

# 1/8 DIN HIGH-PERFORMANCE METERS

## ALARM/CONTROL CAPABILITIES

### STRAIN GAGE, PROCESS VOLTAGE AND CURRENT, TEMPERATURE

## DP41 Series

Starts at  
**\$545**



DP41-S, strain meter, \$545, shown actual size.

#### All Units Feature:

- ✓ 5-Year Warranty
- ✓ 6-Digit Display
- ✓ Min/Max Storage
- ✓ 4 Isolated Open-Collector Outputs
- ✓ NEMA 4 (IP65) Front Panel
- ✓ 12 Readings per Second
- ✓ Alarm/Control Capabilities
- ✓ Smart Filtering Detects the Difference Between a Spike or Process Change (Patent Applied for)
- ✓ Peak and Valley Detection
- ✓ Digital Tare
- ✓ Easy Front-Panel Programming
- ✓ Optional BCD Output
- ✓ Optional Analog Output
- ✓ Optional RS232/RS485 Communications
- ✓ Optional Mechanical Relays

#### Thermocouple Input:

- ✓ 0.01° Resolution
- ✓ 0.2°C Accuracy
- ✓ 9 Thermocouple Types
- ✓ °C/°F/K Units
- ✓ Uses Complete NIST Calibration Tables

#### RTD Input:

- ✓ 0.01° Resolution
- ✓ 0.2°C Accuracy
- ✓ 2-, 3-, or 4-Wire
- ✓ 385 and 392 Pt Curves

#### Voltage/Current Inputs:

- ✓ ±0.005% Rdg Accuracy
- ✓ 10 User-Selectable Voltage or 4 to 20/0 to 20 mA Input Ranges
- ✓ Fully Scalable Display Up to 500,000 Counts
- ✓ 1.5 to 11 Vdc or 24 Vdc Sensor Excitation
- ✓ Adjustable Decimal Point

The OMEGA® DP41 Series of digital panel meter/controllers has set the world standard for accuracy and quality in industrial instrumentation. These meters can measure a broad spectrum of DC voltage and current ranges as well as inputs from 9 thermocouple types and from most RTDs, pressure transducers, load cells, strain gages, and potentiometers. Models include the DP41-W, a legal-for-trade, NTEP-certified strain meter with enhanced features, and the DP41-U, which covers all the input types.

Standard features include 6-digit display; 5 front-panel pushbutton keys; 4 open-collector outputs; and alarm/control, BCD, and analog outputs. Configurable analog output ranges are 0 to 20 mA, 4 to 20 mA, 0 to 5 Vdc, and 0 to 10 Vdc.

On-board excitation allows these meters to power virtually any sensor or transmitter, and 4 setpoints give the user numerous control/alarm possibilities. Setpoint configurations include active above or below; latching or non-latching; and high deviation, low deviation, or band deviation.

With the RS232/485 serial communications option, the user can set the display parameters and read the current, max, and min values remotely. The DP40-R board option provides dual 7 A mechanical relays, activated by the selected setpoint.

## MONOGRAM™ SERIES

The DP41 displays feature 14-segment LED characters, which greatly improves alphanumeric representations. The 7-segment LED characters found on most instruments are adequate for presenting numbers, but not

letters. Words are easier to read with the 14-segment LED characters on the DP41, which, in turn, simplifies operating and programming.

RESET2  
14-segment LED

RESET2  
7-segment LED



Red LED display standard. Also available with green LED at no charge.

# HIGH-PERFORMANCE METERS

## SPECIFICATIONS

**Accuracy:**  $\pm 0.005\%$  rdg  
**Span Temperature Coefficient:**  $\pm 20$  ppm  
**Step Response:** 1 s to 99.9%  
**Warm-Up to Rated Accuracy:** 50 min  
**Operating Environment:** 0 to 50°C (32 to 122°F); 95% RH, non-condensing  
**Storage Temperature:** -40 to 85°C (-40 to 185°F)  
**Power:** 115 or 230 Vac, 49 to 400 Hz; 10 to 32 Vdc  
**Power Consumption:** 6 W nom., 10 W max  
**Normal-Mode Rejection:** 60 dB  
**Common-Mode Rejection:** 120 dB  
**Common-Mode Voltage:** 1500 Vp per HV test  
**Resolution:** 17-bit  
**Conversion:** Dual-slope technique  
**Reading Rate:** 3/s or 13/s, 60 Hz; 3/s or 12/s, 50 Hz  
**Display:** Red or green 6-digit, 14-segment, 13.7 mm (0.54") high; 4 alarm indicators  
**Dimensions:** 48 H x 96 W x 165 mm D (1.89 x 3.78 x 6.5")  
**Panel Cutout:** 45 H x 92 mm W (1.772 x 3.622");  $\frac{1}{8}$  DIN  
**Weight:** 574 g (1.27 lb)  
**Setpoint Outputs:** 4 isolated open collector; rated 150 mA at 1V sink, 30V open  
**BCD Output:** Isolated, tri-state, TTL/CMOS compatible; external 5V supply required for isolated; internal 5V supply for non-isolated  
**Dual Relays:** Form "C", 7 A @ 30 Vdc or 230 Vac  
**4-Relay Option:** Dual 7 A relays and dual 1 A relays

**Analog Output:** 0 to 5V/1 to 5V/0 to 10V/0 to 20 mA/4 to 20 mA, user selectable; 354 Vp isolation; 15-bit resolution; 0.1% accuracy; 50 ms step response

**RS232 Communications:** 300/600/1200/2400/4800/9600/19.2K baud; RJ11 4-wire connection; programmable to transmit current display, alarm status, min/max, actual measured input value and status

**RS485 Communications:** 300/600/1200/2400/4800/9600/19.2K baud; RJ12 6-wire connection; addressable from 0 to 199

**Voltage Input Ranges:** 0 to 100 mV, 0 to 1V, 0 to 5V, 1 to 5V, 0 to 10V, 0 to 100V,  $\pm 50$  mV,  $\pm 500$  mV,  $\pm 5V$ ,  $\pm 50V$

**Current Input Ranges:** 0 to 20 mA, 4 to 20 mA

**Input Configuration:** Single-ended  
**Polarity:** Unipolar/bipolar, programmable

**Span Adjustment:** 0.00001 to 500,000, programmable

**Offset Adjustment:** 0 to 999,999 or 0 to -99,999, programmable

**Thermocouple Input Types:** J, K, T, E, R, S, B, N, J DIN

**RTD Input:** Any 6  $\Omega$  to 6 k $\Omega$  NIST or DIN platinum and any linear RTD

**RTD Connection:** 2-, 3- or 4-wire

**Sensor Break Protection:** Up-scale or down-scale, programmable

**Sensor Excitation:** 10 V at 30 mA; 24V at 25 mA

The DP41 thermocouple meter offers very high accuracy ensured by an advanced (patent applied for) thermocouple linearizing system. Accuracy for most thermocouple types is 0.2°C (3.6°F). The meter is front-panel programmable for any of 9 thermocouple types. The DP41 RTD input meter is programmable for any 6 to 6000  $\Omega$  DIN or NIST platinum RTD. It provides a precision ultra-low constant current excitation to minimize self-heating errors and maximize stability.

INPUT TYPE		RANGE, °C	RANGE, °F	ACCURACY
J	Iron-constantan	-210 to 760	-346 to 1400	0.2°C/0.3°F
K	CHROMEGA®-ALOMEGA®	-270 to 1372	-454 to 2500	0.2°C/0.3°F
T	Copper-constantan	-270 to 400	-454 to 752	0.2°C/0.3°F
E	CHROMEGA®-constantan	-270 to 1000	-454 to 1832	0.2°C/0.3°F
R/S	Pt/Rh	-50 to 1768	-58 to 3214	0.2°C/0.3F
B	Pt/30% Rh-Pt/6° Rh	100 to 1820	212 to 3300	0.3°C/0.5F
N	OMEGALLOY®	-270 to 1300	-454 to 2372	0.2°C/0.3F
J DIN	Iron-constantan	-200 to 900	-328 to 1652	0.6°C/1.0F
RTD	All curves	-200 to 850	-328 to 1562	0.2°C/0.3F

INPUT TYPE		RANGE, °C	RANGE, °F	RANGE, K	ACCURACY
RTD 1	10 $\Omega$ copper	-200 to 200	-328 to 392	73.2 to 473.2	1.0°C/2.0°F/1.0 K
RTD 2	100 $\Omega$ Pt 0.00385	200 to 900	-328 to 1652	73.2 to 1173.2	0.2°C/0.3°F/0.2 K
RTD 3	100 $\Omega$ Pt 0.00392	-200 to 850	-328 to 1562	73.2 to 1123.2	0.2°C/0.3°F/0.2 K

**CE** The following LVD (Low Voltage Directive/Safety) requirements have been met to comply with EN 61010-1, 1993 (Electrical equipment for measurement, control and laboratory use)

1. Pollution Degree 2 2. Installation Category II 3. Double Insulation

DP41 complies with the following EMC Immunity Standards as tested per EN 50082-2, 1995 (Industrial environment)

Phenomena	Test Specification	Basic Standard
Electrostatic Discharge	+/- 4 kV contact discharge +/- 8 kV air discharge	IEC 1000-4-2 Perf. Criteria B
Radio Frequency electromagnetic field	27 - 1000 MHz 10 V/m 80% AM (1 KHz)	IEC 1000-4-3 Perf. Criteria A
Fast Transients	+/- 2 kV (ac mains) +/- 1 kV (dc, signal I/O) 5/50 ns Tr/Th, 5 KHz repet. Freq.	IEC 1000-4-4 Perf. Criteria B
Radio Frequency conducted	0.15 - 80 MHz 10 V/m 80% AM (1 KHz)	IEC 1000-4-6 Perf. Criteria A
Surges	+/- 2 kV line to earth +/- 1 kV line to line 1.2/50 (8/20) $\mu$ s Tr/Th	IEC 1000-4-5 Perf. Criteria B
Voltage Dips	30% reduction 10 ms 60% reduction 100 ms	IEC 1000-4-11 Perf. Criteria B
Voltage Interruption	>95% reduction 5000 ms	IEC 1000-4-11 Perf. Criteria C

DP41 comply with the following EMC Emission Standards as tested per EN 50081-1, 1997 (Residential, Commercial and Light Industrial)

Phenomena	Frequency Range	Limits	Basic Standard
Radiated Emission	30 - 230 MHz 230 - 1000 MHz	30 dB $\mu$ V/m at 10 m 37 dB $\mu$ V/m at 10 m quasi peak	CISPR 22 Class B
Conducted Emission	0.15-0.5 MHz 0.5-5 MHz 5-30 MHz	66-56 dB $\mu$ V q.peak 56 dB $\mu$ V quasi peak 60 dB $\mu$ V quasi peak	CISPR 22 Class B



DP41-T and DP41-RTD, \$595, shown smaller than actual size.

Thermocouple and RTD probes sold separately. Visit [omega.com/temperature](http://omega.com/temperature), for the complete selection of temperature products available from OMEGA®

# HIGH-PERFORMANCE METERS



DP41-TBS bench stand, sold separately, \$25.

DP41-TC, \$595, with thermocouple probe, sold separately, shown smaller than actual size.



DP41Z-E split meter with remote display, panel mount or surface mount with bracket, \$595, shown smaller than actual size.



## MOST POPULAR MODELS HIGHLIGHTED!

### To Order (Specify Model Number)

MODEL NO.	PRICE	DESCRIPTION
DP41-E	\$545	Process voltage/current indicator
DP41-S	545	Strain gage indicator
DP41-W	595	Weight NTEP strain indicator
DP41-TC	595	Thermocouple indicator
DP41-RTD	595	RTD indicator
DP41-U	645	Universal input indicator
DP41Z-E	595	Split-display voltage/current indicator
DP41Z-S	595	Split-display strain gage indicator
DP41Z-W	695	Split-display weight NTEP strain indicator
DP41Z-TC	645	Split-display thermocouple indicator
DP41Z-RTD	645	Split-display RTD indicator
DP41Z-U	695	Split-display universal input indicator

## ANALOG OUTPUT/COMPUTER COMMUNICATIONS

MODEL NO.	PRICE	DESCRIPTION
DP40-A3	\$110	Analog output
DP40-S24	110	Isolated RS232/485 communications

DP40-S24 option comes with communications cable with phone plug termination. For proper termination to a computer, 9-pin and 25-pin connectors are offered below.

## CONTROL/BCD OUTPUTS

MODEL NO.	PRICE	DESCRIPTION
DP40-B	\$110	Isolated BCD output board*
DP40-R	75	Dual 7 A mechanical relays*
DP40-R4	175	Dual 7 A and Dual 1 A relays*

\*Note: Order DP40-B, DP40-R or DP40-R4; only 1 option can be used per unit. DC power option not available on models with DP40-R or DP40-R4.

Ordering Examples: DP41-TC-S24-A3-DC, with DP40-9SC2, DP41 unit for thermocouple inputs, with 10 to 32 Vdc power, RS232 communications, analog output and 9-pin serial connector, \$595 + 110 + 110 + 110 + 30 = \$955.

## CUSTOM CONFIGURATIONS

Custom firmware and hardware available in quantity.

### CUSTOM COLORS

Custom-color bezels and enclosures are available for original equipment manufacturers.

Enhance the appearance of your equipment design with custom colors.

Consult the OMEGA® OEM GROUP.

1-800-82-66342®  
1-800-TC-OMEGA



## POWER AND DISPLAY OPTIONS

SUFFIX	PRICE	DESCRIPTION
-230	N/C	230 Vac power
-DC	\$110	9 to 32 Vdc isolated power
-GN	N/C	Green LED display

## ACCESSORIES FOR COMPUTER COMMUNICATIONS

MODEL NO.	PRICE	DESCRIPTION
DP40-9SC2	\$30	9-pin serial connector for RS232
DP40-9SC4	30	9-pin serial connector for RS485
DP40-25SC2	30	25-pin serial connector for RS232
DP40-25SC4	30	25-pin serial connector for RS485

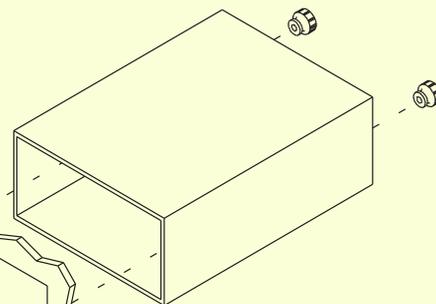
## ACCESSORIES FOR DP41 METERS

MODEL NO.	PRICE	DESCRIPTION
SPC4	\$30	NEMA 4 (IP65) heavy-duty splashproof lens, screw clamp
SPC18	30	NEMA 4 (IP65) splashproof lens, spring clip
DP41-TBS	25	Economical bench stand
DPP-5	525	1/2 DIN panel punch

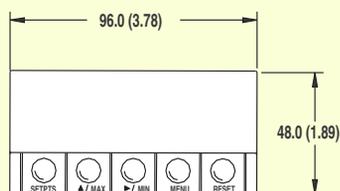
# 1/8 DIN HIGH-PERFORMANCE PROCESS INDICATORS DP41 SERIES



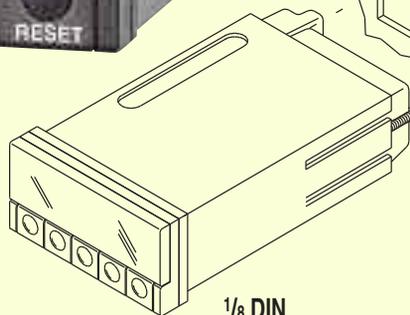
DP41-S, \$545,  
shown smaller than  
actual size.



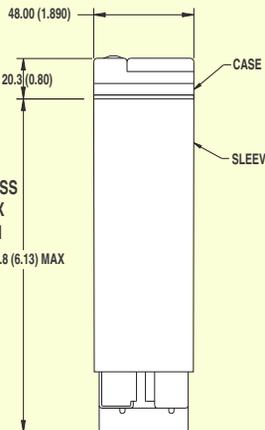
Visit [omega.com/panelpunches](http://omega.com/panelpunches)  
for 1/8 DIN panel punches.



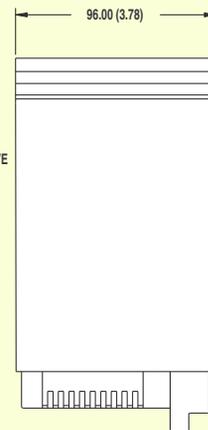
FRONT VIEW  
TYP



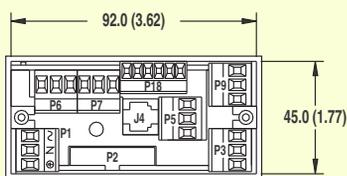
1/8 DIN



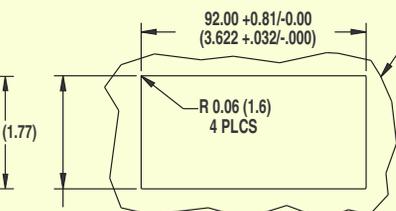
SIDE VIEW  
WITH T/C COVER



TOP VIEW  
WITH T/C COVER



REAR VIEW  
TYP



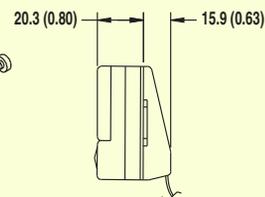
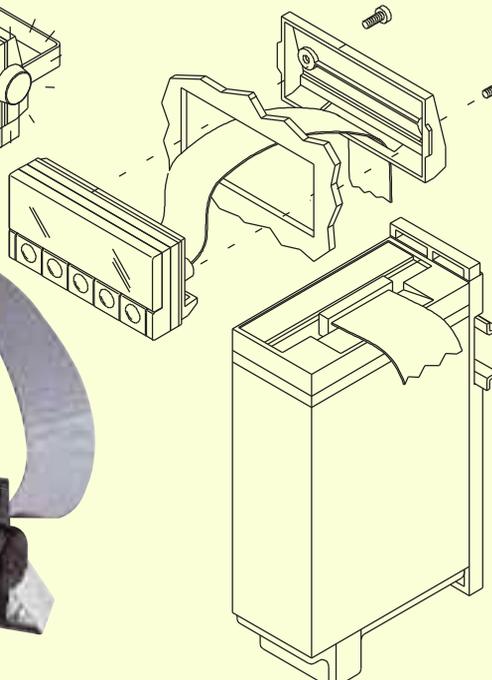
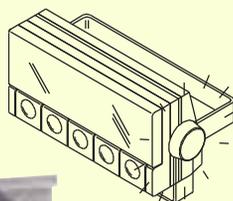
PANEL CUTOUT

PANEL THICKNESS  
6.4 (0.25) MAX  
0.8 (0.03) MIN

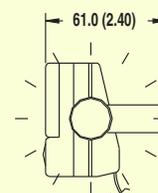
Dimensions:  
mm (in)



DP41Z-E, \$595, shown  
smaller than actual size.



SIDE VIEW  
THROUGH PANEL MOUNT



SIDE VIEW OF  
SURFACE MOUNT



#### UNITED STATES

[www.omega.com](http://www.omega.com)  
1-800-TC-OMEGA  
Stamford, CT.

#### CANADA

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1-800-TC-OMEGA

#### GERMANY

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0800-8266342

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0800-488-488

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088-466-342

#### CZECH REPUBLIC

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### • Heaters

Band Heaters, Cartridge Heaters, Circulation Heaters, Comfort Heaters, Controllers, Meters and Switching Devices, Flexible Heaters, General Test and Measurement Instruments, Heater Hook-up Wire, Heating Cable Systems, Immersion Heaters, Process Air and Duct, Heaters, Radiant Heaters, Strip Heaters, Tubular Heaters