

## Fluke Multifunction Process Calibrators

**The 725 has true dual-channel capability; simultaneous input/output functions let you test and calibrate almost anything**

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Fluke's Model 725 multifunction process calibrator gives you a full array of simultaneous input/output functions. Measure mA, mA with loop supply, DCV, or pressure on Channel A while measuring or sourcing mA, DCV, ohms, T/Cs, RTDs, frequency, or pressure on Channel B (only one pressure module can be connected at one time). Unit is truly dual-channel, has button controls and connection terminals for each channel.

- Measure/Source Screen Lets You Simultaneously View Input and Output; Each Display is Full Size for Easy Reading
- Measures DC Volts, mA, RTDs, Thermocouples, Frequency, Ohms for Sensor and Transmitter Tests
- Sources/Simulates DC Volts, mA, RTDs, Thermocouples, Frequency, Ohms, Pressure for Transmitter Calibrations
- Sources mA with Simultaneous Pressure Measurement for Valve and I/P Tests
- Performs Pressure Functions via Fluke 700 Series Pressure Modules
- Supports Flowmeter Testing with Frequency and Counts Per Minute (CPM) Functions
- Executes Auto Stepping and Continuous Slow or Fast Ramps for Remote Tests; Runs Fast Linearity Tests with 25%-of-Output Stepping; Stores Up to Eight Frequently Used Setups on Any Sourced Function
- PC Interface Allows Benchtop Automated Operations Through Simple Serial Commands
- Internal 24V Loop Supply

### Specifications


Measure or Source	Range	Resolution	Accuracy	Notes
Voltage:	0 to 100 mV 0 to 10V (source) 0 to 30V (measure)	0.01 mV 0.01V 0.01V	0.02% rdg + 2 LSD	1 mA max. load
mA:	0 to 24	0.001 mA	0.02% rdg + 2 LSD	1000Ω max. load
mV (at T/C terminals):	-10 to +75 mV	0.01 mV	0.025% of range + 1 LSD	
Thermocouple:	J, K, T, E, R, S, B, L, U, N	0.1° or 1° F/C	0.8°C, Type K (0 to 1370°C)	Resolution, accuracy dependent on range and/or T/C type
RTD:	Ni 120, Pt 100 (385, 392, JIS), Pt 200 (385), Pt 500 (385), Pt 1000 (385)	0.1° F/C	0.33°C, Pt 100 (385)	Accuracy dependent on RTD type and compatible with pulsed excitation
Resistance:	15 to 3200Ω	0.01 to 0.1Ω	0.10 to 1.0Ω	
Frequency:	2 to 1,000 CPM 1 to 1100 Hz 1 to 10 kHz	0.1 CPM 1 Hz 0.1 kHz	±0.05% ±0.05% ±0.25%	For frequency source: 5V p-p squarewave, -0.1V offset
Loop Supply:	24V DC N/A	10%		
Operating Environment	-10 to +55°C, 95% RH (@ 10 to 35°C)			
Size/Weight	3.8 x 7.9 x 1.9" (96 x 200 x 47 mm)/23 oz. (650g)			
Battery	Four AA alkaline batteries			
Warranty	Three years			

### Ordering Information

Order #	Mfg #	Description	Price
MP725E	725	Multifunction Process Calibrator	
MPC25	C25	Soft Case	
MPC100	C100	Hard Case	
MPTPAK80-4	TPAK	Tool Pak	
See Page A34 for a complete selection of Accessories			

Transcat Accredited Calibration with Data	CALL
Transcat Accredited Calibration without Data	CALL



725—Powerful, simple to use, and affordable. 

The 725 offers convenience, easy operation. Simple pushbutton user interface, no menus, backlit display for working in poor light, compact, readily accessible battery door for fast replacements. And its rugged design stands up to hard field use.

Each Unit Includes: Test leads (TL75), test clips (AC70), one pair of stackable test leads, certificate of calibration and user's manual.



We have a full line of accessories to compliment the 725.

See page G24 and G26 for temperature accessories, page A45 for pressure modules, and pages A92-A99 for pressure pumps.

## Fluke Documenting Process Calibrators

**Equipped with these, you're ready for any process calibration or troubleshooting job**

**A**

- Simultaneous Input and Output
- Interchangeable Pressure Modules
- Bright White Display is Visible in Low Light
- Compact and Rugged
- Calibrate any process device in your plant Using Fluke 740 Series
- Eleven T/C curves and eight RTD curves (plus ohms)
- DC input; mA, V, mV, or frequency. For pressure, choose one of the 29 interchangeable modules from 1.0 "H<sub>2</sub>O to 10,000 PSI
- Model 744 Adds HART communication capability for calibrating, maintaining, and troubleshooting HART instrumentation

744 Also Offers:

- Handling of Fast-Pulsed RTD Transmitters and PLCs, with Pulses as short as 1 mS
- NiMH Battery with 3500 mA Hour Life and Gas Gauge
- Determine Type, Manufacturer, Model, and Tag ID
- Read Smart Transmitter Digital Output while Measuring Output
- Change Sensor Types on most HART Temperature Transmitters
- Read and write HART Configuration Functions
- Re-label Smart Transmitters
- Clone Additional Transmitters
- Perform Automated HART Sensor Trim and Output Trim

- Universal Commands—provide functions implemented in all field devices
- Common Practice Commands—provide functions common to many but not all field devices
- Device-Specific Commands—provide functions unique to a particular field device

HART Operating Modes Supported

- For Point-to-Point Operation connects the 744 to a single HART device in a 4–20 mA loop.
- In Multi-Drop mode, several HART instruments can be bussed together.
- In Burst Mode, the HART instrument transmits bursts of data without waiting to be interrogated by a master unit.

Software Compatibility

The Fluke 743B and 744 is compatible with these leading calibration management software packages! Combined, they provide a turnkey solution for calibration recordkeeping.

- AMS
- Cornerstone Cal Station
- Cornerstone Base Station
- Fluke DPC Track
- Prime Technologies ProCal V5
- TransCal V5



▲ The Fluke 700 series are powerful yet compact and lightweight—just over 3 lbs

Calibration Instruments

### Think About It! Calibration Software...

Calibration management software is designed to organize information on your plant, instruments, procedures, and results.

Here's how the 743B or 744 integrates the program:

1. Tag IDs and associated calibration procedures are downloaded from the PC to the calibrator.
2. Work is performed in the field, results are recorded in the calibrator.
3. Results are uploaded to the database, creating a permanent record.

**Calibration Software saves you time and eliminates errors.**

### How About a Demonstration?

If you want to see the calibrator or software in action, contact our sales department. We can send a sales rep to your location to demonstrate and discuss your needs.

**Contact Transcat for more information.**

For compatible documenting software see pages A53-A62

## Fluke Documenting Process Calibrators

### Supported HART® Models

Manufacturer	Pressure Instruments	Temperature Instruments
ABB/Kent-Taylor	600T	658T <sup>1</sup>
ABB/Hartmann & Braun	Contrans P <sup>1</sup> AS 800 Series	
Endress + Hauser:	CERABAR M, CERABAR S DELTA BAR S	
Foxboro Eckardt:		TI/RTT20 <sup>1</sup>
Foxboro	IAP/IDP/IGP	
Honeywell:	ST3000	
Moore Products:		344 <sup>1</sup>
Rosemount:	1151/2088/3001C/3051	3044C/644/3144
Siemens:	SITRANS P DS, SITRANS P ES	
SMAR:	LD301	TT301 <sup>1</sup>
Yokogawa:	EJA	YTA110 and 310

<sup>1</sup> Sensor Trim not supported

### Specifications

Source Range	Accuracy (% of reading+% of full scale)
110.000 mV, 1.10000V, 15.0000V	±0.01% + 0.005%
22.000 mA (Simulate 22.000 mA)	±0.01% + 0.015%
11.000Ω	±0.02% + 0.03%
110.00Ω	±0.01% + 20 mΩ
1.100 kΩ	±0.01% + 40 mΩ
11 kΩ	±0.02% + 0.5Ω
0.00 to 10.99 Hz	±0.03% + 5Ω
11.00 to 109.99 Hz/110.0 to 1099.9 Hz	±0.01 Hz
1.100 to 21.999 kHz	±0.1 Hz
22.000 to 50.000 kHz	±2 Hz
11.000 to 110.00Ω	±5 Hz
Measurement Range DC	Accuracy (% of reading+% of full scale)
110.000 mV/1.10000V/11.0000V DC	±0.025% + 0.015%
110.000V/300.00V DC	±0.05% + 0.005%
30.000/110.00 mA DC	±0.01% + 0.015%
1.1000/110.00Ω	±0.05% + 50 mΩ
1.1000 kΩ	±0.05% + 0.5Ω
11.000 kΩ	±0.1% + 10Ω
1.00 to 109.99 Hz	±0.05 Hz
110.0 to 1099.9 Hz	±0.5 Hz
1.100 to 10.999 kHz	±5 Hz
11.00 to 50.00 kHz	±50 Hz
Measurement Range VAC	Accuracy
@ 20 to 40 Hz/500 Hz to 1 kHz	±2% + 10 counts
@ 40 to 500 Hz	±0.5% + 5
@ 1 kHz to 5 kHz	±10% + 20
(all calibrator specifications apply from +18°C to +28°C unless stated otherwise)	
Temperature	Accuracy
RTD	Measure Source
100/200/500/1000Ω, 10Ω Cu, 120Ω Ni	±0.3°C ±0.1°C
T/C	Measure Source
EJL	±0.3°C ±0.1°C
KTU	±0.3°C ±0.3°C
B	±0.9°C ±0.8°C
C	±0.6°C ±0.6°C
N	±0.5°C ±0.3°C
R	±1.0°C ±0.9°C
S	±0.9°C ±0.9°C
Resolution: 0.1°C, except 1°C for 10Ω Cu. Best case, mid-range accuracies. For 2-wire and 3-wire RTD measurements, add 0.4°C. Thermocouple accuracies with external cold junction. For internal junction add 0.2°C.	
Operating Temperature: -10°C to 50°C (-20°C typical except Freq. & ACV measurement)	
Ramp Source functions: Voltage, current, resistance, frequency, temperature	
Trip Detect: Continuity or voltage	
Loop Power Voltage: 24V or 28V Selectable (Accuracy: ±5%)	
Maximum current/input voltage: 22 mA, short circuit protected / 30V DC	
Size/Weight: 130 x 236 x 61 mm/1.4 kg (3 lb 1 oz)	
Side Port Connections: Pressure module connector, RS-232 connector to interface to your PC, Connection for optional battery eliminator	
Safety: Complies with CAN/CSA C22.2 No 1010.1-92, ANSI/ISA S82.01-1994, UL3111, and EN610-1:1993	



744E ▲



### Ordering Information

Order #	Description	Price
MP741B	Documenting Process Calibrator	
MP743B	Documenting Process Calibrator with Interface	
MP744E	Documenting Process Calibrator with Interface and HART	
MP744V20	Hart upgrade (Model 744 only)	
MP744V2V	Hart upgrade 5-pack (Model 744 only)	
MP700SW	DPC/Track Software	
MPC700	Hard Carrying Case	
MPC789	Soft Carrying Case	
MPBE9005	Battery Eliminator	
MP700BCW	Bar Code Reader	
MPBP7217	NiCd Battery Pack	
MPBP7235	NiMH Battery Pack for Model 744	
MPBC7217	Battery Charger	

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Transcat Accredited Calibration without Data	CALL

Each Fluke 741B, 743B, and 744E Includes: Two sets of TL24 industrial test leads, two sets of AC20 test clips, one set of TP20 test probes, one BP7217 battery pack (for Model 741B/743B), NiMH battery pack (BP7235) (for Model 744), one BC7217-120 battery charger, NIST traceable certificate with data, and instruction manual.

NOTE: Each 743B and 744 includes a serial port cable and a DPC/TRACK software sample.

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Calibration Instruments

## Fluke Pressure Modules

### Fluke 700 Series pressure modules

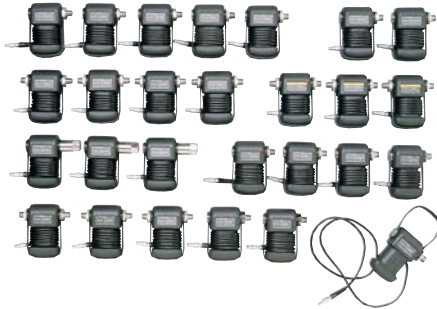
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#### Calibrate Any Pressure Device

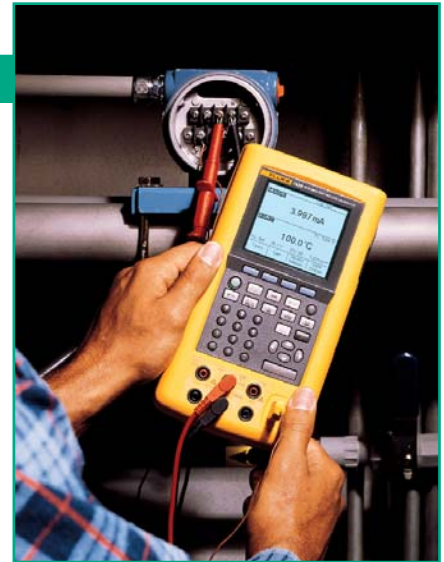
Complete your calibration package with one or more of these 29 pressure modules. Modules are available in gauge, differential, compound, vacuum, and absolute pressure modules in ranges from 1 "H<sub>2</sub>O to 10,000 PSIG. Combined with your 725, 743B, or 744 measurements can be displayed in any of 11 engineering units.

#### Temperature Compensated Accuracy

All modules use active temperature compensation, and will meet published accuracy specs over the full 0–50°C temperature range.



▲ **Fluke pressure modules are rugged and lightweight. They attach to your calibrator via a 3-foot cable with plug-in connector.**



### Ordering Information

USE WITH:

Type	Model	Range and Resolution	Reference Uncertainty (23 ±3°C)	Total <sup>1</sup> Uncertainty	High <sup>2</sup> Side Media	Low Side Media	Fitting Material	Max Over-pressure	Price	701	702	716, 717 718, 725 741B, 743B 744
Differential	MP700P00	1.000 "H <sub>2</sub> O DIFF	0.300%	0.350%	Dry	Dry	316SS	3 "H <sub>2</sub> O		X		X
Differential	MP700P01	10.00 "H <sub>2</sub> O DIFF	0.200%	0.300%	Dry	Dry	316SS	30 "H <sub>2</sub> O		X		X
Differential	MP700P02	1.0000 PSID	0.150%	0.300%	Dry	Dry	316SS	3 PSI		X		X
Differential	MP700P22	1.0000 PSID	0.100%	0.150%	316SS	Dry	316SS	3 PSI		X		X
Differential	MP700P03	5.0000 PSID	0.050%	0.100%	Dry	Dry	316SS	15 PSI		X		X
Differential	MP700P23	5.0000 PSID	0.025%	0.050%	316SS	Dry	316SS	15 PSI		X		X
Differential	MP700P04	15.000 PSID	0.025%	0.050%	Dry	Dry	316SS	45 PSI		X		X
Differential	MP700P24	15.000 PSID	0.025%	0.050%	316SS	Dry	316SS	45 PSI		X		X
Gauge	MP700P05	30.000 PSIG	0.025%	0.050%	316SS	N/A	316SS	90 PSI		X		X
Gauge	MP700P06	100.00 PSIG	0.025%	0.050%	316SS	N/A	316SS	300 PSI		X		X
Gauge	MP700P27	300.00 PSIG	0.025%	0.050%	316SS	N/A	316SS	900 PSI		X		X
Gauge	MP700P07	500.00 PSIG	0.025%	0.050%	316SS	N/A	316SS	1,500 PSI		X		X
Gauge	MP700P08	1000.0 PSIG	0.025%	0.050%	316SS	N/A	316SS	3,000 PSI		X		X
Gauge	MP700P09	1500.0 PSIG	0.025%	0.050%	316SS	N/A	316SS	3,000 PSI		X		X
Absolute	MP700PA3	5.0000 PSIA	0.050%	0.700%	316SS	N/A	316SS	20 PSI				X
Absolute	MP700PA4	15.000 PSIA	0.050%	0.700%	316SS	N/A	316SS	60 PSI				X
Absolute	MP700PA5	30.000 PSIA	0.050%	0.700%	316SS	N/A	316SS	105 PSI				X
Absolute	MP700PA6	100.00 PSIA	0.050%	0.700%	316SS	N/A	316SS	315 PSI				X
Vacuum	MP700PV3	-5.0000 PSID	0.040%	0.700%	316SS	N/A	316SS	15 PSI				X
Vacuum	MP700PV4	-15.000 PSID	0.040%	0.700%	316SS	N/A	316SS	45 PSI				X
Dual	MP700PD2	±1.0000 PSID	0.150%	0.200%	316SS	Dry	316SS	3 PSI		X		X
Dual	MP700PD3	±5.0000 PSID	0.040%	0.700%	316SS	Dry	316SS	15 PSI		X		X
Dual	MP700PD4	±15.000 PSID	0.025%	0.050%	316SS	Dry	316SS	45 PSI		X		X
Dual	MP700PD5	-15/30.000 PSIG	0.025%	0.150%	316SS	N/A	316SS	90 PSI		X		X
Dual	MP700PD6	-15/100.00 PSIG	0.025%	0.050%	316SS	N/A	316SS	300 PSI		X		X
Dual	MP700PD7	-15/200.00 PSIG	0.040%	0.700%	316SS	N/A	316SS	600 PSI		X		X
High	MP700P29	3,000.0 PSIG	0.050%	0.800%	C276	N/A	C276	6,000 PSI		X		X
High	MP700P30	5,000.0 PSIG	0.050%	.800%	C276	N/A	C276	10,000 PSI		X		X
High	MP700P31	10,000 PSIG	0.050%	.800%	C276	N/A	C276	15,000 PSI		X		X

Use of pressure zero is required prior to measurement or source.

(1) Total uncertainty, one year for temperature range 0°C to +50°C. Total uncertainty, 1.0% of full span for temperature range -10°C to 0°C. For P00 module only, compensated temperature range is 15° to 35°C.

(2) "Dry" indicates dry air or non-corrosive gas as compatible media. "316 SS" indicates media compatible with Type 316 Stainless Steel. "C276" indicates media compatible with Hastelloy C276

Metric adapter(s) 1/8" NPT female to male 1/8" — 19 tapered thread included with all modules except P29, P30 and P31.

All modules ship with a NIST traceable certificate and test data.

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Transcat Accredited Calibration without Data	CALL

## Altek Multifunction Process Calibrators

**Lighten up your toolbox—combination multifunction calibrator and troubleshooting meter**

- DC Voltage and Current
- Thermocouples and RTDs
- Frequency and Resistance
- Simulates Two-Wire Transmitters
- Powers and Measures 2-Wire Transmitters
- Measures AC Voltage to 250V
- Tests Continuity
- Keypad Version Available (830E)
- Optional Pressure Modules (830E)
- Package Available with 100 PSI Pressure Modules (830E)
- Recall Recall Three Outputs with the Quik-Chek® switch for Fast Checkout of Span, Zero, and Set Points
- Monitor Signal or Temperature Drift with Automatic Min/Max Tracking
- 830 Two-Line Display Lets You Read Input and Output Simultaneously
- Works with Interchangeable Pressure Modules to Calibrate Pressure Transmitters

830E



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### Keypad Version (830 Only)

If you prefer a keypad over switches and knobs, the push-button Model 830-KP is for you.

Each TechChek™ 820 Includes: Six alkaline AA batteries, deluxe case for hands-free operation, three-year warranty, manufacturer's statement of calibration practices, universal test lead set—shielded banana jacks and test leads, alligator clips, test probes, spade lugs—and operator's manual.

Each 830E Includes: Six alkaline AA batteries, padded case for hands-free use, three-year warranty, manufacturer's statement of calibration practices, universal test lead set, and operator's manual.

### Specifications

Range	Source Accuracy	Measure Accuracy
mA: 0.00 to 24.00 mA:	±(0.05% of span + 0.01 mA)	±(0.05% of span + 0.01 mA)
mV: 0.00 to 110.00 mV	±(0.05% of span + 0.01 mV)	±(0.05% of span + 0.01 mV)
V: 0 to 10.25 VDC	±(0.05% of span + 0.01 mV)	±(0.05% of span + 0.01 mV)
V: 0 to 200.0 VDC	—	±(2% of 200V + 0.1V)
VAC: 0 to 250.0 VAC True RMS	—	±(2% of 250V + 0.1VAC)
Thermocouple: 820 JKTE; 830 JKTERSN	±2°C Typical	±2°C Typical
RTD: 820 Pt 100Ω (385)	±1°C	±1°C
830 Pt 100Ω (Four Types), Ni 120	±1°C	±1°C
830 Cu 10	±8°C	±8°C
830 Cu 50 (China)	±2°C	±2°C
Ohms:	±(0.05% FS + 1 digit) 0 to 400Ω	±(0.05% FS + 1 digit) 0 to 1000Ω
Frequency:	(Sources zero-crossing square waves)	(Measures any waveform)
820 1-1000 CPM/1-1000 Hz/0.01-10.00 kHz	±(0.05% FS + 1 digit)	±(0.05% FS + 1 digit)
830 1-1500 CPM/1-1500 Hz/0.01-15.00 kHz	±(0.05% FS + 1 digit)	±(0.05% FS + 1 digit)
Pressure:	--	See Pressure Module Specifications
Power Supply:	Six AA Alkaline Batteries	Six AA Alkaline Batteries
Size/Weight:	6.25 x 3.25 x 1.94" (158 x 83 x 49.3 mm)/1lb 2oz (0.6 kg)	



830-KP Keypad Version

Calibration Instruments

### Ordering Information

Order #	Description	Price
MP820E	TechChek™ 820 Calibrator	
MP830E	Altek 830 Multifunction Calibrator	
MP830-KP	Altek 830-KP Multifunction Calibrator	
MP830E-100G	Altek 830 Package, 100 PSIG Module	
MP830-KP-100G	Altek 830-KP Package, 100 PSIG Module	
MP90-MP1	Altek Mod Pack Pressure Module Holder/Cable	
MP22171T	JKTE Mini Plug to Pigtail Lead Set	
MP23120E-L	Replacement Lead Kit for 820E	
MP21037E-120	120V Battery Eliminator (830)	
MP21037E-240	240V Battery Eliminator (830)	

NOTE: See Page A65 for Pressure Module Specifications

Order The 830E or 830-KP as a 100 PSI Pressure Package

Package includes the 830E and standard accessories, Mod Pack (90-MP1), hand pump (6215P), tubing and fittings (6218P), carrying case, and 100 PSI Pressure Module.

NOTE: Extends the capabilities of the 830E or 830-KP to calibrate I/Ps, P/Ps and other Pressure Instruments.

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Transcat Accredited Calibration without Data	CALL

## **NEW** Transcat Multifunction Calibrator

### Superior Features and Accuracy

- High Accuracy to  $\pm 0.015\%$  of Reading
- Simultaneous Display of Source and Read Values
- Measure and Source
  - T/Cs (13 types), RTDs (13 types)
  - Current, Voltage, Frequency, and Pulse
- T/C Input/Output Terminal with Automatic CJC
- Programmable Custom PRT Curves (Source and Read)
- Isolated mA/V Circuit for Complete Transmitter Calibration
- Pressure Module Input Using Beta Gauge II Modules
- Interactive Menu-Driven Functions (Function Keys)
- Direct Numeric Keypad for Quick Set-Up
- Five Programmable Setpoints in Each Range Speed Calibrations
- Built-in 250 Ohm Resistor for HART Compatibility with Smart Transmitters
- RS-232 Interface for Remote Control Operation
- Designed to IEC 1010 Safety Standards



### Specifications

	Source	Read
Voltage	0.000 to 20.000 VDC	Isolated 0.000 to 30.000 VDC
Current (mA)	0.000 to 52.000 mA	Isolated 0.000 to 24.000 mA Non-isolated 0.000 to 52.000 mA
Thermocouple/mV Frequency		-10.000 to +75.000 mV
CPM/Hz/kHz	2.0 to 600.0 CPM / 1.0 to 1000.0 Hz / 1.0 to 10.00 kHz	
Pulse (Source only)	1 to 30000.0 pulses; 2 CPM to 10 kHz, selectable amplitude and rate	
Ohms	5.0 to 4000 $\Omega$	0.00 to 4000.0 $\Omega$
Accuracy		
Current (mA)	$\pm 0.015\%$ of reading $\pm 2 \mu\text{A}$ Max load (source) 1000 $\Omega$ at 20 mA; 400 $\Omega$ at 50 mA	
Voltage	$\pm 0.015\%$ of reading $\pm 2 \text{ mV}$	
Thermocouple/mV	$\pm 0.02\%$ of reading $\pm 10 \mu\text{V}$	
Typical J	$\pm 0.2 \text{ }^\circ\text{C}$ and K $\pm 0.3 \text{ }^\circ\text{C}$	
RTD (Pt100 385)	$\pm 0.2 \text{ }^\circ\text{C}$	
Ohms	$\pm 0.025\%$ of reading $\pm 0.05$ ; maximum Works with all pulsed transmitters down to 5 ms	
Frequency CPM/Hz/kHz	$\pm 0.05\%$ of reading, maximum	
Pressure Modules	$\pm (0.025\% \text{ Rdg} \pm 0.025\% \text{ FS})$	
Operating Temperature	-10 to 50 $^\circ\text{C}$	
CE and EMC	Meets CE EMC EN50082-1: 1992 and EN55022: 1994 Class B	
Safety	CSA C22.2 No. 1010.1: 1992	
Size (HWD)/Weight	7.5" x 4.0" x 1.5" (190.5 x 101.6 x 38.1 mm) / 20 ounces (567g)	

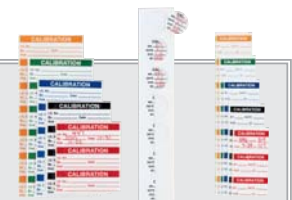
Each Unit Includes: Test leads, 4-AA alkaline batteries and protective rubber boot.

### Ordering Information

Order #	Description	Price
MPMF880	Transcat Multifunction Calibrator	
MP880P-AD	Pressure Module Adapter (One Required)	
MP6109P-1	Transcat Padded Carrying Case	
MP22171T	JKTE T/C Wires with Mini Plug	

NOTE: Compatible with Beta Gauge Modules (See page A85)

**Find  
Calibration  
Labels on  
Page A24**



**Pumps, tubing  
and fittings on  
See Page A92-A99**



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Calibration Instruments

## Druck/Unomat Documenting Multifunction Calibrator

- Typical Accuracy  $\pm 0.02\%$
- Sources and Reads All Common T/Cs and RTDs
- Sources and Reads mV, V, mA, Ohms, and Frequency
- Electrical Isolation Simplifies Troubleshooting
- Measures Pressure Via Interchangeable Modules
- RS-232-C and PCMCIA Card Interface

This calibrator is designed for fast, easy setup and use. Simply scroll through the menus and select the appropriate parameters. Operating and connection errors are minimized in that the unit will detect excessive loop resistance or the absence of a cold junction sensor, and alert the user. When connecting to RTDs, the calibrator automatically senses 2-, 3-, or 4-Wire configuration, and adjusts accordingly!

Auto Step and Ramp modes simplify the testing of control loops. The calibrator can be set up and left to output pre-programmed values while the technician checks the signal or response elsewhere in the loop.

### Documenting Capabilities:

The calibrator can be set up to store as-found and as-left calibration data which can be recalled by pressing a "view" key. The optional LinkPak-W software enables you to create pre defined procedures on a PC for download to the calibrator either via PCMCIA card or directly through the RS-232 interface. Stored data can be transferred back to the PC again via the card or interface. LinkPak-W then enables the user to print calibration reports or archive the calibration record. Data can also be exported to spreadsheet or word processor applications. Intecal windows based software builds on the basic concept of LinkPak-W supporting laboratory and field calibrations with extensive management and analysis features.

**Note:** A PCMCIA Card with release key is required to use LinkPak-W Software with the TRX-II.

**Each Unit Includes:** Four alkaline C cell batteries, test lead set, carrying case, instruction manual.

**NOTE:** External pressure sensor cable must be ordered separately.

### Some of Its Capabilities:

- Measure and Source mA
- Measure and Simulate 12 Types of T/C
- Measure and Simulate 9 Types of RTD
- Measure and Source Frequency and Pulses
- Transmitter Simulation and Calibration
- Measure and Source V and mV
- Tests Switches and Alarms and Captures Values on Contact Change



▲ **The TRX II is a powerful multifunction documenting calibrator in a rugged, compact case. With basic DC accuracy of 0.01% and 5-digit resolution, this is one of the most accurate field calibrators available today!**

### Specifications

Measure mV:	Two ranges, 0–600 mV, $\pm 0.03\%$ or better
Output mV:	-10 to 100 mV, $\pm 0.015\%$ or better
Measure V:	Two ranges, 0–60V, $\pm 0.03\%$ or better
Output V:	0–12 V, $\pm 0.015\%$ or better
Measure mA:	0–52 mA, $\pm 0.02\%$ or better
Output mA:	0–24 mA, $\pm 0.03\%$ or better
Frequency:	Three ranges to 20 kHz, $\pm 1$ Hz or better
Pulse count:	Three ranges 0 counts/Min to 10M counts/Hr
Totalizing Counter:	0–100M counts
Measure/Simulate $\Omega$ s:	Two ranges to 2000 ohms $\pm 0.025\%$ or better
T/C Types:	J, K, T, R, S, B, L, U, N, C, D $\pm 0.7^\circ\text{C}$ or better
RTD Types:	Pt50, Pt100, Pt200 Pt500, Pt1000, D-100, Ni100, Ni120, Cu10 $\pm 0.5^\circ\text{C}$ or better, Cu10 $\pm 2^\circ\text{C}$
Size/Weight:	8 1/4 x 4 3/4 x 2" / 2.7 lbs
Power:	Four C-cell batteries

NOTE: Pressure module media isolation is for gasses and fluids compatible with 316 S and Hastelloy.

NOTE: Differential sensor will withstand up to 500 PSI line pressure and measure ONLY positive pressures.

### 23323P-□ External Sensors (Insert Code In Box)

Range	Gauge Code	Price	Differential Code	Price	Absolute Code	Price
1 PSI (30 "H <sub>2</sub> O)	1G	—	—	—	—	—
5 PSI (150 "H <sub>2</sub> O)	5G	—	—	—	—	—
10 PSI (300 "H <sub>2</sub> O)	10G	—	—	—	10A	—
15 PSI	15G	—	15D	—	15A	—
30 PSI	30G	—	30D	—	30A	—
100 PSI	100G	—	100D	—	100A	—
500 PSI	500G	—	500D	—	—	—
1000 PSI	1000G	—	—	—	—	—
2000 PSI	2000G	—	—	—	—	—
5000 PSI	5000G	—	—	—	—	—

### Ordering Information

Order #	Mfg #	Description	Price
MP23320E	TRX-II	Multifunction Calibrator	
MP23320E-IS	TRX-II-IS	IS Multifunction Calibrator	
MP23323P-□	TRX-PM	Pressure Module	
MP23324P	TAS-5-A074	Sensor Cable	
MP5488E	5488E KIT	LinkPak-W Software w/ PCMCIA Release Card	
MP5489E	5489E KIT	Intecal-W Software w/ PCMCIA Release Card	

Transcat Accredited Calibration with Data	CALL
Transcat Accredited Calibration without Data	CALL

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Calibration Instruments

## **NEW** Druck Multifunction Process Calibrator

A

- Measure and Source mA, mV, V
- Measures and Simulates 2 RTD's, 10 T/C's and Ohms
- Measures/Sources Current and Volts
- Inputs and Outputs Fully Isolated
- Simultaneous Display of Any Input Value and Output Value
- Transmitter Calibration and Simulation
- Loop Check with Step and Ramp Outputs
- Rugged Design Features Easy-Grip Rubber Case
- Tactile membrane keypad
- Scale input and output in engineering units
- Key for setting/recalling preset, ramp, step and scaled values
- Programmable ramp output
- °C/°F temperature selection

### Applications

Temperature transmitter calibration for closed loop calibration of RTD and T/C transmitters. Loop power is available for stand-alone operation.

Temperature transmitter simulation Control system hardware and software can be fully checked by simulating transmitter outputs via the numeric keypad and converted to the corresponding mA output.

Temperature sensor simulation of RTD and thermocouple outputs. Values are entered in °C or °F and the corresponding ohm or mV output is generated. Outputs in ohms or mV can be generated for non-standard sensors. Process signals in mV, V, mA and ohms can be scaled to represent engineering units in both measure and source modes.

Calibration, linearity and multi-point tests can be quickly performed using the Step and Preset outputs. The Preset memory recalls one of three set values at the press of a button, for example 0, 50, 100% FS.

Programmable ramp output continuously cycles through set programs allowing a single technician to signal the loop and monitor the control system.

**Each Unit Includes:** Protective fabric case, alkaline batteries, NIST traceable calibration certificate with data, user manual, quick reference guide and electrical leads.

### Ordering Information

Order #	Mfg #	Description	Price
MPDPI720	DPI720	Multifunction Process Calibrator	

Transcat Accredited Calibration with Data	CALL
Transcat Accredited Calibration without Data	CALL



◀ DPI720

### Specifications

Measure/Source	Input/Output	Accuracy (1 yr)
<b>Electrical</b>		
mV	±21.000 mV	±0.07% + 7*
	±210.01 mV	±0.04% + 4*
V	±2.1000V	±0.04% + 4*
	±10.500V	±0.04% + 4*
mA	±21.000 mA	±0.04% + 4*
Ohms	0 to 400.0/3000Ω	±0.04% + 4*
<b>Temperature (Range)</b>		
J	-200.0 to 1000.0°C	±0.7°C**
L	-200 to 900°C	±0.7°C**
K	-250 to 1350°C	±1°C**
T and U	-250 to 400°C	±0.6°C**
E	-250 to 1000°C	±0.7°C**
N	-250 to 1300°C	±1.4°C**
R and S	-50 to 1750°C	±1.4°C**
B	200 to 1820°C	±2.8°C**
Pt 100	-200 to 850°C	±0.6°C**
Ni 100	-60 to 180°C	±0.7°C**
CJC Error	±0.3°C	
Calibration Reference	23°C ±5°C.	
Maximum Input Voltage	30V with respect to ground.	
* % of reading and number of counts.		
**Accuracy includes temperature errors 59° to 95°F (15° to 35°C). RTD and T/C accuracy best case mid range.		
Cold junction:	Automatic or manual T/C CJC compensation	
Scaled readings:	Process signals scalable into engineering units	
Step Output:	Step output, up and down, using arrow keys	
Ramp Output:	Programmable end points, rate and dwell	
Preset memory:	Quick store and recall of three preset values	
Loop power:	24V loop power for mA measure and source	
Operating Temp.	14 to 131°F (-10 to 55°C)	
Conformity	EN61326-1, EN61010-1, CE Marked	
Power	4 AA Batteries	
Size/Weight	9.6 x 4.9 x 2 inches/1.75 pounds	

Calibration Instruments

## Druck/Unomat Multifunction Documenting Calibrator

- Compatible with LinkPak-W, InteCal-W and AMS
- Compatible with Rosemount HART Smart Temperature and Pressure Transmitters
- All DC Functions with  $\pm 0.015\%$  Accuracy or Better
- Measures Frequency, Counts, and Source Pulses
- HART™ Smart Interface Option Available
- Interchangeable Pressure Modules
- Test Pressure Switches with Visual and Audible Trip Indication

### Calibrate Virtually Every Instrument You Own with this Calibration Lab in a “Nut Shell”

The 5482E delivers the calibration capability of several instruments, including complete test and calibration for voltage, current, resistance, frequency, and pressure instrumentation, plus thermocouples and RTDs with accuracies up to 0.008%. Manual calibrations or preset steps can be programmed to speed calibrations. The Digital Communicator option, which functions like an electronic screwdriver, gives you the ability to test and trim Rosemount HART Smart temperature and pressure transmitters without a separate communicator. Purchase the 5482E with this option included or upgrade your existing calibrator easily by installing the option yourself.

Plug-in pressure modules make calibration of pressure instrumentation possible. Modules are available in single or dual ranges from vacuum to 5000 PSI with an accuracy of  $\pm 0.05\%$  of reading  $\pm 0.01\%$  FS.

The 5482E is a documenting calibrator compatible with LinkPak-W, InteCal-W, ProCal V5 and AMS. By combining these software packages, you create a complete system for calibration and record management.

Tag numbers and procedures are downloaded to the calibrator via an RS-232-C interface. In the field, test routines are automated, as is collection of calibration data. Completed results are uploaded to the PC via the RS-232 interface (or PCMCIA card) for analysis and to print calibration certificates.

**Each 5482E Includes:** Set of five test leads, spare fuses, shoulder strap, six 1.5V alkaline C batteries, carrying case, and instruction manual.

### Ordering Information

Order #	Mfg #	Description	Price
MP5482E	MCX II	Multifunction Calibrator	
MP5482E-SMART	MCX-II W/405-A003	Calibrator with HART Interface Kit	
MP5498E	405-A003	HART Interface Kit for 5482E	
MP4772E	191-A005	Optional Charger Adapter	
MP5483P	MCX-PM-611	0 to 140 "H <sub>2</sub> O Pressure Module	
MP5484P	MCX-PM-601	0 to 30 PSIG Pressure Module	
MP5485P	MCX-PM-602	0 to 100 PSIG Pressure Module	
MP5562P	MCX-PM-604	0 to 600 PSIG Pressure Module	
MP5563P	MCX-PM-605	0 to 1000 PSIG Pressure Module	
MP5564P	MCX-PM-606	0 to 1750 PSIG Pressure Module	
MP5565P	MCX-PM-624	0 to 3000 PSIG Pressure Module	
MP5566P	MCX-PM-625	0 to 5000 PSIG Pressure Module	
MP5486P	MCX-PM-611/601	0 to 30 PSIG/0–140 "H <sub>2</sub> O Dual Module	
MP5487P	MCX-PM-601/602	0 to 30 PSIG/0–100 PSIG Dual Module	
MP5482P	MCX-PM-612	-14.7 to 0 PSIG Vacuum Module	
MP5486E	5486E KIT	LinkPak-W Software with PCMCIA Release Key	
MP5487E	5487E KIT	InteCal-W Software with PCMCIA Release Key	
MP405-A014	405-A014	PCMCIA Card w/ Release Key	
MP5489T	191-A012	Temperature Probe	
Transcat Accredited Calibration with Data			CALL
Transcat Accredited Calibration without Data			CALL



### MCX II ▲

shown with optional pressure module and temperature probe



### Specifications

Range	Span	Resolution	Accuracy
Input/Output mV:	0 to 100/-10 to 100	0.001	$\pm 0.008\% \pm 1$ LSD
mV Autorange:	100–600	0.01	$\pm 0.01\% \pm 1$ LSD
Input V:	0–6	0.0001	$\pm 0.012\% \pm 1$ LSD
V Autorange:	6–60	0.001	$\pm 0.012\% \pm 1$ LSD
Output V:	0–12	0.0001	$\pm 0.006\% \pm 1$ LSD
Input mA:	0–52	0.001	$\pm 0.013\% \pm 1$ LSD
Output mA:	0–24	0.001	$\pm 0.012\% \pm 1$ LSD
Sim 2-wire Xmt:	4–24	0.001	$\pm 0.012\% \pm 1$ LSD
Meas/Sim $\Omega$ :	0–400	0.01	$\pm 0.015\% \pm 1$ LSD
Autorange:	400–2000	0.1	$\pm 0.015\% \pm 1$ LSD
Input Hz:	0–655	0.01 Hz	$\pm 0.01$ Hz
Hz Autorange:	655–1310	0.1 Hz	$\pm 0.1$ Hz
		1310–10,000	1 Hz
$\pm 1$ Hz			
Counter:	0–10 <sup>8</sup> –1	1 ct	infinite
Pulse Output Preset:	0–10 <sup>8</sup> –1	1 ct	infinite
Pulse Output:	0–100 Hz	0.01 Hz	$\pm 0.01$ Hz
Pulse Output:	0–6000 p/min	1 p/min	$\pm 1$ p/min
Pulse Output:	0–10,000 Hz	1 Hz	$\pm 1$ Hz
Pulse Output:	0–99,999 p/hr	1 p/hr	$\pm 36$ p/hr
Meas/Sim RTD:	Pt100 (385), D-100 (392), Pt1000 (385), Ni100, Ni120, Cu10		
Meas/Sim T/C:	J, K, T, E, R, S, B, N, L, U, C, D		
Input/Output Isolation:	500 VDC continuous		
Electrical Protection:	50V, 30 sec max		
Oper Environment:	14–122°F/-10–50°C, 90% RH max non-condensing		
Display:	LCD with contrast control and backlight		
Power Supply:	Six 1.5 V alkaline C batteries; optional C nickel cadmium		
Size/Weight:	10.6 x 6.4 x 2.2" HWD/5.5 lbs; 265 x 160 x 56 mm HWD/2.2 kg		

Calibration Instruments

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## Martel Process Laboratory Calibrator

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- Superior Calibration Accuracy to 0.0025% of Reading
- Direct Keyboard Entry or Cursor Entry with Decade Control
- Automatic Standby Function Protects Device Under Test
- Both Models Source Current and Voltage
- Read T/C, RTD and Pressure (M2001 Only)
- Source/read 11 Thermocouple Types and Nine (9) Standard RTD Types (M2001 Only)
- Custom RTD/SPRT profile (M2001 Only)
- Nine (9) Setpoints for Each Output Range and Ttype
- Auto Step and Dwell
- Local or RS232 Remote Control



▲ M2001

**The Martel M2000/M2001 provides the performance you demand, in any mode:**

**Voltage** — Automatic OPERATE/STANDBY function protects the device under test and the M2000/M2001 from overload conditions; provides UL/CSA-certified safe operation

**Current** — Automatic OPERATE/STANDBY function

**Thermocouple** — T/C voltage input and output, PT-1000 sensor for CJC

**RTD** — Read and source nine (9) RTD types including YSI-400 and Ohms for non-standard curves; probe coefficients (A, B, C, and Ro) can be entered directly.

**Pressure** — Operates with all Fluke 700 series pressure modules over ranges from 0 to 1" H<sub>2</sub>O to 10,000 PSI; wide range of engineering units; up to 0.025% Full Scale accuracy

**Total Setpoint Control** — Up to nine setpoints for each output mode, each thermocouple and RTD type

**Remote Control** — RS232 using a standard PC running Fluke Met/Cal® software, HyperTerminal under Windows, Visual Basic, or any other software using an ASCII interface

**Rock-Solid Stability** — Traceable to NIST standards; accuracy specified for both 90-day and one-year intervals

**Flexible Output** — Five-way copper alloy binding posts; multi-pin LEMO® connector for RTD input; standard Fluke® pressure module connector

### Specifications

(1 year at 23°C ±5°C; % of reading, unless otherwise noted)		M2000 and M2001		
Function	Output Range	Input Range (4.)	Resolution	Accuracy (1.)
Voltage	0 to 100.000 mV	N/A	1 µV	±0.003% (30ppm) ± 3 µV
	0 to 1.00000V	N/A	10 µV	±0.003% (30ppm) ± 20 µV
	0 to 10.0000V	N/A	100 µV	±0.003% (30ppm) ± 200 µV
	0 to 100.000V	N/A	1 mV	±0.003% (30ppm) ± 2 mV
Current	0 to 100.000 mA	N/A	1 µA	±0.01% ± 2 Counts
M2001 Only				
Thermocouple	J,K,T,E,R,S,N,B,L,U,C and mV	J,K,T,E,R,S,N,B,L,U,C and mV	0.1 °C/°F	0.14 °C; Type J, typical
RTD	PT385 (100, 200, 500, 1000), PT392, PT3916 (JIS), Ni120, Cu10, YSI400	PT385 (100, 200, 500, 1000), PT392, PT3916 (JIS), Ni120, Cu10, YSI400	0.1 °C/°F; PT385-100, typical (2.)	±0.1 °C; PT385-100, typical (2.)
		25 Ohm SPRT	0.001 °C/°F; PT385-100, typical (3.)	±0.020 °C; PT385-100, typical (3.)
Ohms	5 to 4000.0 Ohms	N/A	0.01 Ω (5 to 400.00Ω)	±0.03Ω (5 to 400.00Ω)
	N/A	0 to 4000.00 Ohms	0.1Ω (5 to 4000.0Ω)	±0.3Ω (5 to 4000.0Ω)
Pressure	N/A	0 to 1 inch H <sub>2</sub> O; to 10,000 PSI	0.001 Ω (0 to 400.00Ω)	40 PPM ±0.002Ω (0 to 400.00Ω)
		Temperature Coefficient (<18°C/>28°C) = 10% of accuracy spec/°C	0.01Ω (0 to 4000.0Ω)	40 PPM ±0.02Ω (0 to 4000.0Ω)
Stability			module dependent	0.025% F.S., typical

**Notes:**

1. Accuracy specifications are % of reading, unless otherwise noted; ±0.0025% for 90 days, ±0.003% for 1 year
2. RTD output accuracy and resolution
3. RTD input accuracy and resolution
4. All RTD/Ohm inputs are 4-wire



**M2001 Models Measure Pressure Using Fluke Pressure Modules**

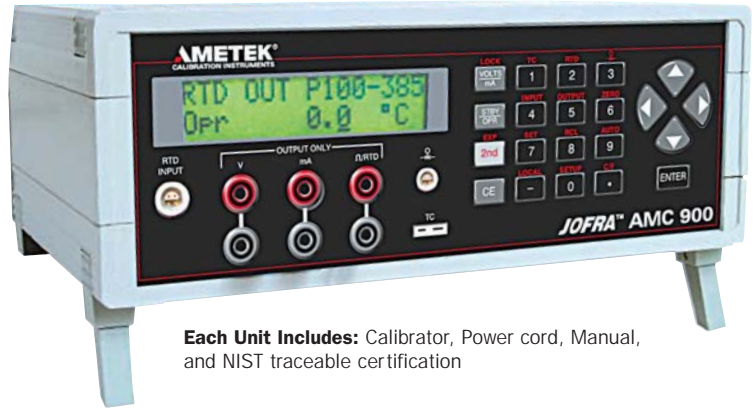
See page A45 for pressure modules

### Ordering Information

Order #	Mfg #	Description	Price
MPM2000	M2000	Bench Calibrator	
MPM2000A	M2000A	Bench Calibrator w/ IEEE-488 Interface	
MPM2001	M2001	Laboratory Process Calibrator	
MPM2001A	M2001A	Laboratory Process Calibrator with IEEE-488 Interface	
MPM2000/1RMK		Rack/Panel Mount Kit	
MPIBP-1	IBP-1	PT100 High Accuracy Probe	
MPLCA-1	LCA-1	Low Thermal RTD Lemo Connector	
MP80029	80029	JKTE Thermocouple Kit	
MP80036	80036	RSNB Thermocouple Kit	
MPURA-1	URA-1	Universal RTD/Ohm Adapter	

## **NEW** Ametek/Jofra AMC900 Multi-Purpose Bench Calibrator

- Advanced Multi-function Calibrator
- Sources mA, VDC, mV,  $\Omega$ , 13 TC, 14 RTD (pulsed)
- Program Custom Curves
- Reads TC, RTD, Pulsed Transmitter, STS Temperature Probes, APM Pressure Modules
- External Communications RS232, IEEE-488
- Store Test Set Ups
- Automate Testing and Control from a PC
- Direct Connection of STS Temperature Reference Probes
- Direct Connection of APM Pressure Modules
- Large Dual Line Display with Icons
- Use with Other JOFRA Calibrators



**Each Unit Includes:** Calibrator, Power cord, Manual, and NIST traceable certification

### Specifications

Resistance	Source		Read	
Range:	5.00 to 400.00 $\Omega$	5 to 4.0 K $\Omega$	0.000 to 400.001 $\Omega$	401 to 4.000 K $\Omega$
Accuracy:	$\pm 0.03\%$	$\pm 0.3\%$	$\pm 40$ ppm + 0.003 $\Omega$	$\pm 40$ ppm + 0.03 $\Omega$
Voltage (VDC)	Source			
Range:	0 to 1 VDC	0 to 10 VDC	0 to 100 VDC	
Accuracy:	$\pm 30$ ppm + 20 $\mu$ V	$\pm 30$ ppm + 200 $\mu$ V	$\pm 30$ ppm + 2 mV	
Resolution:	10 $\mu$ V	100 $\mu$ V	1 mV	
Voltage (mVDC)	Source			
Range:	0 to 100 mV			
Accuracy:	$\pm 30$ ppm + 3 $\mu$ V			
Resolution:	1 $\mu$ V			
Current (mA DC)	Source			
Range:	0 to 100 mA			
Accuracy:	$\pm 100$ ppm + 2 $\mu$ A			
Resolution:	1 mA			
Pressure	APM pressure modules expand the ranges to include vacuum, absolute, differential, and combination ranges			
Pressure accuracy:	$\pm 0.01\%$ of scale (depending on module)			
Engineering units:	PSI, BAR, mBAR, kPa, kg/cm <sup>2</sup> , cmH <sub>2</sub> O (4°C, 20°C), mH <sub>2</sub> O (4°C), cmH <sub>2</sub> O (20°C), inH <sub>2</sub> O (4°C, 20°C, 60°F) mmHg (0°C), inHg (0°C), ftH <sub>2</sub> O (4°C, 20°C, 60°F)			
Temperature (RTD)	2, 3, or 4-wire connections and LEMO plug			
	Source		Read	
Range:			RTD dependent	
Accuracy:	To $\pm 0.006^\circ\text{C}$ / 0.011 $^\circ\text{F}$		To $\pm 0.007^\circ\text{C}$ / 0.013 $^\circ\text{F}$	
Installed curves:	Pt100 (3916), Cu100 (Russian GOST), Pt200 (385), Pt500 (385), Pt10 (385), Pt50 (385), Cu50 (Russian GOST), Pt100 (385), Pt100 (3926), Pt1000 (385), Ni120 (385), Cu10 (427), YSI 400, Pt25 SPRT			
Custom curves:	User programmable curves			
Temperature (T/C)	Wire or blade connectors			
	Source		Read	
Range:	-10 to 75 mV – TC dependent		TC dependent	
Accuracy:	$\pm 30$ ppm + 3 $\mu$ V / To $\pm 0.03^\circ\text{C}$ / 0.05 $^\circ\text{F}$ – TC dependent		$\pm 0.03^\circ\text{C}$ / 0.05 $^\circ\text{F}$ – TC dependent	
Installed curves:	Type B, C, E, J, K, L, N, R, S, T, U, BP (Russian GOST), XK (Russian GOST)			
CJC:	Selectable Cold Junction Compensation			
Transmitters:	Supports standard and pulsed transmitters			
Communications:	RS232 and IEEE-488 (GPIB)			
Resolution:	5-Digit, floating decimal point			
Safety:	EN 61010 Second, ANSI/ISA-S82.01-1994 CAN/CSA-C22.2 No. 1010.1-92, NRTL			
CSA EN61326:	1997/A1:1998			
Voltage:	115 VAC – 230 VAC available (add -230 to catalog part number)			
Size / Weight:	11.5 x 4.7 x 8.9" HWD / 5 lb			

**Find Ametek APM pressure modules on page A78**

**Ametek STS Series Temperature Probes are on page G37**

### Ordering Information

Order #	Mfg#	Description	Price
MPAMC900115BG	AMC900115BG	AMC900, 115 VAC, standard accessories, NIST traceable certification	
MPAMC900230AG	AMC900230AG	AMC900, 230 VAC, standard accessories, NIST traceable certification	
MPSPK-AMC-001	SPK-AMC-001	Adapter – banana connection to LEMO	
MPSPK-AMC-002	SPK-AMC-002	Rack/Panel mount kit	
MP124012-C	124012	Carrying case	
MP104203	104203	Test lead kit	
MPSPK-AMC-003	SPK-AMC-003	LEMO connector kit	

## Transmation Automated Pressure Calibrators

**High accuracy, and interchangeable modules**

- Built-In Pump Generates Vacuum/Pressure for Hands-Free Calibration
- Process Modules: DC mA and V Simulator, Thermocouple Input/Output, and RTD Input/Output
- Pressure Ranges from Vacuum to 5,000 PSIG
- Pressure Accuracy up to  $\pm 0.025\%$  of Reading
- Read mA and V



**Documenting 195 and 196 Interfaces with AMS, ProCal V5, TransCal V5 and Cornerstone!**



**A**

### Automated and Modular

The 190 series incorporates Transmation's proven pressure generation and control technology into a modular calibrator. A calibrator mainframe can be fitted with either one or two modules to create a complete calibration system. Modules up to 100 PSI are connected directly to the internal pump. High pressure modules are electronically linked to the calibrator, but are pressurized by an external source.

Using the 190 series, you can automatically test transmitters, calculate and display errors, and record and display the results. You can also automate the testing of pressure switches. With the optional 65TDB HART Scientific Dry Block Interface Module, you can automate testing of a temperature transmitter/probe assembly. It can handle either dry or wet (powered) contact tests, with contact voltages of up to 250V AC.

**Each Unit Includes:** Batteries and charger, test leads, instructions manual and manufacturer's statement of calibration practices

### Ordering Information

Mfg#	190P	191P	195P	196P
Internal Pump Range:	-11 to 105 PSIG	$\pm 10$ PSIG	-11 to 105 PSIG	$\pm 10$ PSIG
Pump Control Stability:	$\pm 0.01$ "H <sub>2</sub> O	$\pm 0.005$ "H <sub>2</sub> O	$\pm 0.01$ "H <sub>2</sub> O	$\pm 0.005$ "H <sub>2</sub> O
Documenting:	No	No	Yes	Yes
Print Test Data via RS232:	No	No	Yes	Yes
Save & Recall Test Data:	Yes	Yes	Yes	Yes
Order #	MP190P	MP191P	MP195P	MP196P
Price:				



**40E**

**60T**

**65TDB**

**70T**

### Specifications

Range and Accuracy	
Current:	50.000 mA $\pm 0.01\%$ Rdg + 0.01% FS
Voltage:	50.000V $\pm 0.01\%$ Rdg + 0.01% FS
Pressure Accuracy:	See module information on facing page
Loop Power:	24 VDC $\pm 20\%$
Input Protection:	Solid state limit and mA input fuse protected
Switch Test:	Isolated, wet or dry, 250 VAC maximum
Engineering Units:	PSI, Pa, kPa, MPa, BAR, mBAR, Atm, kgf/cm <sup>2</sup> , Torr, mmHg @ 0°C, "Hg @ 0°C and 15°C, "H <sub>2</sub> O @ 4°C, 15°C, 20°C, and 23°C
Power:	Rechargeable 12V sealed lead acid battery, 6 hrs. operation minimum
Size/Weight:	6 x 7.75 x 16.25"/15 lbs (6.8 kg)

### DC T/C and RTD Module Specifications

Mfg #	Range	Accuracy
40E	mA: 0.000 to 24.000 mA	$\pm (0.015\% \text{ Rdg} + 0.002 \text{ mA})$
	V: $\pm 11.000$ VDC	$\pm (0.015\% \text{ Rdg} + 0.002\text{V})$
60T	T/C Ranges:	J/T/E    K/N    R/S    B
	Accuracy:	$\pm 0.2^\circ\text{C}$ $\pm 0.3^\circ\text{C}$ $\pm 0.6^\circ\text{C}$ $\pm 0.7^\circ\text{C}$
	mV Range:	$\pm 110.000$ mV
	Accuracy:	$\pm (0.015\% \text{ Rdg} + 0.006 \text{ mV})$
65TDB	Control Automate and Document Hart Scientific Dry Blocks	
70T	12 RTD types (universal)	$\pm 0.3^\circ\text{C}$ (200–600°C) Pt100 1.3850
	0 to 2000 ohms	$\pm (0.01\% \text{ Rdg} + 0.075 \text{ ohms})$

### Ordering Information

Order #	Description	Price
MP190-CS	Carrying Case	
MP40E	mA/V Simulator Module	
MP60T	T/C Simulator Module	
MP65TDB	Temperature Dry Block Interface Module	
MP70T	RTD Simulator Module	
MP114410	Interface for Cornerstone Cal Station	
MP113410	Interface for Cornerstone Base Station	
MP502226-131	Cigarette Lighter Charger, 12 VDC	
MP195/196-PRINT-KIT	Printer Connection Kit	
MPIDT600-2	500 PSI Dirt/Moisture Trap	
MP700ILF	In-Line Filter	

NOTE: 90 Series Pressure modules ordered separately, see facing page.

Calibration Instruments