DMD4380
DMD4380-DC
DC-DC Isolated Transmitter

M-5001/0219

Model	Power
DMD4380	85-265 VAC, 50/60 Hz or 60-300 VDC
DMD4380-DC	9-30 VDC or 10-32 VAC

Description

The DMD4380 is a field-rangeable signal isolator/transmitter/converter. It accepts a DC voltage or current input and provides an optically isolated DC voltage or current output that is linearly related to the input. Full 3-way isolation (input, output, power) makes this module useful for ground loop elimination, signal conversion and isolation, common mode signal rejection, or noise pickup reduction.

Standard on the DMD4380 is a 15 VDC loop excitation supply for the input and a 20 VDC loop excitation supply for the output. These power supplies can be selectively wired to power passive mA devices.

A green input LED and a red output LED vary in intensity with changes in the process input and output signals. These provide a quick visual picture of your process loop at all times.

An output test button provides a fixed output (independent of the input) when held depressed. The test output level is potentiometer adjustable from 0 to 100% of output span.

The I/O LEDS and the output test button greatly aid in saving time during initial startup and/or troubleshooting.

DC Input Ranges

Field selectable ranges and offsets via switch settings

Voltage:	0-10 mVDC to 0-130 VDC
Bipolar voltage:	±5 mVDC to ±65 VDC
Current:	0-200 µADC to 0-50 mADC
Input offset:	±100% in 15% increments

Input Impedance (Voltage)

Voltage:	1 MΩ minimum
Current:	50 Ω typical
Voltage burden:	1 VDC at 20 mA current input

Common Mode Rejection

100 dB minimum

Input Loop Power Supply

15 VDC ±10%, regulated, 25 mADC
May be selectively wired for sinking or sourcing mA input

LoopTracker

Variable brightness LEDs indicate I/O loop level and status

DC Output Ranges

Field selectable ranges and offsets via switch settings

Voltage (10 mA max):	0-1 VDC to 0-10 VDC
Bipolar voltage:	±5 VDC or ±10 VDC
Current:	0-2 mADC to 0-20 mADC, 4-20 mADC 20 V compliance, 1000 Ω at 20 mA

Output Calibration

Multi-turn zero and span potentiometers
±15% of span adjustment range typical

Output Loop Power Supply

20 VDC nominal, regulated, 25 mADC, <10 mVRMS max. ripple
May be selectively wired for sinking or sourcing mA output

Output Test/Override

Front button sets output to test level when pressed or via external contact closure
Potentiometer adjustable 0-100% of span

Output Ripple and Noise

Less than 10 mVRMS ripple and noise

Linearity

Better than ±0.1% of span

Ambient Temperature Range and Stability

–10°C to +60°C operating ambient
Better than ±0.02% of span per °C stability

Response Time

70 milliseconds typical
DF option: 1 millisecond typ. (output noise will exceed specifications)

Isolation

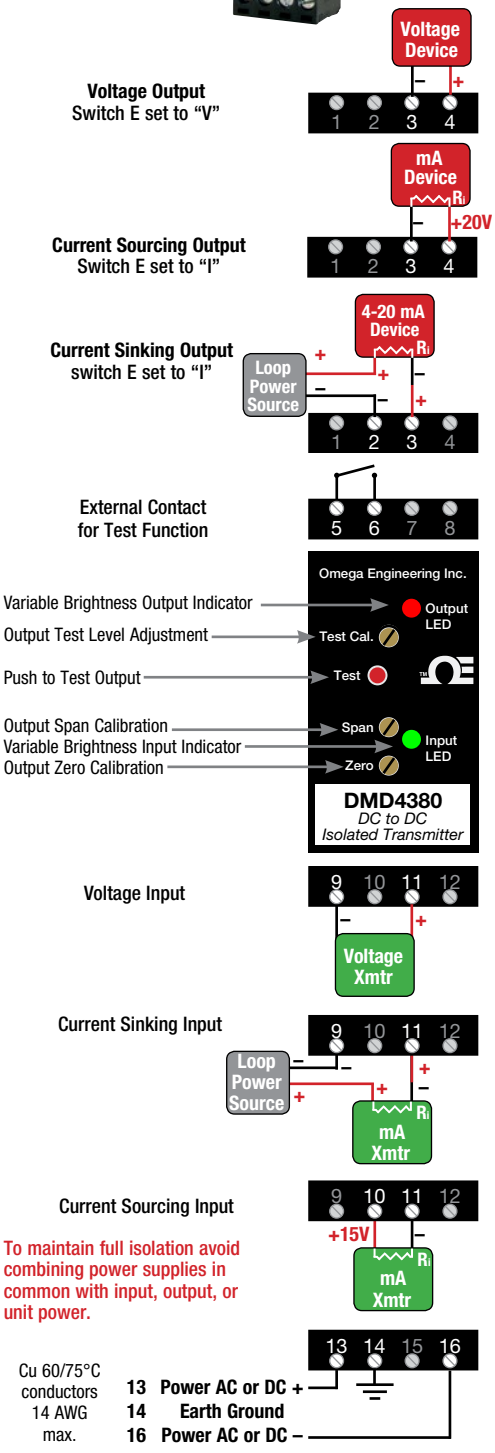
1200 VRMS minimum
Full isolation: power to input, power to output, input to output

Housing and Connectors

IP 40, requires installation in panel or enclosure
For use in Pollution Degree 2 Environment
Mount vertically to a 35 mm DIN rail
Four 4-terminal removable connectors, 14 AWG max wire size

Power

85-265 VAC, 50/60 Hz or 60-300 VDC, 2 W maximum
D versions: 9-30 VDC or 10-32 VAC 50/60 Hz, 2 W maximum



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WARNING: This product can expose you to chemicals including nickel, which are known to the State of California to cause cancer or birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov

Do not connect anything to unused terminals

Wire terminal torque
0.5 to 0.6 Nm or
4.4 to 5.3 in-lbs

Range Selection

See the tables to select I/O ranges for your application. It is generally easier to select ranges before installation. The module label lists common ranges.

For ranges that fall between the listed ranges, use the next highest setting and trim the output signal with the zero and span potentiometers.

Switches A and B: Input range
Switch C: Input offset
Switch D: Output range
Switch E: "V" for voltage output or "I" for current output

Note that when using a current shunt input, it measures a mV drop across a fixed resistance, typically 50 mV, 75 mV or 100 mV. The correct input setting would be the appropriate mV range for the shunt.

Electrical Connections

WARNING! All wiring must be performed by a qualified electrician or instrumentation engineer. Avoid shock hazards! Turn signal input, output, and power off before connecting or disconnecting wiring, removing, or installing module.

See diagram for wiring examples. Polarity must be observed for input and output wiring connections. If the input and/or output do not function, check switch settings and wiring polarity.

Device Connected to Output	Terminal	Terminal	Switch E
Voltage input	3 (–)	4 (+)	V
Passive mA (current) input. Module provides loop power	3 (–)	4 (+20 V)	I
mA (current) input device that provides loop power.	2 (–)	3 (+)	I

Device Connected to Input	Terminal	Terminal
Voltage output	9 (–)	11 (+)
mA (current) output that provides loop power	9 (–)	11 (+)
Passive mA (current) output. Module provides loop power	11 (–)	10 (+15 V)

Using the Loop Power Supplies with Current Signals

Determine if your device (PLC, display, transmitter etc.) provides power to the current loop or if the loop must be powered by the DMD4380. Typical voltage may be 9-24 VDC at your device's terminals if it provides power to the loop.

If your device does not power the current loop, the module can provide power using the appropriate terminals as indicated on the wiring diagram.

Module Power

Check white model/serial number label for module operating voltage to make sure it matches available power.

When using DC power, either polarity is acceptable, but for consistency with similar products, positive (+) can be wired to terminal 13 and negative (–) can be wired to terminal 16.

Mounting to a DIN Rail

The housing is IP40 rated and requires vertical installation on a 35 mm DIN rail in a protective panel or enclosure away from heat sources. Do not block air flow. Allow 1" (25 mm) above and below housing vents for air circulation.

1. Tilt front of module downward and position against DIN rail.
2. Clip lower mount to bottom edge of DIN rail.
3. Push front of module upward until upper mount snaps into place.

Removal

1. Push up on the bottom back of the module.
2. Tilt front of module downward to release upper mount from top edge of DIN rail.
3. The module can now be removed from the DIN rail.

Calibration

Front-mounted Zero and Span potentiometers are used to calibrate the output to compensate for load and lead variations.

Note: Perform the following calibration procedure any time switch settings are changed.

1. Apply power to the module and allow a minimum 20 minute warm up time.
2. Using an accurate calibration source, provide an input to the module equal to the minimum input required for the application.
3. Using an accurate measurement device for the output, adjust the Zero potentiometer for the exact minimum output desired. The Zero control should only be adjusted when the input signal is at its minimum. This will produce the corresponding minimum output signal. For example: 4 mA for a 4-20 mA output or –10 V for a ±10V output.
4. Set the input at maximum and adjust the Span pot for the exact maximum output desired. The Span control should only be adjusted when the input signal is at its maximum. This will produce the corresponding maximum output signal. Example: for 4-20 mA output, the Span control will provide adjustment for the 20 mA or high end of the signal.
5. Repeat adjustments for maximum accuracy.

Output Test Function

When the Test button is pressed it will drive the output with a known good signal that can be used as a diagnostic aid during initial start-up or troubleshooting. When released, the output will return to normal.

The Test Cal. potentiometer is factory set to approximately 50% output. It can be adjusted to set the test output from 0 to 100% of the output span. Press and hold the Test button and adjust the Test Cal. potentiometer for the desired output level.

Operation

The DMD4380 accepts a DC voltage or current input and provides an optically isolated DC voltage or current output that is linearly related to the input.

The green input LED provides a visual indication that a signal is being sensed by the input circuitry of the module. It also indicates the input signal strength by changing in intensity as the process changes from minimum to maximum.

If the LED fails to illuminate, or fails to change in intensity as the process changes, check the module power or signal input wiring. The red output LED provides a visual indication that the output signal is functioning. It becomes brighter as the input and the corresponding output change from minimum to maximum.

For current outputs, the red LED will only light if the output loop current path is complete. For either current or voltage outputs, failure to illuminate or a failure to change in intensity as the process changes may indicate a problem with the module power or signal output wiring. Note that it may be difficult to see the LEDs under bright lighting conditions.

Output	0-1 V	0-2 V	0-4 V	1-5 V	0-5 V	0-8 V	2-10 V	0-10 V	±5 V	±10 V	0-2 mA	0-4 mA	0-8 mA	2-10 mA	0-10 mA	0-16 mA	4-20 mA	0-20 mA
Switches / Input	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE
±5 mV	0330V	0338V	0331V	0336V	0339V	0332V	0337V	0333V	0334V	0335V	0330I	0338I	0331I	0336I	0339I	0332I	0337I	0333I
±10 mV	0730V	0738V	0731V	0736V	0739V	0732V	0737V	0733V	0734V	0735V	0730I	0738I	0731I	0736I	0739I	0732I	0737I	0733I
±20 mV	1330V	1338V	1331V	1336V	1339V	1332V	1337V	1333V	1334V	1335V	1333I	1338I	1331I	1336I	1339I	1332I	1337I	1333I
±25 mV	0B30V	0B38V	0B31V	0B36V	0B39V	0B32V	0B37V	0B33V	0B34V	0B35V	0B30I	0B38I	0B31I	0B36I	0B39I	0B32I	0B37I	0B33I
±40 mV	1730V	1738V	1731V	1736V	1739V	1732V	1737V	1733V	1734V	1735V	1730I	1738I	1731I	1736I	1739I	1732I	1737I	1733I
±50 mV	0130V	0138V	0131V	0136V	0139V	0132V	0137V	0133V	0134V	0135V	0130I	0138I	0131I	0136I	0139I	0132I	0137I	0133I
±65 mV	3330V	3338V	3331V	3336V	3339V	3332V	3337V	3333V	3334V	3335V	3330I	3338I	3331I	3336I	3339I	3332I	3337I	3333I
±80 mV	9330V	9338V	9331V	9336V	9339V	9332V	9337V	9333V	9334V	9335V	9330I	9338I	9331I	9336I	9339I	9332I	9337I	9333I
±100 mV	0530V	0538V	0531V	0536V	0539V	0532V	0537V	0533V	0534V	0535V	0530I	0538I	0531I	0536I	0539I	0532I	0537I	0533I
±125 mV	0A30V	0A38V	0A31V	0A36V	0A39V	0A32V	0A37V	0A33V	0A34V	0A35V	0A30I	0A38I	0A31I	0A36I	0A39I	0A32I	0A37I	0A33I
±130 mV	3730V	3738V	3731V	3736V	3739V	3732V	3737V	3733V	3734V	3735V	3730I	3738I	3731I	3736I	3739I	3732I	3737I	3733I
±160 mV	9730V	9738V	9731V	9736V	9739V	9732V	9737V	9733V	9734V	9735V	9730I	9738I	9731I	9736I	9739I	9732I	9737I	9733I
±200 mV	1130V	1138V	1131V	1136V	1139V	1132V	1137V	1133V	1134V	1135V	1130I	1138I	1131I	1136I	1139I	1132I	1137I	1133I
±250 mV	0030V	0038V	0031V	0036V	0039V	0032V	0037V	0033V	0034V	0035V	0030I	0038I	0031I	0036I	0039I	0032I	0037I	0033I
±260 mV	B330V	B338V	B331V	B336V	B339V	B332V	B337V	B333V	B334V	B335V	B330I	B338I	B331I	B336I	B339I	B332I	B337I	B333I
±325 mV	3B30V	3B38V	3B31V	3B36V	3B39V	3B32V	3B37V	3B33V	3B34V	3B35V	3B30I	3B38I	3B31I	3B36I	3B39I	3B32I	3B37I	3B33I
±400 mV	1530V	1538V	1531V	1536V	1539V	1532V	1537V	1533V	1534V	1535V	1530I	1538I	1531I	1536I	1539I	1532I	1537I	1533I
±500 mV	0430V	0438V	0431V	0436V	0439V	0432V	0437V	0433V	0434V	0435V	0430I	0438I	0431I	0436I	0439I	0432I	0437I	0433I
±650 mV	3130V	3138V	3131V	3136V	3139V	3132V	3137V	3133V	3134V	3135V	3130I	3138I	3131I	3136I	3139I	3132I	3137I	3133I
±800 mV	9130V	9138V	9131V	9136V	9139V	9132V	9137V	9133V	9134V	9135V	9130I	9138I	9131I	9136I	9139I	9132I	9137I	9133I
±1 V	1030V	1038V	1031V	1036V	1039V	1032V	1037V	1033V	1034V	1035V	1030I	1038I	1031I	1036I	1039I	1032I	1037I	1033I
±1.25 V	0830V	0838V	0831V	0836V	0839V	0832V	0837V	0833V	0834V	0835V	0830I	0838I	0831I	0836I	0839I	0832I	0837I	0833I
±1.3 V	3530V	3538V	3531V	3536V	3539V	3532V	3537V	3533V	3534V	3535V	3530I	3538I	3531I	3536I	3539I	3532I	3537I	3533I
±1.6 V	9530V	9538V	9531V	9536V	9539V	9532V	9537V	9533V	9534V	9535V	9530I	9538I	9531I	9536I	9539I	9532I	9537I	9533I
±2 V	1430V	1438V	1431V	1436V	1439V	1432V	1437V	1333V	1434V	1435V	1430I	1438I	1431I	1436I	1439I	1432I	1437I	1433I
±2.5 V	2030V	2038V	2031V	2036V	2039V	2032V	2037V	2033V	2034V	2035V	2030I	2038I	2031I	2036I	2039I	2032I	2037I	2033I
±3.25 V	3030V	3038V	3031V	3036V	3039V	3032V	3037V	3033V	3034V	3035V	3030I	3038I	3031I	3036I	3039I	3032I	3037I	3033I
±4 V	9030V	9038V	9031V	9036V	9039V	9032V	9037V	9033V	9034V	9035V	9030I	9038I	9031I	9036I	9039I	9032I	9037I	9033I
±5 V	2430V	2438V	2431V	2436V	2439V	2432V	2437V	2433V	2434V	2435V	2430I	2438I	2431I	2436I	2439I	2432I	2437I	2433I
±6.5 V	3430V	3438V	3431V	3436V	3439V	3432V	3437V	3433V	3434V	3435V	3430I	3438I	3431I	3436I	3439I	3432I	3437I	3433I
±8 V	9430V	9438V	9431V	9436V	9439V	9432V	9437V	9433V	9434V	9435V	9430I	9438I	9431I	9436I	9439I	9432I	9437I	9433I
±10 V	1C30V	1C38V	1C31V	1C36V	1C39V	1C32V	1C37V	1C33V	1C34V	1C35V	1C30I	1C38I	1C31I	1C36I	1C39I	1C32I	1C37I	1C33I
±12.5 V	2830V	2838V	2831V	2836V	2839V	2832V	2837V	2833V	2834V	2835V	2830I	2838I	2831I	2836I	2839I	2832I	2837I	2833I
±13 V	B030V	B038V	B031V	B036V	B039V	B032V	B037V	B033V	B034V	B035V	B030I	B038I	B031I	B036I	B039I	B032I	B037I	B033I
±16.25 V	3830V	3838V	3831V	3836V	3839V	3832V	3837V	3833V	3834V	3835V	3830I	3838I	3831I	3836I	3839I	3832I	3837I	3833I
±20 V	A430V	A438V	A431V	A436V	A439V	A432V	A437V	A433V	A434V	A435V	A430I	A438I	A431I	A436I	A439I	A432I	A437I	A433I
±25 V	2C30V	2C38V	2C31V	2C36V	2C39V	2C32V	2C37V	2C33V	2C34V	2C35I	2C30I	2C38I	2C31I	2C36I	2C39I	2C32I	2C37I	2C33I
±32.5 V	3C30V	3C38V	3C31V	3C36V	3C39V	3C32V	3C37V	3C33V	3C34V	3C35V	3C30I	3C38I	3C31I	3C36I	3C39I	3C32I	3C37I	3C33I
±50 V	A830V	A838V	A831V	A836V	A839V	A832V	A837V	A833V	A834V	A835V	A830I	A838I	A831I	A836I	A839I	A832I	A837I	A833I
±65 V	B830V	B838V	B831V	B836V	B839V	B832V	B837V	B833V	B834V	B835V	B830I	B838I	B831I	B836I	B839I	B832I	B837I	B833I

Output	0-1 V	0-2 V	0-4 V	1-5 V	0-5 V	0-8 V	2-10 V	0-10 V	±5 V	±10 V	0-2 mA	0-4 mA	0-8 mA	2-10 mA	0-10 mA	0-16 mA	4-20 mA	0-20 mA
Switches / Input	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE
0-200 µA	4300V	4308V	4301V	4306V	4309V	4302V	4307V	4303V	4304V	4305V	4300I	4308I	4301I	4306I	4309I	4302I	4307I	4303I
0-400 µA	4700V	4708V	4701V	4706V	4709V	4702V	4707V	4703V	4704V	4705V	4700I	4708I	4701I	4706I	4709I	4702I	4707I	4703I
0-800 µA	5300V	5308V	5301V	5306V	5309V	5302V	5307V	5303V	5304V	5305V	5300I	5308I	5301I	5306I	5309I	5302I	5307I	5303I
0-1 mA	4B00V	4B08V	4B01V	4B06V	4B09V	4B02V	4B07V	4B03V	4B04V	4B05V	4B00I	4B08I	4B01I	4B06I	4B09I	4B02I	4B07I	4B03I
0-1.6 mA	5700V	5708V	5701V	5706V	5709V	5702V	5707V	5703V	5704V	5705V	5700I	5708I	5701I	5706I	5709I	5702I	5707I	5703I
0-2 mA	4100V	4108V	4101V	4106V	4109V	4102V	4107V	4103V	4104V	4105V	4100I	4108I	4101I	4106I	4109I	4102I	4107I	4103I
0-2.6 mA	7300V	7308V	7301V	7306V	7309V	7302V	7307V	7303V	7304V	7305V	7300I	7308I	7301I	7306I	7309I	7302I	7307I	7303I
0-3.2 mA	D300V	D308V	D301V	D306V	D309V	D302V	D307V	D303V	D304V	D305V	D300I	D308I	D301I	D306I	D309I	D302I	D307I	D303I
0-4 mA	4500V	4508V	4501V	4506V	4509V	4502V	4507V	4503V	4504V	4505V	4500I	4508I	4501I	4506I	4509I	4502I	4507I	4503I
0-5 mA	4A00V	4A08V	4A01V	4A06V	4A09V	4A02V	4A07V	4A03V	4A04V	4A05V	4A00I	4A08I	4A01I	4A06I	4A09I	4A02I	4A07I	4A03I
0-5.2 mA	7700V	7708V	7701V	7706V	7709V	7702V	7707V	7703V	7704V	7705V	7700I	7708I	7701I	7706I	7709I	7702I	7707I	7703I
0-6.4 mA	D700V	D708V	D701V	D706V	D709V	D702V	D707V	D703V	D704V	D705V	D700I	D708I	D701I	D706I	D709I	D702I	D707I	D703I
0-8 mA	5100V	5108V	5101V	5106V	5109V	5102V	5107V	5103V	5104V	5105V	5100I	5108I	5101I	5106I	5109I	5102I	5107I	5103I
2-10 mA	5190V	5198V	5191V	5196V	5199V	5192V	5197V	5193V	5194V	5195V	5190I	5198I	5191I	5196I	5199I	5192I	5197I	5193I
0-10 mA	4000V	4008V	4001V	4006V	4009V	4002V	4007V	4003V	4004V	4005V	4000I	4008I	4001I	4006I	4009I	4002I	4007I	4003I
0-10.4 mA	F300V	F308V	F301V	F306V	F309V	F302V	F307V	F303V	F304V	F305V	F300I	F308I	F301I	F306I	F309I	F302I	F307I	F303I
0-13 mA	7B00V	7B08V	7B01V	7B06V	7B09V	7B02V	7B07V	7B03V	7B04V	7B05V	7B00I	7B08I	7B01I	7B06I	7B09I	7B02I	7B07I	7B03I
0-16 mA	5500V	5508V	5501V	5506V	5509V	5502V	5507V	5503V	5504V	5505V	5500I	5508I	5501I	5506I	5509I	5502I	5507I	5503I
4-20 mA	5590V	5598V	5591V	5596V	5599V	5592V	5597V	5593V	5594V	5595V	5590I	5598I	5591I	5596I	5599I	5592I	5597I	5593I
0-20 mA	4400V	4408V	4401V	4406V	4409V	4402V	4407V	4403V	4404V	4405V	4400I	4408I	4401I	4406I	4409I	4402I	4407I	4403I
0-20.8 mA	F700V	F708V	F701V	F706V	F709V	F702V	F707V	F703V	F704V	F705V	F700I	F708I	F701I	F706I	F709I	F702I	F707I	F703I
0-26 mA	7100V	7108V	7101V	7106V	7109V	7102V	7107V	7103V	7104V	7105V	7100I	7108I	7101I	7106I	7109I	7102I	7107I	7103I
0-32 mA	D100V	D108V	D101V	D106V	D109V	D102V	D107V	D103V	D104V	D105V	D100I	D108I	D101I	D106I	D109I	D102I	D107I	D103I
0-40 mA	5000V	5008V	5001V	5006V	5009V	5002V	5007V	5003V	5004V	5005V	5000I	5008I	5001I	5006I	5009I	5002I	5007I	5003I
0-50 mA	4800V	4808V	4801V	4806V	4809V	4802V	4807V	4803V	4804V	4805V	4800I	4808I	4801I	4806I	4809I	4802I	4807I	4803I

Output	0-1 V	0-2 V	0-4 V	1-5 V	0-5 V	0-8 V	2-10 V	0-10 V	±5 V	±10 V	0-2 mA	0-4 mA	0-8 mA	2-10 mA	0-10 mA	0-16 mA	4-20 mA	0-20 mA
Switches / Input	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE	ABCDE
0-10 mV	0300V	0308V	0301V	0306V	0309V	0302V	0307V	0303V	0304V	0305V	0300I	0308I	0301I	0306I	0309I	0302I	0307I	0303I
0-20 mV	0700V	0708V	0701V	0706V	0709V	0702V	0707V	0703V	0704V	0705V	0700I	0708I	0701I	0706I	0709I	0702I	0707I	0703I
0-40 mV	1300V	1308V	1301V	1306V	1309V	1302V	1307V	1303V	1304V	1305V	1300I	1308I	1301I	1306I	1309I	1302I	1307I	1303I
0-50 mV	0B00V	0B08V	0B01V	0B06V	0B09V	0B02V	0B07V	0B03V	0B04V	0B05V	0B00I	0B08I	0B01I	0B06I	0B09I	0B02I	0B07I	0B03I
0-80 mV	1700V	1708V	1701V	1706V	1709V	1702V	1707V	1703V	1704V	1705V	1700I	1708I	1701I	1706I	1709I	1702I	1707I	1703I
0-100 mV	0100V	0108V	0101V	0106V	0109V	0102V	0107V	0103V	0104V	0105V	0100I	0108I	0101I	0106I	0109I	0102I	0107I	0103I
0-130 mV	3300V	3308V	3301V	3306V	3309V	3302V	3307V	3303V	3304V	3305V	3300I	3308I	3301I	3306I	3309I	3302I	3307I	3303I
0-160 mV	9300V	9308V	9301V	9306V	9309V	9302V	9307V	9303V	9304V	9305V	9300I	9308I	9301I	9306I	9309I	9302I	9307I	9303I
0-200 mV	0500V	0508V	0501V	0506V	0509V	0502V	0507V	0503V	0504V	0505V	0500I	0508I	0501I	0506I	0509I	0502I	0507I	0503I
0-250 mV	0A00V	0A08V	0A01V	0A06V	0A09V	0A02V	0A07V	0A03V	0A04V	0A05V	0A00I	0A08I	0A01I	0A06I	0A09I	0A02I	0A07I	0A03I
0-260 mV	3700V	3708V	3701V	3706V	3709V	3702V	3707V	3703V	3704V	3705V	3700I	3708I	3701I	3706I	3709I	3702I	3707I	3703I
0-320 mV	9700V	9708V	9701V	9706V	9709V	9702V	9707V	9703V	9704V	9705V	9700I	9708I	9701I	9706I	9709I	9702I	9707I	9703I
0-400 mV	1100V	1108V	1101V	1106V	1109V	1102V	1107V	1103V	1104V	1105V	1100I	1108I	1101I	1106I	1109I	1102I	1107I	1103I
0-500 mV	0000V	0008V	0001V	0006V	0009V	0002V	0007V	0003V	0004V	0005V	0000I	0008I	0001I	0006I	0009I	0002I	0007I	0003I
0-520 mV	B300V	B308V	B301V	B306V	B309V	B302V	B307V	B303V	B304V	B305V	B300I	B308I	B301I	B306I	B309I	B302I	B307I	B303I
0-650 mV	3B00V	3B08V	3B01V	3B06V	3B09V	3B02V	3B07V	3B03V	3B04V	3B05V	3B00I	3B08I	3B01I	3B06I	3B09I	3B02I	3B07I	3B03I
0-800 mV	1500V	1508V	1501V	1506V	1509V	1502V	1507V	1503V	1504V	1505V	1500I	1508I	1501I	1506I	1509I	1502I	1507I	1503I
0-1 V	0400V	0408V	0401V	0406V	0409V	0402V	0407V	0403V	0404V	0405V	0400I	0408I	0401I	0406I	0409I	0402I	0407I	0403I
0-1.04 V	B700V	B708V	B701V	B706V	B709V	B702V	B707V	B703V	B704V	B705V	B700I	B708I	B701I	B706I	B709I	B702I	B707I	B703I
0-1.3 V	3100V	3108V	3101V	3106V	3109V	3102V	3107V	3103V	3104V	3105V	3100I	3108I	3101I	3106I	3109I	3102I	3107I	3103I
0-1.6 V	9100V	9108V	9101V	9106V	9109V	9102V	9107V	9103V	9104V	9105V	9100I	9108I	9101I	9106I	9109I	9102I	9107I	9103I
0-2 V	1000V	1008V	1001V	1006V	1009V	1002V	1007V	1003V	1004V	1005V	1000I	1008I	1001I	1006I	1009I	1002I	1007I	1003I
0-2.5 V	0800V	0808V	0801V	0806V	0809V	0802V	0807V	0803V	0804V	0805V	0800I	0808I	0801I	0806I	0809I	0802I	0807I	0803I
0-2.6 V	3500V	3508V	3501V	3506V	3509V	3502V	3507V	3503V	3504V	3505V	3500I	3508I	3501I	3506I	3509I	3502I	3507I	3503I
0-3.2 V	9500V	9508V	9501V	9506V	9509V	9502V	9507V	9503V	9504V	9505V	9500I	9508I	9501I	9506I	9509I	9502I	9507I	9503I
0-3.25 V	3A00V	3A08V	3A01V	3A06V	3A09V	3A02V	3A07V	3A03V	3A04V	3A05V	3A00I	3A08I	3A01I	3A06I	3A09I	3A02I	3A07I	3A03I
0-4 V	1400V	1408V	1401V	1406V	1409V	1402V	1407V	1403V	1404V	1405V	1400I	1408I	1401I	1406I	1409I	1402I	1407I	1403I
1-5 V	1490V	1498V	1491V	1496V	1499V	1492V	1497V	1493V	1494V	1495V	1490I	1498I	1491I	1496I	1499I	1492I	1497I	1493I
0-5 V	2000V	2008V	2001V	2006V	2009V	2002V	2007V	2003V	2004V	2005V	2000I	2008I	2001I	2006I	2009I	2002I	2007I	2003I
0-5.25 V	B100V	B108V	B101V	B106V	B109V	B102V	B107V	B103V	B104V	B105V	B100I	B108I	B101I	B106I	B109I	B102I	B107I	B103I
0-6.5 V	3000V	3008V	3001V	3006V	3009V	3002V	3007V	3003V	3004V	3005V	3000I	3008I	3001I	3006I	3009I	3002I	3007I	3003I
0-8 V	9000V	9008V	9001V	9006V	9009V	9002V	9007V	9003V	9004V	9005V	9000I	9008I	9001I	9006I	9009I	9002I	9007I	9003I
2-10 V	9090V	9098V	9091V	9096V	9099V	9092V	9097V	9093V	9094V	9095V	9090I	9098I	9091I	9096I	9099I	9092I	9097I	9093I
0-10 V	2400V	2408V	2401V	2406V	2409V	2402V	2407V	2403V	2404V	2405V	2400I	2408I	2401I	2406I	2409I	2402I	2407I	2403I
0-10.4 V	B500V	B508V	B501V	B506V	B509V	B502V	B507V	B503V	B504V	B505V	B500I	B508I	B501I	B506I	B509I	B502I	B507I	B503I
0-13 V	3400V	3408V	3401V	3406V	3409V	3402V	3407V	3403V	3404V	3405V	3400I	3408I	3401I	3406I	3409I	3402I	3407I	3403I
0-16 V	9400V	9408V	9401V	9406V	9409V	9402V	9407V	9403V	9404V	9405V	9400I	9408I	9401I	9406I	9409I	9402I	9407I	9403I
0-20 V	1C00V	1C08V	1C01V	1C06V	1C09V	1C02V	1C07V	1C03V	1C04V	1C05V	1C00I	1C08I	1C01I	1C06I	1C09I	1C02I	1C07I	1C03I
0-25 V	2800V	2808V	2801V	2806V	2809V	2802V	2807V	2803V	2804V	2805V	2800I	2808I	2801I	2806I	2809I	2802I	2807I	2803I
0-26 V	B000V	B008V	B001V	B006V	B009V	B002V	B007V	B003V	B004V	B005V	B000I	B008I	B001I	B006I	B009I	B002I	B007I	B003I
0-32.5 V	3800V	3808V	3801V	3806V	3809V	3802V	3807V	3803V	3804V	3805V	3800I	3808I	3801I	3806I	3809I	3802I	3807I	3803I
0-40 V	A400V	A408V	A401V	A406V	A409V	A402V	A407V	A403V	A404V	A405V	A400I	A408I	A401I	A406I	A409I	A402I	A407I	A403I
0-50 V	2C00V	2C08V	2C01V	2C06V	2C09V	2C02V	2C07V	2C03V	2C04V	2C05V	2C00I	2C08I	2C01I	2C06I	2C09I	2C02I	2C07I	2C03I
0-52 V	B400V	B408V	B401V	B406V	B409V	B402V	B407V	B403V	B404V	B405V	B400I	B408I	B401I	B406I	B409I	B402I	B407I	B403I
0-65 V	3C00V	3C08V	3C01V	3C06V	3C09V	3C02V	3C07V	3C03V	3C04V	3C05V	3C00I	3C08I	3C01I	3C06I	3C09I	3C02I	3C07I	3C03I
0-100 V	A800V	A808V	A801V	A806V	A809V	A802V	A807V	A803V	A804V	A805V	A800I	A808I	A801I	A806I	A809I	A802I	A807I	A803I
0-130 V	B800V	B808V	B801V	B806V	B809V	B802V	B807V	B803V	B804V	B805V	B800I	B808I	B801I	B806I	B809I	B802I	B807I	B803I

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **13 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to the normal **one (1) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

OMEGA is pleased to offer suggestions on the use of its various products. However, OMEGA neither assumes responsibility for any omissions or errors nor assumes liability for any damages that result from the use of its products in accordance with information provided by OMEGA, either verbal or written. OMEGA warrants only that the parts manufactured by the company will be as specified and free of defects. OMEGA MAKES NO OTHER WARRANTIES OR REPRESENTATIONS OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED, EXCEPT THAT OF TITLE, AND ALL IMPLIED WARRANTIES INCLUDING ANY WARRANTY OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED. LIMITATION OF LIABILITY: The remedies of purchaser set forth herein are exclusive, and the total liability of OMEGA with respect to this order, whether based on contract, warranty, negligence, indemnification, strict liability or otherwise, shall not exceed the purchase price of the component upon which liability is based. In no event shall OMEGA be liable for consequential, incidental or special damages.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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