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Large Display Meters

400B Series for Thermocouple, RTD, Voltage or Current Inputs

MADE IN USA — 2 YEAR WARRANTY

400B Series

- J, K, T, E, R, S or B Thermocouples
- 3- or 4-Wire Platinum RTDs
- Scalable Current and Voltage Inputs
- 1° Resolution

410B Series

- Rugged Die-Cast Aluminum Case
- °F or °C Switchable
- 20 mm (0.8") Display *(bigger than conventional 14 mm [0.56"] displays)*
- Modular Construction
- 0.1° Resolution





All models shown smaller than actual size.

402B Series

- 1° Resolution
- 5 Point Selector Switch



412B Series

- 0.1° Resolution
- 5 Point Selector Switch





405B, 10 point selector switch for thermocouple inputs shown smaller than actual size.

Thermocouple and RTD Single Input 400B and 410B Indicators

The 400B and 410B Series measure temperatures with laboratory accuracy. Signals from thermocouples and RTD's can be displayed with 1° or 0.1° resolution. High instrument accuracy is achieved with a superior combination of low noise analog-to-digital conversion, multi-segment linearization conformity and isolated electronics. The standard resolution version, the 400B, has a 1° resolution. The higher resolution version, 410B, provides a 0.1° resolution. A miniature "DIP" switch, easily accessible behind the front panel, makes the °C to °F conversion a snap. You can add one option card to either the model 400B or 410B.

Thermocouple Multi-Input 402B and 412B Indicators

The 402B and the 412B have multi-input boards that can switch between five inputs of a common input type (*e.g.*, 5 Type K thermocouples). A row of five pushbutton switches, accessible on the front panel, permits easy switching between sensor readings. There are screw terminals located at the rear of the instrument where up to five sensors can be attached. The 402B has a standard 1° resolution. The 412B has a 0.1° resolution.

DC and Scaled DC 400B and 410B Indicators

For dc voltage single range indicators, the 400B and 410B provide exceptional accuracy and resolution for direct measurement of dc voltages. Ranges from 25 mV to 25 Vdc can be selected and measured with laboratory accuracy and repeatability. The 400B displays the voltage within -1000 to 2500 counts with 1-count accuracy. The 410B provides an additional decade of resolution from -10000 to 25000 and accuracy to 0.01% of reading. Both instruments offer exceptional 1-count repeatability.

Scaled DC Voltage and Current Loop Single Input 400B and 410B Indicators

The Models 400B and 410B display process parameters with laboratory accuracy. Signals from current transmitters, signal conditioners or other DC voltage sources can be scaled to display directly in engineering units.

Three types of input/display ranges are available. The I-1 range accepts 4 to 20 mA as its input and automatically scales and displays indicated results as 0.0 to 100% on the 400B (0.00 to 100.00% on the 410B). The decimal point position can be changed via programming, and various engineering unit labels are included. For user scalable, wide ranging displays from 4 to 20 mA inputs, select the I-3 range, or for 0 to 5V, select the V5 range. Both provide the ability to scale and offset the instrument's display proportional to process engineering units.

DC Voltage Multi-Input 402B and 412B Indicators

Models 402B and 412B provide low cost measurement in applications where more than one voltage input is needed. Five front panel pushbuttons provide convenient selection between similar inputs. All channels must measure the same input range (*e.g.*, -10 to 25V).

Scaled DC Voltage Multi-Input 402B and 412B Indicators

Models 402B and 412B can be specified with the V5 range to provide the ability to switch between five inputs of a commonly scaled voltage (*e.g.*, all inputs accepting 1 to 5 Vdc inputs can be scaled to display 0 to 2500). A row of five pushbutton switches permits easy switching between input readings.

Specifications

Accuracy: See range specifications
Resolution:
400B, 402B and 403B:
1° range RTD and thermocouple
410B, 412B and 415B:
0.1° range RTD and thermocouple
Repeatability:
R, S, B Ranges: ±0.2°C or °F
T Range < -130°C (-202°F):
±0.1°C (±0.2°F)
All Other Ranges: ±1 digit
Stability with Temperature:
Zero: 400B Models: 1 µV/°C
410B Models: 0.5 µV/°C
Span: 400B Models:
0.01% rdg/°C
410B Models:
0.005% rdg/°C
Reference Junction: 0.05% °C/°C, 10 to 40°C (50 to 104°F) base metal types 0.05% °C/°C, 10 to 40°C (50 to 104°F) noble metal types

Stability with Time:
No measurable drift
Noise Rejection:
NMR: >60 dB at 58 to 62 Hz, >56 dB at 50 Hz 3 pole, low pass filter with 6 Hz poles
CMR: >120 dB at 58 to 62 Hz, > 110 dB at 50 Hz with 250 Ω in balance
Operating Range:
Ambient Temperature: 0 to 50°C (32 to 122°F); temperature rise inside case is 5°C (9°F) typical
Ambient Humidity: 0 to 70% RH, 0 to 50°C (32 to 122°F) for rated accuracy
Storage Temperature:
-40 to 60°C (-40 to 140°F)
Input Connections: At rear of indicator; four screw terminals on ⅜" centers

Power: 100 to 125 Vac or 190 to 250 Vac (switch selectable), 48 to 400 Hz, 1.8 m (6') detachable power cord is supplied
Display: 20.3 mm (0.8") high LEDs
Construction: Instrument case of rugged die-cast aluminum with textured vinyl paint
Instrument Size:
72 H x 144 W x 173 mm D (2.84 x 5.67 x 6.82")
Panel cutout: 68 x 138 mm (2.68 x 5.44")
Weight: Net: 1.13 kg (2.5 lb)
Shipping: 1.36 kg (3.0 lb)



Temperature Input Types and Ranges

Input Code	Designation	Temperature Range	400B/402B Accuracy (±) 1° Resolution	410B/412B Accuracy (±) 0.1° Resolution
J	Iron-Constantan	-328 to 1712°F	1°F	0.6°F
		-200 to 933°C	1°C	0.5°C
K	CHROMEGA® ALOMEGA®	-208 to 2552°F	1.5° below 0°, 1° above 0°F	1.2° below 0°, 0.8° above 0°F
		-133 to 1400°C	1°C	0.8° below 0°, 0.5° above 0°C
T	Copper-Constantan	-328 to 752°F	2° below 0°, 1° above 0°F	1.5° below 0°, 0.6° above 0°F
		-200 to 400°C	1°C	1.0° below 0°, 0.4° above 0°C
E	CHROMEGA®-Constantan	-328 to 1952°F	1°F	0.7°F
		-200 to 1066°C	1°C	0.4°C
R	Pt-Pt13% Rh	32 to 3252°F	3° below 350°, 2° above 350°F	2° below 200°, 1° above 200°F
		0 to 1788°C	2°C	3° below 350°, 1.5° above 350°C
S	Pt-Pt10% Rh	32 to 3252°F	3° below 600°, 2° above 600°F	2° below 315°, 1° above 315°F
		0 to 1788°C	2°C	3° below 600°, 1.5° above 600°C
B	Pt30%-Rh	912 to 3392°F	4°F	2.5°F
		489 to 1867°C	2.5°C	1°C
PT3	0.00385	-388 to 1632°F	1°F	0.7° below -328°, 0.4° above -328°F
		-233 to 888°C	1°C	0.3 below -200°, 0.2 above 200°C
PT4	0.00385	-388 to 1632°F	1° F	0.7° below -328°, 0.4° above -328°F
		-233 to 888°C	1°C	0.3 below -200°, 0.2 above -200°C

DC Voltage Input Types and Ranges

Input Code	Input Range	STD Resolution (400B custom order)	High Resolution (410B)
V1	10.000 to 25.000 mV	10 µV	1 µV
V2	-100.0 to 250.0 mV	100 µV	10 µV
V3	-1.000 to 2.500V	1 mV	100 µV
V4	-10.00 to 25.00V	10 mV	1 mV
V5	0 to 5 Vdc (display adjustable for engineering units)	Adj 2500 counts	Adj 25,000 counts

Current Input Types and Ranges

Input Code	Input Type	Display Range	Accuracy (all ±)	
			400B	410B
I-1	4 to 20 mA transducer current transmitter	Fixed scale 0 to 100% — 400B Resolution 0.1% rdg; 410B Resolution 0.01% rdg	1 count	0.01% of reading ± count
I-3	4 to 20 mA transducer current transmitter	Adjustable scaling to engineering units 400B Resolution -1000 to 2500 (100 ct minimum) 410B Resolution -10000 to 25000 (1000 ct min.)	±5 counts	±50 counts

To Order

Model No.	Description
400B-TC	J, K, T, E, R, S, B selectable input, 1° resolution °F/°C
400B-CV	4 to 20 mA or 0 to 5 V input
402B-TC	J, K, T, E, R, S, B selectable input, 1° resolution °F/°C, 5-channel switch
402B-CV	4 to 20 mA or 0 to 5V input, 5-channel switch
405B	10-point selector switch for thermocouple input 400B and 410B models
410B-(*)	0.1° resolution, °F or °C switchable
412B-(*)	0.1° resolution, °F or °C switchable, 5-channel selector switch

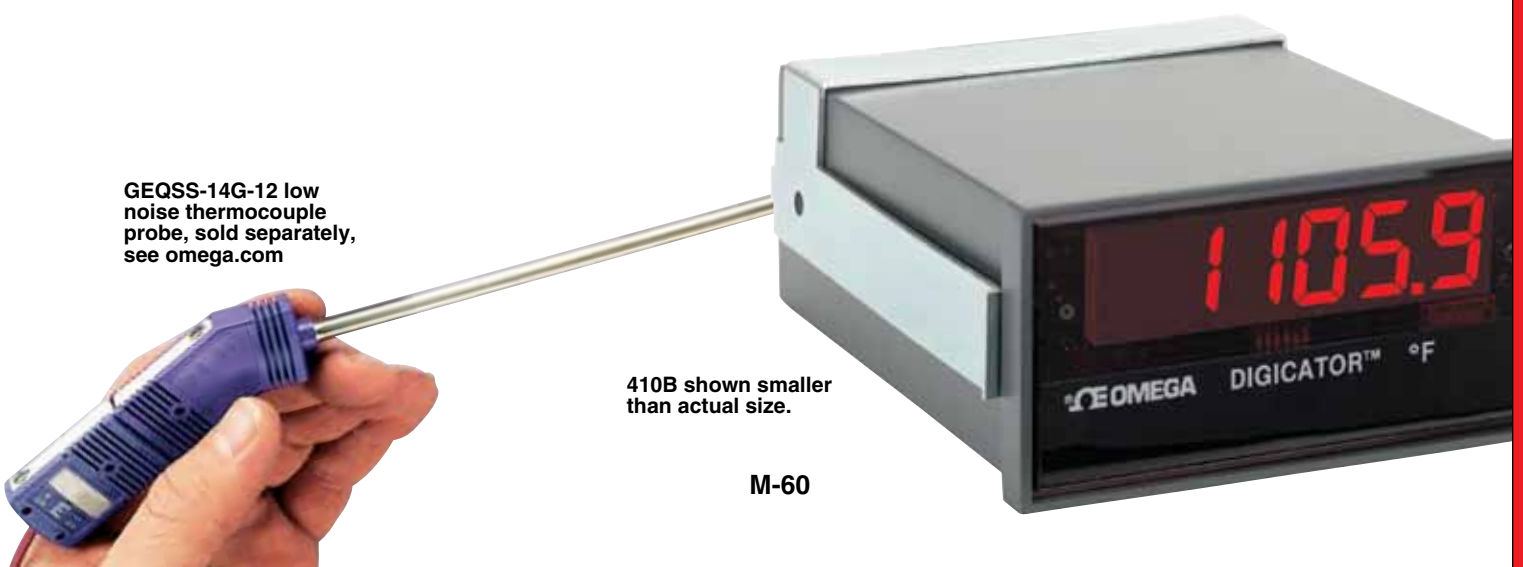
***** *Insert input code from one of the input and range tables.*

***Ordering Examples: 400B-TC**, indicator for various thermocouple inputs.*
***OCW-3,** OMEGACARE℠ extends standard 2-year warranty to a total of 5 years, for additional cost.*
***4128B-TC,** indicator for various thermocouple inputs.*

OMEGACARE℠ Extended Warranty Program

OMEGACARE℠ extended warranty program is available for models shown on this page. Ask your sales representative for full details when placing an order. OMEGACARE℠ covers parts, labor and equivalent loaners.

GEQSS-14G-12 low noise thermocouple probe, sold separately, see omega.com



410B shown smaller than actual size.

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