Enhanced $\pm .025\%^{**}$
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**Intrinsically Safe Certification.....\$232**

**Meriam M201 - Push-to-read Valve, brass (2-port pressure manifold).....\$1,750**  
**Meriam M201 - 1/4 turn Valve, brass, copper (2-port pressure manifold).....\$1,805**  
**Meriam M201 - Integral push-to-read-valve, 316SS, viton (3-port pressure manifold).....\$2,115**  
 all models include protective red boot, batteries.

The M201 is available in the following RANGES:

Differential - 0-200" H <sub>2</sub> O	Differential - 0-28" H <sub>2</sub> O*
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**Intrinsically Safe Certification.....\$232**

MODELS / EXTRAS

\*Note: Please add \$235 for this range.  
 \*\*Note: Please add \$199 for this accuracy.

\*Note: Please add \$75 for this range.





**SOURCE 3000  
Pressure Source  
3,000 PSI**



**CYLinderREGulator  
Cylinder Regulator Assembly  
For Nitrogen**

FEATURES

Self-contained nitrogen cylinder  
“Overpressure Protection” regulator  
Works with all pressure calibrator models  
15.2 cubic foot nitrogen at 3,000 psi

Maximum Primary Inlet Pressure: 3,000 PSIG (206.9 Bar)  
Low Torque required by operator for pressure adjustment  
Single Stage, Venting Type with spring controlled piston  
Integral inlet filter used to promote long life  
CGA-580 fitting for direct connection for In-House cylinder  
1/4 inch 37 degree male output port connection

DESCRIPTION

The Condec Source 3000 is a pneumatic pressure source that offers a clean and dry pressure up to 3,000 psi. It's pressure generator is equipped with a large-capacity cylinder that ensures you won't run out of nitrogen in the middle of a job. It eliminates the inconvenience and physical stress of hand pumps. It has two ports for connecting to a measuring device and virtually any electronic calibrator. The Source 3000 is a unique device that incorporates a pressure vernier to allow you to dial in exact pressure readings, which eliminates the risk of costly damage from overshoot.

The Cylinder Regulator Assembly (CYLREG) allows the operator to ensure a properly regulated pressure output from an existing “in-house” Nitrogen Supply Cylinder that has a Maximum Charge of 3,000 psig. CYLREG has Maximum input pressure rating of 3,000 psig and a Maximum operator controlled regulated output pressure based on selected model.

MODELS / EXTRAS

- Source 3000.....\$4,400**
- Swagelok QC4 Style Quick-Disconnect.....\$95**  
Swagelok QC4 Style Quick-Disconnect Female Test Ports and QC4 Quick-Connect Male Fill Port (Buna-N Seals).
- Ralston quick-test/check-valve.....\$50**  
Ralston quick-test/check-valve Male Test Ports and Standard 7/16 -20 AN Male Fill Port (Buna-N Seals).
- Tool Hose Canvas Carrier.....\$45**
- Quick-disconnect for Pressure Trap.....\$189**
- 2 High Pressure Hoses w/ Fittings.....\$499**
- Pressure Trap.....\$625**  
Stainless steel pressure trap to contain backflow.

- CYLREG 500 (0-500 PSIG Output).....\$615**
- CYLREG 1000 (0-1,000 PSIG Output).....\$629**
- CYLREG 2000 (0-2,000 PSIG Output).....\$659**
- CYLREG 3000 (0-3,000 PSIG Output).....\$799**
- 5 ft. long hose.....\$175**
- 10 ft. long hose.....\$199**
- 15 ft. long hose.....\$249**
- 20 ft. long hose.....\$275**
- Universal Steel Fitting Kit.....\$175**  
Before ordering, please specify gas used, as this changes the fittings needed.





**ThermCal400**

**Dry Block  
Temperature Calibrator**

Range: 25°C - 400°C (20°C ambient)  
 Stability: ±0.02°C (25°C - 200°C) | ±0.04°C (200°C - 400°C)  
 Accuracy: ±0.25°C (25°C - 200°C) | ±0.4°C (200°C - 400°C)  
 Heat up time 25 to 400°C: 13 Minutes  
 Cooling time 400 to 100°C: 20 Minutes  
 Weight: 11 lbs

The ThermCal400 is a small, portable and light weight calibrator that is built rugged for field work with specifications good enough to be a laboratory standard. Perform calibration checks on liquid in glass thermometers, dial thermometers, hand held digital indicators, probe assemblies, systems and virtually dozens of other temperature monitoring and recording devices. Checking the performance and accuracy of a temperature sensor is best performed by placing it in precise environment at its true operating temperature.



**ThermCal130**

**Temperature Calibrator**

Range: -4 to 266°F (-20 to 130°C)  
 Accuracy: ±0.4°C | Stability: ±0.05°C  
 Lightweight and portable for use in the field  
 CE marked for safety  
 Designed & manufactured in the USA  
 L8 x W9 x H10" • Weigh: 17 lbs

The ThermCal130 temperature calibrator is a small, rugged, portable and light weight dry block that is easy to use straight out of the box and provides specifications good enough to be a laboratory standard, while being small enough to use in the field. Compatible with a variety of removable insets, the ThermCal130 is ideal for calibrating liquid in glass thermometers, dial thermometers, hand held digital indicators, thermal switches, RTDs/PRTs, thermocouples and dozens of other temperature monitoring and recording devices.

FEATURES

DESCRIPTION

**ThermCal400.....\$1,895**  
 includes ThermCal400, multiwell aluminum insert, insert extractor, power cable, carrying strap, instruction manual, and traceable calibration certificate.

- Insert Blank.....\$160**
- Insert 5 x 1/4" holes.....\$195**
- Insert 2 x 1/4" & 2 x 3/8" holes.....\$195**
- Insert 2 x 1/4" & 2 x 1/2" holes.....\$195**
- Insert 1 x 1/4" hole.....\$195**
- Insert 1 x 9/16" & 1 x 1/4" holes.....\$195**
- Insert 1 x 5/8" & 1 x 1/4" holes.....\$195**
- Insert 1 x 11/16" & 1 x 1/4" holes.....\$195**
- Insert 1 x 3/4" & 1 x 1/4" holes.....\$195**
- Soft sided carrying case with insert pockets.....\$145**

**ThermCal130.....\$2,395**  
 includes ThermCal130, carrying strap, insert removal tool, mains cable, traceable calibration certificate.

- Insert Blank.....\$65**
- Insert 1/8" x 4 deep.....\$65**
- Insert 3/16" x 4 deep.....\$65**
- Insert 1/4" x 4 deep.....\$65**
- Insert 5/16" x 4 deep.....\$65**
- Insert 3/8" x 4 deep.....\$65**
- Soft sided carrying case with insert pockets.....\$145**

MODELS / EXTRAS





PIE 850



PIE 830

### 10-50 mA Multifunction Process Calibrator

### High Accuracy Multifunction Diagnostic Calibrator w/ Dual Display

DESCRIPTION

The PIE Model 850 is more than a multifunction calibrator. It is also a loop detective that is able to diagnose common problems that other test equipment just can not find, such as ground fault. Or use the LoopScope to see at a glance all the parameters - milliamps, voltage and resistance - in the loop.

The PIECAL 830 is more than a multifunction calibrator that can handle Milliamp, Voltage, Frequency, pH Ohms, Thermocouples, RTDs, Pressure, Loop Diagnostics, and Transmitter Supply. It is also a loop detective that is able to diagnose common problems that other test equipment just cannot find, such as ground fault.

FEATURES

- Calibrate with Confidence**  
Accurate to  $\pm 0.02\%$  of Reading + 0.01% Full Scale.
- Lighten up your toolbox**  
Pocket sized calibrator replaces toolbox of single function devices, Milliamp, Voltage, Frequency, pH, Ohms, Thermocouples, RTDs, Pressure, Loop Diagnostics, Transmitter Supply.
- Guaranteed Compatibility with process inputs**  
Compatible with the instruments you use including all brands of smart transmitters and PLCs with 14 T/C and 9 RTD types to 0.1°C and 0.1°F.
- Detect hidden loop problems**  
Quickly diagnose troublesome ground faults & current leakage with patented Loop Diagnostic technology. These problems are undetectable with other instruments!
- Check all loop parameters at once with the LoopScope**  
Simultaneously displays current, voltage and resistance to let you know the condition of a live loop. Finds problems with power supplies & loops with too many loads. Patented by PIE!
- Troubleshoot wiring problems without a multimeter**  
Built in continuity checker with beeper quickly finds broken wires or shorts in instrumentation wiring. Also handy for checking operation of relays and controller outputs.

- Detect hidden loop problems**  
Quickly diagnose troublesome ground faults & current leakage with patented Loop Diagnostic technology. These problems are undetectable with other instruments!
- Check all loop parameters at once with the LoopScope**  
Simultaneously displays current, voltage, and resistance to let you know the condition of a live loop. Finds problems with power supplies & loops with too many loads. Patented by PIE Instruments.
- Automatically detect 2, 3 or 4 wire RTDs**  
Trouble shoot sensor connections and find broken wires with patented technology. LCD indicates which of the four wires are connected to an RTD sensor.
- Swap out faulty transmitters to diagnose control issues**  
Easily setup the 830 as a universal isolated transmitter for temperature, frequency, millivolt or pressure. If the loop is back under control you know the transmitter was faulty. Turn on the LoopScope to simultaneously see the loop current, power supply voltage and loop loads for troubleshooting.
- Troubleshoot wiring problems without a multimeter**  
Built in continuity checker with beeper quickly finds broken wires or shorts in instrumentation wiring. Also handy for checking operation of relays and controller outputs.

MODELS / EXTRAS

- PIE 850.....\$5,495**  
includes rubber boot, custom carrying case, test leads, RTD wire kit, batteries, calibration certificate.
- T/C - J,T,E,K mini plug w/ stranded wire, lead kit.....\$145**
- T/C - B,R/S,N mini plug w/ stranded wire, lead kit....\$145**

- PIE 830.....\$2,999**  
includes rubber boot, custom carrying case, test leads, RTD wire kit, batteries, calibration certificate.
- NiMh Charger & 4 "AA" batteries 120v 60hz.....\$80**
- T/C - J,T,E,K mini plug w/ stranded wire, lead kit.....\$145**
- T/C - B,R/S,N mini plug w/ stranded wire, lead kit....\$145**





**PIE 820**

### Multifunction Process Calibrator



**PIE 525B**

### Automated Thermocouple & RTD Calibrator

The PIECAL 820 process calibrator packs the power of six single function calibrators into one surprisingly small package. It combines advanced features, ease of use, accuracy, signal compatibility and compact size. Essentially functions as a Fluke™ 743 without pressure and documentation functions.

**Lighten up your toolbox**

Pocket sized calibrator replaces toolbox of single function devices, Milliamp • Voltage • Frequency, Thermocouples • RTDs • Check Continuity.

**Technician friendly operation**

Intuitive EZ-DIAL Double Click Menu makes it easier to setup than other multifunction calibrators. Uses the same menus as the single function PIECAL Evolution Calibrators.

**Use it as a milliamp and voltage calibrator**

Source 0 to 24.00 mA, 0 to 10.25v dc and -10.00 to 110.00 mV, Read to 24.00 mA, ±60.00v dc and -10.00 to 110.00 mV, Simulate 2-Wire Transmitters, Power up transmitters & loops with the built-in 24v power supply, Simplify HART hookups with built-in 250 Ohm resistor.

**Calibrate directly in temperature (°C & °F)**

The PIECAL 820 works with the instruments you use. Types J, K, T, E, R, S, B, N, G, C, D, L (J DIN), U (T DIN) and P (Platinel II). Pt 100 Ohm (3850, 2902, 3916, 3926) & 1000 Ohm (3850) Copper 10 & 50 Ohm, Nickel 100 and 120 Ohm.

**Checkout flow and vibration systems**

Source & read frequency to 2000 CPM (Counts-Per-Minute), 999.00 Hz, 9999.9 Hz, 9.9999 kHz & to 20.000 kHz.

**Troubleshoot loop & wiring problems**

'Beep' out connections with the built-in continuity checker.

**PIE 820.....\$2,059**

includes rubber boot, custom carrying case, test leads, RTD wire kit, batteries, calibration certificate.

**T/C - J,T,E,K mini plug w/ stranded wire, lead kit.....\$145**

**T/C - B,R/S,N mini plug w/ stranded wire, lead kit....\$145**

The PIECAL 525B thermocouple and RTD calibrator is an automated, high accuracy instrument designed to calibrate all your thermocouple and RTD instruments and measure temperature sensors.

**Calibrate T/C instruments to 0.1 & 0.01 °F & °C**

Types J, K, T, E, R, S, B, N, G, C, D, L (J DIN), U (T DIN) & P (Platinel): -13.000 to 80.000 mV.

**Calibrate RTD instruments to 0.1 & 0.01 °F & °C**

Pt 10, 50, 100, 200, 500 & 1000 Ohm (3850)m, Pt 100 Ohm (alpha=3902, 3916, 3926), Cu 10 & 50 Ohm and Ni 120 Ohm.

**Calibrate with Confidence**

Resolution to 0.01 °F & °C; Accurate to 0.2°, Cold Junction Sensor Accurate to 0.05°C m.

**Perform Heat Treating Surveys & Accuracy Tests**

Meets or exceeds the requirement of AMS 2750 as both a Secondary Standard Instrument and as a Field Test Instrument.

**Troubleshoot RTD Sensors & Instruments**

Automatic detection of 2, 3 or 4 wire connections indicates when individual wire connections are open. Verify proper instrument operation by measuring the excitation current.

**Faster Calibrations**

Instantly select three outputs with EZ-CHECK switch. Easily find trip points with two speed EZ-DIAL knob & Automatic Stepping.

**PIE 525B.....\$1,599**

includes rubber boot, custom carrying case, mV leads, RTD wire kit, batteries, calibration certificate.

**T/C - J,T,E,K mini plug w/ stranded wire, lead kit.....\$145**

**T/C - B,R/S,N mini plug w/ stranded wire, lead kit....\$145**

**PIE RTD Wire Kit.....\$55**

DESCRIPTION

FEATURES

MODELS / EXTRAS





PIE 334+



PIE 434

## Milliamp Loop Diagnostic Calibrator

## Automated Diagnostic 4-20 mA Calibrator

FEATURES

The PIECAL 334+ powers up the 2-Wire transmitter or loop and indicates the total current and the uncontrolled current. This provides information useful to troubleshoot loop errors.

The PIECAL 434 allows you to check, calibrate and measure all of your current signal instruments in a 4-20 mA DC loop. It can be used at any access point in your loop. You can calibrate recorders, digital indicators, stroke valves or any instruments that get their input from a 4-20 mA loop. Quickly diagnose ground fault and current leakage.

FEATURES

**Calibrate Milliamp Instruments**  
Source 0.00 to 24.00 mA & -25.0 to 125.0% of 4-20 mA, Read 0.00 to 52.00 mA, Read -99.99 to 99.99 V, Simulate 2-Wire Transmitter, Power & Read Transmitters, Menu Selectable 250 Ohm resistor for HART compatibility.

**Calibrate Milliamp Instruments**  
Source 0.000 to 24.000 mA & -25.00 to 125.00% of 4-20 mA. Read 0.000 to 24.000 mA & -25.00 to 125.00% of 4-20 mA. Read -99.99 to 99.99 V. Simulate 2-Wire Transmitter, Power & Read Transmitters. Menu Selectable 250 Ohm resistor for HART compatibility.

**Calibrate with Accuracy**  
Accurate to  $\pm(0.02\%$  of Reading + 0.002 mA).

**Calibrate with Lab Accuracy**  
Accurate to  $\pm(0.01\%$  of Reading + 0.002 mA). PIECAL 434 is more accurate than similar calibrators - within  $\pm 0.004$  mA at 20 mA output!

**Easy-to-Read Backlit Display**

**Locate Loop Current Leakages**  
Automatic indication of Loop Current and Leakage Current. Measure ground current leakage from faulty wiring, flooded conduit and corrosion bridges. Leakage typically appears as a Zero Shift and helps you decide if the transmitter needs calibration or if there is a problem in the loop wiring.

**Locate Loop Current Leakages (Ground Faults)**  
Automatic indication of Loop Current and Leakage Current. Measure ground current leakage from faulty wiring, flooded conduit and corrosion bridges. Leakage typically appears as a Zero Shift and helps you decide if the transmitter needs calibration or if there is a problem in the loop wiring.

**Faster Calibrations**  
Three output EZ-CHECK switch, 2 speed EZ-DIAL, Stepping & Ramping Includes Rubber Boot & Test Leads.

**Faster Calibrations**  
Three output EZ-CHECK switch, 2 speed EZ-DIAL, Stepping & Ramping.

**Easy-to-Read Backlit Display**  
Easy viewing in dark locations.

MODELS / EXTRAS

**PIE 334+.....\$949**  
includes rubber boot, custom carrying case, test leads, batteries, calibration certificate.

**PIE 434.....\$1,099**  
includes rubber boot, custom carrying case, batteries, calibration certificate, and test leads.

**AC Adaptor 100-120v, 60Hz.....\$60**  
**NiMh Charger & 4 "AA" batteries 120v 60hz.....\$80**

**AC Adaptor 100-120v, 60Hz.....\$60**  
**NiMh Charger & 4 "AA" batteries 120v 60hz.....\$80**





PIE 311

### Automated RTD Calibrator



PIE 322-1

### Thermocouple Calibrator

The PIECAL 311 works with the RTDs you use including Platinum 100 (alpha = 3850, 3902, 3926) & 1000 (alpha = 3850, 3750) Ohm, Copper 10 @ 50 Ohm, and Nickel 120 Ohm. Easily set any value quickly to within 0.1°. Or use like a decade box from 0.00 to 410.00 and from 0.0 to 4001.0 Ohms.

**Calibrate with Ease**  
Resolution to 0.1 °F & °C; Accurate to 0.2°.

**Source and Read Multiple RTD Curves plus Ω**  
Platinum 100 Ω: 1.3850, 1.3902, 1.3926, Platinum 1000 Ω: 1.3850, 1.3750, Copper 10 & 50 Ω; Nickel 110 & 120 Ω; 0.00 to 4001.0 Ω, Custom ranges available: consult factory.

**Automatically Detect 2, 3, & 4 Wire Connections**  
Troubleshoot sensor connections & find broken wires with patented technology.

**Guaranteed Compatible with all Instrumentation**  
Works with Rosemount & Honeywell Smart Transmitters, PLCs, DCSs, Multi-channel Recorders and other pulsed excitation devices.

**Faster Calibration**  
Instantly select three outputs with EZ-CHECK switch. Easily find trip points with two speed EZ-DIAL knob & Automatic Stepping.

**Additional Info**  
Double click to select RTD Type & °F & °C. Secondary display of Ω, Easy-to-Read Display w/ backlight. Simple “No Tool” Battery Changes, Four inexpensive “AA” batteries, Use in the Plant, Field or Shop.

The PIECAL 322-1 works with the four most common thermocouples you use including types J, K, T and E. Easily set any value quickly to within 0.1° Choose between 2, 3, 5, 11 steps and ramp to automatically increment the output in 100%, 50%, 25%, 10% or 5% of span.

**Source and Read Four T/C Types plus mV**  
J, K, T & E: - 13.000 to 80.000 mV.

**Calibrate with Confidence**  
Resolution to 0.1 °F & °C; Accurate to 0.2°.

**Faster Calibrations**  
Instantly select three outputs with EZ-CHECK switch. Easily find trip points with two speed EZ-DIAL knob & Automatic Stepping.

**Easily Change T/C Types & Scale**  
Double click to select T/C type & °F & °C.

**Easy-to-Read Display**  
Turn on the backlight to read in dark areas of the plant.

**Use in the Plant, Field or Shop**  
Includes Rubber Boot and mV Test Leads. Low profile switches resist accidental damage.

**Simple “No Tool” Battery Changes**  
Four inexpensive “AA” batteries.

**Optional Accessories**  
Wire & Mini T/C Plug: J, T, E, K (020-0202).

FEATURES

FEATURES

**PIE 211.....\$995**  
**PIE 311.....\$1,499**  
PIE 311 can also read nickel 110 & 120 Ω; 0.00 to 4001.0 Ω, Custom ranges available: consult factory.

Both include rubber boot, custom carrying case, batteries, calibration certificate, and RTD Wire Kit.

**PIE 322-1.....\$995**  
**PIE 422.....\$1,399**  
PIE 422 can source and read fourteen thermocouple types J, K, T, E, R, S, B, N, G, C, D, L & more.

Both include rubber boot, custom carrying case, batteries, calibration certificate, and RTD Wire Kit.

MODELS / EXTRAS





PIE 235

### Process Voltage Calibrator



PIE 541

### Frequency Calibrator with Totalizer

FEATURES

The PIE 235 checks, calibrates and measures voltage instruments. The 20V range has an extended span of up to 24V giving you a portable source for powering your loops. It has a pH simulator used to verify proper operation of pH devices before you place a probe into a calibrated buffer.

The PIECAL 541 is the best tool for calibration, test, and any frequency devices in the shop, plant and/or field. Save hours of time on problems when compared to other calibration methods. This calibrator will automatically stop when the selected number of pulses has been sent to the totalizer, eliminating the need of a stop watch.

FEATURES

Source 3 ranges of mV & V dc plus percent of 1 to 5 volts  
With the 235 you can check, calibrate and measure all your voltage, millivolt and pH signal instruments in your plant. Source -500.00 to 999.00 mV, 1.000 to 5.000 V, -25.00 to +125.00% of 1 to 5 V; 0.000 to 20.000 V.

Frequency Read & Source Functions  
True ±0.005% of range accuracy. Source and Read. Six Ranges 1 per hour to 20.000Khz. Calibrate Totalizer input and outputs from 1 to 99999. Count Pulses 1 to 99999. LED indicator for gate time.

Power your loops with over 1,000 Ohm loads  
The 20.000 V range has an extended span of up to 24.000 Volts giving you a portable source for powering your loops.

Read / Source Function  
Read a wide range of Frequencies and Waveforms. Read 50mV to 120V peak. Read signals from Flowmeter pickups, Velocity and Motion Detectors and Totalizers. Sine and Square waves, Zero Based and Zero Crossing. Frequency from 1CPH to 20KHz. Adjustable amplitude from 100mV to 12Volts peak-to-peak. Simulates Vibration Pickups, Variable Speed Drives and more.

Read DC volts  
The 235 can measure from -500.00 to +999.00 mV, 0.000 to 5.100 V, -25.0 to 125.0 % of 1 to 5 V; 0 to 20.000 V and 0.00 to 60.00 V DC. Use it to check loop power supplies, I/V converters, 1 to 5 Volt signals, and other voltages.

Calibrate Totalizers & Gate Trigger Indicator  
Output a number of pulses from 1 to 100 minutes. The LED flashes in sync with the output frequency allowing easy adjustment of the attenuation for proper gate triggering.

Calibrating recorders & monitors in 4-20 mA loops  
Other brands of calibrators require that you break the loop to calibrate voltage inputs. With the PIE 235 you simply clip the test leads across the voltage inputs in a live 4 to 20 mA loop without disconnecting any wires.

EZ-Dial Knob & EZ-Check Switch  
Change the speed of dialing your test point by just pushing down on the knob. Stop watch style push button for accurate totalizer measurements and for high and low readings

Easy-to-Read Display  
Turn on the backlight to read in dark areas of the plant.

Uses a standard 9V Alkaline Battery  
Superior battery life of 24 hours under typical continuous usage. Easy access to battery compartment.

MODELS / EXTRAS

**PIE 235.....\$849**  
includes rubber boot, custom carrying case, batteries, calibration certificate.

**PIE 541.....\$1,599**  
includes carrying case, batteries, calibration certificate, and attached test leads.

**NiMh Charger & 4 "AA" batteries 120v 60hz.....\$80**





**LOOPY 5000**

**Portable 24V  
Loop Power Supply**

- No need to run wires
- Can Power Any 4-20mA Loop
- Up to a month of daily use
- Battery Operated
- Saves from using two calibrators
- 2 Year Quibble-Free Warranty

The Loopy 5000 provides field technicians with a portable, economic, and durable 24VDC power source for powering field transmitters. This is especially useful during plant startup, shutdown, and overhaul, when the loops are not usually energized, but field instruments must still be installed, tested, and calibrated. Efficient switching regulator allows LPS to extract virtually 100% of available battery power. Accidental short circuits are protected by a Positive Temperature Coefficient thermistor. A must have for any field technician's tool bag.

**LOOPY 5000.....\$299**

Powered by (1) 9 Volt Battery. Offers superior portability from the palm of your hand to your shirt pocket.

\* \$50 OFF w/ purchase of any PIE Calibrator.



**LOOPY 6000**

**Portable 24V  
Loop Power Supply**

- No need to run wires
- Can Power Any 4-20mA Loop
- Up to a month of daily use
- Battery Operated
- Saves from using two calibrators
- 2 Year Quibble-Free Warranty

The Loopy 6000 provides field technicians with a portable, economic, and durable 24VDC power source for powering field transmitters. This is especially useful during plant startup, shutdown, and overhaul, when the loops are not usually energized, but field instruments must still be installed, tested, and calibrated. Efficient switching regulator allows LPS to extract virtually 100% of available battery power. Accidental short circuits are protected by a Positive Temperature Coefficient thermistor. A must have for any field technician's tool bag.

**LOOPY 6000.....\$299**

Powered by (4) AA Batteries. Offers superior portability from the palm of your hand to your shirt pocket.

\* \$50 OFF w/ purchase of any PIE Calibrator.

FEATURES

DESCRIPTION

MODELS / EXTRAS

**Why the Loopy?**

- Doesn't tie up a second loop calibrator.
- Great for isolated loops.
- Light/Easy to carry.
- Compare to Transcat Model #21050E.





**HM35**

**Differential Calibrator**



**HM28**

**Digital Handheld Pressure Calibrator**

FEATURES

Ranges from as low as 0-10" H2O  
Data Log Memory for 10,000 measurements  
MIN/MAX and average values  
Accuracy to better than .025% ( $\pm 1/2$  LSD)  
Lowest full-scale differential pressure calibrator made  
Withstands 145 psi static pressure

Units: mbar, bar, kPa, hPa, MPa, mmH2O, mH2O, mmHg, psi, inH2O, inHg  
Accuracy: 0.1% FS (0.05% available on some ranges)  
Differential pressure / absolute pressure  
Battery or power supply unit  
Integrated data memory & RS232 Output

DESCRIPTION

The HM35 Gauge & Differential Digital Manometer provide users with gauge, vacuum and differential pressure measurements with accuracy to 0.05%FS. Absolute and Barometric models are rated at 0.1% FS. Accuracy includes stability for one year and is valid over the operating temperature range of 0°C to 50°C. A large easy to read display and light weight ergonomic case make the HM35 convenient to use. The HM35 is ideal for very low pressure differential measurements.

A convincing feature of this handheld pressure gauge is its versatility. Functions are available for leak rate, min./max. values and for storing the measured values in the display. The measured values can be stored in the integrated data memory with the datalogging function and from there, logged directly on a connected printer (without PC) via the RS232 interface. Of course a PC-software level Windows is also available. The HM28 permits measurements in over-and underpressure, differential or absolute pressure.

MODELS / EXTRAS

**HM35.....\$2,349**  
**HM35EX (explode proof).....\$2,649**  
**HM35AB (absolute).....\$2,649**

**HM28.....\$1,995**

The HM35 is available in the following **RANGES**:

The HM28 is available in the following **RANGES**:

0-10" H2O	0-14.5 PSI	0-245 PSI
0-28" H2O	0-15.9 PSI	0-500 PSI
0-80" H2O	0-29 PSI	0-1000 PSI
0-120" H2O	0-100 PSI	0-1300 PSI
0-200" H2O	0-145 PSI	

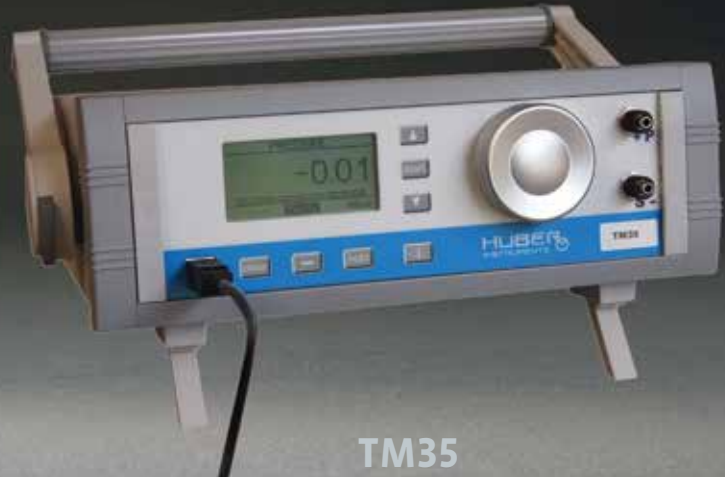
0-100 PSI	0-10" H2O	0-1100 ABS
0-145 PSI	0-28" H2O	0-2000 ABS
0-245 PSI	0-80" H2O	
0-435 PSI	0-120" H2O	
0-1,015 PSI	0-200 H2O	
0-1,305 PSI	0-400" H2O	
	0-800" H2O	





**HM30**

**Meteo Station**



**TM35**

**Bench Top Digital Manometer**

Measures Barometric pressure, Dew point, and Altitude  
 Second temperature with insertion sensor  
 Works with Leica precision measurement equipment  
 Peak Value Storage, min/max

Available ranges from: 0.4”h2o to 100psi  
 Offered in gauge, differential and absolute pressure  
 Accuracy 0.1% to 0.05%  
 Temperature compensated 0 to 50 °C  
 Relative-, differential- or absolute pressure  
 22 selectable units of measure

The HM30 has numerous applications including metrology, heating, ventilation, air conditioning, geology, geodesy, measurement, technique, aviation, and mountaineering. Several meteo parameters can also be observed, measured and evaluated along with simultaneous display of barometric pressure, humidity, temperature 1 and temperature 2. It also comes equipped with data-logging including real time clock, data transfer to PC, PC remote control facility, data printout possible without PC and windows supported software.

This bench top manometer measures gauge, differential and absolute pressures, rate of pressure change, MIN/MAX and average value are available. A large readable display also shows real time, date and is illuminated. Data Memory holds 10,000 measurements, and there are 22 selectable measurement units with 14 different measurement ranges available up to 90 bar (high overload resist). Graphic display with high resolution and backlight. Manually fine-tuning adjustment (0.5 l internal volume (up to 1 bar). Remote commands allow the direct reading of data via USB and software is available. Powered over USB (max 80mA) / Battery operated. Field of application: Medical Technology, Pharmaceutical Industry, Chemical & Petrochemical Industry, Laboratories and Universities, Diagnostics.

**Why the Meteo Station?**

- So sensitive you can measure the height of a table.
- Extremely reliable.
- Complete instruments measures barometric pressure, humidity pressure, and temperature.

**HM30.....\$1,989**

**TM35.....\$4,995**

FEATURES

DESCRIPTION

MODELS / EXTRAS





**MIT1025**

## DC Insulation Resistance Testers

Measures up to 20 TΩ  
 PI, DAR, DD, SV and ramp test  
 Operate from line power/mains if battery dead  
 Li ion battery - extended capacity, rapid charge  
 Advanced memory with time/date stamp  
 CATIV 600 V safety rating

Offering CAT IV, the MIT1025 is compact, light 10 kV insulation resistance tester for the diagnostic testing and maintenance of high voltage electrical equipment. Enclosed in a tough case it is both smaller and lighter than its predecessor making it even easier to carry and store. As well as measuring insulation resistance to 20 TΩ, the MIT1025 also offers various diagnostic tests such as Polarisation index, Dielectric Absorption Ratio, Step Voltage, Dielectric discharge and ramp testing.



**MEGGER 220015**

## 5 and 15 kV DC Dielectric Test Sets

Compact and portable  
 Air insulated, no oil  
 ±2% accuracy  
 Leakage current measurement as low as 0.1 mA  
 0 to 122° F (-17.7 to +50° C) operating temperature

The dc Dielectric Test Sets measure leakage current while applying a dc voltage at or above the insulation system's operating level. This measurement aids in determining the insulation system's ability to withstand overvoltages such as lightning strikes and switching surges. It can be used to check the electrical insulation quality of motors, power cables, switchgear, insulators, transformers and capacitors.

<b>Megger MIT515</b> .....	<b>\$2,890</b>
<b>Megger MIT525</b> .....	<b>\$3,788</b>
<b>Megger MIT1025</b> .....	<b>\$4,587</b>
<b>Megger MIT1525</b> .....	<b>\$5,154</b>

includes power lead, 10 ft (3 m) leadset x 3, medium insulated clips, 10 ft (3 m) 3 m leadset x 3, large insulated clips, USB cable, PowerDB lite software.

<b>Megger 220005 5 kV</b> .....	<b>\$3,206</b>
<b>Megger 220015 15 kV</b> .....	<b>\$4,309</b>

Includes ground connection cable, 10 ft [3 m], kV/MΩ test record graph paper (100-sheet pad), power cord

The MIT is available in the following **RANGES**:

MIT515	5 kV IRT with PI and DAR but no memory
MIT525	5 kV IRT , ramp test, advanced memory functions, USB
MIT1025	10 kV IRT, ramp test, advanced memory functions, USB
MIT1525	15 kV IRT, ramp test, advanced memory functions, USB

FEATURES

DESCRIPTION

MODELS / EXTRAS





**MIT400 Series**

## Industrial Maintenance Insulation and Continuity Testers

- CATIV 600V applications
- Insulation testing to 1000V and to 200GΩ
- TRMS & DC Voltage measurement
- Continuity testing at 200mA down to 0.01Ω
- Analogue and dual digital display
- Bluetooth wireless data transfer

The MIT400 series of insulation and continuity tester offers those working in electrical engineering, the electrical supply industry and in maintenance, repair and servicing of industrial equipment and manufacturing processes a convenient test instrument. The MIT400 series insulation and continuity testers are designed not just for Electrical and Industrial, but with an exceptionally wide range of applications from electrical installations, cable testing, motor testing, automotive, ESD, panel building, avionics, maintenance etc.

- Megger MIT400.....\$533**
- Megger MIT410.....\$610**
- Megger MIT420.....\$634**
- Megger MIT430.....\$734**

includes silicone test leads, rubber boot with built-in stand, carrying case, info CD, calibration certificate, 3 year warranty.

The MIT is available in the following **RANGES**:

MIT400	250v, 500v, 1000v
MIT410	+ 50v, 100v, Polarization Index, Dielectric Absorption Ratio
MIT420	+ Result Storage
MIT430	+ Bluetooth download

- Megger 1002-001 Test Lead Set.....\$135**
- Megger 1007-157 SP5 Remote Probe.....\$129**



**DET14C | DET24C**

## Earth/Ground Clamp-on Resistance Tester

- Clamp shape improves access to earth cables and straps up to 50 mm
- Low maintenance flat jaw interface
- Measures ground resistance from 0.05 Ω to 1500 Ω
- and ground leakage current from 0.5 mA rms - 35 A rms
- CAT IV 600 V safety rating

The DET14C and DET24C represent a new generation of earth/ground clamp-on resistance testers. These instruments induce a test current into earth systems and measure ground resistance in multi ground installations without needing to disconnect the ground. They offer market leading access, advanced features, simple operation and CAT IV 600 V safety protection. The elliptical shaped head design offers improved access to cables and earth straps in space constrained locations. The clamp head accommodates up to 37 mm diameter cable and 50 mm earth tapes.

- DET14C.....\$1,294**
- includes carrying case, carrying strap - wrist loop, user guide CD, calibration check accessory, batteries.

- DET24C.....\$1,464**
- includes bluetooth capabilities, carrying case, carrying strap - wrist loop, user guide CD, calibration check accessory, USB IrDA dongle, USB extension lead, PowerDB Lite software.

FEATURES

DESCRIPTION

MODELS / EXTRAS





**GX-2009**

**Personal Four Gas Monitor**



**GX-6000**

**6 Gas, Sample Draw w/PID, IR & Super Toxics**

FEATURES

Large capacity data logging standard (100 records)  
20 hours of operation  
Large LCD display screen & Automatic backlighting  
STEL and TWA readouts  
Intrinsically safe, CSA, C/US classified IECEx / ATEX

5 Operating modes: normal, leak check, inert, snap log and bar hole  
Library of over 600 VOCs  
PPM Leak Check mode  
Operates up to 14 hours on Li-ion battery pack, fully recharges in 3 hours

DESCRIPTION

The smallest and lightest 4-gas monitor in the world. Weighing only 4.6 ounces, it fits in the palm of your while simultaneously monitoring and displaying combustibles, oxygen, carbon monoxide, and hydrogen sulfide. It offers dual-audible alarm ports, alarm LED's, water resistance and a dustproof designs.

The GX-6000 is a game changer. This powerful hand-held instrument is capable of simultaneously monitoring up to 6 gases. In addition to the standard 4 confined space gases which include combustibles, O2, CO, & H2S, the GX-6000 has 2 additional smart channels that accept PID, IR or super toxic sensors. Equipped with a strong internal sample pump, a man-down alarm, a panic alarm, an LED flashlight, and large auto rotating LCD display, the GX-6000 can operate as a single gas PID unit or a multifunctional tool utilizing all 6 channels.

MODELS / EXTRAS

**GX-2009.....Starts At \$695**  
Includes alligator clip, two (2) NiMH batteries, charging station with 115/220 VAC power supply (also available without power supply), product CD, datalogging software.

**GX-6000.....Starts At \$1,945**  
Includes rubber boot, belt clip, hand strap, tapper nozzle, probe with hydrphobic & dust filter 3' teflon lined hose.





**EAGLE 2**

**SIX Gas Sample Drawing Monitor**

- PID, IR, TC, & Smart Toxic Specialty Sensors
- Powerful long-life pump up to 125' range
- Methane elimination for environmental use
- Datalogging standard
- Autocalibration / single gas calibration

The EAGLE 2 is a powerful instrument that does more than just offer the standard confined space protection for LEL, O2, H2S and CO. The EAGLE 2 available features include a PID sensor for detecting high or low ppm levels of VOC gases; % volume capability for CH4 and H2 using a TC sensor; PPM or LEL hydrocarbon detection at the push of a button; infrared sensors for CO2, methane or hydrocarbons in LEL and % volume ranges; methane elimination feature for environmental applications; and a variety of super toxic gases.

**EAGLE 2.....Starts At \$1,945**



**GX-2012**

**Confined Space Multi Gas Monitor**

- Internal sample drawing pump with up to 50' range
- Vibration, visual, and audible alarms
- Bump test and calibration reminder w/ lock out option
- Up to 600 hours of datalogging with alarm trends
- Snap-logging - on demand data recording

With the GX-2012, you have multiple tools in one instrument. Having 3 operating modes, the GX-2012 can be used for confined space, safety monitoring in it's Normal Operating mode; for leak investigation in Leak Check mode; and for underground leak checking in Bar Hole mode. When equipped with an optional TC sensor, the GX-2012 can measure 100% volume methane and dynamically auto range from % LEL to % volume. This is ideal for line purge testing.

**GX-2012.....Starts At \$845**

DESCRIPTION

APPLICATIONS & INDUSTRIES

MODULE OPTIONS / EXTRAS





**SBS-6500**

**Battery Analyzer**



**SBS-2003**

**Digital Hydrometer  
Density Meter**

FEATURES

Download specific gravity readings wirelessly  
Voltage range: 0–300V for batteries from 1.2–48 Vdc  
Data storage: +7.5 Million records (75,000 Batteries)  
Storage battery resistance testing: automatically switches within the test range 1 mΩ to 400 mΩ and resistance measurement resolution reaches 1 mΩ

Data-Logging with Wireless Downloading  
Accuracy: ± 0.002  
Auto temperature compensated to 77° °F (25°C)  
1,000 reading memory Excel-compatible data format  
Exclusive to Storage Battery Systems  
IP64 water resistant

DESCRIPTION

The SBS-6500 analyzer is a multipurpose resistance and voltage testing kit. It has a storage capacity of 7.5 million data records for capturing and analyzing the entire history and details of up to 300 battery systems. Through your PC, or while on-site, the SBS-6500 can be programmed with site names, battery details and pass/warning/fail alarm set points for resistance measurements (pass/fail for voltage).

Specific gravity testing has never been this easy! Simply insert the nozzle into the battery and depress the finger pump which draws a few drops of sulfuric acid (H2SO4) through the tube. Within three seconds the measured refractive index is converted into a temperature compensated specific gravity reading and then both the specific gravity and temperature are displayed. The SBS-2003 has the added benefit of storing the results for future download via Bluetooth or USB.

MODELS / EXTRAS

- SBS-6500.....\$5,520**  
Includes Pin probes, NiMH battery & charger, USB cable, Software, Carrying case.
- SBS 6500-CLAMP-PROBE..... \$295**  
Clamp Probe Leads for Testing with SBS-6500.
- 6500-PIN-PROBES.....\$295**  
Replacement Pin Probe Leads for SBS-6500.
- SBS 6500-PROBE-TIP.....\$75**  
Replacement Pin Set for 6500-PIN-PROBES.
- SBS 6500-BATT.....\$125**  
Spare NiMH Battery for SBS-6500.

- SBS-2003.....\$2,395**  
Includes Three (3) silicone tubes, 9V battery, Adjustable hand strap, Case, Bluetooth to USB adapter.
- 2003/-SPR-PRT-KT.....\$250**  
o-ring, sample chamber w/rubber pump, (3) 9" sample tubes
- 2002/3-HOL.....\$75**  
Holster w/ belt for SBS-2003





## Emerson AMS Trex Field Communicator

- 5.7in (14.5 cm) color VGA resistive touchscreen display & adjustable backlit screen
- 2 GB NAND and 32 GB extended flash memory
- 8+ hour rechargeable lithium-ion power module
- 800 MHz ARM Cortex A8 / NXP microprocessor
- 4 to 131°F (-20 to 55°C) operating temp
- Built-in Bluetooth, USB, and WiFi connectivity

SPECIFICATIONS

**Automatically synchronize field changes:** The Auto Sync technology in AMS Trex helps maintain data integrity in your AMS Device Manager database without any technician intervention.

**Diagnose Communication Problems:** Quickly fix issues in the field with advanced device diagnostics. Detect power supply problems using the communicator's power the loop functionality or by monitoring low frequency noise on a segment.

**Configure and test valves inline:** Perform valve

diagnostics in the field, including valve signature, dynamic error band, PD one button sweep, and step response, without having to pull the valve or perform invasive troubleshooting steps.

The Trex communicator includes built-in functionality to power a device; Simply connect the communicator to an instrument to power it.

The AMS Trex is Intrinsically safe; usable anywhere you need to go and has an IP54 environmental rating.

DESCRIPTION

**Emerson AMS Trex.....Call For Pricing**  
Includes AC Adapter, USB Cable, Lead Set with connectors, Hand Strap, Quick Start Guide and Resource DVD.

**Emerson TREX-0005-0011 Carrying case.....\$165.00**

**ORDERING INFORMATION:**

**RADIO OPTIONS**

W: Wireless  
9: None

**PRODUCT CERTIFICATIONS**

NA: No approval  
KL: ATEX, CSA (US/Canada) and IECEx intrinsically safe

**CARRYING CASE**

NA: Not included  
S: Included

**COMMUNICATION MODULE**

C: Device communicator communication module  
L: Device communicator + communication module

**APPLICATIONS**

H: HART Application  
F: HART + FOUNDATION fieldbus applications

**SUPPORT**

S1: Standard support (1 year)  
S3: Standard support (3 year)  
P1: Premium support (1 year)  
P3: Premium support (3 year)

OPTIONS / EXTRAS





1051

**8 Decade Wide Range Resistance Box**



1040

**8 Decade Wide Range Resistance Box**

DESCRIPTION

A precision low ohm resistance box designed for general laboratory work including platinum resistance thermometry. The 1051 is compact and durable, with range from 0.01Ω to 1MΩ and 0.1% best accuracy.

A popular wide range decade box covering 0 to 100MΩ in 1Ω steps, with 0.1% best accuracy. The 1040 is used in both industry and education, providing precision and reliability in all required applications.

FEATURES

Range / Resolution: 0 to 100MΩ / 1Ω steps

Decade	0.01Ω	0.1Ω	1Ω	10Ω	100Ω	1kΩ	10kΩ	100kΩ
Accuracy	±10%	±5%	±1%	±0.5%	±0.1%	±0.1%	±0.1%	±0.1%
Max Current	1A	1A	1A	0.3A	0.1A	33mA	10mA	3mA

Residual Resistance: Less than 250mΩ  
 Power Rating: 1 watt per resistor  
 Voltage Rating: Maximum 250V DC/AC RMS  
 Temperature Coefficient: 50ppm/°C  
 Color coded digits, safety terminals  
 W8.4 x H3.9 x D4.7" • Weight: 2.2 lbs

Range / Resolution: 0 to 100MΩ / 1Ω steps

Decade	1Ω	10Ω	100Ω	1kΩ	10kΩ	100kΩ	1MΩ	10MΩ
Accuracy	±1%	±0.5%	±0.1%	±0.1%	±0.1%	±0.1%	±0.1%	±1%
Max Current	0.5A	0.3A	100mA	30mA	3mA	0.3mA	30μA	3μA

Residual Resistance: Less than 250mΩ  
 Power Rating: 1 watt per resistor  
 Voltage Rating: Maximum 250V DC/AC RMS  
 Temperature Coefficient: 50ppm/°C  
 Color coded digits, safety terminals  
 W8.4 x H3.9 x D4.7" • Weight: 2.2 lbs

MODELS / EXTRAS

- 1051 Resistance Decade Box.....\$895**
- 1041 Resistance Decade Box.....\$695**  
 A low ohm decade box covering 0 to 1kΩ in 0.01Ω steps, with 0.5% mid scale accuracy (see first 5 decades of 1051 table).
- Protective Rubber Boot.....\$44**
- Carrying Case.....\$125**
- NIST/UKAS Calibration Cert.....\$215**

- 1040 Resistance Decade Box.....\$895**
- 1061 : 6 Decade Resistance Box.....\$475**  
 Slim line design with in-line read-out that has a range of 0 to 1.2MΩ in 1Ω steps, accuracy ±1%
- Protective Rubber Boot.....\$44**
- Carrying Case (1040).....\$125**
- NIST/UKAS Calibration Cert.....\$215**





1067

### 6 Decade Precision Resistance Box



1070 | 1071

### Decade Capacitance Boxes

A high accuracy resistance decade box ideal for PT100 simulation applications. Range is 0 to 12kΩ in 10mΩ steps, with ± 0.01% accuracy.

Capacitance boxes suitable for applications in industry and education. The 1070 is a 5 decade model for 100pF to 100μF and the 1071 has 7 decades for 10pF to 100μF.

DESCRIPTION

Range / Resolution: 0 to 12kΩ / 10mΩ steps  
 Accuracy: ± 0.01%  
 Resistance: Less than 10mΩ - Less than 1mΩ variation  
 Power Rating: 0.35 watt per resistor  
 Stability: 20ppm/year (>1Ω), 100ppm/year (<1Ω)  
 Voltage Rating: Maximum 200V DC/AC RMS  
 Insulation: Case to resistance terminals 2kV / 50Hz max  
 Temperature Coefficient: 10ppm/°C (20ppm/°C below 1Ω)  
 W13.8 x H2.5 x D3.5" • Weight: 2.4 lbs

1070 Range / Resolution: 0 to 10 F / 100pF steps  
 1070 Residual Capacitance: Less than 38pF  
 1071 Range / Resolution: 0 to 100 F / 10pF steps  
 1071 Residual Capacitance: Less than 50pF  
 Accuracy: 1% (5% above 10μF on 1071)  
 Voltage Rating: Maximum 300V DC, 200V AC  
 Bi-polar working, color coded digits, safety terminals  
 W8.4 x H3.9 x D4.7" • Weight: 2.2 lbs

FEATURES

**1067 : 6 Decade Precision Resistance Box.....\$1,675**  
**1065 : 6 Decade Power Resistance Box.....\$1,750**  
 0 to 120kΩ in 0.1Ω steps, best accuracy is 1%, and each resistor has a 10 watt power rating.  
**NIST/UKAS Calibration Certificate.....\$215**

**1070 : 5 Decade Capacitance Box.....\$895**  
**1071 : 7 Decade Capacitance Box.....\$995**  
**1053 : 4 Decade Inductance Box.....\$1,295**  
 Range is 0 to 10H in 1mH steps.  
**Protective Rubber Boot (1070, 1071).....\$44**  
**Carry Case (1070, 1071).....\$125**  
**NIST/UKAS Calibration Certificate.....\$215**

MODELS / EXTRAS





1006 | 1007

**DC Millivolt Sources**



1024

**DC Current Calibrator**

DESCRIPTION

High accuracy handheld millivolt sources primarily used for voltage injection or potentiometric voltage measurement (1007). Applications include thermocouple simulation and calibration of A/D converters and chart recorders.

A portable benchtop DC current source for calibration and test applications from nanoamp levels to 100mA. Applications include current transducer testing and calibration and linearity tests on digital and electronic current meters.

FEATURES

3 ranges up to 1V  
 Accuracy 0.02% of setting + 0.02% of range  
 Best resolution 1µV  
 20mA output current  
 Powered by 6 AA batteries  
 100 hours typical battery life  
 Short circuit and overload protected  
 Safety terminals  
 LED null measuring facility (1007)  
 H8.4 x W3.9 x D4.7" • Weight: 2.5 lbs

0 to 100mA output in 5 ranges  
 Accuracy 0.02% of setting  
 10ppm/hr stability  
 Up to 15V output drive  
 30ppm/°C temperature coefficient  
 Safety terminals  
 Null meter measures to 1µA resolution  
 Battery or mains operation  
 12 hours typical use between charges  
 W8.5 x H6.2 x D7.5" • Weight: 7.3 lbs

MODELS / EXTRAS

- 1006 DC Millivolt Source .....\$1,350**
- 1007 DC Millivolt Potentiometer and Calibrator...\$1,750**
- 1010 DC Voltage Calibrator.....\$2,250**  
 0.01µV to 10V in 5 ranges / Accuracy 0.02% of setting.
- Protective Rubber Boot (1006, 1007).....\$44**
- Carrying Case (1006, 1007).....\$125**
- Rechargeable Battery Pack (1006, 1007).....\$160**
- NIST/UKAS Calibration Cert (1006, 1007).....\$195**
- Carrying Case (1010).....\$195**
- NIST/UKAS Calibration Certificate (1010).....\$255**

- 1024 DC Current Calibrator.....\$2,585**
- 1021 Milliamp Source with Null Indicator.....\$1,725**  
 0 to 100mA output in 3 ranges / Accuracy 0.02% of setting +0.02% of rating.
- 1077 Milliamp Transducer Simulator.....\$1,995**  
 3 operating modes / 100mA source and load / 24V line mode / 0.02% accuracy.
- Protective Rubber Boot (1021, 1077).....\$44**
- Carrying Case (1024).....\$215**
- NIST/UKAS Calibration Cert (1024).....\$230**
- Carrying Case (1021, 1077).....\$125**
- Rechargeable Battery Pack (1021, 1077).....\$160**
- NIST/UKAS Calibration Cert (1021, 1077).....\$195**





1017

### Voltage/Current/Resistance Calibrator

A portable multifunction calibrator with voltage, current, and resistance ranges. The 1017 is suitable for calibrating a wide range of instruments including thermocouples, transducers, transmitters, and platinum resistance thermometers.

- DC Voltage 10nV to 100V
- DC Current 100nA to 100mA
- Resistance 10mΩ to 10kΩ
- Accuracy 0.005% of setting + 0.002% of rng
- 1ppm setting resolution
- Stability <5ppm/day, <25ppm/yr
- Noise <2ppm (0.1 to 1Hz)
- Deviation control Voltage and Current
- Battery or mains operation
- 12 hours typical use between charges
- W9.8 x H4.6 x D12.2" • Weight: 5.3 lbs

**1017 Voltage/Current/Resistance Calibrator.....\$2,825**

**NIST/UKAS Calibration Cert.....\$290**



1044

### Voltage and Current Calibrator

A precision handheld calibrator that can be used as a general purpose current and voltage source. High performance and ease of use make it suitable for test engineers, R&D, service, and calibration technicians.

- Measure voltage and current
- Source voltage and current
- 3 voltage ranges 0 to 20V
- 3 current ranges 0 to 20mA
- Accuracy 0.05% of range
- 4.5 digit LCD display
- Battery powered 9V PP3
- 28 hours typical battery life
- Supplied with carry case
- H5.5 x W3.0 x D2.0" • Weight: 0.7 lbs

**1044 Voltage and Current Calibrator.....\$975**

**1030 Voltage and Current Source.....\$625**

10mV, 100mV, 1V ranges / 10mA, 100mA ranges / Accuracy 0.1% of range.

**110V Mains Power Supply (not charger) (1044).....\$85**

**NIST/UKAS Calibration Cert (1044).....\$168**

**Rechargeable Battery Pack (1030).....\$85**

**NIST/UKAS Calibration Cert (1030).....\$128**

DESCRIPTION

FEATURES

MODELS / EXTRAS





1048

### Voltage and Current Calibrator



7006

### Loop-Mate 1 Loop Simulator and Source

DESCRIPTION

A compact voltage, current, and process loop calibrator for engineering, manufacturing, test, and process control applications. The 1048 combines digital accuracy with simple analogue control and is well suited to plant operations such as powering control loops.

A cost-effective handheld loop simulator that provides 4 to 20mA or 0 to 10V loop signals. Features include manual and automatic step modes with audible indication that changes pitch as the output increases/decreases.

FEATURES

Source/measure voltage and current  
 3 source ranges: 0 to 22mA and 0 to 22V  
 3 measure ranges: 0 to 70mA and 0 to 50V  
 Accuracy 0.02% of range  
 Transmitter simulator/sink loop control  
 Output steps and ramps  
 Fine adjustment (inching)  
 Battery powered 9V PP3, 20 hours typical use  
 H5.5 x W3.0 x D2.0" • Weight: 0.7 lbs

4 to 20mA or 0 to 10V ranges  
 Set-points: 0, 10, 25, 50, 75, 90, 100% of range  
 Accuracy 0.1% of range  
 TxSim or RxTest modes  
 Internal loop supply, 25mA maximum  
 Auto-stepping mode: up/down/up, 0.5, 1, 2, 4, or 8 sec/step  
 Battery powered 9V PP3, 40 hours of typical use  
 Supplied with carry case  
 H5.5 x W2.5 x D1.2" • Weight - 0.4 lbs

MODELS / EXTRAS

**1048 Voltage and Current Calibrator.....\$995**  
  
**7005 Voltage/Current/Loop Calibrator.....\$1,335**  
 Current measure: 125mA, source 50mA / Voltage measure: 25V, source 21V / Accuracy: Source 0.01% of setting, Measure: 0.01% of reading.  
  
**110V Mains Power Supply (1048).....\$85**  
**NIST/UKAS Calibration Cert (1048).....\$168**  
**NIST/UKAS Calibration Cert (7005).....\$245**

**7006 Loop-Mate 1: Loop Simulator and Source.....\$410**  
  
**7007 Loop-Mate 2: Loop Signal Indicator.....\$365**  
 4 to 20mA, 0 to 10V, 0 to 50V ranges / LCD 4 digit display, mA, V, or % of range / Accuracy 0.05% of reading.  
  
**NIST/UKAS Calibration Cert.....\$162**





1049

### PT100 Simulator



1090

### Multifunction Process Calibrator

A handheld precision simulator for PT100 0.3850 platinum resistance elements used for accurate temperature measurement. High performance metal film resistors are used throughout which ensures a good temperature coefficient and long term stability.

A portable, key-press operation instrument that combines source and measurement functions for thermocouples, RTDs, mV and mA. The 1090 features a memory storage function that holds frequently used values.

DESCRIPTION

FEATURES

MODELS / EXTRAS

- 200°C to +800°C with 23 set points
- Accuracy  $\pm 0.3^{\circ}\text{C}$
- Less than 30ppm/ $^{\circ}\text{C}$  temperature coefficient
- ITS-90 IEC60751
- Exceeds class A
- Passive resistance source
- $^{\circ}\text{F}$  version available – 1050
- 1050 Range: -100°F to 1000°F,  $\pm 0.5^{\circ}\text{F}$  accuracy
- Carrying Case Included
- H4.4 x W2.4 x D2.1" • Weight - 0.4 lbs

- Measures/simulates 8 thermocouple types, PT 100-RTD, mV and mA
- Displays units in  $^{\circ}\text{C}$ ,  $^{\circ}\text{F}$ ,  $\mu\text{V}/\text{mV}$ , or mA
- Accuracy: Source 0.02% of range,  $0.5^{\circ}\text{C}$ .
- Measure 0.05% of range,  $0.7^{\circ}\text{C}$
- Automatic or manual cold junction compensation
- Inching and step functions with time configurable steps
- Process loops 4 to 20mA and 0 to 50mA
- Mains or battery operation, 60 hours typical use
- Battery Charger and Carrying Case Included
- H9.2 x W5.9 x D2.9" • Weight - 2.8 lbs

<b>1049 PT100 Simulator (<math>^{\circ}\text{C}</math>)</b> .....	<b>\$550</b>
<b>1050 PT100 Simulator (<math>^{\circ}\text{F}</math>)</b> .....	<b>\$550</b>
<b>7000 RTD Temperature Calibrator</b> .....	<b>\$1,495</b>
Measure and simulate $^{\circ}\text{C}$ , $^{\circ}\text{F}$ , $^{\circ}\text{K}$ , and ohms / PT100 plus 7 other RTD types / Temp Accuracy $0.05^{\circ}\text{C}$ ( $0.09^{\circ}\text{F}$ ) / Resistance Accuracy $0.03\Omega$ .	
<b>NIST/UKAS Calibration Cert (1049, 1050)</b> .....	<b>\$215</b>
<b>Mains Power Adaptor (7000)</b> .....	<b>\$95</b>
<b>NIST/UKAS Calibration Cert (7000)</b> .....	<b>\$270</b>

<b>1090 Multifunction Process Calibrator</b> .....	<b>\$2,750</b>
<b>7050 Process/Thermocouple Calibrator</b> .....	<b>\$6,300</b>
Measure and simulate V, mV, mA, and ohms with the direct readout simulation of thermocouples and RTDs in $^{\circ}\text{C}$ or $^{\circ}\text{F}$ units.	
<b>NIST/UKAS Calibration Cert (1090)</b> .....	<b>\$255</b>
<b>NIST/UKAS Calibration Cert (7050)</b> .....	<b>\$595</b>





5025E

**Multifunction Calibrator**



5075

**Precision Digital Multimeter**

DESCRIPTION

A precision multi-product calibrator designed for wide calibration workload coverage at an affordable cost. Accurately test and verify both traditional and new test equipment with a calibrator that meets both technical and budget requirements.

A benchtop digital multimeter that combines high performance with simple operation. The 5075 easily measures from nanovolts to 10kV, from picoamps to 30 amps, from micro-ohms up to 1GΩ, from picofarads to 300μF, with up to 7 1/2 digit accuracy.

FEATURES

- 0 to 1050V AC/DC voltage
- 0 to 22A AC/DC current
- 10Ω to 1GΩ resistance
- PT100 and Thermocouple simulation
- Digital frequency
- Capacitance
- Optional adaptor for clamp meter calibration
- RS-232 and USB interfaces
- PC Virtual Control Software included
- Supplied with 5 piece test lead set
- W17.7 x H6.0 x D18.7” • Weight: 36.4 lbs

- 7 digit resolution
- 10nV to 10kV, 10pA to 30A
- Resistance, Capacitance, and Frequency
- 18ppm accuracy/best 1 year
- 10 channel low thermal emf scanner option
- PC/laptop control via EasyCal software
- GPIB interface (USB adaptor available)
- Rack mount kit option
- W16.5 x H3.5 x D16.2” • Weight: 18.7 lbs

MODELS / EXTRAS

- 5025E Multifunction Calibrator.....Call For Pricing
- 5025 Multifunction Calibrator.....CFP
- 5051+ Multifunction Calibration System.....CFP
- Common Options (5025E, 5025):**
- 9770 Scope Calibration (1mV to 200V, 0.1Hz - 100 MHz)
- 9797 Power Calibration (0-20KW AC and DC)
- 9780 External Clamp Meter Adaptor
- ECFLA EasyCal Calibration Software

- 5075 Precision Digital Multimeter.....Call For Pricing
- 5065 Digital Multimeter (6.5 digit).....CFP
- 5011 Resistance / Temperature Calibrator.....CFP
- 5018 Programmable DC/AC V/I Calibrator.....CFP
- 5045 Oscilloscope Calibrator.....CFP
- 5077 Power Calibrator.....CFP





## CalBench

### Multi-Purpose Calibration Benches

CalBench is the ultimate multifunction calibration station from Time Electronics. Each bench is custom-made to meet specific user requirements. Offering versatility and precision it is ideal for laboratories and workshops in need of multi-product testing that meets the highest industry standards. A wide range of modules can be fitted to the primary console creating a highly flexible system that is both functional and easy to use. Further expansion can be achieved by adding the secondary console, mounted under the primary. Calibration modules cover electronic signal, temperature, loop, and pressure applications.

Common applications include the calibration of:

**Pressure:** Gauges, Calibrators, Transducers, Transmitters, Indicators, Switches, Valves.

**Temperature & Loop:** Sensors, Indicators, Thermocouple and RTD Transmitters, Calibrators, PRTs, Thermistors.

**Electrical/Electronic:** Multimeters, AC/DC Signal Sources, Clamp Meters, Tachometers, Ohmmeters, Decade Boxes.

**Frequency:** Signal Generators, Oscilloscopes, Frequency Meters, Timer Counters.

**And Much More:** Incorporate various test equipment for Flow, Level, Mass, Mechanical, Dimensional, and more.

**Pressure:** Precision calibrators, indicators, and controller modules. Ranges from vacuum to 600bar.

**Power Supplies:** Fixed and adjustable AC and DC power supplies, dual and programmable units.

**Loop & Temperature:** High accuracy loop calibrator modules with source, measure and sink functions. Temperature calibrators for measuring & simulating RTDs/thermocouples.

**Multifunction Calibrator and DMM Modules:** The 7051 provides high accuracy multi-product calibration and has an internal 6 1/2 digit multimeter. Also available are the 5065B (6 1/2 digit) and 5075B (7 1/2 digit) DMM modules.

CalBenches are used in test facilities across the world. It provides customers with a high performance system for the necessary applications within their respective industries.

**Popular Industries:** Petrochemical, Power Generation, Oil & Gas, Manufacturing, Nuclear, Automation, Automotive, Aeronautics, Transport, Telecomms, Pharmaceuticals, R & D, Metrology, Process, and Education.

**Popular Locations:** Processing Plants, Offshore Platforms, Refineries, Power Plants, Engineer Training Centers, Schools and Universities, Calibration Laboratories, R & D Labs, Manufacturing Plants.

**Additional Modules:** Further modules include oscilloscopes, frequency counters, function generators, and harmonics analyzers. Custom design modules can be fitted allows the user to integrate a familiar instrument into their system.

**External Options:** Pneumatic and hydraulic calibration pumps, pressure gauges, dead weight testers, dry block calibrators, pressure test kits, hoses and connectors, test lead sets, solder stations, vices, and much more.

**Accessories:** To improve usability and create a more efficient workspace drawers, cabinets, PC holders, tool holders for the perforated back panel, and more can be added. All fittings meet U.S. standard.

DESCRIPTION

APPLICATIONS & INDUSTRIES

MODULE OPTIONS / EXTRAS





**MODEL 4620 | MODEL 4630**

**Digital Ground Resistance Testers**



**BT100**

**Battery Capacity Tester**

**DESCRIPTION**

Perform both ground and soil resistivity tests, auto-ranging from 0 to 2000 Ω. Exceed mechanical and safety specifications in IEC standards for shock, vibration, and drop tests. They are designed to reject high levels of interference, so they can be used under difficult conditions like high stray currents.

The Extech BT100 battery capacity tester can be used to check battery condition in seconds while the battery is in service. It simultaneously measures battery resistance and voltage. On-line testing without shutting down battery. A built-in data logger stores up to 999 tests.

**FEATURES**

Measures soil resistivity (4-Point) method  
 Measures ground resistance Fall-of-Potential method  
 Step voltage tests and touch potential measurements  
 Auto-Ranging 0-2000 Ω auto selects the optimum range  
 Designed to reject high levels of noise and interference  
 Extremely simple to operate: connect - press - read  
 LED on faceplate informs operator of any issues  
 Large easy-to-read backlit display  
 Rugged dustproof and rainproof field case  
 Can also be used for continuity tests on bonding  
 Color-coded terminals, Double insulation

Resistance: 400mΩ/100μΩ, 40mΩ/10μΩ, 4Ω/1mΩ, 40Ω/10mΩ  
 Basic Accuracy: ±(1% of reading, ±8d)  
 Voltage: 4V/1mV, 40V/10mV  
 Basic Accuracy: ±(0.1% of reading, ±6d)  
 Maximum input voltage: 50 VDC  
 Power supply: 6 AAA batteries  
 Battery life: 7 hours  
 Dimensions: 9.75" x 4" x 1.75" (250 x 100 x 45 mm)  
 Weight: 17.5 oz (500 g)  
 1 year warranty/CE approved

**MODELS / EXTRAS**

**Model 4620.....\$999**  
 (8) "C" Alkaline Battery Powered.  
**Model 4630.....\$1,420.25**  
 AC/Rechargeable NiMH Battery Powered.

**150 ft. 3-Point Test Kit.....+\$399**  
 Includes: (2) 150 ft. color-coded leads on spools(R/B), 30 ft. lead (G).

**300 ft. 3-Point Test Kit.....+\$494**  
 Includes: (2) 300 ft. color-coded leads on spools(R/B), (2) 100 ft. color-coded leads (G/B).

**500 ft. 3-Point Test Kit.....+\$636.50**  
 Includes: (2) 500 ft. color-coded leads on spools(R/B), (2) 100 ft. color-coded leads (G/B), (1) 30 ft. lead (G).

**BT100 Battery Capacity Tester.....\$789**  
 Includes Software, Cable, Kelvin alligator clips, Kelvin test leads, Batteries.

**BT100-ALKelvinAlligatorClips.....\$54.99**  
 Replacement alligator clips designed for use with the Extech BT100 battery capacity tester.

**BT100 Kelvin Test Lead Set.....\$59.99**  
 Replacement test leads designed for use with the Extech BT100 battery capacity tester.

**120V AC Adapter.....\$39.99**  
 120V AC adapter for BT100 battery capacity tester.

**Soft Vinyl Carrying Case.....\$15.99**

All Kits also include: (2) T-shaped aux. ground electrodes, (5) spaded lugs, (1) 100 ft. tape measure, Carrying bag.





**PCA400**

**Portable Combustion Analyzer**

Offers everything needed to commission, tune, maintain and certify any boiler. This unit can be configured to measure up to four gases by selecting from O<sub>2</sub>, CO, NO, NO<sub>2</sub>, and SO<sub>2</sub>. Additional measurements include ambient, stack and differential temperatures, pressure and differential pressure, and flow.

- 4.3in color touch-screen display
- Bluetooth wireless technology for live data streaming
- Long-life O<sub>2</sub> sensor (5-year warranty)
- Organize and store up to 500 sets of records
- Optional NO<sub>x</sub> and SO<sub>2</sub> sensors for emissions testing
- Dilution mode protects sensors in harsh conditions
- B-Smart sensors save downtime & calibration costs
- Rugged all-in-one probe connection
- Rechargeable Li-Ion batteries or line power options

**PCA400 Portable Combustion Analyzer.....\$2,695**

**Gas Options**

- O<sub>2</sub>, CO.....**
- O<sub>2</sub>, COH.....**
- O<sub>2</sub>, CO, NO.....+\$450.00**
- O<sub>2</sub>, CO, SO<sub>2</sub>.....+\$697.50**
- O<sub>2</sub>, CO, NO, NO<sub>2</sub>.....+\$1,147.50**
- O<sub>2</sub>, CO, NO, SO<sub>2</sub>.....+\$1,147.50**



**FLUKE**

**TIS10-9HZ**

**Thermal Imager**

Provides the resolution, range, and accuracy to easily and quickly identify problems before they become expensive failures. Whether you are a building inspector, electrician, energy auditor, equipment technician, or plant manager; this is the ideal tool for identifying heat and moisture issues.

- Range: -20 to 250°C (-4 to 482°F)
- 7.8 mRad spatial resolution
- 4800 (80 x 60) pixel resolution, 9Hz frame rate
- 35.7 ° x 26.8 ° field of view
- ±2°C or 2% (at 25°C nominal, whichever is greater)
- Fixed focus, minimum focus distance 0.45 m (1.5ft)
- Thermal sensitivity: ≤0.15°C at 30°C target temp (150mK)
- 7.5 to 14µm spectral band
- Built-in visible light digital camera (5MP)
- Engineered to withstand 2 meter (6.5 feet) drop
- Internal 4GB memory

**TiS10 Thermal Imager.....\$1,349.99**

Includes AC charger/power supply with mains adapters, Lithium-ion smart battery, USB cable, Soft transport bag, Statement of factory calibration, Quick start guide, Safety sheet.

- TiS20 Thermal Imager.....\$1,749.99**
- TiS40 Thermal Imager.....\$3,099.99**
- TiS45 Thermal Imager.....\$3,399.99**
- TiS50 Thermal Imager.....\$3,699.99**
- TiS55 Thermal Imager.....\$3,999.99**
- TiS60 Thermal Imager.....\$4,399.99**
- TiS65 Thermal Imager.....\$4,699.99**

DESCRIPTION

APPLICATIONS & INDUSTRIES

MODULE OPTIONS / EXTRAS



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