

# 1/8 DIN Ultra High Performance Meter

BEYOND INFINITY®

DP41-B  
\$595



- ✓ Universal Inputs: DC Voltage/Current, T/C, RTD, and Strain
- ✓ Accuracy:  $\pm 0.005\%$  Rdg
- ✓ 6-Digit Patented Color-Changing LED Display
- ✓ Up to 142 Readings Per Second
- ✓ 10-Point Linearization
- ✓ 4 Isolated Open-Collector Outputs
- ✓ Isolated Analog Output (Optional)
- ✓ 4 Relays (Optional)
- ✓ Optional Ethernet or RS232/RS485 Communications
- ✓ In-Line Calibration
- ✓ NEMA 4 (IP65) Front Bezel

OMEGA goes BEYOND INFINITY® with the DP41-B. The OMEGA® INFINITY® set the world standard for accuracy, performance, and quality in digital panel meters. The DP41-B raises the bar even higher with an accuracy rating of up to  $\pm 0.005\%$  of reading, and up to 142 readings per second.



DP41-B, \$595, shown actual size.

It is also extremely versatile, handling a broad spectrum of DC voltage and current ranges, 9 thermocouple types, multiple RTDs, and signals from strain gage transducers such as load cells and pressure transducers, as well as potentiometric inputs. And it features user-programmable 10-point linearization of input signals. Other standard features include built-in excitation to power virtually any sensor or transmitter, and 4 isolated open-collector outputs for control or alarms. The big, bright, 6-digit patented LED display can be programmed to change color between **RED**, **AMBER**, and **GREEN** at any setpoint. The digits are 58% bigger than those in typical

displays. Output options include isolated programmable analog voltage or current and 4 relays.

### Embedded Internet and Serial Communications

With the “Embedded Internet” feature (specify “EI” option), the DP41-B connects directly to an Ethernet network and transmits data in standard TCP/IP packets. It even serve Web pages over a LAN or the Internet. The DP41-B is also available with serial communications. With the “-C24” option, the user can select from the pushbutton menu between RS232, RS422, and RS485, with straightforward ASCII commands or MODBUS®.

**change color**  
At Any Setpoint



## Totally Programmable Color Displays

The BEYOND INFINITY® DP41-B meter has totally programmable color displays.

The display can be programmed to change color at any setpoint or alarm point.



### Programmable Color Display

The DP41-B has totally programmable color displays. The display can be programmed to change color at any setpoint or alarm point.

For example, one could use **GREEN** during warm-up, switch to **AMBER** for the normal operating range, and choose **RED** to signal an alarm condition. The changes in color are visible from a distance, allowing the user to react to changing conditions. The colors can be programmed to change back when the value drops back below the alarm point or to "latch" on until being reset by the operator.

The instrument can also display only 1 unchanging color: **GREEN**, **AMBER**, or **RED**. This lets an operator identify process values in 3 separate locations or display 3 different measurements, such as temperature, pressure, and flow.

### QUALITY and TECHNOLOGY

The innovative OMEGA® DP41-B meters are backed by a 5-year warranty. Using COB (chip-on-board) and SMT (surface mount technology) assembly techniques and automation, the DP41-B packs a wealth of power and features into a compact package. Every instrument is thoroughly calibrated and tested at several stages throughout production. The DP41-B has very high accuracy: 0.005% of reading. The analog-to-digital conversion uses patented algorithms and smart filtering.

### Universal Inputs

The DP41-B offers a broad selection of signal inputs, selectable from the front-panel pushbutton menu or by serial or Ethernet communications.

### Nine Thermocouple Types

The DP41-B handles 9 thermocouple Types: K, J, T, E, R, S, B, N, and J DIN. The patented thermocouple linearization algorithms produce very high accuracy.

### Most Accurate RTD Measurements

The DP41-B works with a wide selection of RTDs. It handles Pt 0.00385 and 0.00392 curves, any 6 to 6000  $\Omega$  NIST or DIN Pt, and any linear RTD (10  $\Omega$  Cu, etc.). A choice of 2-, 3-, or 4-wire RTD connections ensures high accuracy.

DP41-B rear view, \$595, shown smaller than actual size.



### Process Voltage and Current

The OMEGA® DP41-B measures process voltage in ranges of 0 to 100 mV, 0 to 1V, 0 to 10V, 0 to 100V (unipolar),  $\pm 50$  mV,  $\pm 500$  mV,  $\pm 5$  V,  $\pm 50$  V (bipolar), and process current from 0 to 20 mA or 4 to 20 mA

### Strain Gage

The DP41-B measures inputs from load cells, pressure transducers, and most strain gage sensors. Input can be linearized over 10 points on ranges 0 to 100 mV, 0 to 1V, 0 to 10V, 0 to 100V (unipolar),  $\pm 50$  mV,  $\pm 500$  mV,  $\pm 5$  V, and  $\pm 50$  V (bipolar), in addition to 0 to 20 mA. Excitation for transducers of 10 and 24V is standard.

### Analog Output

The optional analog output covers a range of 0 to 10 Vdc or 0 to 20 mA, selectable as a calibrated retransmission of the process value.

### Built-In Excitation

The DP41-B features built-in excitation. The user can capture and

display peak and valley levels of input signals, useful in such applications as destructive and pressure testing. Five different excitation levels are available for sensors such as transmitters (24 Vdc @ 25 mA), strain gages (1.5 to 10 Vdc @ up to 60 mA max), and slide-wire potentiometers (1.25 Vdc @ 30 mA).

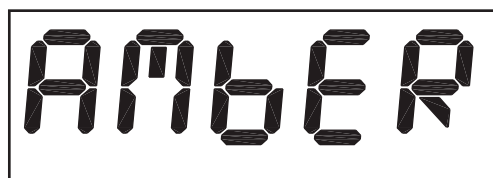
### Free Software

The OMEGA® DP41-B comes with free software for easy setup, configuration, and data acquisition.

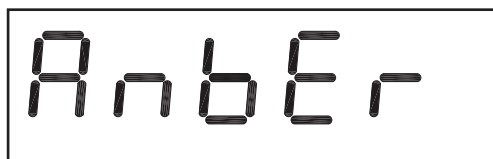
### Free ActiveX Controls

Free ActiveX Controls make it easy to integrate the DP41-B with information systems that use "ActiveX Containers", such as Microsoft Visual Basic and Microsoft Excel, as well as with popular OLE- and OPC-compliant data acquisition, process-control, and industrial automation software from OMEGA®, GE Fanuc, Intellution, Rockwell Automation, Object Automation, iconics, and Wonderware, among others.

The DP41-B has a unique 9-segment LED display, which makes alphanumeric representations much clearer. The 7-segment LED characters found on most instruments are adequate for presenting numbers, but not letters. Words are easier to read with the unique 9-segment LED characters on the DP41-B, which makes operating and programming easier.



9-Segment Display (Bigger)



7-Segment Display (Smaller)

INFINITY® is a registered trademark of NEWPORT ELECTRONICS, INC.

## Factory Setup and Configuration

DP41-B meters/controllers can be preconfigured by the factory. The user specifies the input types, scaling if applicable, setpoints, alarm points, etc., and we will program the instruments in our calibration lab before shipment. For a checklist of factory setup parameters, please consult the OMEGA engineers.

## Custom Configurations

Custom-color bezels and enclosures are available for original equipment manufacturers (OEMs); consult the OMEGA OEM Group. DP41-B LED displays are considerably bigger and brighter than displays for conventional instruments with the same DIN size.

## Specifications

**Accuracy:**  $\pm 0.005\%$  rdg

**Span Temperature Coefficient:**  
 $\pm 20$  ppm

**Power:** 90 to 240 Vac or 10 to 32 Vdc

**Normal-Mode Rejection:** 60 dB

**Common-Mode Rejection:** 120 dB

**Common-Mode Voltage:**

1500 Vp per Hv test

**Resolution:** 24-bit

**Reading Rate:**

7 to 142 samples per second

**Display:** Red/amber/green, 6-digit, 9-segment; 17.3 H x 10.2 mm W (0.68 x 0.40"); 4 alarm indicators; °C, °F, and K

**Panel Cutout:** 45 H x 92 mm W (1.8 x 3.6");  $\frac{1}{8}$  DIN

**Setpoint Outputs:** 4, isolated open collector; rated 150 mA at 1V sink, 30V open

**4-Relay Option:** Two 5 A and two 3 A relays; form "C", SPDT

**Analog Output:** 0 to 5V/1 to 5V/0 to 10V/0 to 20 mA/4 to 20 mA, user selectable; 354 Vp isolation; 14-bit resolution; 0.1% accuracy; 6 ms step response

**Ethernet:** Standards compliance IEEE 802.3 10 Base-T

**Protocols:** TCP/IP, ARP, HTTPGET RS232/RS422/RS485/telnet simulation/tunneling

**MODBUS:** Selectable from menu

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

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

**Polarity:** Unipolar/bipolar, programmable

**Thermocouple Input Types:**

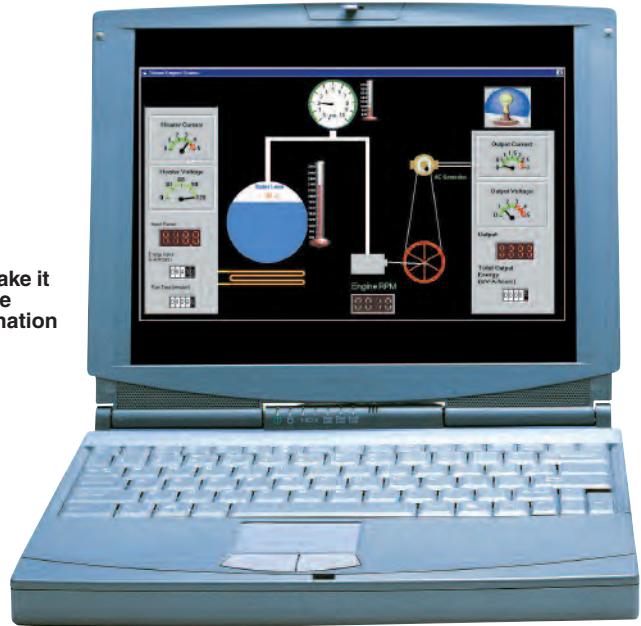
J, K, T, E, R, S, B, N, J DIN

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

ActiveX controls make it easy to integrate the DP41-B with information systems.

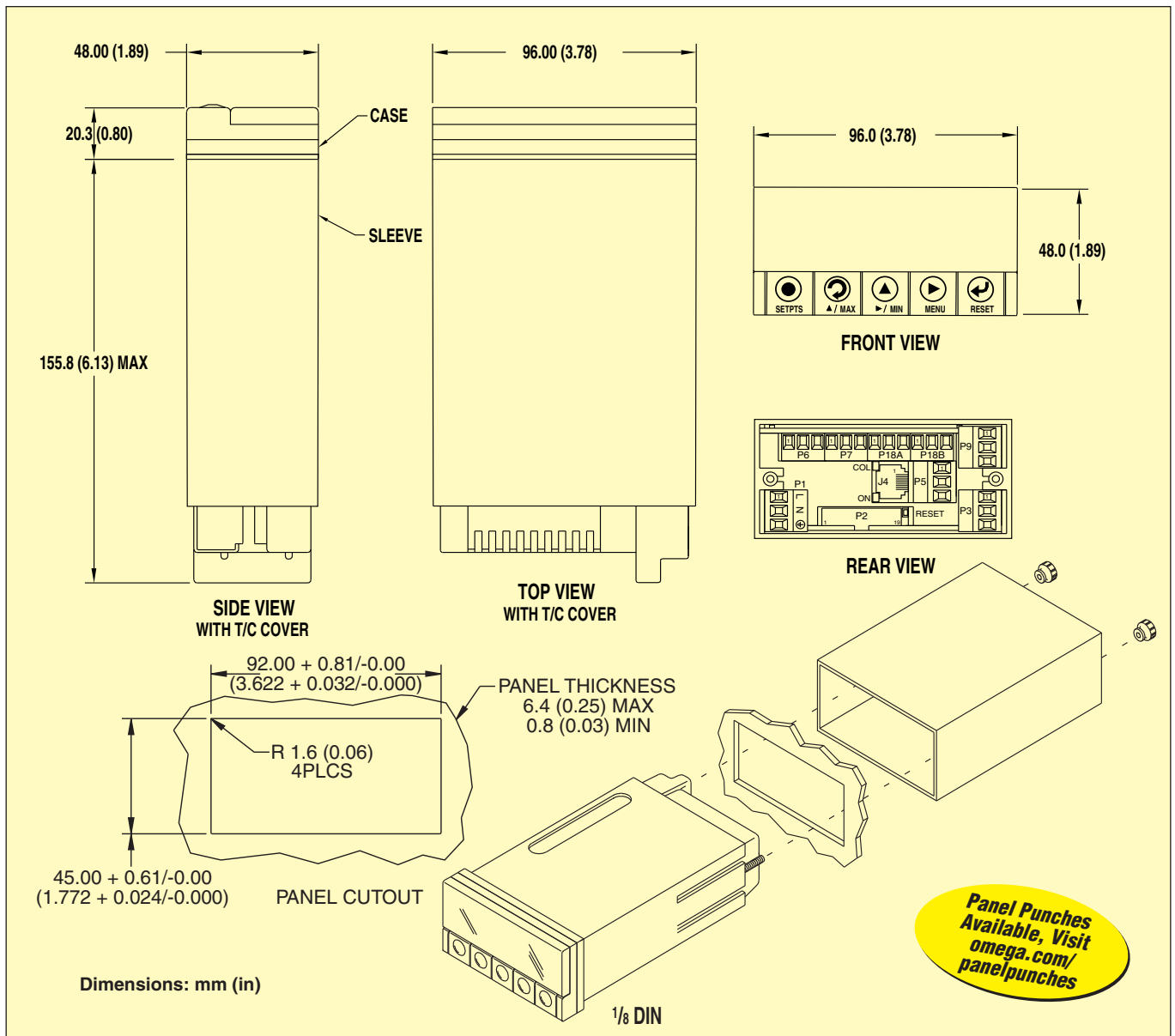


## Input Types

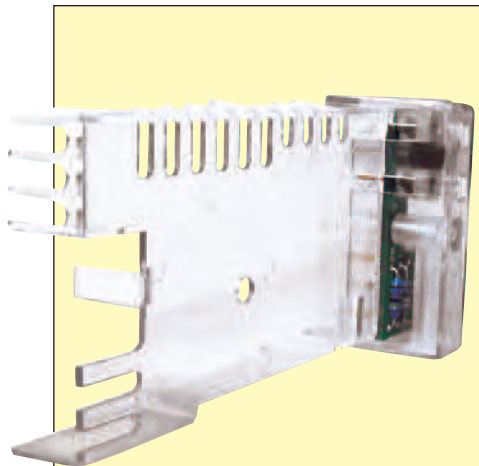
Sensor Type	Range	Accuracy*
<b>J</b> Iron-Constantan	-210 to 760°C -346 to 1400°F 63.2 to 1673.2 K	0.2°C 0.3°F 0.2 K
<b>K</b> Chromel-Alumel	-250 to 1250°C -418 to 2282°F 23 to 977.2 K	0.2°C 0.3°F 0.2 K
<b>T</b> Copper-Constantan	-270 to 400°C -454 to 752°F 3.2 to 673.2 K	0.2°C 0.3°F 0.2 K
<b>E</b> Chromel-Constantan	-270 to 1000°C -454 to 1832°F 3.2 to 1273.2 K	0.2°C 0.3°F 0.2 K
<b>R</b> Pt/13%Rh-platinum	-50 to 1768°C -58 to 3214°F 223.2 to 2041.2 K	0.2°C 0.3°F 0.2 K
<b>S</b> Pt/10%Rh-platinum	-50 to 1768°C -58 to 3214°F 223.2 to 2041.2 K	0.2°C 0.3°F 0.2 K
<b>B</b> Pt/30%Rh-Pt/6%Rh	+100 to 1820°C +212 to 3300°F 373.2 to 2093.2 K	0.3°C 0.5°F 0.3 K
<b>N</b> OMEGALLOY*1 nicosil-nisil	-270 to 1300°C -454 to 2372°F 3.2 to 1573.2 K	0.2°C 0.3°F 0.2 K
<b>J DIN</b> Iron-Constantan	-200 to 900°C -328 to 1652°F 73.2 to 1173.2 K	0.6°C 1.0°F 0.6 K

Sensor Type	Range	Accuracy*
<b>RTD 1</b> 10 $\Omega$ Copper	-200 to 200°C -328 to 392°F 73.2 to 473.2 K	1.0°C 2.0°F 1.0 K
<b>RTD 2</b> 100 $\Omega$ Pt 0.00385	-200 to 900°C -328 to 1652°F 73.2 to 1173.2 K	0.2°C 0.3°F 0.2 K
<b>RTD 3</b> 100 $\Omega$ Pt 0.00392	-200 to 850°C -328 to 1562°F 73.2 to 1123.2 K	0.2°C 0.3°F 0.2 K

\* Includes (all  $\pm$ ) maximum linearization error.



**AVAILABLE FOR FAST DELIVERY!**



**DP40B-TC field installable thermocouple temperature compensation connector kit, \$25.**

**To Order (Specify Model Number)**

Model No.	Price	Description
DP41-B	\$595	Universal digital meter (suffix "-TC" required for thermocouple input)

**Options and Accessory**

Suffix	Price	Description
-TC	\$25	Thermocouple Input
-4R	110	4-relay form "C" SPDT output board
-A	110	Isolated 14-bit analog output board
-C24	110	Serial communications, RS232 + RS485 + MODBUS*
-DC	50	Low voltage power option 10 to 32 Vdc
-EI	100	Ethernet/Internet*
DP40B-TC	25	Field installable thermocouple temperature compensation connector kit

Comes complete with operator's manual.

\* Mutually exclusive; can order 1 communication/Ethernet option per unit.

All output options are on printed circuit boards that can be installed at the factory or in the field.

**Ordering Example:** DP41-B-TC-4R-A, universal digital meter with optional thermocouple input module, 4-relay output board and analog output board, \$595 + 25 + 110 + 110 = **\$840.**



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