

TRUE RMS AC VOLTMETER, OMEGA[®] AMMETER INDICATOR/ CONTROLLER

1/8 DIN

Product Discontinued

DP2000-CDFG Series

- ✓ ±1999 or ±9999 Count Display Span
- ✓ Special Scaling for 5 A Current Transformer
- ✓ Front-Panel Accessible Adjustments
- ✓ RoHS 2 Compliant

The DP2000/DP9000 AC AVG voltmeter and ammeter use a precision op-amp rectifier circuit to provide an economical AC-average meter, which is calibrated to display the true-RMS value of sinusoidal signals.

The AC RMS voltmeter and ammeter use an integrated circuit that computes the true-root-mean-square value of complex waveforms.

Screw-terminals are provided for AC or DC coupling. AC coupling allows the measurement of the AC component or ripple from a signal with both AC and DC components. DC coupling allows the measurement of true-RMS, including both DC and AC components.

The signal conditioner provides six current ranges, as determined by an internal shunt resistor. In addition, there is a special 5 A range, which allows direct connection to a current transformer (CT) with 5 A secondary, without need for a stepdown transformer. Proper scaling can be for any primary current.

An 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.



DP2000-C5 shown actual size.

AC AVG VOLTAGE INPUTS C SERIES

CODE*	DP2000 RANGE	DP9000 RANGE	INPUT IMPED	DP2000 RES	DP9000 RES
C2	199.9 mV	99.99 mV	1.1 MΩ	0.1 mV	0.01 mV
C3	1.999 V	999.9 mV	1.1 MΩ	1 mV	0.1 mV
C4	19.99 V	9.999 V	1.0 MΩ	10 mV	1 mV
C5	199.9 V	99.99 V	1.0 MΩ	100 mV	10 mV
C6	650 V	650 V	10 MΩ	1 V	100 mV

Full-wave rectified average AC signal, calibrated for sinusoidal input
Ordering Example: DP2000-C5, LED 120 Vac, 100 mV/count, 199.9V range for AC AVG voltage input.

AC AVG CURRENT INPUTS D SERIES

CODE*	DP2000 RANGE	DP9000 RANGE	INPUT IMPED	DP2000 RES	DP9000 RES
D1	19.99 μA	9.999 μA	10 kΩ	0.01 μA	1 nA
D2	199.9 μA	99.99 μA	1 kΩ	0.1 μA	10 nA
D3	1.999 mA	999.9 μA	100 Ω	1 μA	100 nA
D4	19.99 mA	9.999 mA	10 Ω	10 μA	1 μA
D5	199.9 mA	99.99 mA	1 Ω	100 μA	10 μA
D6	1.999 A	999.9 mA	0.1 Ω	1 mA	100 μA
D7	5.00 A**	5.00 A	0.01 Ω	2.5 mA	500 μA

** 50 mV shunt for 5 A current transformer input. Full-wave rectified average AC signal, calibrated for sinusoidal input.

Ordering Example: DP2000-D4, LED 120 Vac, 10 μA/count, 19.99 mA range for AC AVG current input.

AC RMS VOLTAGE INPUTS

F SERIES

CODE*	DP2000 RANGE	DP9000 RANGE	INPUT IMPED	DP2000 RES	DP9000 RES
F2	199.9 mV	99.99 mV	1.1 MΩ	0.1 mV	0.01 mV
F3	1.999 V	999.9 mV	1.1 MΩ	1 mV	0.1 mV
F4	19.99 V	9.999 V	1.0 MΩ	10 mV	1 mV
F5	199.9 V	99.99 V	1.0 MΩ	100 mV	10 mV
F6	650 V	650 V	10 MΩ	1 V	100 mV

Provides true RMS accuracy for non-sinusoidal inputs with a crest factor of 3:1 or less.

Ordering Example: DP2000-F3, LED 120 Vac, 1 mV/count, 1.999V for AC RMS voltage input.

AC RMS CURRENT INPUT

G SERIES

CODE*	DP2000 RANGE	DP9000 RANGE	INPUT IMPED	DP2000 RES	DP9000 RES
G1	19.99 μA	9.999 μA	10 kΩ	0.01 μA	1 nA
G2	199.9 μA	99.99 μA	1 kΩ	0.1 μA	10 nA
G3	1.999 mA	999.9 μA	100 Ω	1 μA	100 nA
G4	19.99 mA	9.999 mA	10 Ω	10 μA	1 μA
G5	199.9 mA	99.99 mA	1 Ω	100 μA	10 μA
G6	1.999 A	999.9 mA	0.1 Ω	1 mA	100 μA
G7	5.00 A**	5.00 A	0.01 Ω	2.5 mA	500 μA

** 50 mV shunt for 5 A current transformer input. Provides true RMS accuracy for non-sinusoidal inputs with a crest factor of 3:1 or less.

Ordering Example: DP2000-G2, LED 120 Vac, 0.1 μA/count, 199.9 μA for AC RMS current input.

SPECIFICATIONS

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

INSTRUMENTATION

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Power

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

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

Common Mode

Voltage: 1500 Vp test (354 Vp per IEC spacing)

Rejection (DC to 60 Hz): 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)

Accuracy @ 25°C (AC)

Maximum Error: ±0.1 of rdg ± 10 counts

Span Tempco: ±0.01% of reading/°C (AC)

Step Response: 1 s to 99.9% of span

Frequency Range for Rated Accuracy: 147 to 1000 Hz

Warmup to Rated Accuracy: Less than 10 min (DP2), or 30 min (DP9)

Accuracy @ 25°C (RMS) (1% to 100% of Full Scale)

Maximum Error, AC Coupling: ±0.1% of reading, ±1 ct (DP2), ±10 cts (DP9), 47 Hz to 5 kHz

Maximum Error, DC Coupling: ±0.1% of reading, ±1 ct (DP2), ±10 cts (DP9), 9 Hz to 5 kHz

Span Tempco: ±0.03% of reading/°C (typical)

Zero Tempco: 0.15 mV/°C (typical)

Step Response: 1 sec to 99.9% of span

Warmup to Rated Accuracy: Less than 10 min (DP2), or 30 min (DP9)

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

To Order

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 (DP2) or 0.1 mV/count (DP9) (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
				-C(*)	AC AVG voltage
				-D(*)	AC AVG current
				-F(*)	AC RMS voltage
				-G(*)	AC RMS current
					ADDITIONAL OPTIONS
				-G	Green LED display
				-FS	Custom calibration for D7 and G7. Specify required full scale display for a 5A RMS input

* Refer to previous page for input code options.

Accessory

MODEL NO.	DESCRIPTION
DPP-5	1/8 DIN panel punch

Comes complete with operator's manual.

Ordering Example: DP9000-C4, 4-digit AC voltmeter, red LED display, 120 Vac power, 0.1 mV/count, 9.999V range for AC AVG voltage.