



PIE Model 901

WIRELESS DIAGNOSTIC CALIBRATOR

4-20 mA • V • PRESSURE

- **Compact, Accurate & Easy to use**

Carry the small Model 901 to check, calibrate and measure all your current and voltage signal instruments in a 4 to 20 milliamp DC loop. It's easier to carry and use than other brands with confusing buttons, has laboratory accuracy plus advanced troubleshooting features! Optional rechargeable batteries for economical use or swap in a set of "AA" alkaline batteries to continue operating when away from the battery charger.

- **Easy to read**

Full color display with backlight - shines in dark areas of the plant.

- **Troubleshoot loop problems**

Quickly diagnose ground fault and current leakage with the patented loop diagnostic technology (US Patent# 7,248,058).

- **Source milliamps**

Calibrate recorders, digital indicators, stroke valves or any instruments that get their input from a 4 to 20 mA loop. Easily set any value quickly to within 0.001 mA with the adjustable digital potentiometer "DIAL" or use preset **4.000 mA (0.00%)** and **20.000 mA (100.00%)** EZ-CHECK™ settings.

- **Automatic output stepping & ramping**

Press & hold the dial to automatically step from 4 to 20 in 2, 3 or 5 steps or choose a continuous ramp.

- **Calibrate using loop power**

Check loop wiring and receivers by using the Model 901 in place of a 2 Wire transmitter. Uses any loop power from 2 to 60 V DC.

- **Read loop current**

Check controller outputs or measure the milliamp signal anywhere in the loop. The Model 901 measures 0.000 to 24.000 mA (-25.00 to 125.00%) signals with greater accuracy than a typical multimeter.

- **Power & measure 2 wire transmitters**

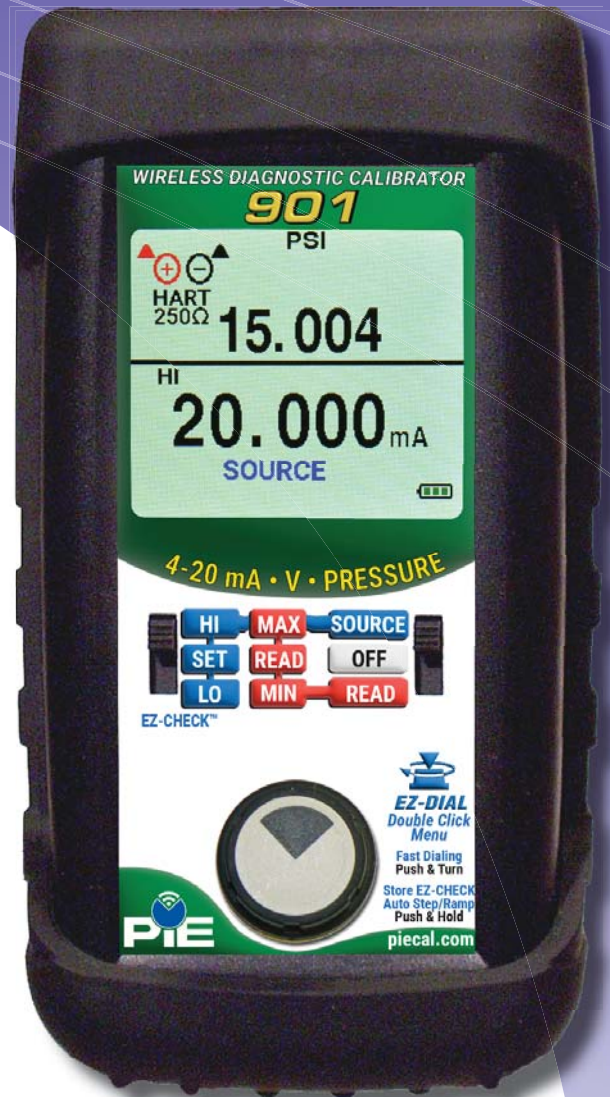
The Model 901 simultaneously outputs 24V DC to power any and all devices in a process loop using the internal batteries and internal switching power supply, while measuring the mA output of a 2 Wire Transmitter & any other loop devices. Powers HART™ transmitters with built-in 250 ohm resistor simplifying hookups with communicators.

- **Source & Read DC volts**

The Model 901 can generate 0.000 to 22.500 V DC and measures from -60.000 to +60.000 VDC with 0.001 Volt resolution. Great for calibrating 1 to 5 Volt inputs on recorders and PLCs. Use it to check loop power supplies, I/V converters and 1 to 5 Volt signals making it unnecessary to carry a multimeter to check process signals.

- **Easily measure pressure with a plug in pressure module**

Dual display of milliamp & pressure for easy calibration of I/P, P/I, gauges, or other pressure instruments with either loop power or using the 901's internal 24 volt supply. Choose from a wide selection of PIE pressure modules along with one of the hand pumps and tubing kits for a complete pressure calibration system. BlueTooth capable for wireless connection to pressure modules.



Actual Size

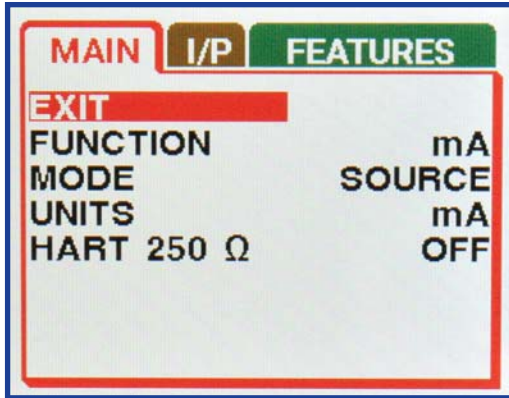


Practical Instrument Electronics

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Easy to Read and Simple to Use

The PIE 901 has a large color LCD which makes navigation of the menus clearer and easier than ever. The “Easy as PIE” double click menus are easier to navigate than ever before with colored tabs to instantly see where you are, and where you need to head to choose the settings you need.



When you have to calibrate in bright sunlight switch the PIE 901 to “DARK MODE” and easily read the high contrast display. You may turn off DARK MODE when you come back inside and have to calibrate in the dark recesses of your plant.



Ground Leak Detection

Have you ever replaced a “faulty” transmitter only to find the problem was somewhere else in the loop? And did you end up throwing the transmitter away after you fixed the other problem “just in case” the transmitter was faulty?

If you find a loop where the transmitter is calibrated correctly but all the readings elsewhere in the loop have a fixed offset this is due to a *Zero Shift*. This zero shift is typically caused by some current in the loop bypassing the transmitter. This might be caused by ground faults, moisture or corrosion.

If you have some loops that are erratic after it rains there may be moisture present in a junction box or where insulation has broken down. Turn on Ground Leak Detection and use the Model 901 to power up the loop. Any current that isn't controlled by the transmitter or other current control element will be indicated as leakage on the Model 901 display.

The Model 901 powers up the 2-Wire transmitter or loop and indicates the total current and the uncontrolled current. This provides information useful in troubleshooting loop errors.

Typical Error Conditions



The Model 901 is supplying the loop voltage. A calibrated transmitter is limiting the loop current to 12.00 mA. An additional 0.51 mA is not controlled by the transmitter and is leaking somewhere in the loop.

Warranty

Our equipment is warranted against defective material and workmanship (excluding batteries) for a period of three years from the date of shipment. Claims under warranty can be made by returning the equipment prepaid to our factory. The equipment will be repaired, replaced or adjusted at our option. The liability of Practical Instrument Electronics (PIE) is restricted to that given under our warranty. No responsibility is accepted for damage, loss or other expense incurred through sale or use of our equipment. Under no condition shall Practical Instrument Electronics, Inc. be liable for any special, incidental or consequential damage.

Measure Pressure

• Easily measure pressure with an optional plug in pressure module

Purchase any of the pressure modules from the table below along with one of the three hand pumps and tubing kits for a complete pressure calibration system (requires optional cable 020-0241 for PIE 900 Series to PIE/Meriam pressure modules).

Sensor Code	Application	Ranges Available
DNxxxx	Differential, Non-isolated	0 to 0010*, 0028, 0200, 0415, 2000" H2O
DIxxxx	Differential, Isolated	0 to 0001, 0005, 0015, 0030, 0100, 0300, 0500 PSID
GIxxxx	Gauge, Isolated	0 to 0015, 0030, 0050, 0100, 0300, 0500, 1000, 3000 PSIG
CIxxxx	Compound, Isolated	-14.7 to +0015, 0030, 0050, 0100, 0300, 0500, 1000, 3000 PSIG
AIxxxx	Absolute, Isolated	0 to 0017, 0038, 0100, 1000 PSIA

Media Compatibility

Non-isolated DN sensors: clean, dry, non-corrosive, non-condensing gases only

Isolated DI sensors: any media compatible with 316L SS & Viton®

Isolated GI, CI & AI sensors: any media compatible with 316L SS

Accuracy

±0.025% of full scale including all effects of linearity, repeatability and hysteresis from -20° to +50°C (-4° to +122°F)

* The DN0010 sensor accuracy is ±0.050% of full scale

32 Engineering Units:

PSI • inches, feet, mm, cm and meter of H2O @ 4°C, 20°C & 60°F • inches, meter, cm and mm of Hg @ 0°C;
 torr • kg/cm2 • kg/m2 • Pa • hPa • kPa • MPa • Bar • mBar • ATM • oz/in2 • lb/ft2



PIE 901 with Optional Pressure Module, Pressure/Vacuum Pump & Hose

Model 901 Specifications

(Unless otherwise indicated all specifications are rated from a nominal 23°C, 70% RH for 1 year from calibration)

General	
Operating Temperature Range	-20 to 60 °C (-5 to 140 °F)
Storage Temperature Range	-30 to 60 °C (-22 to 140 °F)
Relative Humidity Range	10 % ≤RH ≤90 % (0 to 35 °C), Non-condensing
	10 % ≤RH ≤ 70 % (35 to 60 °C), Non-condensing
Size	5.63 x 3.00 x 1.60 in, 143 x 76 x 41mm (LxWxH)
Weight	12.1 ounces, 0.34 kg (including boot & batteries)
Batteries	Four "AA" Alkaline 1.5V (LR6)
Optional AC Adaptors	100 to 240 VAC to 9V USB C (020-0104)
Optional Rechargeable Batteries	(4) NiMH "AA" Batteries (020-0105)
Low Battery	Continuous indication of battery level with nominal 1 hour of operation left with low battery
Protection against misconnection	Over-voltage protection to 135 vrms (rated for 30 seconds) or 240 vrms (rated for 15 seconds)
Display	TFT color display with LED backlighting. Dark Mode for use in bright sunlight.

Read mA	
Ranges and Resolution	0.000 to 24.000 mA or -25.00 to 125.00% of 4-20 mA
Accuracy	≤ ± (0.01 % of Reading +0.002 mA)
Voltage burden	≤ 2V at 50 mA
Overload/Current limit protection	25 mA nominal

Voltage Read	
Range and Resolution	-60.000 to +60.000 VDC
Accuracy	≤ ± (0.02 % of Reading + 0.01% Full Scale)
Temperature effect	≤ ± 100 ppm/°C of FS
Input resistance	≥ 2 MΩ

Source/Power & Measure Two Wire Transmitters	
Ranges and Resolution	0.000 to 24.000 mA or -25.00 to 125.00% of 4-20 mA
Accuracy	≤ ± (0.01 % of Reading +0.002 mA)
Noise	≤ ± ½ Least Significant Digit
Temperature effect	≤ ± 0.005 %/°C of FS
Loop compliance voltage	≥ 24 DCV @ 20.00mA
Loop drive capability - Leak Detection Off	1200 Ω at 20 mA 950 Ω with Hart Resistor enabled
Loop drive capability - Leak Detection On	1000 Ω at 20 mA 750 Ω with Hart Resistor enabled

2-Wire Transmitter Simulation	
Accuracy	Same as Source/Power & Measure
Voltage burden	≤ 2V at 20 mA
Overload/Current limit protection	24 mA nominal
Loop voltage limits	2 to 60 VDC (fuse-less protected from reverse polarity connections)

Source V dc	
Ranges and Resolution	0.000 to 22.500V
Accuracy	≤ ± (0.02 % of Reading + 0.01% Full Scale)
Source Current	≥ 20 mA
Sink Current	> 16 mA
Output Impedance	< 0.05 Ohm
Short Circuit Duration	Infinite

Accessories

INCLUDED:

Rubber Boot, Four "AA" Alkaline batteries, Certificate of Calibration
 Hands Free Carrying Case Part No. 020-0211
 Test Leads - one pair: 1 meter (3') long with banana plug & alligator clips Part No. 020-0207

OPTIONAL:

AC Adaptor - 9V USB (100 to 240 VAC) Part No. 020-0104
 NiMH "AA" Batteries (4) Part No. 020-0105
 Cable for PIE 900 Series to PIE/Meriam Modules Part No. 020-0241

Additional Information

PIE Calibrators are manufactured in the USA. This product is calibrated on equipment traceable to NIST and includes a Certificate of Calibration. Test Data is available for an additional charge.

Practical Instrument Electronics recommends a calibration interval of one year. Contact your local representative for recalibration and repair services.



Available From:

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