

DPI 880

Druck multi-function calibrator

Features

- Sources and reads mA, mV, V, ohms, frequency and pulses
- Simulates and reads 8 RTDs and 12 thermocouples
- 32 pressure modules from 10 in H_20 to 10,000 psi (25 mbar to 700 bar)
- Simultaneous dual reading capability
- Automatic switch test and pressure leak test
- 1000 point data storage with real time clock
- 24 V loop power supply
- HART® loop resistor
- Large backlit display
- Robust and weatherproof
- Compact, simple to use, easy to carry
- Convenient one-handed operation
- Plug/play connector for IDOS universal pressure modules

Applications

- Test and maintenance
- Transmitter calibration
- Loop set-up and diagnostics
- Switch, trip and alarm verification

The DPI 800 Series is a complete range of advanced, robust and simple to use hand-held instruments. Highly cost effective, these tools are ideal for test/calibration of many popular process parameters. Advanced features and technical innovations address more applications in less time and deliver results you can rely on.

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DPI 880 specifications

The DPI 880 multi-function calibrator is an ultra compact and simple to use tool for testing, configuring and calibrating virtually all process parameters. It measures, sources and simulates mA, mV, V, RTDs, thermocouples, ohms, frequency, pulses and pressure, captures switch values and provides 24 V loop power.

Simultaneous dual readings

Reads both input and output parameters simplifying calibrations and system diagnostics. Calibration values are captured on one screen and adjustments are seen in real time, for example, when making zero and span adjustments.

	Measure or source							IDOS pressure
	mA	V	mV	Hz	RTD	TC	V	
mA	✔	✔	✔	✔	✔	✔	✔	✔
mA (24V)	✔	✔	✔	✔	✔	✔	✔	✔
V	✔	✔	✔	✔	✔	✔	✔	✔
Switch test	✔	✔	✔	✔	✔	✔	✔	✔
IDOS pressure	✔	✔	✔	✔	✔	✔	✔	
Leak test								✔

Programmable step and ramp outputs

Quickly step through calibrations with the %Step output or make zero and full scale adjustments using Span Check. The Ramp output is ideal for delicate analogue meters, rate of change indicators and checking valve travel and slew rates.

Adjustable nudge output

Provides small incremental output changes for accurately setting valve positioners, switches, trips, and alarms.

Automatic switch test

Captures open/closed trip values providing a fast and highly accurate "safety system" check.

HART resistor

Can be switched into the loop when required for a HART digital communicator avoiding the inconvenience of carrying a 250 Ω resistor.

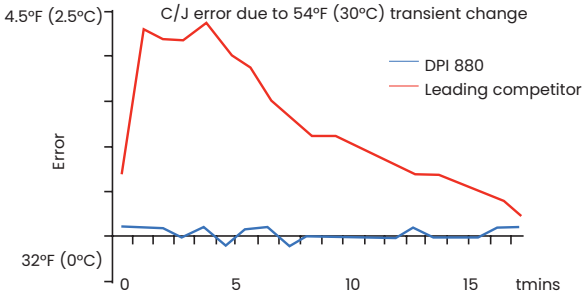
24V loop power supply

Energizes transmitters and control loops.

Temperature

Measures or simulates RTD or thermocouple sensors and is the ideal tool for checking probes, transmitters, process loops, indicators and controllers. Use with a temperature probe to provide a versatile thermometer.

Unique thermocouple cold junction compensation virtually eliminates errors caused by changing environmental conditions on test instruments used outside.



Automatic detection of 2, 3 and 4 wire RTDs

Quickly detect damaged sensors and faulty wiring that could otherwise be missed or cause system inaccuracy.

Thermometer with wide probe compatibility

Compatibility with 8 RTDs and 12 thermocouples allows probe selection for any thermometer application, e.g. general purpose, high temperature, hygienic and aggressive media.

Frequency

Measures or sources Hz, kHz, CPM and CPH providing a highly accurate calibration standard and versatile test tool for process technicians and electronic engineers. Dedicated features facilitate test and maintenance of electronic circuits, frequency/flow meters, batch counters, tachometers, and motion pickups.

Automatic trigger

Detects the best value regardless of waveform or amplitude.

Pressure

Intelligent Digital Output Sensor (IDOS) pressure modules are available from 10 in H_2O to 10,000 psi (25 mbar to 700 bar). IDOS modules are plug and play requiring no instrument calibration or set-up to provide a fully featured pressure calibrator.

Standard and premier accuracy

Standard accuracy from 0.05% FS includes operation over 32°F to 122°F (0°C to 50°C), one year stability and calibration uncertainty. The Premier range provides laboratory grade precision to 0.01% FS.

Total flexibility

IDOS modules can be used with any compatible instrument carrying the IDOS logo; for example, the DPI 800 series and DPI 150.

Electrical specification

	Measure accuracy	Source accuracy
0 to 24.000 mA		0.02% rdg + 2 counts
0 to 55.000 mA	0.02% rdg + 3 counts	
0 to 120.00 mV	0.02% rdg + 2 counts	
0 to 12.000 V		0.02% rdg + 2 counts
0 to 30.000 V	0.03% rdg + 2 counts	
0 TO 4000.0 Ω	0.1 to 1.3 Ω	
Switch detection	Open and closed, 2 mA current	
Loop power	24 V +/-10% (35 mA maximum)	
HART mA loop resistor	250 Ω (menu selection)	

Frequency specification

	Measure accuracy	Source accuracy
0 to 999.999 Hz	0.003% rdg + 2 counts	0.003% rdg + 0.0023 Hz
0 to 50.0000 kHz	0.003% rdg + 2 counts	0.003% rdg + 0.0336 Hz
0 to 999999 cpm	0.003% rdg + 2 counts	
0 to 59999 cpm		0.003% rdg + 0.138 cpm
0 to 999999 cph	0.003% rdg + 2 counts	
0 to 99999 cph		0.003% rdg + 0.5 cph
Output waveform	Square wave (zero crossing)	
Voltage input	30 V maximum	
Trigger level	0 to 12 V resolution 0.1V	
Output amplitude	0 to 12 VDC +/- 1% (10 mA maximum) 0 to 12 VAC pk-pk +/- 5% (10 mA maximum)	

Temperature specification

Measure and simulate	Standard	*Accuracy	Range
Pt 50 (385)	IEC 751	0.9°F (0.5°C)	-328°F to 1562°F (-200°C to 850°C)
Pt 100 (385)	IEC 751	0.45°F (0.25°C)	-328°F to 1562°F (-200°C to 850°C)
Pt 200 (385)	IEC 751	1.08°F (0.6°C)	-328°F to 1562°F (-200°C to 850°C)
Pt 500 (385)	IEC 751	0.72°F (0.4°C)	-328°F to 1562°F (-200°C to 850°C)
Pt 1000 (385)	IEC 751	0.36°F (0.2°C)	-328°F to 752°F (-200°C to 400°C)
D 100 (392)	JIS 1604-1989	0.45°F (0.25°C)	-328°F to 1202°F (-200°C to 650°C)
Ni 100	DIN 43760	0.36°F (0.2°C)	-76°F to 482°F (-60°C to 250°C)
Ni 120	MINCO 7-120	0.36°F (0.2°C)	-112°F to 500°F (-80°C to 260°C)
Ohms		0 to 4000	0.1 to 1.3 Ω

* Mid range figure quoted

Excitation: 0.2 to 0.5 mA measure, 0.05 to 3 mA simulate pulse excitation currents minimum duration 10 ms

Type	Standard	*Accuracy	Range
K	IEC 584	1.1°F (0.6°C)	-454°F to 2502°F (-270°C to 1372°C)
J	IEC 584	0.9°F (0.5°C)	-346°F to 2192°F (-210°C to 1200°C)
T	IEC 584	0.6°F (0.3°C)	-454°F to 752°F (-270°C to 400°C)
B	IEC 584	1.8°F (1.0°C)	32°F to 3308°F (0°C to 1820°C)
R	IEC 584	1.8°F (1.0°C)	-58°F to 3214°F (-50°C to 1768°C)
S	IEC 584	2.5°F (1.4°C)	-58°F to 3214°F (-50°C to 1768°C)
E	IEC 584	0.7°F (0.4°C)	-454°F to 1832°F (-270°C to 1000°C)
N	IEC 584	1.1°F (0.6°C)	-454°F to 2372°F (-270°C to 1300°C)
L	DIN 43710	0.6°F (0.3°C)	-328°F to 1652°F (-200°C to 900°C)
U	DIN 43710	0.6°F (0.3°C)	-328°F to 1112°F (-200°C to 600°C)
C		1.8°F (1.0°C)	32°F to 4199°F (0°C to 2315°C)
D		1.8°F (1.0°C)	32°F to 4514°F (0°C to 2490°C)
mV		0.2%rdg + 0.01%FS	-10 to 75 mV

*Mid range figure quoted

Cold junction error 0.4°F (0.2°C) maximum for 86°F (30°C) change in ambient temperature.

IDOS universal pressure modules

Pressure range	G/D	G	A	Media		*Accuracy	%FS
				+	-	S	P
±10 in H_2O (25 mbar)	✔			❷	❸	0.1	0.03
±1, 3, 5, or 10 psi (70, 200, 350, or 700 m bar)	✔			❷	❸	0.075	0.03
5 psi (350 mbar)			✔	❷		0.1	N/A
-15 to 15 or 30 psi (-1 to 1 or 2 bar)	✔			❷	❸	0.05	0.01
30 psi (2 bar)			✔	❷		0.075	N/A
-15 to 50, 100, 150 or 300 psi (-1 to 3.5, 7 10 or 20 bar)		✔		❶		0.05	0.01
100, 300 psi (7, 20 bar)			✔	❶		0.075	N/A
500, 1000, 1500, 2000 or 3000 psi (35, 70, 100, 135, 200 bar)		✔		❶		0.05	0.01
5000 or 10,000 psi (350 or 700 bar) sealed gauge		✔		❶		0.05	N/A

G = gauge, A = absolute, G/D = gauge/differential; calibrated referenced to atmosphere maximum line pressure 30 psi (2 bar).. ❶ Stainless steel, compatibility ❷ Non-corrosive gas/fluid and ❸ Non-corrosive gas. (N/A = not available). Accuracy assumes regular zero correction.

***IDOS UPM-S standard accuracy**

Total accuracy over 32°F to 122°F (0°C to 50°C) and one year stability

***IDOS UPM-P premier accuracy**

Precision over 65°F to 82°F (18°C to 28°C).
Option A) negative calibration for premier ranges

Pressure connections

G 1/8 female or 1/8 NPT female

Please refer to IDOS UPM data sheet for full specification

General specifications

Electrical connection

4mm sockets and mini-jack thermocouple socket

Calibrated temperature

50°F to 86°F (10°C to 30°C) unless otherwise stated

Operating temperature

14°F to 122°F (-10°C to 50°C) unless otherwise stated Temperature coefficient 14°F to 50°F, 86°F to 122°F 0.0017%FS/°F (-10°C to 10°C, 30°C to 50°C 0.003%FS/°C) For ohms 14°F to 50°F, 86°F to 122°F 0.0028%FS/°F (-10°C to 10°C, 30°C to 50°C 0.005%FS/°C)

Storage temperature

-4°F to 158°F (-20°C to 70°C)

Humidity

0% to 90% non-condensing, Def Stan 66-31, 8.6 Cat III

Shock and vibration

BS EN61010:2001, Def Stan 66-31, 8.4 Cat III

EMC

BS EN61326-1:1998 + A2:2001

Safety

Electrical BS EN61010:2001. Pressure Equipment Directive (PED), Class SEP. CE marked

Display

Graphic LCD with backlight

Size (l x w x h) and weight

7.1 in x 3.3 in x 2 in (180 mm x 85 mm x 50 mm), 15 oz (425 g)

Batteries

3 AA alkaline, >50 hours measure, >10 hours 24V source

Accessories

IO800A

Soft fabric carrying case with accessory pocket

IO800B

Belt clip, wrist strap/hanging loop and bench stand

IO800C

NiMh batteries with charger, batteries charged externally

IO800E

Data logging upgrade and RS232 lead

Log data periodically (1 second to 23 hours 59 minutes 59 seconds) or manually by key press. **Review data** on-screen or upload to a PC via the RS232 interface. No software purchase is necessary as standard Microsoft® applications provide data transfer (HyperTerminal) and analysis (Excel). Alternatively, print directly to a compatible serial printer. **Real time clock** with date. **Memory:** 1000 single or 750 dual reading screens with date and time. **Header tags:** 6 user characters to identify groups of readings. **RS232:** 19.2 k baud, 8 data bits, 1 stop bit, no parity, Xon/Xoff. **Data output:** comma separated ASCII.

Ordering information

For DPI 880

Please state the model number DPI 880 and accessories as separate items.

Each unit is supplied with batteries, calibration certificate, user guide and a set of electrical test leads.

For IDOS UPM

Please state the model number IDOS UPM S for the standard accuracy version or IDOS UPM P for the premier accuracy version followed by the range, G/D, G or A and G 1/8 female or 1/8 NPT female.

Each unit is supplied with calibration certificate and user guide.

Supporting services (order as separate items)

Related products

Druck is a world leader in the design and manufacture of pressure, temperature and electrical field calibrators, laboratory/workshop calibration equipment and pressure sensors.

Supporting services

Our highly trained staff can support you, no matter where you are in the world. We can provide training, nationally accredited calibration - both initially and at periodic intervals - extended warranty terms, maintenance and even rental of portable or laboratory calibrators. Further details can be found in www.bakerhughesds.com/druck/global-service-support

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