

1/8 DIN Multisignal Panel Meter



Economical Panel Meter for Process, Temperature and Electrical Measurement

DP20



DP20 meter shown smaller than actual size.

OMEGA's new multisignal panel meter delivers high-performance in a 1/8 DIN size for panel mounts and integration in a wide range of applications. The DP20 accepts universal inputs, including thermocouple, RTD, process (mA & Vdc), resistance, frequency and true RMS voltage and current. By configuration, it will work as an AC and DC voltmeter (up to 600 V) and AC and DC ammeter (up to 5 A) offering application flexibility for process control and industrial requirements. A single universal power supply allows this unit to be suited for global use.

The optional relays, analog output, and Modbus® RTU serial communications provide customization, control and communication capability. Additional features of the economical DP20 panel meter include scaling, NEMA 4 (IP65) protection, and programmable decimal points.

- ✓ **Fast Access Menu—Front Key Access to Modify the Alarm Setpoints and Max/Min Memory**
- ✓ **External Control Function—Contact at Multifunctional Terminal 5 (Second Scaling, Decimal Point Change, 'Hold' the Reading Tare or Activate the Max/Min Memory)**
- ✓ **Automatic, Power Saving Eco Mode**
- ✓ **Alarms 1 or 2, Independent, Configurable as Max/Min, with Setpoint and Hysteresis**

APPLICATIONS

- ✓ **Assembly Line**
- ✓ **Control Panel**
- ✓ **Laboratory**

- ✓ **Reading Offset—Configure a Fixed Number of Counts to be Added to the Reading**
- ✓ **Second Scaling Function—Define Two Scalings for the Same Signal and Control (One is Active with the 'External Control' Option)**
- ✓ **Recursive Display Filter for Noisy Signals and Configurable Steps for Minimum Predefined Changes on the Reading**
- ✓ **Output and Control Options:**
 - 1 or 2 Relay Outputs, 1 Analog
 - 4 to 20 mA Isolated Output,
 - 1 Modbus RTU Isolated Serial Output
- ✓ **5 Levels of Brightness Intensity**
- ✓ **Password Protection**

Specifications

Digits: 4

Reading: 9999/-1999

Decimal Point: Configurable

LED Color: Red

Digit Height: 14 mm (0.55")

Accepted Signal Ranges: See tables at page 4 for more information

AC Voltages and AC Currents: 600Vac, 200Vac, 20Vac, 2Vac, 200mVac, 60mVac, 5Aac, 20mAac (True RMS measure) (accepts phase-neutral and phase-phase measure)

DC Voltages and DC Currents: ± 600 Vdc, ± 200 Vdc, ± 20 Vdc, ± 2 Vdc, ± 200 mVdc, ± 60 mVdc, ± 5 Adc, ± 20 mAac

Thermocouples: K, J, E, N, L, R, S, B, T and C (automatic cold junction compensation)

Probes:

Resistive 'Pt' Probes: Pt100 with 2 and 3 wires, Pt500, Pt1000

Resistive 'Ni' Probes: Ni100, Ni200, Ni1000

Resistive NTC Probes: See table at page 4

Resistive PTC Probes: Families KTY-121, KTY-210 and KTY-220

Process: 4/20 mA, 0/10Vdc (+15Vdc excitation voltage configurable at terminal 5)

Resistances: Ranges 0/5K and 0/50K

Potentiometers: With nominal values from 500R up to 20K Frequency up to 100 Hz (minimum 15 Hz), Vac and Aac ranges

Thermal Drift Offset+Span: 150 ppm/ $^{\circ}$ C

Readings: 3 readings/ second

Refresh: 3 readings/ second

Response Time: <300 mSec. (0% to 99% of signal)

Power 'U': 18 to 265Vac/dc (isolated 1500Veff @ 60 seconds)

Output and Control Options:

1 or 2 Relays

1 analog output 4/20 mA isolated

1 Modbus RTU isolated serial output

Protection: NEMA 4 (IP65)

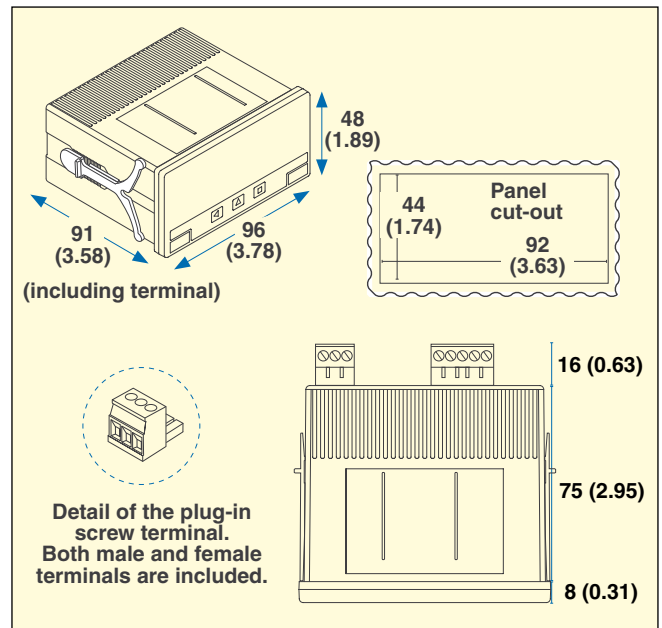
Consumption (Normal Mode): <1.0 W (meter only) <2.5 W (meter with options)

Consumption ('Eco' Mode): <0.3 W (meter only) <1.5 W (meter with options)

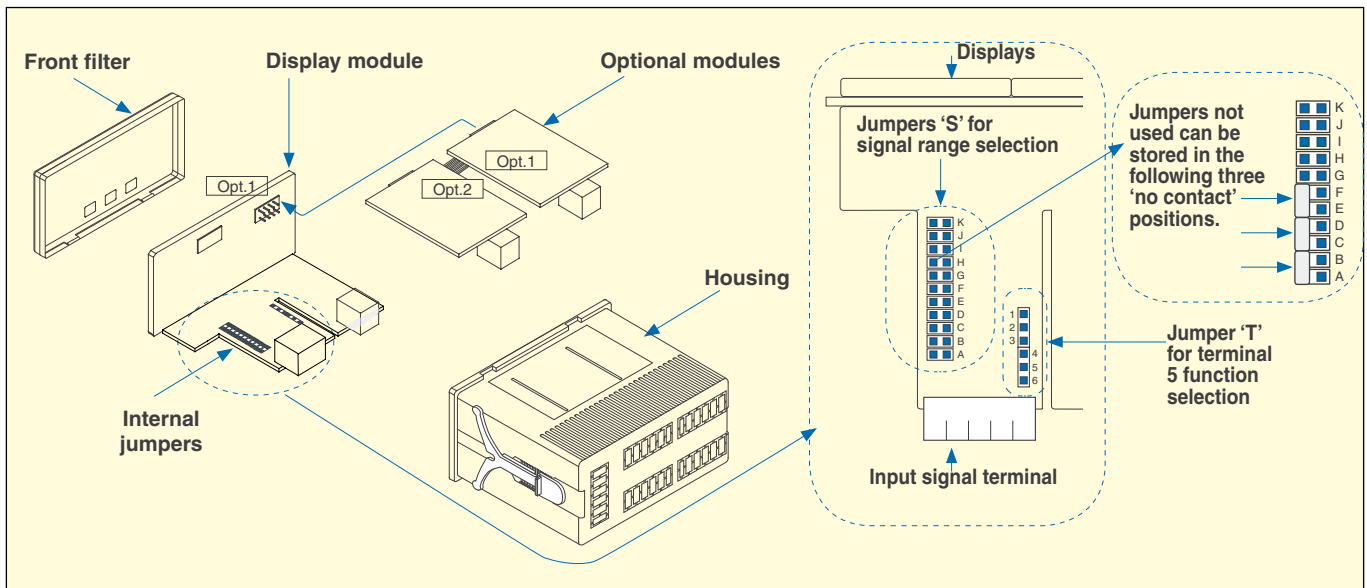
Connections: Plug-in screw terminals

Weight: <150g (5.3 oz)

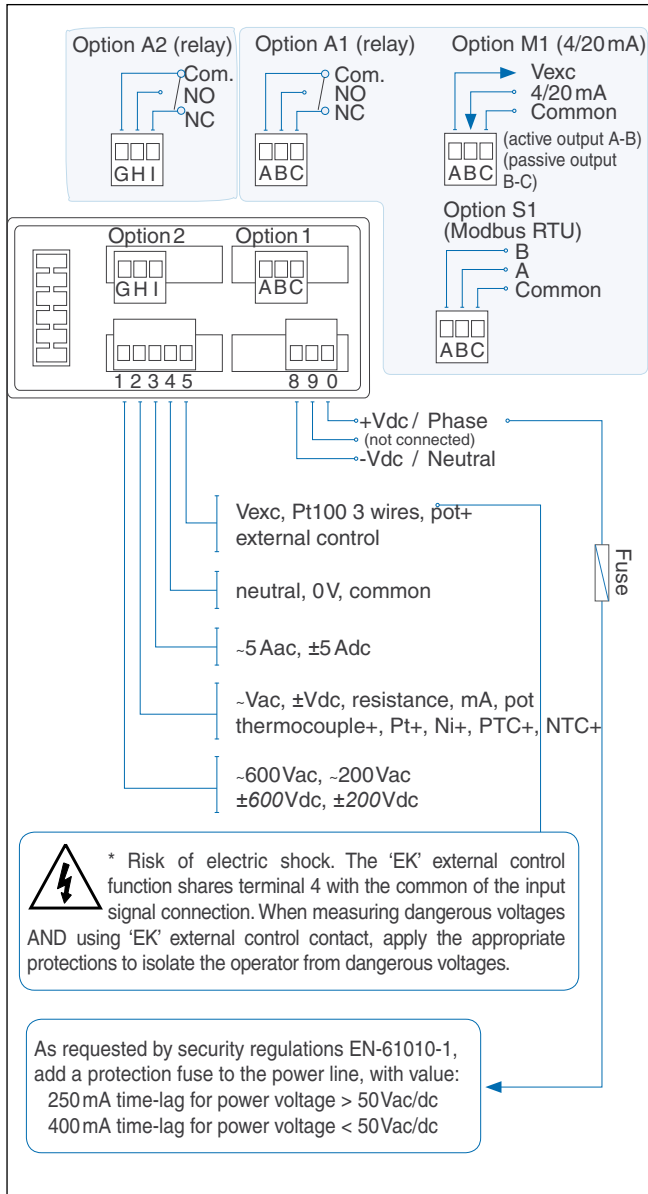
Operation Temperature: 0 to 50 $^{\circ}$ C (32 to 122 $^{\circ}$ F)



Internal Structure - Jumpers for Input Range Selection



Connections and Rear View



Options

Relay outputs

Module A1 and A2

Function 1 relay output
 3 contacts (NC, NO, Common) up to
 250Vac @ 8A resistive load



Analog output

Module M1

Function 1 analog output isolated
 4/20 mA
 isolated 1000Vdc



Modbus RTU output

Module S1

Function 1 Modbus RTU output
 9,600 bps, 4,800 bps
 isolated 1000Vdc



Input Signal Ranges - Technical Specifications

Vac ranges (Veff.)	Scale by default	Scalable	Jumpers 'S'	Jumpers 'T'	Accuracy (% FS)	Max. Oversignal	Z _{in}
~ 600 Vac	600	from 9999 to -1999	G I	4-5	<0.30% (up to 150 Hz)	800 Vac	12 M
~ 200 Vac	200.0		I			800 Vac	12 M
~ 20 Vac	20.00		A I			150 Vac	1 M
~ 2 Vac	2.000		B I			100 Vac	100 K
~ 200 mVac	200.0		C I			30 Vac	10 K
~ 60 mVac	60.0		E I			3 Vac	1 M

Vdc Ranges	Scale by default	Scalable	Jumpers 'S'	Jumpers 'T'	Accuracy (% FS)	Max. Oversignal	Z _{in}
±600 Vdc	600	from 9999 to -1999	G	4-5	<0.20%	800 Vdc	12 M
±200 Vdc	200.0		---			800 Vdc	12 M
±20 Vdc	20.00		A			150 Vdc	1 M
±2 Vdc	2.000		B			100 Vdc	100 K
±200 mVdc	200.0		C			30 Vdc	10 K
±60 mVdc	60.0		E		3 Vdc	1 M	
					<0.25%		

Aac ranges (Aeff.)	Scale by default	Scalable	Jumpers 'S'	Jumpers 'T'	Accuracy (% FS)	Max. Oversignal	Z _{in}
~ 5 Aac	5.00	from 9999 to -1999	I	4-5	<0.50% (up to 150 Hz)	7 Aac max. (7 sec.)	20 mΩ
~ 20 mAac	20.00		D I			25 mAac	4.7 R

Adc ranges	Scale by default	Scalable	Jumpers 'S'	Jumpers 'T'	Accuracy (% FS)	Max. Oversignal	Z _{in}
±5 Adc	±5.00	from 9999 to -1999	---	4-5	<0.25%	7 Adc (max. 7 sec.)	20 mΩ
±20 mAdc	±20.00		D	4-5	<0.15%	25 mAdc	4.7 R

Process Signals	Scale by Default	Scalable	Jumpers 'S'	Jumpers 'T'	Accuracy (% FS)	Max. Oversignal	Z _{in}
4/20 mA	0/100.0	from 9999 to -1999	D	1-2*	<0.15%	25 mA	4.7 R
0/10 Vdc	0/100.0		A		<0.20%	25 Vdc	1 M

*Place jumper 'T' at position 1-2 for +15 Vdc excitation voltage at terminal 5. Optionally, place jumper 'T' at position 4-5 to work with 'external contact' at terminal 5.

NTC probes 'R ₂₅ ' (configurable)*	Jumpers 'S'	Jumpers 'T'	Range of measure	Accuracy (% of reading)	Beta (configurable)
10K	F, K	4-5	-60°C to 150°C	<1.5 % of reading	3500

*'Beta' configurable (2000 to 5500). R25 configurable. Resistance measure from 100R to 1MR.

PTC probes Family	Jumpers 'S'	Jumpers 'T'	Range in °C (°F)	Total Error
KTY-121	F	4-5	-55/150 (-67/302)	<1 °
KTY-210	F, H, K			
KTY-220	F, H, K			



Maximum oversignal is the maximum signal accepted by the instrument. Higher signal values may cause instrument damage. Lower values are not destructive but may be out of accuracy specifications.

Input Signal Ranges - Technical Specifications

Thermocouples	Jumpers 'S'	Jumpers 'T'	Range °C (°F)	Total Error (Cold Junction Included)
K	E	4-5	-100 to 1350 (-148 to 2462)	<3°
J			-100 to 1200 (-148 to 2192)	
E			-100 to 1000 (-148 to 1832)	
N			-100 to 1300 (-148 to 2372)	
L			-100 to 900 (-148 to 1652)	
R	E, J		0 to 1768 (32 to 3214)	<3°
S			0 to 1768 (32 to 3214)	
T			-100 to 400 (-148 to 752)	
C	E		0 to 2300 (32 to 4172)	<5°
B	E, J		700 to 1820 (1292 to 3308)	

Pt and Ni Probes	Jumpers 'S'	Jumpers 'T'	Range °C (°F)	Total Error	Current at Sensor
Pt100 (3 wires)	F, H, J	5-6	-200 to 700 (-328 to 1292)	<1°	< 900 uA
Pt100 (2 wires)	F, H	4-5	-200 to 700 (-328 to 1292)		< 900 uA
Pt500	F		-150 to 630 (-238 to 1166)		< 90 uA
Pt1000	F		-190 to 630 (-310 to 1166)		< 90 uA
Ni100	F, H		-60 to 180 (-76 to 356)		< 900 uA
Ni200	F, H		-60 to 120 (-76 to 248)		< 900 uA
Ni1000	F		-60 to 180 (-76 to 356)		< 90 uA

Resistance ranges	Scale by default	Scalable	Jumpers 'S'	Jumpers 'T'	Accuracy (% of reading)
0 to 5K	9.999	from 9999 to -1999	F, H, K	4-5	<1.5% of reading
0 to 50K	99.99		F, K		

Potentiometers nominal value	Scale by default	Scalable	Jumpers 'S'	Jumpers 'T'	Accuracy (% FS)
500 R to 20 K	0/100.0	from 9999 to -1999	A	2-3	<0.5%

Frequency signals	Scale by default	Scalable	Jumpers 'S'	Jumpers 'T'	Accuracy (% reading)
15 Hz to 100 Hz	0/100.0	from 9999 to -1999	Vac or Aac ranges	4-5	<0.15% of reading



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To Order	
Model No.	Description
DP20	1/8 DIN multisignal panel meter with universal 18/265 Vac/dc power supply
DP20-A1	1/8 DIN multisignal digital panel meter with universal 18/265 Vac/dc power supply with 1 relay output
DP20-A1-A2	1/8 DIN multisignal digital panel meter with universal 18/265 Vac/dc power supply with 2 relay outputs
DP20-M1	1/8 DIN multisignal digital panel meter with universal 18/265 Vac/dc power supply with 1 isolated 4 to 20 mA analog output
DP20-M1-A2	1/8 DIN multisignal digital panel meter with universal 18/265 Vac/dc power supply with 1 isolated 4 to 20 mA analog output and 1 relay output
DP20-S1	1/8 DIN multisignal digital panel meter with universal 18/265 Vac/dc power supply with 1 isolated Modbus RTU output
DP20-S1-A2	1/8 DIN multisignal digital panel meter with universal 18/265 Vac/dc power supply with 1 isolated Modbus RTU output and 1 relay output

Comes complete with operator's manual.

The AC powered units cannot be shipped to Canada.