

STRAIN/MICROVOLTMETER INDICATOR CONTROLLER

1/8 DIN

DP2000-S Series



- ✓ Adjustable 1 to 10 Vdc Bridge Excitation Supply
- ✓ ± 1999 or ± 9999 Count Display Span
- ✓ Seven Overlapping Gain Ranges
- ✓ Front-Panel Accessible Zero and Span Adjustments
- ✓ Resolution Down to 1 or 2 $\mu\text{V}/\text{Count}$
- ✓ Strain-Gauge Sensitivity Down to 0.20 mV/V
- ✓ Ratiometric Measurement
- ✓ 1 or 0.2 mV/Count Analog Output
- ✓ LED or LCD Display
- ✓ Automatic Polarity
- ✓ Display Hold and Test
- ✓ Screw-Terminal Barrier Strip



DP2000-S3 shown
actual size.

The DP2000/9000-S is a meter/controller for use with pressure transducers and load cells which require bridge excitation and preamplification of microvolt signals. Deadload and tare adjustments make it suitable for weighing applications. Like process meters, it provides zero and span adjustments for direct readout in engineering units. It can also be used as a microvoltmeter with differential input. A universal 1/8 DIN case houses each meter. Choose any combination of display type (LED or LCD), operating power, input type and range, analog output, and digital or control outputs.

EXCITATION SUPPLY AND PREAMPLIFIER

The DP2000/9000-S provides a constant-voltage excitation supply, which is adjustable from 1 to 10V and can drive up to 30 mA. It also provides a high-impedance preamplifier, which is continuously adjustable so that signal levels from ± 2.0 to ± 500 mV can produce the full-scale display of ± 1999 or ± 9999 counts. At 10V excitation and maximum gain, full-scale readout can be obtained with strain-gauge sensitivity as low as 0.20 mV/V. An active filter is provided for noise reduction.

BRIDGE CONNECTION

Bridges can be connected by 4 or 6 wires. In 6-wire connection, two lines sense the voltage applied to the bridge and compensate for lead resistance.

RESOLUTION AND ACCURACY

Resolution for DP2000-S is one part in ± 1999 counts, or 0.05% of full scale. Resolution for DP9000-S is one part in ± 9999 counts, or 0.01% of full scale. Accuracy is 99.9% of reading. The measurement is ratiometric to reduce errors due to temperature and power-line variations. The same internal reference controls the meter gain and the excitation level.

SPECIFICATIONS

Gain Adjustment: Seven overlapping ranges with fine adjustment

Input Configuration: Differential, ratiometric

Zero Adjustment: ± 225 $\mu\text{V}/\text{volt}$ of excitation

Span Adjustment: 1 to 2.47 of preamp gain

Bias Current: 11 nA typ, 22 nA max

Noise Rejection

CMR, SIG GND to SIG LO: 80 dB, DC to 60 Hz

CMV, SIG GND to SIG LO: ± 1 V, DC to 60 Hz

CMR, SIG GND to PWR GND: 120 dB

CMV, SIG GND to PWR GND: 1500 Vp per HV test, 354 Vp per IEC spacing

Accuracy at 25°C

Error, Maximum $\pm 0.05\%$ of reading ± 1 count (DP2); $\pm 0.05\%$ of reading ± 2 counts (DP9)

Span Tempco: $\pm 0.01\%$ of reading/ $^{\circ}\text{C}$

Zero Drift, Maximum: ± 0.3 $\mu\text{V}/^{\circ}\text{C}$

Offset Drift, Maximum: $\pm(0.01\%$ offset V $\pm 0.01\%$ FS V) $^{\circ}\text{C}$

Step Response: 1 s to 99.9% of span

Warmup to Rated Accuracy: 30 min (DP2); 60 min (DP9)

Excitation

Configuration: Constant-voltage

Voltage Sense: Internal or remote

Voltage Range: Adjustable from 1 to 10V

Load Current, Maximum: 30 mA

Conversion

Technique: Auto-zero, dual slope, average value

Signal Integration Period: 100 ms, nominal

Reading Rate: 2.5/s, nominal

Display

LED: Red, 14.2 mm (0.56"), 7-segment

LCD: 12.7 mm (0.50"), 7-segment

Power

AC Models: 120, 240 or 24 Vac +10%/-15%, 49 to 440 Hz

DC Models: 9 to 32 Vdc, isolated to 300 Vp; 26 to 56 Vdc, isolated to 300 Vp; 5 Vdc ±5%, non-isolated

Common Mode

Rejection: 120 dB

Environmental

Operating Temperature: 0 to 60°C (32 to 140°F)

Storage Temperature: -40 to 85°C (-40 to 185°F)

Humidity: 95% RH, non-condensing @ 40°C (104°F)

Mechanical

Bezel: 96 W x 48 H x 8 mm D (3.78 x 1.89 x 0.31")

Depth Behind Bezel: 139.8 mm (5.50")

Panel Cutout: 92 W x 45 mm H (3.62 x 1.77")

Weight: 17 oz (480 g)

Case Material: 94V-0 UL-rated polycarbonate

STRAIN GAGE, PRESSURE TRANSDUCER, AND LOAD CELL SIGNAL INPUT S SERIES

CODE*	MAX INPUT SPAN	MIN GAIN	MAX GAIN
S1	499 mV	4.01 counts/mV	9.9 counts/mV
S2	249 mV	8.02 counts/mV	19.8 counts/mV
S3	124 mV	16.10 counts/mV	39.7 counts/mV
S4	62.5 mV	32.00 counts/mV	79.0 counts/mV
S5	31.2 mV	64.20 counts/mV	158.0 counts/mV
S6	15.6 mV	128.00 counts/mV	315.0 counts/mV
S7	7.8 mV	258.00 counts/mV	637.0 counts/mV

To Order Visit omega.com/dp2000-s for Pricing and Details

MODEL NO.					DESCRIPTION
DP2	3½-DIGIT FOR ±1999 COUNT				
DP9	4-DIGIT FOR ±9999 COUNT				
	0	0	0	-X	A. POWER AND DISPLAY
	0				LED; 120 Vac (50/60 Hz)
	1				LCD; 120 Vac (50/60 Hz) (DP2000 only)
	2				LED; 240 Vac (50/60 Hz)
	3				LCD; 240 Vac (50/60 Hz) (DP2000 only)
	4				LED; 9 to 32 Vdc, isolated
	5				LCD; 9 to 32 Vdc, isolated (DP2000 only)
	6				LED; 5 Vdc
	7				LCD; 5 Vdc (DP2000 only)
	8				LED; 24 Vac
	9				LCD; 24 Vac (DP2000 only)
	A				LED; 26 to 56 Vdc, isolated
	B				LCD; 26 to 56 Vdc, isolated (DP2000 only)
					B. ANALOG OUTPUTS
		0			1 mV/count (supplied on all units)
		1			0 to 5 Vdc
		2			0 to 10 Vdc
		3			0 to 1 mA (internally driven)
		4			4 to 20 mA (internally driven)
		5			4 to 20 mA (externally driven)
		6			4 to 20 mA (isolated)
					C. CONTROL OUTPUTS
			0		None
			1		Dual setpoint, 10 A relay (SPDT)
			2		Proportional 4 to 20 mA
			3		Proportional/time proportioning, 2 A relay
			4		Parallel BCD, isolated
			5		Single setpoint, 10 A relay (SPDT)
					D. SIGNAL CONDITIONER INPUTS
				-S(*)	Strain gage
					ADDITIONAL OPTIONS
				-G	Green LED display

* Refer to chart above for strain gage code options.

Accessory

MODEL NO.	DESCRIPTION
DPP-5	½ DIN panel punch

Comes complete with operator's manual.

Ordering Example: DP2000-S2, 3½ digit strain gage meter, red LED, 120 Vac power, and 8 to 20 counts per mV.