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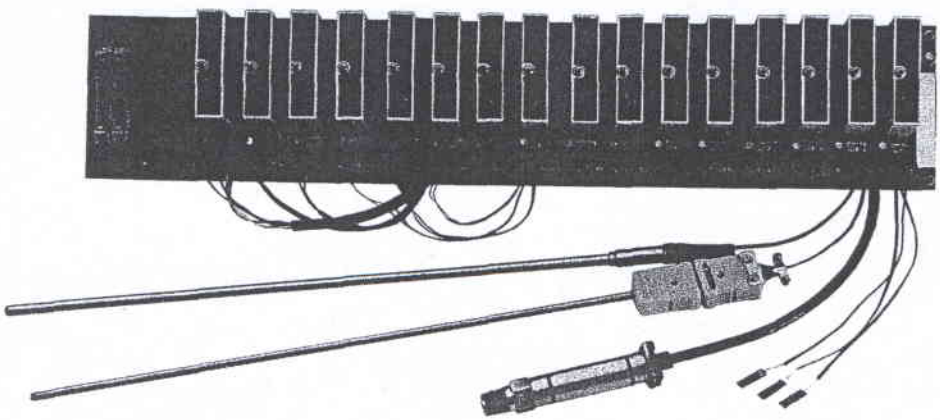

ISO 9001 CERTIFIED CORPORATE QUALITY
STAMFORD, CT

ISO 9001 CERTIFIED CORPORATE QUALITY
MANCHESTER, UK

OM5-C
Modular Isolated Signal Conditioners

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General Description

OMEGA® OM5 Series Isolated Signal Conditioning Modules are low cost, high performance, plug-in signal conditioners. Each OM5 module provides a single channel of isolated analog input or output. Input modules interface to all types of external sensors. The modules filter, isolate, amplify, and convert the input signal to a high-level analog voltage output. The output modules accept a high-level analog voltage signal from a host system, then buffer, isolate, and amplify before providing a process current or voltage output to field devices. Over 115 different OM5 modules are available encompassing a wide selection of isolated analog input and output functions. Analog inputs include voltage and current in narrow and wide bandwidths, Thermocouple, RTD, Potentiometer, Strain Gage, Frequency, and 2-Wire Transmitter. Custom I/O ranges are also available. All modules are CSA certified and FM approved for safe operation in Class I, Division 2, Groups A, B, C, and D hazardous environments.

Accessories include: addressable and non-addressable single, dual, eight and 16 channel backpanels, available with on-board temperature sensors and cold junction thermocouple compensation; power supplies; mounting racks; interface cables, and evaluation boards.

OM5 modules offer several advantages when compared with competitive parts, while maintaining equivalent price:

• **50 times better** noise rejection by using a **6-pole filter** with 95dB NMR, versus a three-pole filter with 60dB NMR; • Lower output noise • True 3-way isolation • CMR of noise spikes measures **20dB better** than competing models.

Key Specifications

- 1500V Isolation
- Accuracy, 0.05%
- CMR, 160dB
- NMR, 95dB
- Transient Protection, ANSI/IEEE C37.90.1-1989
- ±1µV/°C Drift
- Output noise as low as 150µVrms
- 240VAC Protection for field I/O
- Operating temp range, –40°C/+85°C
- CSA CERTIFIED (Class I, Division 2, Groups A, B, C, D)
- FM APPROVED (Class I, Division 2, Groups A, B, C, D)
- EUROPEAN EMC DIRECTIVE COMPLIANT
- CE APPROVAL for low voltage directive not applicable. Products comply with ENG1010-1 (IEC1010)

Applications

- DESIGNED FOR INDUSTRIAL PLANT ENVIRONMENTS
- PROTECTS USER EQUIPMENT FROM LIGHTNING AND HEAVY EQUIPMENT POWER-LINE VOLTAGE
- REDUCES ELECTRICAL NOISE IN MEASURED SIGNALS
- CONVENIENT SYSTEM EXPANSION AND REPAIR

SELECTION GUIDE FOR OM5 ISOLATED SIGNAL CONDITIONING PRODUCTS

ANALOG VOLTAGE INPUT MODULES, NARROW BANDWIDTH (4Hz BW)

MODEL	INPUT RANGE	OUTPUT RANGE*
OM5-IMV-10A-C	±10mV	±5V
OM5-IMV-50A-C	±50mV	±5V
OM5-IMV-100A-C	±100mV	±5V
OM5-IMV-10B-C	±10mV	0 to +5V
OM5-IMV-50B-C	±50mV	0 to +5V
OM5-IMV-100B-C	±100mV	0 to +5V
OM5-IV-1A-C	±1V	±5V
OM5-IV-5A-C	±5V	±5V
OM5-IV-10A-C	±10V	±5V
OM5-IV-1B-C	±1V	0 to +5V
OM5-IV-5B-C	±5V	0 to +5V
OM5-IV-10B-C	±10V	0 to +5V
OM5-IV-20A-C	±20V	±5V
OM5-IV-20B-C	±20V	0 to +5V
OM5-IV-40A-C	±40V	±5V
OM5-IV-40B-C	±40V	0 to +5V

ANALOG CURRENT INPUT MODULES, 4Hz AND 1kHz BANDWIDTH

MODEL	INPUT RANGE	OUTPUT RANGE*	BW
OM5-II-4/20-C	4 to 20mA	0 to +5V	4Hz
OM5-II-0/20-C	0 to 20mA	0 to +5V	4Hz

TRUE RMS INPUT MODULES

MODEL	INPUT RANGE (rms)	OUTPUT RANGE (dc)
OM5-IAC-100B-C	0 to 100mV	0 to +5V
OM5-IAC-1B-C	0 to 1V	0 to +5V
OM5-IAC-10B-C	0 to 10V	0 to +5V

LINEARIZED 2- OR 3-WIRE RTD INPUT MODULES (0 to +5V OUTPUT*, 4Hz BW)

MODEL	TYPE***	INPUT RANGE
OM5-IP-N100-C	100Ω Pt	–100°C to +100°C (–148°F to +212°F)
OM5-IP-100-C	100Ω Pt	0°C to +100°C (+32°F to +212°F)
OM5-IP-200-C	100Ω Pt	0°C to +200°C (+32°F to +392°F)
OM5-IP-600-C	100Ω Pt	0°C to +600°C (+32°F to +1112°F)
OM5-IC-120-01-C	10Ω Cu at 0°C	0°C to +120°C (+32°F to +248°F)
OM5-IC-120-02-C	10Ω Cu at 25°C	0°C to +120°C (+32°F to +248°F)
OM5-IN-300-C	120Ω Ni	0°C to +300°C (+32°F to +572°F)

LINEARIZED 4-WIRE RTD INPUT MODULES (0 to +5V OUTPUT*, 4Hz BW)

MODEL	TYPE***	INPUT RANGE
OM5-IP4-N100-C	100Ω Pt	–100°C to +100°C (–148°F to +212°F)
OM5-IP4-100-C	100Ω Pt	0°C to +100°C (+32°F to +212°F)
OM5-IP4-200-C	100Ω Pt	0°C to +200°C (+32°F to +392°F)
OM5-IP4-600-C	100Ω Pt	0°C to +600°C (+32°F to +1112°F)
OM5-IC4-120-01-C	10Ω Cu at 0°C	0°C to +120°C (+32°F to +248°F)
OM5-IC4-120-02-C	10Ω Cu at 25°C	0°C to +120°C (+32°F to +248°F)
OM5-IN4-300-C	120Ω Ni	0°C to +300°C (+32°F to +572°F)

POTENTIOMETER INPUT MODULES (4Hz BW)

MODEL	INPUT RANGE	OUTPUT RANGE*
OM5-PT-100-C	0 to 100Ω	0 to +5V
OM5-PT-500-C	0 to 500Ω	0 to +5V
OM5-PT-1K-C	0 to 1KΩ	0 to +5V
OM5-PT-10K-C	0 to 10KΩ	0 to +5V

THERMOCOUPLE INPUT MODULES (0 to +5V OUTPUT*, 4Hz BW)

MODEL	TYPE**	INPUT RANGE
OM5-ITC-J-C	J	–100°C to +760°C (–148°F to +1400°F)
OM5-ITC-K-C	K	–100°C to +1350°C (–148°F to +2462°F)
OM5-ITC-T-C	T	–100°C to +400°C (–148°F to +752°F)
OM5-ITC-E-C	E	0°C to +900°C (+32°F to +1652°F)
OM5-ITC-R-C	R	0°C to +1750°C (+32°F to +3182°F)
OM5-ITC-S-C	S	0°C to +1750°C (+32°F to +3182°F)
OM5-ITC-B-C	B	0°C to +1800°C (+32°F to +3272°F)
OM5-ITC-C1-C	C	+350°C to +1300°C (+662°F to +2372°F)
OM5-ITC-N1-C	N	-100°C to +1300°C (-148°F to +2372°F)

STRAIN GAGE INPUT MODULES (±5V OUTPUT*, 10kHz BW)

MODEL	INPUT	EXCITATION
OM5-WBS38-01-C	±10mV Full Bridge Input, (3mV/V) 100 to 10kΩ	3.333V
OM5-WBS-1-C	±30mV Full Bridge Input, (3mV/V) 300 to 10KΩ	10.000V
OM5-WBS38-03-C	±10mV Half Bridge Input, (3mV/V) 100 to 10kΩ	3.333V
OM5-WBS-3-C	±30mV Half Bridge Input, (3mV/V) 300 to 10KΩ	10.000V
OM5-WBS-2-C	±20mV Full Bridge Input, (2mV/V) 300 to 10KΩ	10.000V
OM5-WBS-4-C	±33.3mV Full Bridge Input, (10mV/V) 100 to 10KΩ	3.333V
OM5-WBS-5-C	±100mV Full Bridge Input, (10mV/V) 300 to 10KΩ	10.000V

ANALOG CURRENT OUTPUT MODULES, 400Hz AND 1kHz BANDWIDTH

MODEL	INPUT RANGE	OUTPUT RANGE	BW
OM5-IVI-B4-C	0 to +5V	4 to 20mA	400Hz
OM5-IVI-A4-C	±5V	4 to 20mA	400Hz
OM5-IVI-B0-C	0 to +5V	0 to 20mA	400Hz
OM5-IVI-A0-C	±5V	0 to 20mA	400Hz

SELECTION GUIDE FOR OM5 ISOLATED SIGNAL CONDITIONING PRODUCTS

ANALOG VOLTAGE INPUT MODULES, WIDE BANDWIDTH (10kHz BW)

MODEL	INPUT RANGE	OUTPUT RANGE*
OM5-WMV-10A-C	±10mV	±5V
OM5-WMV-50A-C	±50mV	±5
OM5-WMV-100A-C	±100mV	±5V
OM5-WMV-10B-C	±10mV	0 to +5V
OM5-WMV-50B-C	±50mV	0 to +5V
OM5-WMV-100B-C	±100mV	0 to +5V
OM5-WV-1A-C	±1V	±5V
OM5-WV-5A-C	±5V	±5V
OM5-WV-10A-C	±10V	±5V
OM5-WV-1B-C	±1V	0 to +5V
OM5-WV-5B-C	±5V	0 to +5V
OM5-WV-10B-C	±10V	0 to +5V
OM5-WV-20A-C	±20V	±5V
OM5-WV-20B-C	±20V	0 to +5V
OM5-WV-40A-C	±40V	±5V
OM5-WV-40B-C	±40V	0 to +5V

2-WIRE TRANSMITTER INTERFACE MODULES (100Hz BW)

MODEL	INPUT RANGE	OUTPUT RANGE
OM5-TX-1-C	4 to 20mA	+1 to +5V
OM5-TX-2-C	4 to 20mA	+2 to +10V

GENERAL PURPOSE INPUT MODULES, DC EXCITATION

MODEL	MAXIMUM INPUT	OUTPUT*
OM5-DT-1-C	±1V	±5V
OM5-DT-2-C	±2V	±5V
OM5-DT-3-C	±3V	±5V
OM5-DT-4-C	±4V	±5V
OM5-DT-5-C	±5V	±5V
OM5-DT-6-C	±6V	±5V
OM5-DT-7-C	±7V	±5V
OM5-DT-8-C	±8V	±5V
OM5-DT-9-C	±9V	±5V
OM5-DT-10-C	±10V	±5V

FREQUENCY INPUT MODULES

MODEL	INPUT RANGE	OUTPUT RANGE*
OM5-IFI-500-C	0 to 500Hz	0 to +5V
OM5-IFI-1K-C	0 to 1kHz	0 to +5V
OM5-IFI-3K-C	0 to 3kHz	0 to +5V
OM5-IFI-5K-C	0 to 5kHz	0 to +5V
OM5-IFI-10K-C	0 to 10kHz	0 to +5V
OM5-IFI-25K-C	0 to 25kHz	0 to +5V
OM5-IFI-50K-C	0 to 50kHz	0 to +5V
OM5-IFI-100K-C	0 to 100kHz	0 to +5V

LINEARIZED THERMOCOUPLE INPUT MODULES (0 to +5V OUTPUT*, 4Hz BW)

MODEL	TYPE**	INPUT RANGE
OM5-LTC-J1-C	J	0°C to +760°C (+32°F to +1400°F)
OM5-LTC-J2-C	J	−100°C to +300°C (−148°F to +572°F)
OM5-LTC-J3-C	J	0°C to +500°C (+32°F to +932°F)
OM5-LTC-J4-C	J	−100°C to +760°C (−148°F to +1400°F)
OM5-LTC-K1-C	K	0°C to +1000°C (+32°F to +1832°F)
OM5-LTC-K2-C	K	0°C to +500°C (+32°F to +932°F)
OM5-LTC-K3-C	K	−100°C to +1350°C (−148°F to +2462°F)
OM5-LTC-K4-C	K	0°C to +1200°C (+32°F to +2192°F)
OM5-LTC-T1-C	T	−100°C to +400°C (−148°F to +752°F)
OM5-LTC-T2-C	T	0°C to +200°C (+32°F to +392°F)
OM5-LTC-E-C	E	0°C to +1000°C (+32°F to +1832°F)
OM5-LTC-R-C	R	+500°C to +1750°C (+932°F to +3182°F)
OM5-LTC-S-C	S	+500°C to +1750°C (+932°F to +3182°F)
OM5-LTC-B-C	B	+500°C to +1800°C (+932°F to +3272°F)

VOLTAGE OUTPUT MODULES, 50mA DRIVE CAPACITY (400 Hz BW)

MODEL	INPUT RANGE	OUTPUT RANGE
OM5-AV-1-C	0 to +5V	±5V
OM5-AV-2-C	±5V	±5V
OM5-AV-3-C	±5V	0 to +5V
OM5-AV-4-C	0 to +10V	±10V
OM5-AV-5-C	±10V	±10V
OM5-AV-6-C	±10V	0 to +10V
OM5-AV-7-C	±5V	±10V

ACCESSORIES

MODEL	DESCRIPTION
OM5-BP-16-C	Non-multiplexed, 16 channel backpanel
OM5-BP-16-DIN-C	OM5-BP-16-C with DIN rail mounting option
OM5-BP-16-MUX-C	Multiplexed, 16 channel backpanel
OM5-BP-16-MUX-DIN-C	OM5-BP-16-MUX-C with DIN rail mounting option
OM5-BP-8-C	Non-multiplexed, 8 channel backpanel
OM5-BP-8-DIN-C	OM5-BP-8-C with DIN rail mounting option
OM5-BP-8-MUX-C	Multiplexed, 8 channel backpanel
OM5-BP-8-MUX-DIN-C	OM5-BP-8-MUX-C with DIN rail mounting option
OM5-BP-SKT-C	Single channel backpanel, DIN rail mount
OM5-BP-2-C	Dual channel backpanel, DIN rail mount
OM7-DIN-WSF	Base element without snap foot
OM7-DIN-SF	Base element with snap foot
OM5-CA-04-01	System interface cable for analog backpanels
OMX-CAB-01-C	Daisy chain cable for OM5-BP-16-MUX-C
OM7-IF	Ribbon cable to screw interface board
OMX-1344-C	Package of 10 jumpers
OM5-PRT-003	Power supply, 3A, 5VDC, 120VAC U.S.
OM5-PRT-003-220	Power supply, 3A, 5VDC, 220VAC U.S.
OMX-1362-C	Precision 20Ω resistor for OM5-II and OM5-TX
OMX-CJC-C	Encapsulated cold junction circuit
OMX-1363-C	19 inch metal rack for mounting backpanels
OM7-DIN-SE	Side element
OM7-DIN-CP	Connection pins

***Note:**
Any module not shown with a 10V output can be specified with 10V output. Consult factory for minimum quantity and pricing details and module specifications.

**THERMOCOUPLE ALLOY COMBINATIONS

TYPE	MATERIAL
J	Iron vs. Copper-Nickel
K	Nickel-Chromium vs. Nickel-Aluminum
T	Copper vs. Copper-Nickel
E	Nickel-Chromium vs. Copper-Nickel
R	Platinum-13% Rhodium vs. Platinum
S	Platinum-10% Rhodium vs. Platinum
B	Platinum-30% Rhodium vs.Platinum-6%Rhodium
C	Tungsten-5% Rhenium vs. Tungsten-26% Rhenium
N	Nickel-14.2% Chromium-1.4% Silicon vs. Nickel-4.4% Silicon-0.1% Magnesium

***RTD ALPHA COEFFICIENTS

TYPE	ALPHA COEFFICIENT
100Ω Pt	0.00385
120Ω Ni	0.00672
10Ω Cu	0.004274

OM5-IMV/IV

Analog Voltage Input Modules, Narrow Bandwidth

FEATURES

- ACCEPTS MILLIVOLT AND VOLTAGE LEVEL SIGNALS
- HIGH LEVEL VOLTAGE OUTPUTS
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- 160dB CMR
- 95dB NMR AT 60Hz, 90dB at 50Hz
- ±0.05% ACCURACY
- ±0.02% LINEARITY
- ±1µV/°C DRIFT
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANELS

DESCRIPTION

Each OM5-IMV and OM5-IV voltage input module provides a single channel of analog input which is filtered, isolated, amplified, and converted to a high level analog voltage output (Figure 1). This voltage output is logic-switch controlled, allowing these modules to share a common analog bus without the requirement of external multiplexers.

The OM5 modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side.

After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit on the OM5-IMV and OM5-IV modules provides protection against accidental connection of power-line voltages up to 240VAC.

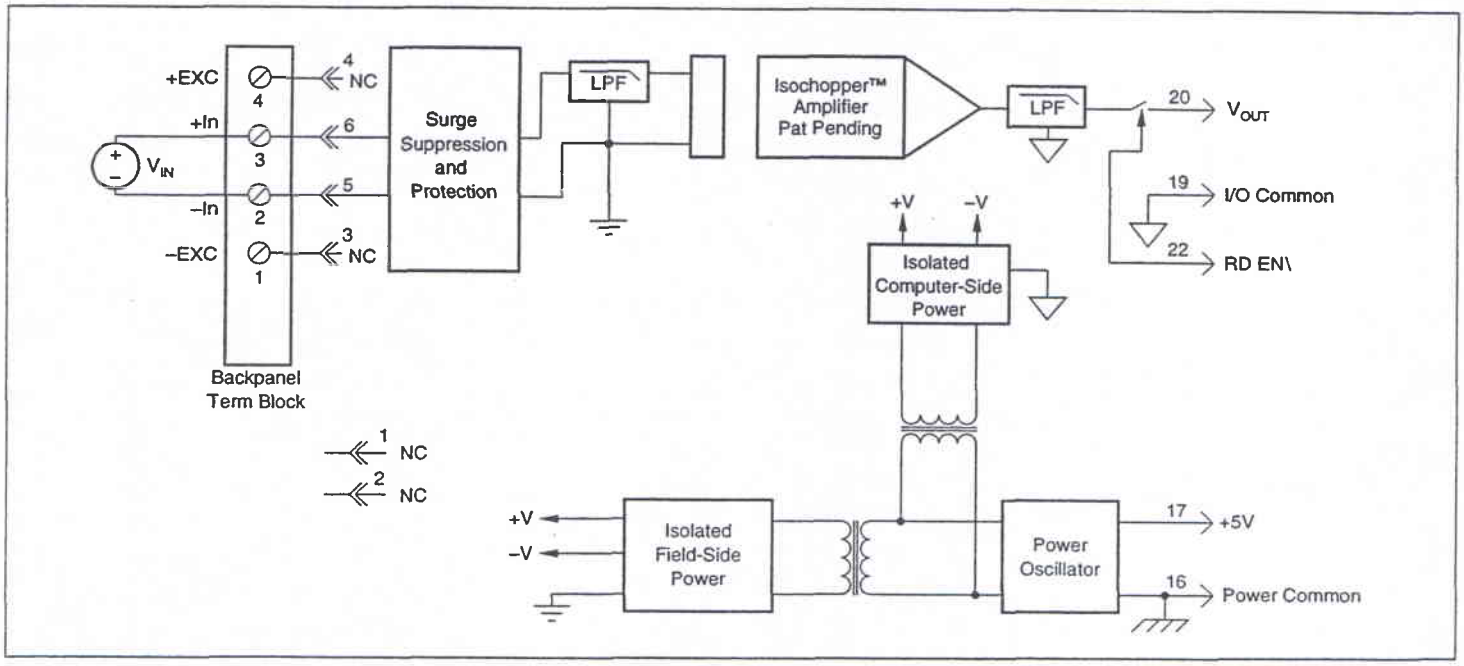


FIGURE 1. OM5-IMV/IV Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V power.

Module	OM5-IMV	OM5-IV
Input Range	±10mV to ±100mV	±1V to ±40V
Input Bias Current	±0.5nA	±0.05nA
Input Resistance		
Normal	50MΩ	650kΩ (minimum)
Power Off	40kΩ	650kΩ (minimum)
Overload	40kΩ	650kΩ (minimum)
Input Protection		
Continuous	240Vrms max	*
Transient	ANSI/IEEE C37.90.1-1989	*
CMV, Input to Output		
Continuous	1500Vrms max	*
Transient	ANSI/IEEE C37.90.1-1989	*
CMR (50Hz or 60Hz)	160dB	*
NMR	95dB at 60Hz, 90dB at 50Hz	*
Accuracy[1]	±0.05% Span ±10µV RTI[2] ±0.05%(V_Z[3])	±0.05% Span ±0.2mV RTI[2] ±0.05%(V_Z[3])
Nonlinearity	±0.02% Span	*
Stability		
Input Offset	±1µV/°C	±20µV/°C
Output Offset	±20µV/°C	*
Gain	±25ppm/°C	±50ppm/°C
Noise		
Input, 0.1 to 10Hz	0.2µVrms	2µVrms
Output, 100kHz	200µVrms	*
Bandwidth, –3dB	4Hz	*
Response Time, 90% Span	0.2s	*
Output Range	±5V, 0V to +5V	*
Output Resistance	50Ω	*
Output Protection	Continuous Short to Ground	*
Output Selection Time		
(to ±1mV of V_{OUT})	6µs at C_{load} = 0 to 2000pF	*
Output Current Limit	±8mA	*
Output Enable Control		
Max Logic "0"	+0.8V	*
Min Logic "1"	+2.4V	*
Max Logic "1"	+36V	*
Input Current, "0", "1"	0.5µA	*
Power Supply Voltage	+5VDC ±5%	*
Power Supply Current	30mA	*
Power Supply Sensitivity	±2µV/% RTI[2]	±200µV/% RTI[2]
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)	*
Environmental		
Operating Temp. Range	–40°C to +85°C	*
Storage Temp. Range	–40°C to +85°C	*
Relative Humidity	0 to 95% Noncondensing	*
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)	*
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)	*

* Same specification as OM5-IMV.
NOTES: (1) Includes nonlinearity, hysteresis and repeatability.
(2) RTI = Referenced to input.
(3) V_Z is the input voltage that results in 0V output.

ORDERING INFORMATION

MODEL	INPUT RANGE	OUTPUT RANGE
OM5-IMV-10A-C	–10mV to +10mV	–5V to +5V
OM5-IMV-50A-C	–50mV to +50mV	–5V to +5V
OM5-IMV-100A-C	–100mV to +100mV	–5V to +5V
OM5-IMV-10B-C	–10mV to +10mV	0V to +5V
OM5-IMV-50B-C	–50mV to +50mV	0V to +5V
OM5-IMV-100B-C	–100mV to +100mV	0V to +5V
OM5-IV-1A-C	–1V to +1V	–5V to +5V
OM5-IV-5A-C	–5V to +5V	–5V to +5V
OM5-IV-10A-C	–10V to +10V	–5V to +5V
OM5-IV-1B-C	–1V to +1V	0V to +5V
OM5-IV-5B-C	–5V to +5V	0V to +5V
OM5-IV-10B-C	–10V to +10V	0V to +5V
OM5-IV-20A-C	–20V to +20V	–5V to +5V
OM5-IV-20B-C	–20V to +20V	0V to +5V
OM5-IV-40A-C	–40V to +40V	–5V to +5V
OM5-IV-40B-C	–40V to +40V	0V to +5V

OM5-II
Analog Current Input Modules

FEATURES

- ACCEPTS MILLIAMP LEVEL SIGNALS
- HIGH LEVEL VOLTAGE OUTPUTS
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- 160dB CMR
- 95dB NMR AT 60Hz, 90dB AT 50Hz
- ±0.05% ACCURACY
- ±0.02% LINEARITY
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANELS

DESCRIPTION

Each OM5-II current input module provides a single channel of analog input which is filtered, isolated, amplified, and converted to a high level analog voltage output (Figure 1). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The OM5-II modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

A precision 20Ω current conversion resistor is supplied with the OM5-II module. Sockets are provided on the OM5-BP backpanels to allow installation of this resistor. Extra resistors are available under part number OMX-1362-C.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side.

After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit on the OM5-II modules provides protection against accidental connection of power-line voltages up to 240VAC.

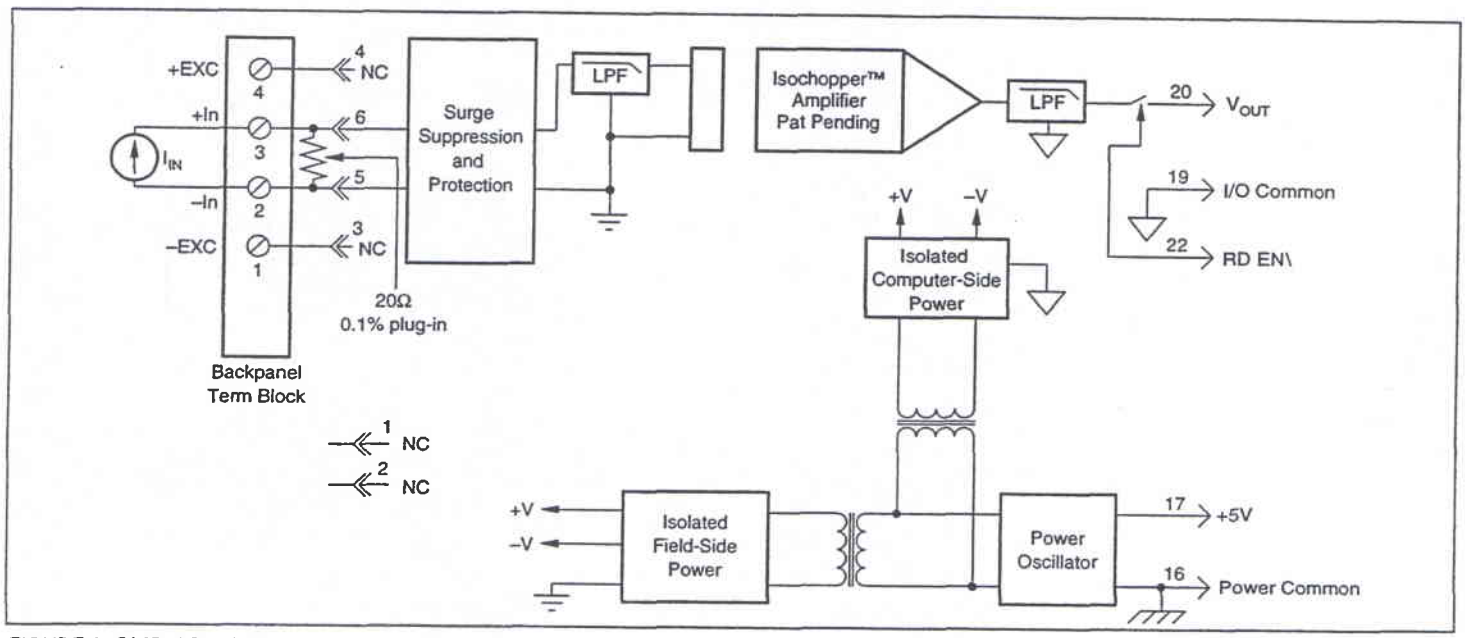


FIGURE 1. OM5-II Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V power.

Module	OM5-II
Input Range	0mA to 20mA or 4mA to 20mA
Input Resistor	
Value	20.00Ω
Accuracy	±0.1%
Stability	±10ppm/°C
Input Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMV, Input to Output	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50Hz or 60Hz)	160dB
NMR	95dB at 60Hz, 90dB at 50Hz
Accuracy[1]	±0.05% span ±0.05% (I_Z [2])
Nonlinearity	±0.02% Span
Stability	
Input Offset	±50nA/°C
Output Offset	±20µV/°C
Gain	±25ppm/°C
Noise	
Input, 0.1Hz to 10Hz	10nArms
Output, 100kHz	200µVrms
Bandwidth, –3dB	4Hz
Response Time, 90% Span	0.2s
Output Range	0 to +5V
Output Resistance	50Ω
Output Protection	Continuous Short to Gnd
Output Selection Time (to ±1mV of V_{OUT})	6µs at C_{load} = 0 to 2000pF
Output Current Limit	+8mA
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0,1"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	30mA
Power Supply Sensitivity	±20µV/% RTI[3]
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	-40°C to +85°C
Storage Temp. Range	-40°C to +85°C
Relative Humidity	0 to 95% Noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

NOTE: (1) Includes nonlinearity, hysteresis and repeatability. (2) I_Z is the input current that results in 0V output. (3) RTI = Referenced to input.

ORDERING INFORMATION

MODEL	INPUT RANGE	OUTPUT RANGE	BANDWIDTH
OM5-II-4/20-C	4mA to 20mA	0V to +5V	4Hz
OM5-II-0/20-C	0mA to 20mA	0V to +5V	4Hz

OM5-IAC
Isolated True RMS Input Modules

FEATURES

- INTERFACES RMS VOLTAGE (0 – 300V) OR RMS CURRENT (0 – 5A)
- DESIGNED FOR STANDARD OPERATION WITH FREQUENCIES OF 45HZ TO 1000HZ (EXTENDED RANGE TO 20Khz)
- COMPATIBLE WITH STANDARD CURRENT AND POTENTIAL TRANSFORMERS
- INDUSTRY STANDARD 0-5V OUTPUT
- ±0.25% FACTORY CALIBRATED ACCURACY (ACCURACY CLASS 0.2)
- 1500 VRMS CONTINUOUS TRANSFORMER BASED ISOLATION
- INPUT OVERLOAD PROTECTED TO 480V MAX (PEAK AC & DC) OR 10A RMS CONTINUOUS
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION

DESCRIPTION

Each OM5-IAC True RMS input module provides a single channel of AC input which is converted to its True RMS dc value, filtered, isolated, amplified, and converted to a standard process voltage or current output (Figure 1).

The OM5-IAC modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The field voltage or current input signal is processed through a pre-amplifier and RMS converter on the field side of the isolation barrier. The converted dc signal is then chopped by a proprietary chopper circuit and transferred across the transformer isolation barrier, suppressing transmission of common mode spikes and surges. The computer side circuitry reconstructs, filters and converts the signal to a 0-5VDC output. Modules are powered from +5VDC, ±5%.

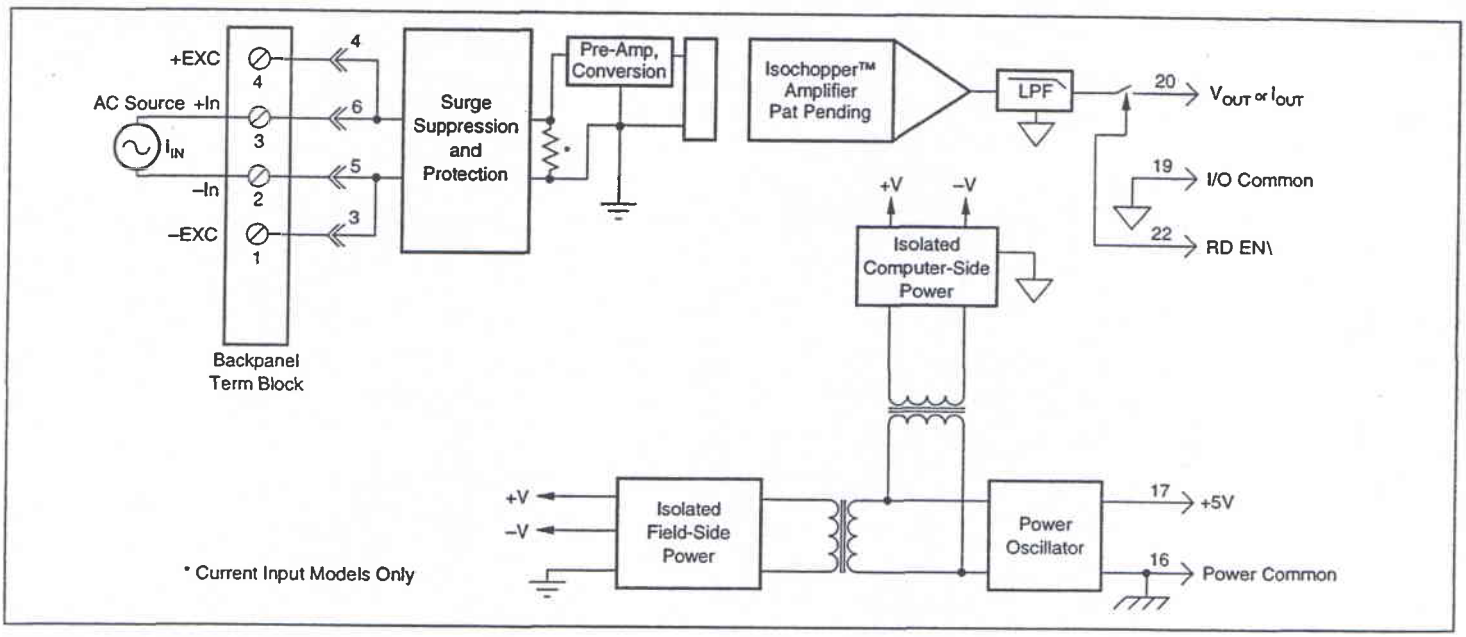


FIGURE 1. OM5-IAC Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V power.

Module	OM5-IAC
Input	
Signal Range	100mV to 10V rms, 0 to 5A rms
Standard Frequency Range	45Hz to 1000Hz
Extended Frequency Range	1kHz to 20kHz
Impedance	1 MΩ ±1% shunted by 100pF (-01 thru -05), 0.05Ω ±1% (-06, -07)
Coupling	AC
Protection[1]	
Continuous	480V (Peak AC & DC)
Transient	ANSI/IEEE C37.90.1-1989
Output	
Signal Range	0-5V
Current Limit	8mA
Voltage Limit	±18V
Resistance	50Ω
Protection	Continuous Short to Ground
Ripple and Noise (100Khz)	0.025% Span rms
Accuracy[2][3]	
Sinusoid	
50/60 Hz	±0.25% Span
45Hz to 1kHz	±0.25% Reading Additional Factor
1kHz to 20kHz	±0.75% Reading Additional Factor
Non-Sinusoid	
Crest Factor = 1 to 2	±0.05% Reading Additional Error
Crest Factor = 2 to 3	±0.15% Reading Additional Error
Crest Factor = 3 to 4	±0.30% Reading Additional Error
Crest Factor = 4 to 5	±0.40% Reading Additional Error
Vs. Temperature	±100ppm/°C
Isolation (Common Mode)	
Input to Output, Input to Power	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
Output to Power	
Continuous	50Vdc max
Rejection (50-60Hz Common Mode)	100dB
Response Time (0 to 99%)	<400ms
Output Enable Control	
Selection Time	6.0µS @ C_{LOAD} = 0 to 2000pF
Voltage	
Max Logic "0"	+0.8V
Min / Max Logic "1"	+2.4V / +36V
Current, "0,1"	0.5µA
Loop Voltage	+7.5Vdc min, +26Vdc max
Load Resistance (maximum)	(Loop Voltage - 14) / (Loop Current)
Supply Voltage	+5VDC ±5%
Current	30mA
Sensitivity	±200ppm/%
Environmental	
Operating Temp. Range	-40° C to +85° C
Storage Temp. Range	-40° C to +85° C
Relative Humidity	0 to 90% noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)
Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)

NOTE:
(1) Module rating only. Backpanel connector rating may differ — use the lowest of the two in accordance with required safety requirements.
(2) At standard 60Hz factory calibration. Consult factory for calibration at other frequencies.
(3) For 10-100% rated span. Add an additional 0.25% error for 0-10% Span measurements. Accuracy includes nonlinearity, hysteresis and repeatability but not source or external shunt inaccuracy (if used).

ORDERING INFORMATION

MODEL	INPUT* (rms)	OUTPUT* (dc)
OM5-IAC-100B-C	0-100mV	0-5V
OM5-IAC-1B-C	0-1V	0-5V
OM5-IAC-10B-C	0-10V	0-5V

* Modules can be ordered with other input/output ranges. Consult factory for ordering details and specifications.

OM5-IP/IC/IN
Linearized 2- or 3-Wire RTD Input Modules

FEATURES

- INTERFACES TO 100Ω PLATINUM, 10Ω COPPER, OR 120Ω NICKEL RTDs
- LINEARIZES RTD SIGNAL
- HIGH LEVEL VOLTAGE OUTPUTS
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- 160dB CMR
- 95dB NMR AT 60Hz, 90dB AT 50Hz
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANEL

DESCRIPTION

Each OM5 RTD input module provides a single channel of RTD input which is filtered, isolated, amplified, linearized, and converted to a high level analog voltage output (Figure 1). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The OM5 modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

RTD excitation is provided from the module by two matched current sources. When using a three-wire RTD, this method allows an equal current to flow in each RTD lead, which cancels the effects of lead resistances. The excitation currents are very small (0.25mA for 100Ω Pt and 120Ω Ni, and 1.0mA for 10Ω Cu) which minimizes self-heating of the RTD.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side. After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit on the OM5 modules provides protection against accidental connection of power-line voltages up to 240VAC.

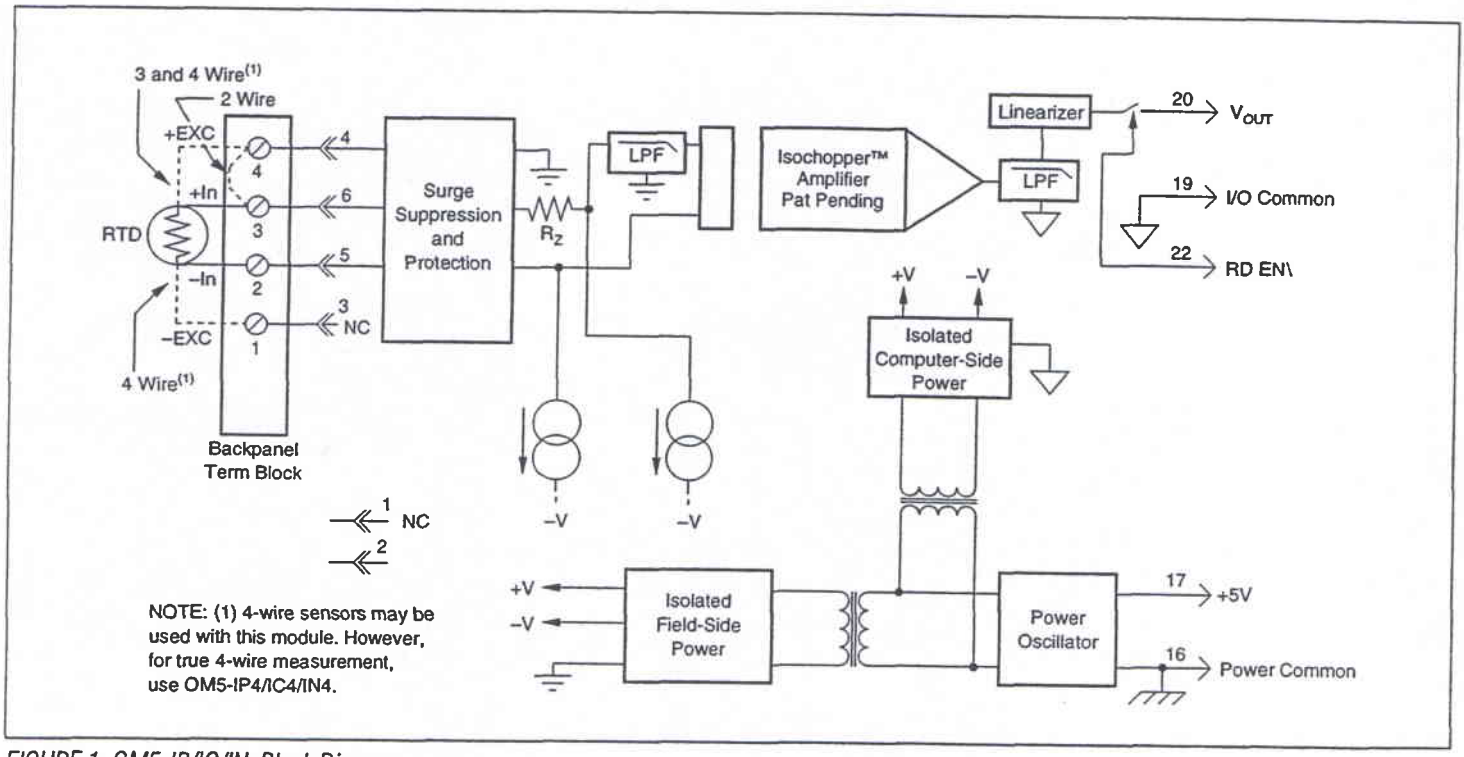


FIGURE 1. OM5-IP/IC/IN Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V Power.

Module	OM5-IP/IC/IN
Input Range Limits	–200°C to +850°C (100Ω Pt) –80°C to 320°C (120Ω Ni) –100°C to 260°C (10Ω Cu)
Input Resistance	
Normal	50MΩ
Power Off	40kΩ
Overload	40kΩ
Input Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
Sensor Excitation Current	
100Ω Pt, 120Ω Ni	0.25mA
10Ω Cu	1.0mA
Lead Resistance Effect	
100Ω Pt, 120Ω Ni	±0.02°C/Ω(1)
10Ω Cu	±0.2°C/Ω(1)
CMV, Input to Output	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50 or 60Hz)	160dB
NMR	95dB at 60Hz, 90dB at 50Hz
Accuracy	See Ordering Information
Conformity Error	±0.05% Span
Stability	
Input Offset	±0.02°C/°C
Output Offset	±20µV/°C
Gain	±50ppm of reading/°C
Noise	
Input, 0.1 to 10Hz	0.2µVrms
Output, 100kHz	200µVrms
Bandwidth, –3dB	4Hz
Response Time, 90% Span	0.2s
Output Range	0V to +5V
Output Resistance	50Ω
Output Protection	Continuous Short to Ground
Output Selection Time (to ±1mV of V_{OUT})	6µs at C_{load} = 0 to 2000pF
Output Current Limit	+8mA
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0,1"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	30mA
Power Supply Sensitivity	
100Ω Pt, 120Ω Ni	0.2°C/V
10Ω Cu	0.5°C/V
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temperature Range	–40°C to +85°C
Storage Temperature Range	–40°C to +85°C
Relative Humidity	0 to 95% noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

NOTES: (1) "Ω" refers to the resistance in one lead.

ORDERING INFORMATION

MODEL	INPUT RANGE	OUTPUT RANGE	ACCURACY†
100Ω Pt, α = 0.00385			
OM5-IP-N100-C	–100°C to +100°C (–148°F to +212°F)	0V to +5V	±0.32°C
OM5-IP-100-C	0°C to +100°C (+32°F to 212°F)	0V to +5V	±0.13°C
OM5-IP-200-C	0°C to +200°C (+32°F to 392°F)	0V to +5V	±0.26°C
OM5-IP-600-C	0°C to +600°C (+32°F to 1112°F)	0V to +5V	±0.78°C
10Ω Cu, α = 0.004274			
OM5-IC-120-01-C	0°C to +120°C (10Ω at 0°C) (+32°F to +248°F)	0V to +5V	±0.23°C
OM5-IC-120-02-C	0°C to +120°C (10Ω at 25°C) (+32°F to +248°F)	0V to +5V	±0.23°C
120Ω Ni, α = 0.00672			
OM5-IN-300-C	0°C to +300°C (+32°F to +572°F)	0V to +5V	±0.40°C

†Includes conformity, hysteresis and repeatability.

OM5-IP4/IC4/IN4
Linearized 4-Wire RTD Input Modules

FEATURES

- INTERFACES TO 100Ω PLATINUM, 10Ω COPPER, OR 120Ω NICKEL RTDs
- TRUE 4-WIRE INPUT
- LINEARIZES RTD SIGNAL
- HIGH LEVEL VOLTAGE OUTPUT
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- 160dB CMR
- 95dB NMR AT 60HZ, 90dB AT 50HZ
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANEL

DESCRIPTION

In RTD temperature measurement applications requiring a very high level of accuracy, the OM5 4-Wire RTD input module offers a significant advantage over 3-wire measurement techniques (Figure 1). The OM5 measures only the voltage dropped across the RTD and almost completely ignores the resistance or length of the RTD lead wires. The OM5 3-Wire RTD module provides lead resistance compensation, but requires equal lead resistances, while the 4-wire modules do not require matched lead resistances.

Each OM5 4-wire RTD input module provides a single channel of RTD input which is filtered, isolated, amplified, linearized, and converted to a high level analog voltage output. This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The OM5 modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

RTD excitation is provided from the module by a precision current source. The excitation current is available on two leads which are separate from the two input signal measuring leads. The excitation current does not flow in the input signal leads, which allows RTD measurement to be totally independent of lead resistance. The excitation current is very small (0.25mA for 100 Ω Pt and 120 Ω Ni and 1.0 mA for 10Ω Cu) which minimizes self-heating of the RTD.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side. After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit provides protection against accidental connection of power-line voltages up to 240VAC.

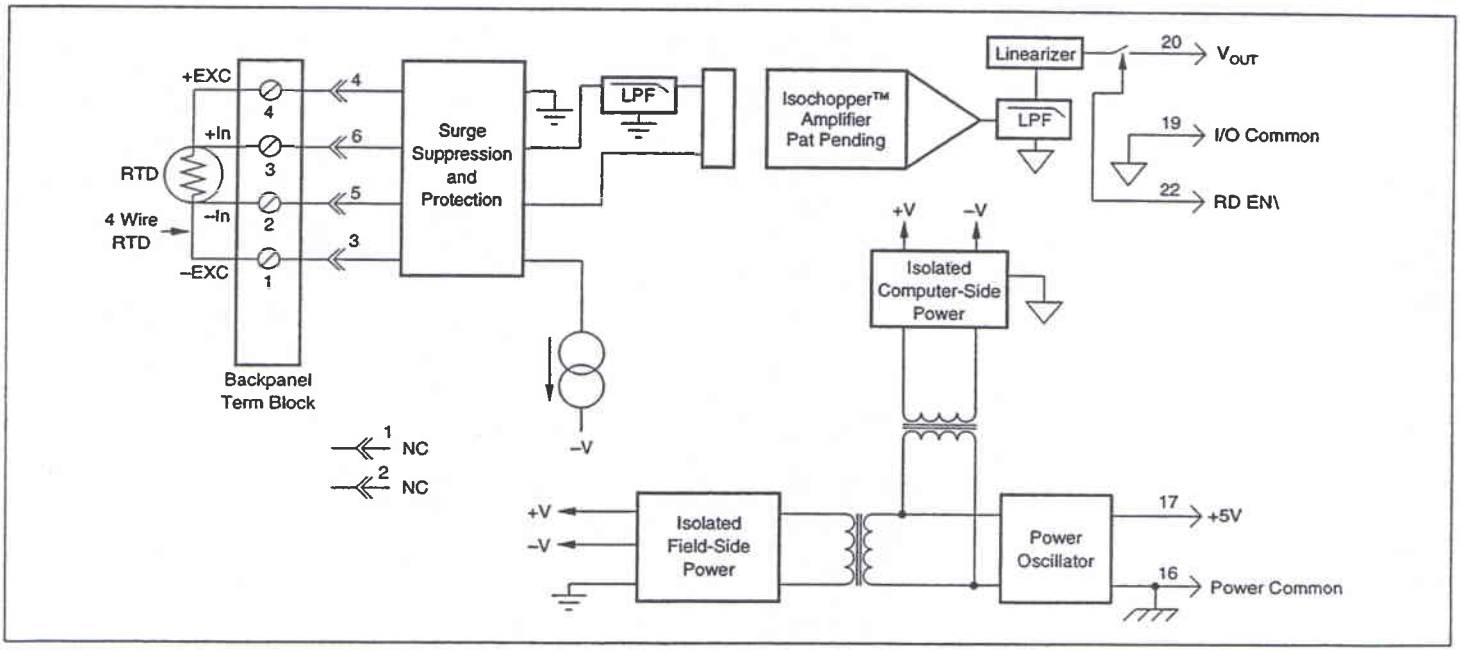


FIGURE 1. OM5-IP4/IC4/IN4 Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V Power.

Module	OM5-IP4/IC4/IN4
Input Range Limits	−200°C to +850°C (100Ω Pt) −80°C to +320°C (120Ω Ni) −100°C to +260°C (10Ω Cu)
Input Resistance	
Normal	50MΩ
Power Off	40kΩ
Overload	40kΩ
Input Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
Sensor Excitation Current	
100Ω Pt, 120Ω Ni	0.25mA
10Ω Cu	1.0mA
Lead Resistance Effect	
100Ω Pt, 120Ω Ni	±0.0005 °C/Ω(1)
10Ω Cu	±0.005 °C/Ω(1)
CMV, Input to Output	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50Hz or 60Hz)	160dB
NMR	95dB at 60Hz, 90dB at 50Hz
Accuracy	See Ordering Information
Conformity Error	±0.05% Span
Stability	
Input Offset	±0.02°C/°C
Output Offset	±20µV/°C
Gain	±50ppm of reading/°C
Noise	
Input, 0.1 to 10Hz	0.2µVrms
Output, 100kHz	200µVrms
Bandwidth, −3dB	4Hz
Response Time, 90% span	0.2s
Output Range	0V to +5V
Output Resistance	50Ω
Output Protection	Continuous short to ground
Output Selection Time (to ±1mV of V_{OUT})	6µs at C_{load} = 0 to 2000pF
Output Current Limit	+8mA
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0,1"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	30mA
Power Supply Sensitivity	
100Ω Pt, 120Ω Ni	±0.2°C/V
10Ω Cu	±0.5°C/V
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	−40°C to +85°C
Storage Temp. Range	−40°C to +85°C
Relative Humidity	0 to 95% noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

NOTES: (1) "Ω" refers to the resistance in one lead.

ORDERING INFORMATION

MODEL	INPUT RANGE	OUTPUT RANGE	ACCURACY†
100 Ω Pt, α = 0.00385			
OM5-IP4-N100-C	−100°C to +100°C (−148°F to +212°F)	0V to +5V	±0.32°C
OM5-IP4-100-C	0°C to +100°C (+32°F to 212°F)	0V to +5V	±0.13°C
OM5-IP4-200-C	0°C to +200°C (+32°F to 392°F)	0V to +5V	±0.26°C
OM5-IP4-600-C	0°C to +600°C (+32°F to 1112°F)	0V to +5V	±0.78°C
10 Ω Cu, α = 0.004274			
OM5-IC4-120-01-C	0°C to +120°C (10Ω at 0°C) (+32°F to +248°F)	0V to +5V	±0.23°C
OM5-IC4-120-02-C	0°C to +120°C (10Ω at 25°C) (+32°F to +248°F)	0V to +5V	±0.23°C
120 Ω Ni, α = 0.00672			
OM5-IN4-300-C	0°C to +300°C (+32°F to +572°F)	0V to +5V	±0.40°C

†Includes conformity, hysteresis and repeatability.

OM5-PT

Potentiometer Input Modules

FEATURES

- INTERFACES TO POTENTIOMETERS UP TO 10,000 OHMS
- HIGH LEVEL VOLTAGE OUTPUTS
- 1500 VOLT TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- 160dB CMR
- 95dB NMR AT 60HZ, 90dB AT 50HZ
- MIX AND MATCH OM5 TYPES ON BACKPANEL
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT

DESCRIPTION

Each OM5-PT Potentiometer input module provides a single channel of potentiometer input which is filtered, isolated, amplified, and converted to a high level analog voltage output (Figure 1). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The OM5 modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

Excitation for the potentiometer is provided from the module by two matched current sources. When using a three-wire potentiometer, this method allows cancellation of the effects of lead resistances. The excitation currents are very small (less than 1.0mA) which minimizes self-heating of the potentiometer.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are in the output stage. After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit provides protection against accidental connection of power-line voltages up to 240VAC.

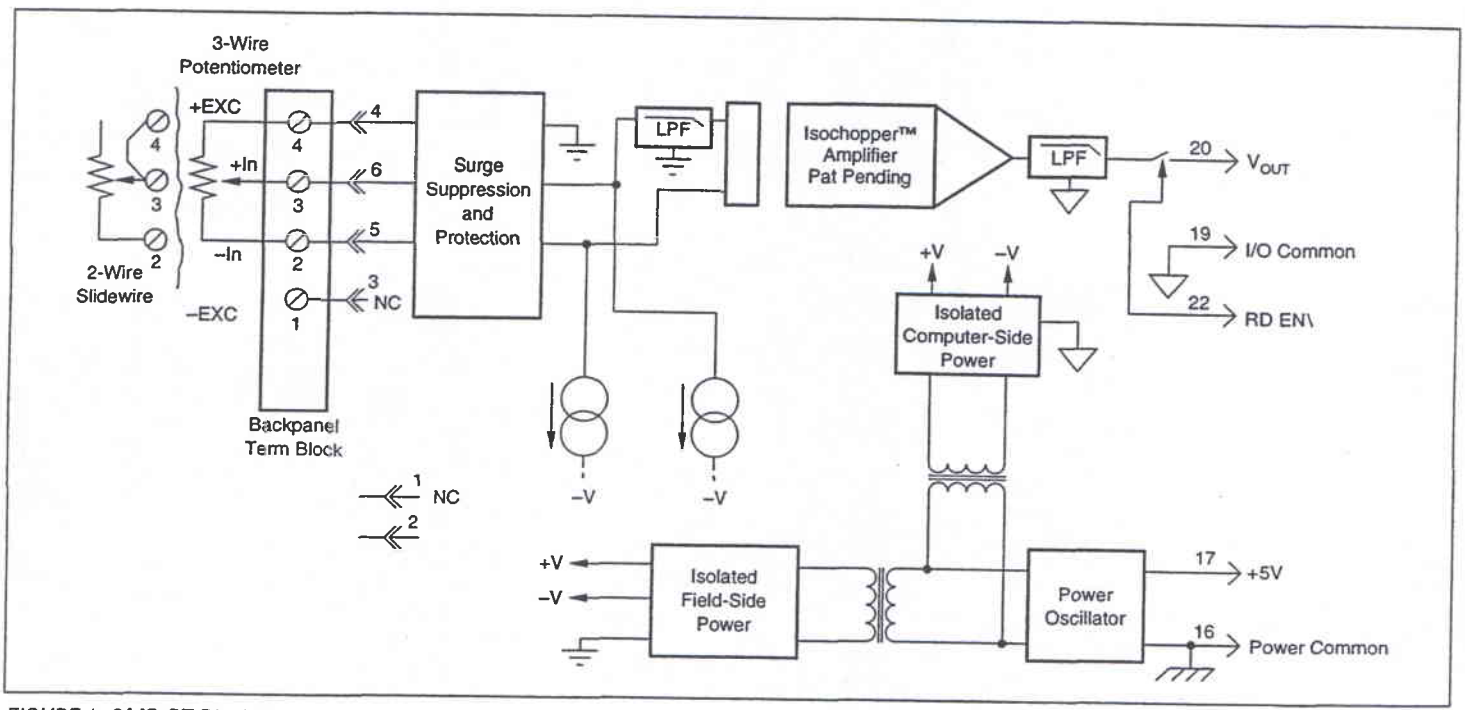


FIGURE 1. OM5-PT Block Diagram.

SPECIFICATIONS

Typical at Ta = +25°C and +5V Power

Module	OM5-PT
Input Range	0 to 10KΩ
Input Resistance	
Normal	50MΩ
Power Off	40KΩ
Overload	40KΩ
Input Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
Sensor Excitation Current	0.25mA; 100Ω, 500Ω, 1KΩ sensor 0.10mA; 10KΩ sensor
Lead Resistance Effect	±0.01Ω/Ω; 100Ω, 500Ω, 1KΩ sensor ±0.02Ω/Ω; 10KΩ sensor
CMV, Input to Output	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50 or 60Hz)	160dB
NMR	95dB @ 60Hz, 90dB @ 50Hz
Accuracy[2]	±0.08% Span
Stability	
Input Offset	±0.004Ω/°C; 100Ω, 500Ω, 1KΩ sensor ±0.010Ω/°C; 10KΩ sensor
Output Offset	±20µV/°C
Gain	±50ppm of reading/°C
Noise	
Input, 0.1 to 10Hz	0.2µVrms
Output, 100KHz	200µVrms
Bandwidth, -3dB	4Hz
Response Time, 90% span	0.2s
Output Range	0 to +5V
Output Resistance	50Ω
Output Protection	Continuous short to ground
Output Selection Time (to ±1mV of V_{out})	6µs at C_{load} = 0 to 2000pF
Output Current Limit	+8mA
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0,1"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	30mA
Power Supply Sensitivity	±2µV/% RTI[1]
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	-40°C to +85°C
Storage Temp. Range	-40°C to +85°C
Relative Humidity	0 to 95% noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

NOTES: (1) Referenced to input. (2) Includes nonlinearity, hysteresis and repeatability.

ORDERING INFORMATION

MODEL	INPUT RANGE	OUTPUT RANGE
OM5-PT-100-C	0 to 100Ω	0V to +5V
OM5-PT-500-C	0 to 500Ω	0V to +5V
OM5-PT-1K-C	0 to 1KΩ	0V to +5V
OM5-PT-10K-C	0 to 10KΩ	0V to +5V

OM5-ITC
Thermocouple Input Modules

FEATURES

- INTERFACES TO TYPES J, K, T, E, R, S, C, N AND B THERMOCOUPLES
- HIGH LEVEL VOLTAGE OUTPUTS
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- 160dB CMR
- 95dB NMR AT 60Hz, 90dB at 50Hz
- ±0.05% ACCURACY
- ±0.02% LINEARITY
- ±1µV/°C DRIFT
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANEL

DESCRIPTION

Each OM5-ITC Thermocouple input module provides a single channel of thermocouple input which is filtered, isolated, amplified, and converted to a high level analog voltage output (Figure 1). This voltage output is logic-switch controlled, allowing these modules to share a common analog bus without the requirement of external multiplexers.

The OM5-ITC modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The OM5-ITC can interface to nine industry standard thermocouple types: J, K, T, E, R, S, C, N, and B. Its corresponding output signal operates over a 0V to +5V range. Each module is cold-junction compensated to correct for parasitic thermocouples formed by the thermocouple wire and screw terminals on the mounting backpanel. Upscale open thermocouple detect is provided by an internal pull-up resistor. Downscale indication can be implemented by installing an external 47MΩ resistor, ±20% tolerance, between screw terminals 1 and 3 on the OM5-BP backpanels.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side.

After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit provides protection against accidental connection of power-line voltages up to 240VAC.

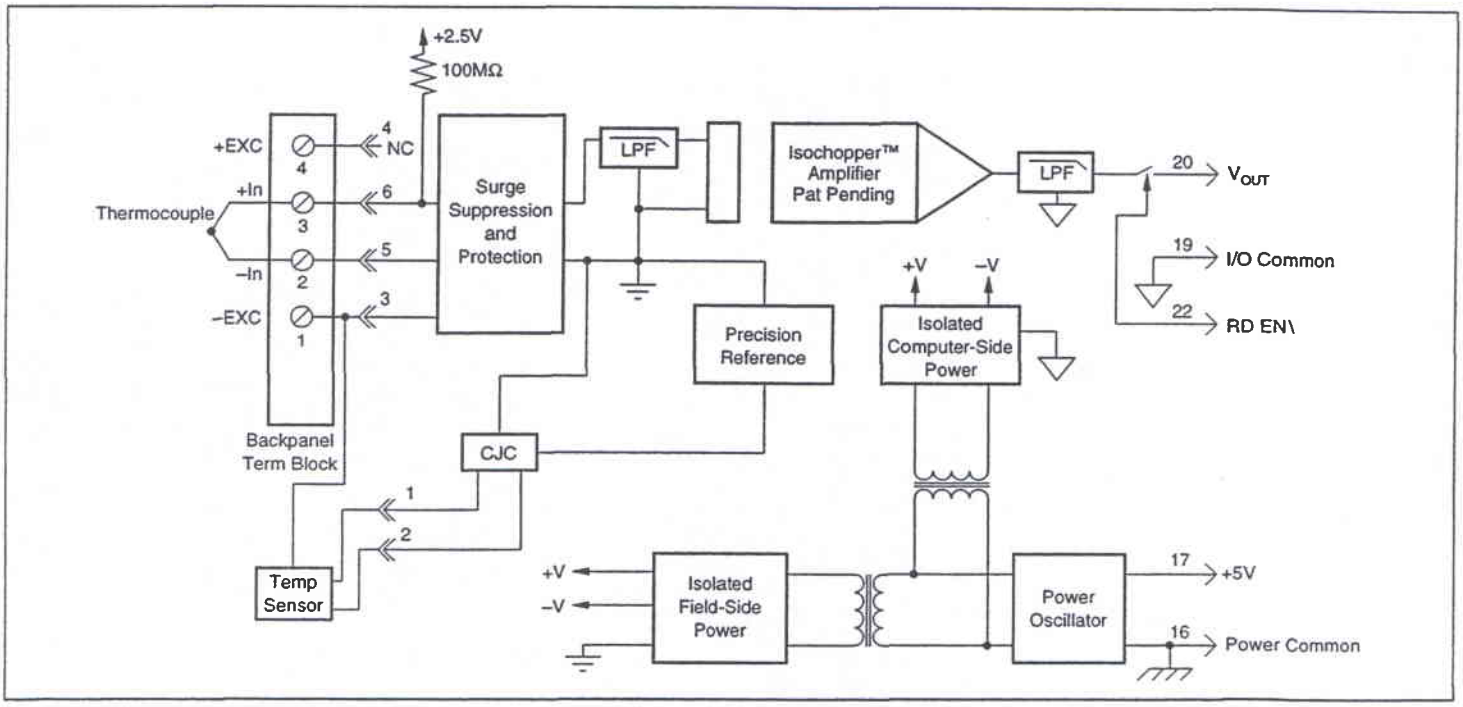


FIGURE 1. OM5-ITC Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V power.

Module	OM5-ITC
Input Range	-0.1V to +0.5V
Input Bias Current	-25nA
Input Resistance	
Normal	50MΩ
Power Off	40kΩ
Overload	40kΩ
Input Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMV, Input to Output	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50Hz or 60Hz)	160dB
NMR	95dB at 60Hz, 90dB at 50Hz
Accuracy	See Ordering Information
Nonlinearity	±0.02% Span
Stability	
Input Offset	±1µV/°C[3]
Output Offset	±20µV/°C
Gain	±25ppm/°C
Noise	
Input, 0.1 to 10Hz	0.2µVrms
Output, 100kHz	200µVrms
Bandwidth, –3dB	4Hz
Response Time, 90% Span	0.2s
Output Range	0V to +5V
Output Resistance	50Ω
Output Protection	Continuous Short to Ground
Output Selection Time (to ±1mV of V_{OUT})	6µs at C_{load} = 0 to 2000pF
Output Current Limit	+8mA
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0", "1"	0.5µA
Open Input Response	Upscale
Open Input Detection Time	10s
Cold Junction Compensation	
Accuracy, 25°C	±0.25°C
Accuracy, +5°C to +45°C	±0.5°C
Accuracy, –40°C to +85°C	±1.25°C
Power Supply Voltage	+5VDC ±5%
Power Supply Current	30mA
Power Supply Sensitivity	±2µV/% RTI[2]
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	–40°C to +85°C
Storage Temp. Range	–40°C to +85°C
Relative Humidity	0 to 95% Noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

NOTES: (1) Includes nonlinearity, hysteresis and repeatability. Does not include CJC accuracy. (2) RTI = Referenced to input. (3)This is equivalent to °C as follows: Type J 0.020 °C/°C, Types K, T 0.025°C/°C, Type E 0.016°C/°C, Types R, S 0.168°C/°C. Type N 0.037°C/°C, Type C, 0.072°C/°C.

ORDERING INFORMATION

MODEL	TYPE	INPUT RANGE	OUTPUT RANGE	ACCURACY[1]	
OM5-ITC-J-C	Type J	–100°C to +760°C (–148°F to +1400°F)	0V to +5V	±0.07%	±0.61°C
OM5-ITC-K-C	Type K	–100°C to +1350°C (–148°F to +2462°F)	0V to +5V	±0.07%	±0.97°C
OM5-ITC-T-C	Type T	–100°C to +400°C (–148°F to +752°F)	0V to +5V	±0.09%	±0.46°C
OM5-ITC-E-C	Type E	0°C to +900°C (+32°F to +1652°F)	0V to +5V	±0.07%	±0.59°C
OM5-ITC-R-C	Type R	0°C to +1750°C (+32°F to +3182°F)	0V to +5V	±0.10%	±1.72°C
OM5-ITC-S-C	Type S	0°C to +1750°C (+32°F to +3182°F)	0V to +5V	±0.10%	±1.82°C
OM5-ITC-B-C	Type B	0°C to +1800°C (+32°F to +3272°F)	0V to +5V	±0.12%	±2.21°C
OM5-ITC-C1-C	Type C	+350°C to +1300°C (+662°F to +2372°F)	0V to +5V	±0.11%	±1.01°C
OM5-ITC-N1-C	Type N	–100°C to +1300°C (–148°F to +2372°F)	0V to +5V	±0.70%	±0.98°C

OM5-WBS

Strain Gage Input Modules, Wide Bandwidth

FEATURES

- INTERFACES TO 100Ω THRU 10kΩ, FULL-BRIDGE, HALF-BRIDGE, OR QUARTER-BRIDGE STRAIN GAGES
- HIGH LEVEL VOLTAGE OUTPUTS
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- FULLY ISOLATED EXCITATION SUPPLY
- 100dB CMR
- 10kHz SIGNAL BANDWIDTH
- ±0.08% ACCURACY
- ±0.02% LINEARITY
- ±1μV/°C DRIFT
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANEL

DESCRIPTION

Each OM5-WBS Strain Gage input module provides a single channel of strain gage input which is filtered, isolated, amplified, and converted to a high level analog voltage output (Figure 1). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The OM5-WBS modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The OM5-WBS can interface to full-bridge or half-bridge transducers with a nominal resistance of 100Ω to 10kΩ. A matched pair of bridge-completion resistors (to ±1mV at +10V excitation) allows use of low cost half-bridge or quarter-bridge transducers (Figures 2, 3, 4). The 10kHz bandwidth allows measurement of high speed processes such as vibration analysis.

Strain Gage excitation is provided from the module by a very stable 10V or 3.333V source. The excitation supply is fully isolated, allowing the amplifier inputs to operate over the full range of the excitation voltage. This feature offers significant flexibility in real world applications. Full scale sensitivities of 2mV/V, 3mV/V or 10mV/V are offered as standard. With 10V excitation, this results in ±20mV, ±30mV or ±100mV full scale input range producing ± 5V full scale output.

The input signal is processed through a pre-amplifier on the field side of the isolation barrier. This pre-amplifier has a gain-bandwidth product of 5MHz and is bandwidth limited to 10kHz. After amplification, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

Special input circuits provide protection of the signal inputs and the isolated excitation supply up to 240VAC.

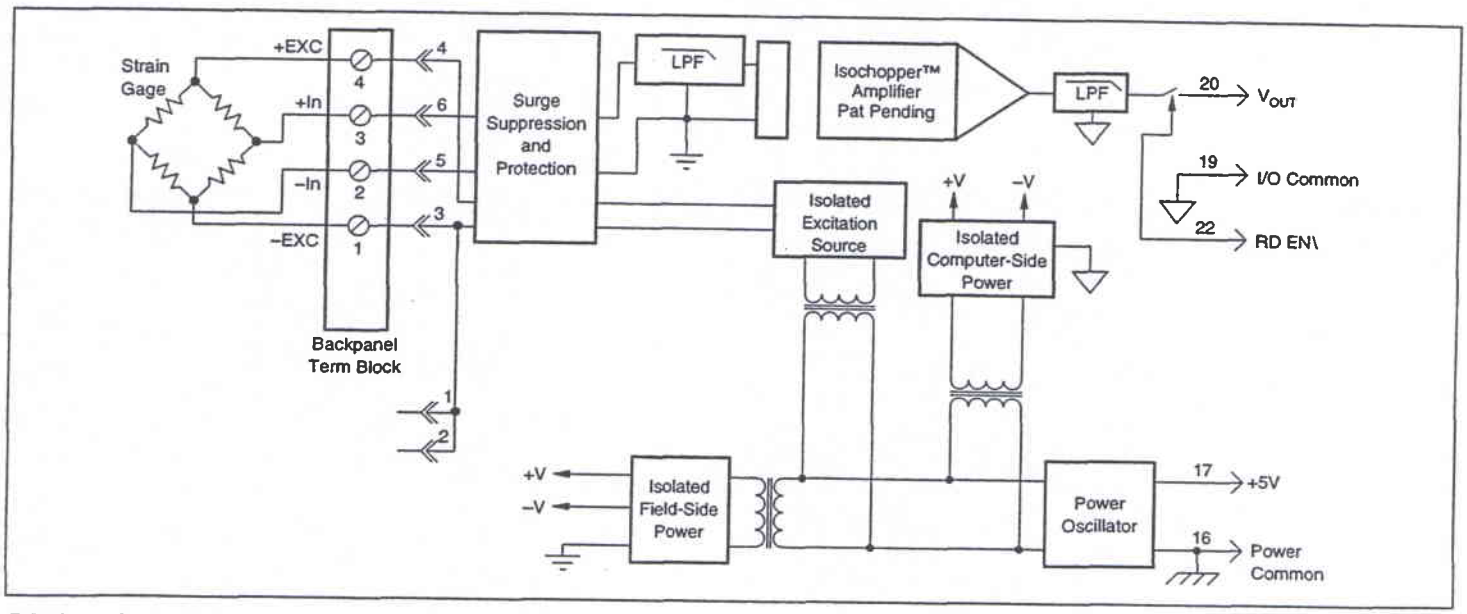


FIGURE 1. OM5-WBS Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V power.

Module	Full Bridge OM5-WBS38-01-C, -WBS-1/-2/-4/-5-C	Half Bridge OM5-WBS38-03-C,-WBS-3-C
Input Range	±10mV to ±100mV	*
Input Bias Current	±0.3nA	*
Input Resistance		
Normal	50MΩ	*
Power Off	40kΩ	*
Overload	40kΩ	*
Signal Input Protection		
Continuous	240Vrms max	*
Transient	ANSI/IEEE C37.90.1-1989	*
Excitation Output (-1/-2/-3/-5-C)	+10V ±3mV	*
Excitation Output (-4-C,-01/-03-C)	+3.333V ±2mV	*
Excitation Load Regulation	±5ppm/mA	*
Excitation Stability	±15ppm/°C	*
Half Bridge Voltage Level (-3-C)	NA	+5V ±1mV
Half Bridge Voltage Level (-03-C)	NA	+1.667V ±1mV
Isolated Excitation Protection		
Continuous	240Vrms max	*
Transient	ANSI/IEEE C37.90.1-1989	*
CMV, Input to Output		
Continuous	1500Vrms max	*
Transient	ANSI/IEEE C37.90.1-1989	*
CMR (50 or 60Hz)	100dB	*
NMR (–3dB at 10kHz)	120dB per Decade above 10kHz	*
Accuracy[2]	±0.08% Span ±10µV RTI[3]	*
Nonlinearity	±0.02% Span	*
Stability		
Input Offset	±1µV/°C	*
Output Offset	±40µV/°C	*
Gain	±25ppm of Reading/°C	*
Noise		
Input, 0.1 to 10Hz	0.4µVrms	2µVrms
Output, 100kHz	10mVp-p	*
Bandwidth, –3dB	10kHz	*
Rise Time, 10 to 90% span	35µs	*
Setting Time, to 0.1%	250µs	*
Output Range	±5V	*
Output Resistance	50Ω	*
Output Protection	Continuous Short to Ground	*
Output Selection Time (to ±1mV of V_{OUT})	6µs at C_{load} = 0 to 2000pF	*
Output Current Limit	±8mA	
Output Enable Control		
Max Logic "0"	+0.8V	*
Min Logic "1"	+2.4V	*
Max Logic "1"	+36V	*
Input Current, "0,1"	0.5µA	*
Power Supply Voltage	+5VDC ±5%	*
Power Supply Current	170mA Full Exc. Load, 70mA No Exc. Load	*
Power Supply Sensitivity	±2µV/% RTI[3]	*
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)	*
Environmental		
Operating Temperature Range	–40°C to +85°C	*
Storage Temperature Range	–40°C to +85°C	*
Relative Humidity	0 to 95% Noncondensing	*
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)	*
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)	*

FIGURE 2. Full Bridge Connection.

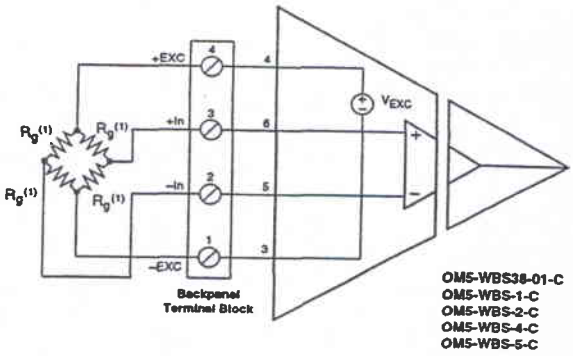


FIGURE 3. Half Bridge Connection.

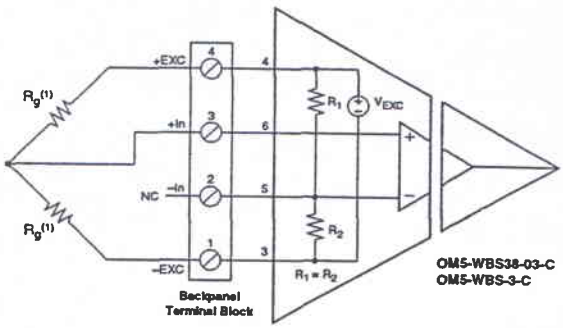
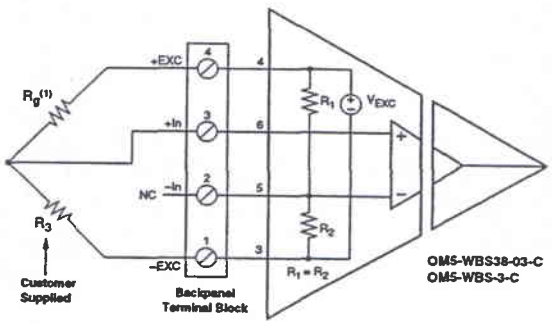


FIGURE 4. Quarter Bridge Connection.



* Same as Full Bridge modules.

NOTES: (1) Strain element. (2) Includes excitation error, nonlinearity, hysteresis and repeatability. (3) Referenced to input.

ORDERING INFORMATION

MODEL (10kHz)	INPUT BRIDGE TYPE	INPUT RANGE	EXCITATION	OUTPUT RANGE
OM5-WBS38-01-C	Full Bridge	100Ω to 10kΩ	3.333V at 3mV/V Sensitivity	-5V to +5V
OM5-WBS-1-C	Full Bridge	300Ω to 10kΩ	10.0V at 3mV/V Sensitivity	–5V to +5V
OM5-WBS38-03-C	Half Bridge	100Ω to 10kΩ	3.333V at 3mV/V Sensitivity	-5V to +5V
OM5-WBS-3-C	Half Bridge	300Ω to 10kΩ	10.0V at 3mV/V Sensitivity	–5V to +5V
OM5-WBS-2-C	Full Bridge	300Ω to 10kΩ	10.0V at 2mV/V Sensitivity	–5V to +5V
OM5-WBS-4-C	Full Bridge	100Ω to 10kΩ	3.333V at 10mV/V Sensitivity	–5V to +5V
OM5-WBS-5-C	Full Bridge	300Ω to 10kΩ	10.0V at 10mV/V Sensitivity	–5V to +5V

OM5-IVI
Current Output Modules

FEATURES

- ACCEPTS HIGH LEVEL VOLTAGE OR PROCESS CURRENT INPUT
- UNIPOLAR OR BIPOLAR CURRENT OUTPUT
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- OUTPUT PROTECTED TO 240VAC CONTINUOUS
- 110dB CMR
- 400Hz SIGNAL BANDWIDTH
- ±0.05% ACCURACY
- ±0.02% LINEARITY
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANEL

DESCRIPTION

Each OM5-IVI current output module provides a single channel of analog output. The track-and-hold circuit in the input stage can be operated in a hold mode where one DAC can supply many output modules, or a track mode where one DAC is dedicated to each module. In addition to the track-and-hold circuit, each module provides signal buffering, isolation, filtering, and conversion to a high level current output (Figure 1).

Setting of the track or hold mode is controlled by the logic state of WR EN\, module pin 23. When pin 23 is low, the track mode is enabled. If pin 23 is open or high, the hold mode is enabled. The module is designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the track and hold circuit. For a low state, simply connect pin 23, the Write-Enable pin, to I/O Common, pin 19.

The OM5-BP-16-MUX backpanels allow host computer control of the WR EN\ control line, which allows multiplexing of one host DAC to up to 64 OM5-IVI output modules. During power-up, the output remains at 0mA for 100ms on all models, which allows the track-and-hold circuit to be initialized.

A special circuit in the output stage of the module provides protection against accidental connection of power-line voltages up to 240VAC.

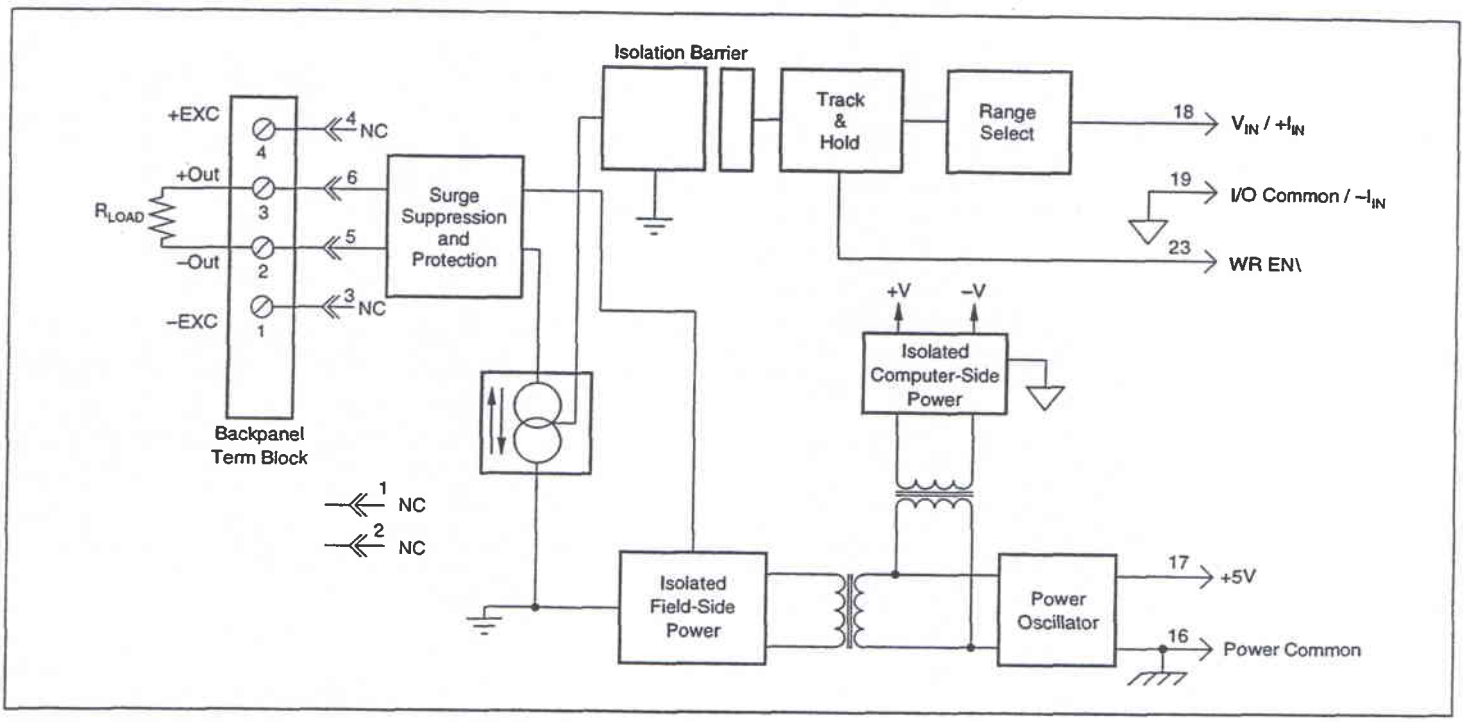


FIGURE 1. OM5-IVI Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V power.

Module	Unipolar Output Current OM5-IVI
Input Voltage Range	±5V or 0V to +5V
Input Current Range (–05)	0 to 20mA
Input Voltage Maximum	±36V (no damage)
Input Current, Maximum (–05)	75mA (no damage)
Input Resistance	50MΩ
Input Resistance (–05)	20Ω
Output Current Range	0 to 20mA or 4 to 20mA
Over Range Capability	10%
Output Compliance Voltage (Open Circuit)	22VDC
Load Resistance Range	0 to 650Ω (0 to 750Ω for Power Supply Voltage greater than 4.95VDC)
Output I Under Fault, max	26mA
Output Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMV, Output to Input	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50Hz or 60Hz)	110dB
NMR (–3dB at 400 Hz)	40dB per Decade above 400Hz
Accuracy	±0.05% Span
Nonlinearity	±0.02% Span
Stability	
Zero	±0.5µA/°C
Span	±20ppm/°C
Noise	
Output Ripple, 1kHz bandwidth	10µAp-p
Bandwidth, –3dB	400Hz
Rise Time, 10 to 90% Span	0.75ms
Sample and Hold	
Output Droop Rate	40µA/s
Acquisition Time	50µs
Track-and-Hold Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	170mA
Power Supply Sensitivity	±0.5µA/% typ
Mechanical Dimensions	2.28" x 2.26" x 0.6" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	–40°C to +85°C
Storage Temp. Range	–40°C to +85°C
Relative Humidity	0 to 95% Noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

* same specification

ORDERING INFORMATION

MODEL	INPUT RANGE	OUTPUT RANGE	BANDWIDTH
OM5-IVI-B4-C	0V to +5V	4mA to 20mA	400Hz
OM5-IVI-A4-C	–5V to +5V	4mA to 20mA	400Hz
OM5-IVI-B0-C	0V to +5V	0mA to 20mA	400Hz
OM5-IVI-A0-C	–5V to +5V	0mA to 20mA	400Hz

OM5-WMV/WV
Analog Voltage Input Modules, Wide Bandwidth

FEATURES

- ACCEPTS MILLIVOLT AND VOLTAGE LEVEL SIGNALS
- HIGH LEVEL VOLTAGE OUTPUTS
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- 100dB CMR
- 10kHz SIGNAL BANDWIDTH
- ±0.05% ACCURACY
- ±0.02% LINEARITY
- ±1µV/°C DRIFT
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANEL

DESCRIPTION

Each OM5 wide bandwidth voltage input module provides a single channel of analog input which is amplified, isolated, and converted to a high level analog voltage output (Figure 1). This voltage output is logic-switch controlled, allowing these modules to share a common analog bus without the requirement of external multiplexers.

The OM5 modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The input signal is processed through a pre-amplifier on the field side of the isolation barrier. This pre-amplifier has a gain-bandwidth product of 5MHz and is bandwidth limited to 10kHz. After amplification, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit provides protection against accidental connection of power-line voltages up to 240VAC.

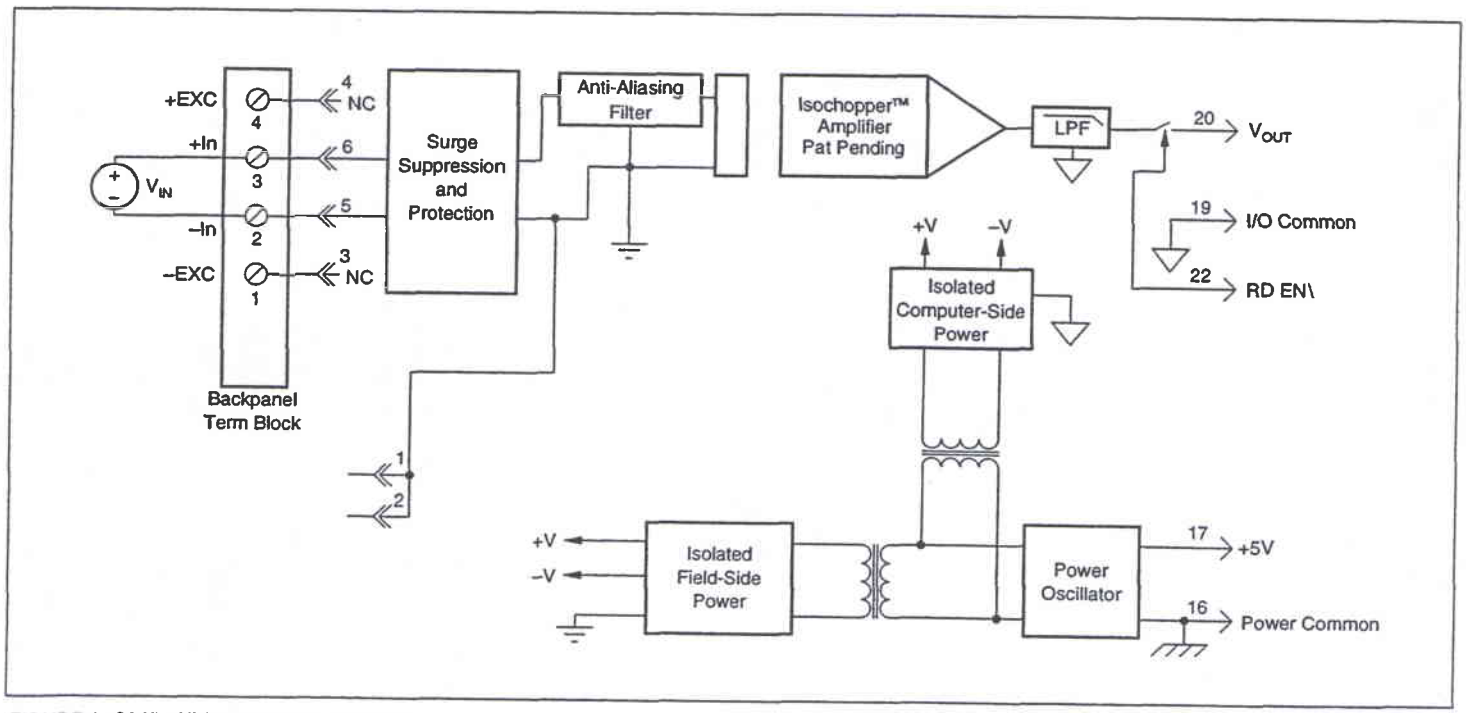


FIGURE 1. OM5-WMV/WV Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V Power.

Module	OM5-WMV	OM5-WV
Input Range	±10mV to ±100mV	±1V to ±40V
Input Bias Current	±0.5nA	±0.05nA
Input Resistance		
Normal	200MΩ	650kΩ (minimum)
Power Off	40kΩ	650kΩ (minimum)
Overload	40kΩ	650kΩ (minimum)
Input Protection		
Continuous	240Vrms Max	*
Transient	ANSI/IEEE C37.90.1-1989	*
CMV, Input to Output		
Continuous	1500Vrms max	*
Transient	ANSI/IEEE C37.90.1-1989	*
CMR (50Hz or 60Hz)	100dB	*
NMR (–3dB at 10kHz)	120dB per Decade above 10kHz	*
Accuracy[1]	±0.05% Span ±10µV RTI[2] ±0.05%(V_Z[3])	±0.05% span ±0.2mV RTI[2] ±0.05% (V_Z[3])
Nonlinearity	±0.02% Span	*
Stability		
Input Offset	±1µV/°C	±20µV/°C
Output Offset	±40µV/°C	*
Gain	±25ppm/°C	±50ppm/°C
Noise		
Input, 0.1 to 10Hz	0.4µVrms	2µVrms
Output, 100kHz	10mVp-p	*
Bandwidth, –3dB	10kHz	*
Rise Time, 10 to 90% Span	35µs	*
Settling Time, to 0.1%	250µs	*
Output Range	±5V or 0V to +5V	*
Output Resistance	50Ω	*
Output Protection	Continuous Short to Ground	*
Output Selection Time (to ±1mV of V_{OUT})	6µs at C_{load} = 0 to 2000pF	*
Output Current Limit	±8mA	*
Output Enable Control		
Max Logic "0"	+0.8V	*
Min Logic "1"	+2.4V	*
Max Logic "1"	+36V	*
Input Current, "0", "1"	0.5µA	*
Power Supply Voltage	+5VDC ±5%	*
Power Supply Current	30mA	*
Power Supply Sensitivity	±2µV/% RTI[2]	±200µV/% RTI[2]
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)	*
Environmental		
Operating Temp. Range	–40°C to +85°C	*
Storage Temp. Range	–40°C to +85°C	*
Relative Humidity	0 to 95% Noncondensing	*
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)	*
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)	*

* Same specification as OM5-WMV.

NOTES: (1) Includes nonlinearity, hysteresis and repeatability. (2) RTI = Referenced to input. (3) V_Z is the input voltage that results in 0V output.

ORDERING INFORMATION

MODEL	INPUT RANGE	OUTPUT RANGE
OM5-WMV-10A-C	–10mV to +10mV	–5V to +5V
OM5-WMV-50A-C	–50mV to +50mV	–5V to +5V
OM5-WMV-100A-C	–100mV to +100mV	–5V to +5V
OM5-WMV-10B-C	–10mV to +10mV	0V to +5V
OM5-WMV-50B-C	–50mV to +50mV	0V to +5V
OM5-WMV-100B-C	–100mV to +100mV	0V to +5V
OM5-WV-1A-C	–1V to +1V	–5V to +5V
OM5-WV-5A-C	–5V to +5V	–5V to +5V
OM5-WV-10A-C	–10V to +10V	–5V to +5V
OM5-WV-1B-C	–1V to +1V	0V to +5V
OM5-WV-5B-C	–5V to +5V	0V to +5V
OM5-WV-10B-C	–10V to +10V	0V to +5V
OM5-WV-20A-C	–20V to +20V	–5V to +5V
OM5-WV-20B-C	–20V to +20V	0V to +5V
OM5-WV-40A-C	–40V to +40V	–5V to +5V
OM5-WV-40B-C	–40V to +40V	0V to +5V

OM5-TX
2-Wire Transmitter Interface Modules

FEATURES

- ISOLATED +20VDC CURRENT LOOP SUPPLY
- PROVIDES ISOLATION FOR NON-ISOLATED 2-WIRE TRANSMITTERS
- HIGH LEVEL VOLTAGE OUTPUT: +1V to +5V or +2V to +10V
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- 100dB CMR
- 100Hz SIGNAL BANDWIDTH
- ±0.05% ACCURACY
- ±0.02% LINEARITY
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANEL

DESCRIPTION

Each OM5-TX 2-wire transmitter interface module provides a single channel which accepts a 4 to 20 mA process current input and provides a standard +1 to +5V or +2 to +10V output signal (Figure 1). An isolated +20VDC regulated power supply is provided to power the current transmitter. This allows a 2-wire loop powered transmitter to be directly connected to the module without requiring an external power supply. The regulated supply will provide a nominal +20VDC at a loop current of 4mA to 20mA.

The OM5-TX will provide a 1500V isolation barrier for non-isolated 2-wire field transmitters. It can also be used when additional isolation is required between an isolated 2-wire transmitter and the input stage of the control room computer.

The voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

A precision 20Ω current conversion resistor is supplied with the module. Sockets are provided on the OM5-BP backpanels to allow installation of this resistor. Extra resistors are available under part number OMX-1362-C. All field inputs are fully protected from accidental connection of power-line voltages up to 240VAC. The module has a 3dB bandwidth of 100Hz. Signal filtering is accomplished with a six-pole filter, with two poles on the field side of the isolation barrier, and the other four on the computer side.

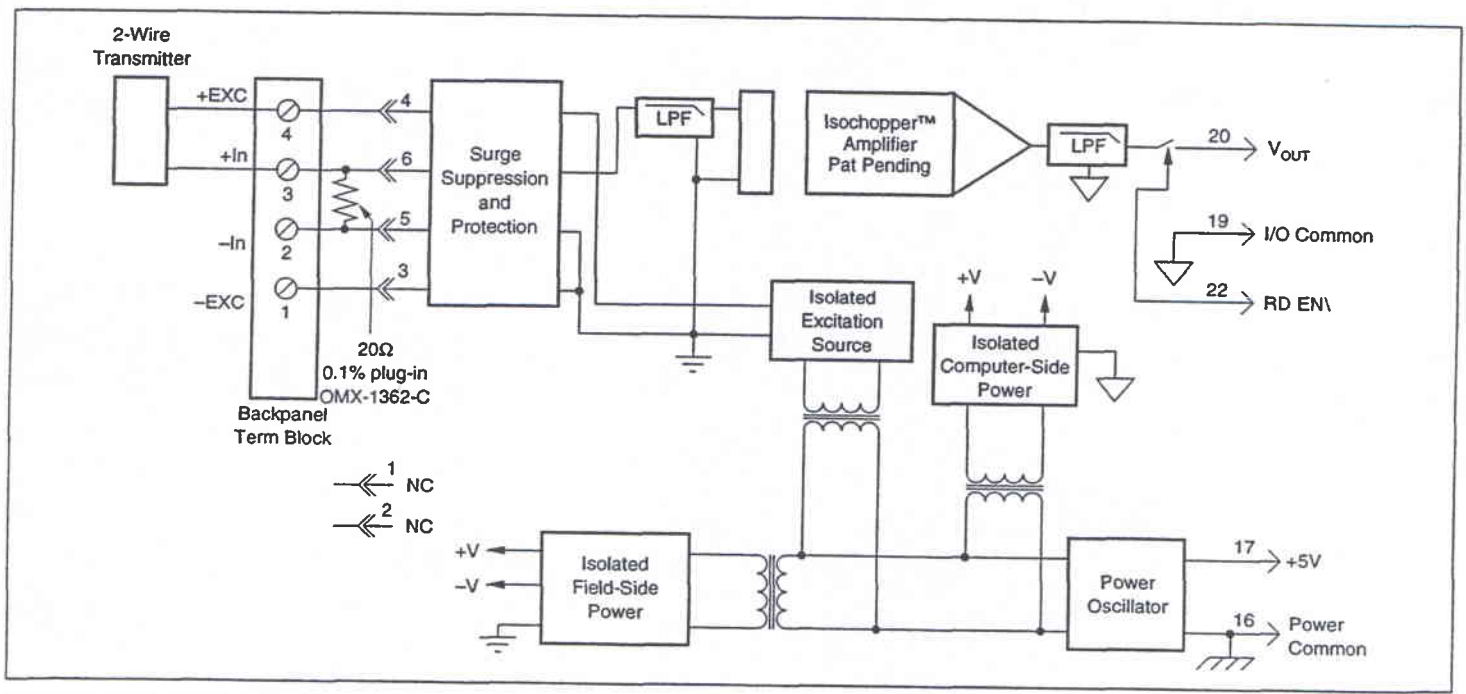


FIGURE 1. OM5-TX Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V power.

Module	OM5-TX
Input Range	4mA to 20mA
Input Resistor	
Value	20.00Ω
Accuracy	±0.1%
Stability	±10ppm/°C
Loop Supply Voltage	Nominal 20V at 4mA to 20mA
Isolated Excitation Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
Input Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMV, Input to Output	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50 or 60Hz)	100dB
NMR (–3dB at 100Hz)	120dB per decade above 100Hz
Accuracy[1]	±0.05% span ±4µA RTI[2]
Nonlinearity	±0.02% span
Stability	
Input Offset	±1µV/°C
Output Offset	±40µV/°C
Gain	±25ppm/°C of reading
Noise	
Input, 0.1 to 10Hz	10nArms
Output, 100KHz	500µVrms
Bandwidth, –3dB	100Hz
Response Time, 90% span	4mS
Output Range	+1V to +5V or +2V to +10V
Output Resistance	50Ω
Output Protection	Continuous short to gnd
Output Selection Time (to ±1mV of V_{OUT})	6µs at C_{load} = 0 to 2000pF
Output Current Limit	+8mA
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0, 1"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	180mA at transmitter load of 20mA 100mA at transmitter load of 4mA
Power Supply Sensitivity	±10µV/% RTI[2]
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	–40°C to +85°C
Storage Temp. Range	–40°C to +85°C
Relative Humidity	0 to 95% noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

NOTES: (1) Includes nonlinearity, hysteresis and repeatability.
(2) RTI = Referenced to input.

ORDERING INFORMATION

MODEL	INPUT RANGE	OUTPUT RANGE
OM5-TX-1-C	4mA to 20mA	+1V to +5V
OM5-TX-2-C	4mA to 20mA	+2V to +10V

OM5-DT
General Purpose Input Modules, with DC Excitation

FEATURES

- INTERFACES TO DC DISPLACEMENT TRANSDUCERS AND OTHER DEVICES REQUIRING A STABLE DC SUPPLY
- HIGH LEVEL VOLTAGE OUTPUTS
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- FULLY ISOLATED EXCITATION SUPPLY
- 100dB CMR
- 1KHz SIGNAL BANDWIDTH
- ±0.10% ACCURACY
- ±0.02% LINEARITY
- ±20µV/°C DRIFT
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANEL

DESCRIPTION

Each OM5-DT general purpose input module provides a single channel of transducer input which is filtered, isolated, scaled, and converted to a high level analog voltage output (Figure 1). This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers.

The modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The OM5-DT can interface to devices which require a precision 10VDC excitation supply. The 1kHz bandwidth significantly reduces ripple and noise inherent in these devices.

Transducer excitation is provided from the module by a very stable 10V source. The excitation supply is fully isolated, allowing the amplifier inputs to operate over the full range of the excitation voltage. This feature offers significant flexibility in real world applications. Eight full scale input ranges are provided, from ±1V to ±10V, producing ±5V full scale output.

The input signal is processed through a pre-amplifier on the field side of the isolation barrier. This pre-amplifier has a gain-bandwidth product of 5MHz and is bandwidth limited to 1kHz. After amplification, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

Special input circuits provide protection of the signal inputs and the isolated excitation supply up to 240VAC.

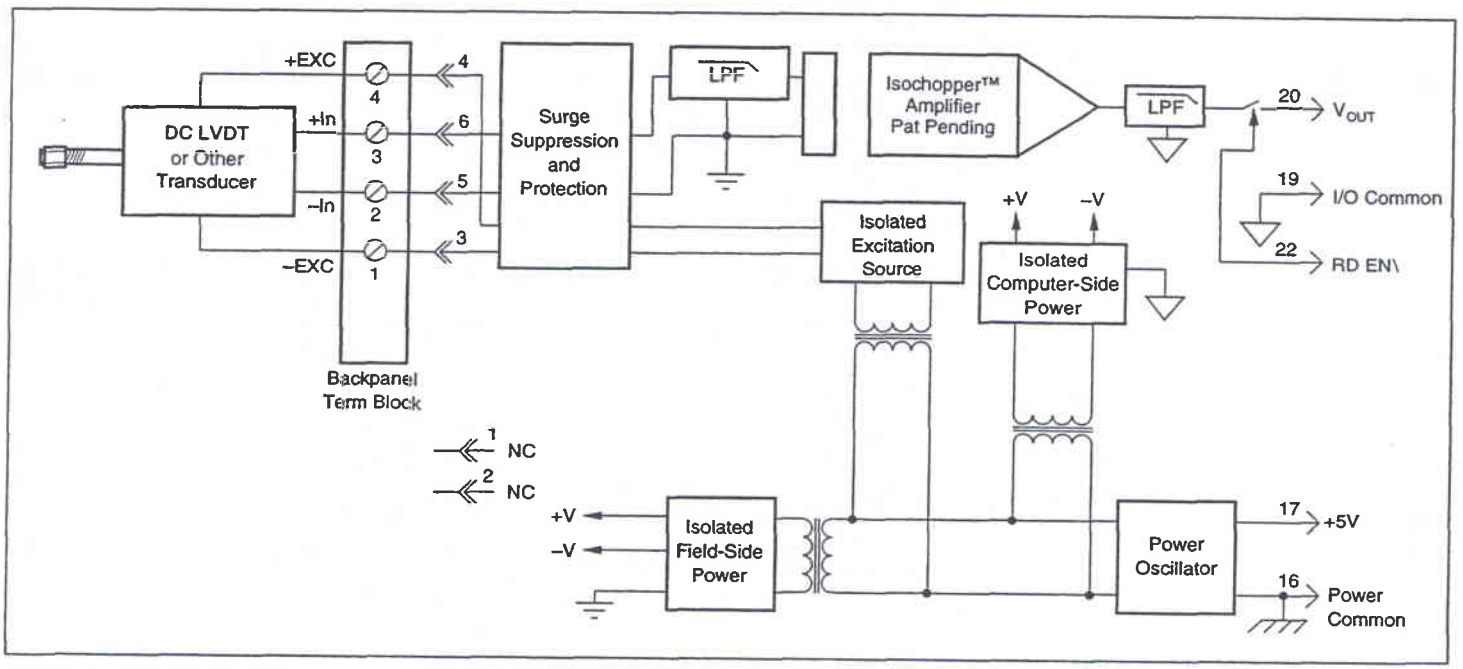


FIGURE 1. OM5-DT Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V power.

Module	OM5-DT
Input Range	±1V to ±10V
Input Bias Current	±0.05nA
Input Resistance	
Normal	2MΩ (minimum)
Power Off	2MΩ (minimum)
Overload	2MΩ (minimum)
Input Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989 (formerly IEEE-472)
Excitation Voltage, V_{EXC}	+10.0VDC ±2mV
Excitation current	40mA (maximum)
Excitation Load Regulation	±5ppm/mA
Excitation Stability	±15ppm/°C
Isolated Excitation Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989 (formerly IEEE-472)
CMV, Input to Output	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989 (formerly IEEE-472)
CMR (50 or 60Hz)	100dB
NMR (–3dB at 1kHz)	120dB per decade above 1kHz
Accuracy[1]	±0.1% span, ±0.2mV RTI[2]
Nonlinearity	±0.02% span
Stability	
Input Offset	±20µV/°C
Output Offset	±40µV/°C
Gain	±50ppm/°C
Noise	
Input, 0.1 to 10Hz	0.4µVrms
Output, 100KHz	5mVpp
Bandwidth, –3dB	1kHz
Response Time (to 90% final value)	750µs
Output Range	±5V
Output Resistance	50Ω
Output Protection	Continuous short to ground
Output Selection Time (to ±1mV of V_{OUT})	6.0µs at C_{load} = 0 to 2000pF
Output Current Limit	±8mA
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0, 1"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	200mA @ Full Exc. load, 100mA @ No Exc. Load
Power Supply Sensitivity	±200µV/% RTI[2]
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	–40°C to +85°C
Storage Temp. Range	–40°C to +85°C
Relative Humidity	0 to 95% noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

NOTES:
(1) Includes excitation error, nonlinearity, hysteresis and repeatability.
(2) RTI = Referenced to input.

ORDERING INFORMATION

MODEL	MAXIMUM INPUT	OUTPUT
OM5-DT-1-C	±1V	±5V
OM5-DT-2-C	±2V	±5V
OM5-DT-3-C	±3V	±5V
OM5-DT-4-C	±4V	±5V
OM5-DT-5-C	±5V	±5V
OM5-DT-6-C	±6V	±5V
OM5-DT-7-C	±7V	±5V
OM5-DT-8-C	±8V	±5V
OM5-DT-9-C	±9V	±5V
OM5-DT-10-C	±10V	±5V

OM5-IFI
Frequency Input Modules

FEATURES

- ACCEPTS FREQUENCY INPUTS OF 0 to 100kHz
- PROVIDES HIGH LEVEL VOLTAGE OUTPUTS
- TTL LEVEL INPUTS
- 1500 VOLT TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- ±0.05% ACCURACY
- MIX AND MATCH OM5 TYPES ON BACKPANEL
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT

DESCRIPTION

Each OM5-IFI Frequency input module provides a single channel of frequency input which is isolated and converted to a high level analog voltage output. This voltage output is logic switch controlled, which allows these modules to share a common analog bus without the requirement of external multiplexers (Figure 1).

The frequency input signal can be a TTL level signal or a zero-crossing signal. Terminal 3 (+In) on the field-side terminal block is the "common" or ground connection for input signals. A TTL signal is connected from terminal 2 (–In) to terminal 3 (+In), while a zero-crossing signal is connected from terminal 4 (+EXC) to terminal 3 (+In). Input circuitry for each of the signal types has hysteresis built in. An input signal must cross entirely through the hysteresis region in order to trigger the threshold comparator.

A 5.1V excitation is available for use with magnetic pick-up or contact-closure type sensors. The excitation is available on pin 1 (–EXC) and the excitation common is pin 3 (+In).

The modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

A special circuit in the input stage of the module provides protection against accidental connection of power-line voltages up to 240VAC.

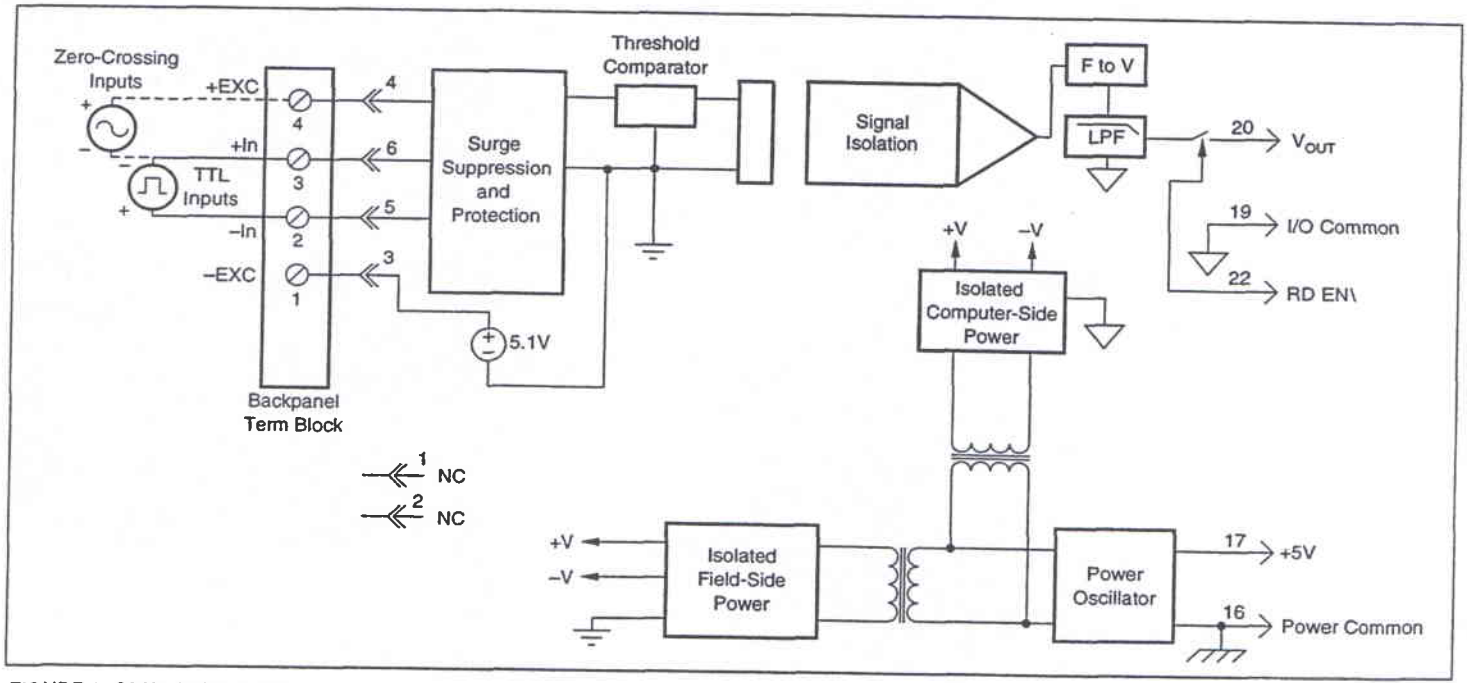


FIGURE 1. OM5-IFI Block Diagram.

SPECIFICATIONS Typical at Ta = +25C and +5V Power

Module	OM5-IFI
Input Range	0 to 100KHz
Input Threshold	Zero Crossing
Minimum Input	60mVp-p
Maximum Input	350Vp-p
Minimum Pulse Width	4µs
TTL Input Low	0.8V max
TTL Input High	2.4V min
Input Hysteresis	
Zero Crossing	0.04V
TTL	1.5V
Input Resistance	
Normal	100KΩ
Power Off	100KΩ
Overload	100KΩ
Input Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
Excitation	+5.1V @ 8mA max
CMV, Input to Output	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50 or 60Hz)	120dB
Accuracy(1)	±0.05% span
Nonlinearity	±0.02% span
Stability	
Offset	±40ppm/°C
Gain	±40ppm/°C
Noise	
Output Ripple	<10mVp-p @ Input >2% span
Response Time (0 to 90%)	
OM5-IFI-500/1K-C	300 ms
OM5-IFI-3K-C	170 ms
OM5-IFI-5K/10K-C	90 ms
OM5-IFI-25K/50K/100K-C	20 ms
Output Range	0V to +5V
Output Resistance	50Ω
Output Protection	Continuous short to ground
Output Selection Time (to ±1mV of V_{OUT})	6µs at C_{load} = 0 to 2000pF
Output Current Limit	+8mA
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0,1"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	110mA
Power Supply Sensitivity	±150µV/% RTO (2)
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	-40°C to +85°C
Storage Temp. Range	-40°C to +85°C
Relative Humidity	0 to 95% noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

NOTES: (1) Includes nonlinearity, hysteresis and repeatability.
(2) RTO = Referenced to Output.

ORDERING INFORMATION

MODEL	INPUT RANGE	OUTPUT RANGE
OM5-IFI-500-C	0 to 500Hz	0V to +5V
OM5-IFI-1K-C	0 to 1kHz	0V to +5V
OM5-IFI-3K-C	0 to 3kHz	0V to +5V
OM5-IFI-5K-C	0 to 5kHz	0V to +5V
OM5-IFI-10K-C	0 to 10kHz	0V to +5V
OM5-IFI-25K-C	0 to 25kHz	0V to +5V
OM5-IFI-50K-C	0 to 50kHz	0V to +5V
OM5-IFI-100K-C	0 to 100kHz	0V to +5V

OM5-LTC
Linearized Thermocouple Input Modules

FEATURES

- INTERFACES TO TYPES J, K, T, E, R, S, N, AND B THERMOCOUPLES
- LINEARIZES THERMOCOUPLE SIGNAL
- HIGH LEVEL VOLTAGE OUTPUTS
- 1500Vrms TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1-1989 TRANSIENT PROTECTION
- INPUT PROTECTED TO 240VAC CONTINUOUS
- 160dB CMR
- 95dB NMR AT 60Hz, 90dB at 50Hz
- ±1µV/°C DRIFT
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT
- MIX AND MATCH OM5 TYPES ON BACKPANEL

DESCRIPTION

Each OM5-LTC thermocouple input module provides a single channel of thermocouple input which is filtered, isolated, amplified, linearized and converted to a high level analog voltage output (Figure 1). This voltage output is logic-switch controlled, allowing these modules to share a common analog bus without the requirement of external multiplexers.

The OM5-LTC modules are designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the output switch. If desired, the output switch can be turned on continuously by simply connecting pin 22, the Read-Enable pin to I/O Common, pin 19.

The OM5-LTC can interface to eight industry standard thermocouple types: J, K, T, E, R, S, N, and B. Its corresponding output signal operates over a 0V to +5V range. Each module is cold-junction compensated to correct for parasitic thermocouples formed by the thermocouple wire and screw terminals on the mounting backpanel. Upscale open thermocouple detect is provided by an internal pull-up resistor. Downscale indication can be implemented by installing an external 47MΩ resistor, ±20% tolerance, between screw terminals 1 and 3 on the OM5-BP backpanels.

Signal filtering is accomplished with a six-pole filter which provides 95dB of normal-mode-rejection at 60Hz and 90dB at 50Hz. Two poles of this filter are on the field side of the isolation barrier, and the other four are on the computer side.

After the initial field-side filtering, the input signal is chopped by a proprietary chopper circuit. Isolation is provided by transformer coupling, again using a proprietary technique to suppress transmission of common mode spikes or surges. The module is powered from +5VDC, ±5%.

A special input circuit provides protection against accidental connection of power-line voltages up to 240VAC.

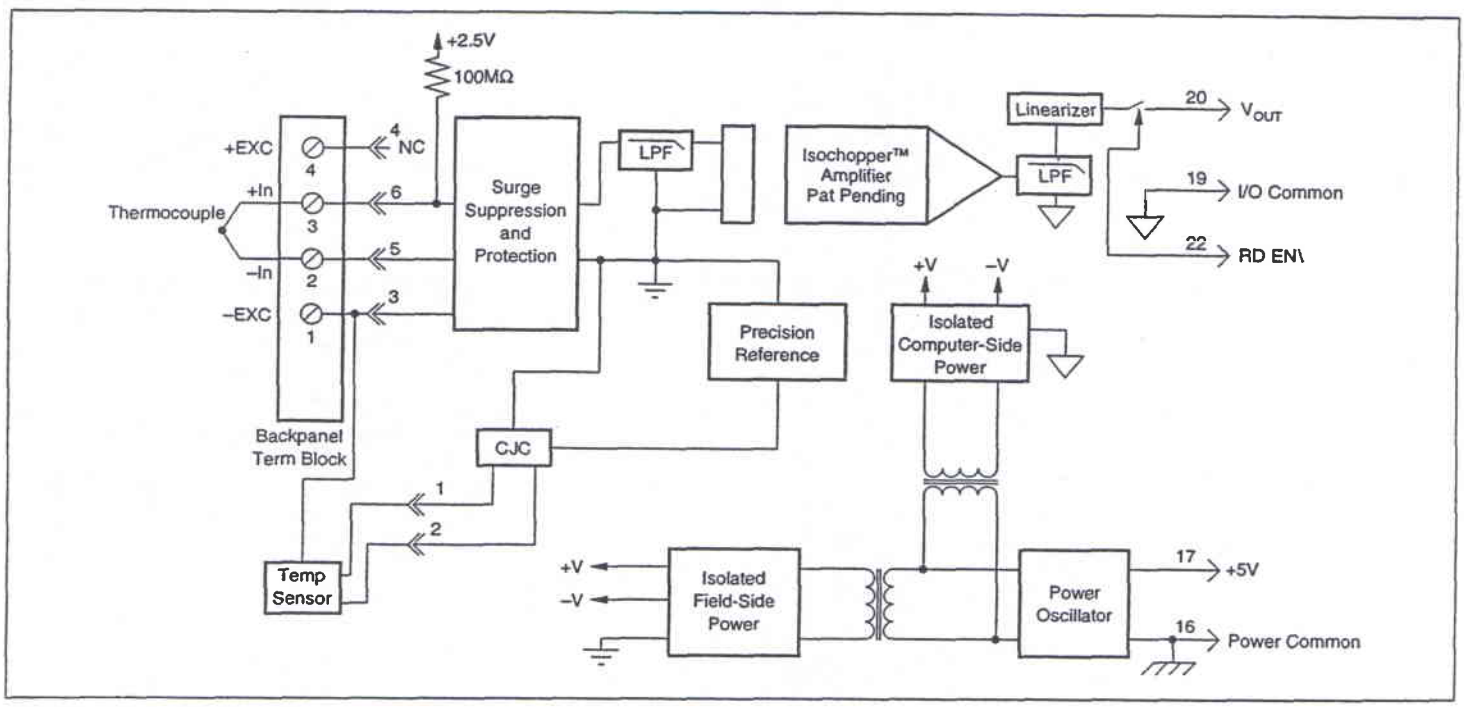


FIGURE 1. OM5-LTC Block Diagram.

SPECIFICATIONS Typical at T_A = +25°C and +5V power.

Module	OM5-LTC
Input Range	–0.1V to +0.5V
Input Bias Current	–25nA
Input Resistance	
Normal	50MΩ
Power Off	40kΩ
Overload	40kΩ
Input Protection	
Continuous	240Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMV, Input to Output	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50Hz or 60Hz)	160dB
NMR	95dB at 60Hz, 90dB at 50Hz
Accuracy	See Ordering Information
Stability	
Input Offset	±1µV/°C(1)
Output Offset	±20µV/°C
Gain	±25ppm/°C
Noise	
Input, 0.1 to 10Hz	0.2µVrms
Output, 100kHz	300µVp-p, 150µVrms
Bandwidth, –3dB	4Hz
Response Time, 90% Span	0.2s
Output Range	0V to +5V
Output Resistance	50Ω
Output Protection	Continuous Short to Ground
Output Selection Time (to ±1mV of V_{OUT})	6µs at C_{load} = 0 to 2000pF
Output Current Limit	+8mA
Output Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0", "1"	0.5µA
Open Input Response	Upscale
Open Input Detection Time	10s
Cold Junction Compensation	
Accuracy, 25°C	±0.25°C
Accuracy, +5°C to +45°C	±0.5°C
Accuracy, –40°C to +85°C	±1.25°C
Power Supply Voltage	+5VDC ±5%
Power Supply Current	30mA
Power Supply Sensitivity	±2µV/% RTI(2)
Mechanical Dimensions	2.28" x 2.26" x 0.6" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	–40°C to +85°C
Storage Temp. Range	–40°C to +85°C
Relative Humidity	0 to 95% Noncondensing
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

NOTES: (1) This is equivalent to °C as follows: Type J 0.020 °C/°C, Types K, T 0.025°C/°C, Type E 0.016°C/°C, Types R, S 0.168°C/°C, Type N 0.037°C/°C, Type C 0.072°C/°C. (2) Referenced to input.

ORDERING INFORMATION

MODEL	TYPE	INPUT RANGE	OUTPUT RANGE	ACCURACY†	
OM5-LTC-J1-C	Type J	0°C to +760°C (+32°F to +1400°F)	0V to +5V	±0.08%	±0.61°C
OM5-LTC-J2-C	Type J	-100°C to +300°C (-148°F to +572°F)	0V to +5V	±0.08%	±0.32°C
OM5-LTC-J3-C	Type J	0°C to +500°C (+32°F to 932°F)	0V to +5V	±0.07%	±0.36°C
OM5-LTC-J4-C	Type J	-100°C to +760°C (-148°F to +1400°F)	0V to +5V	±0.08%	±0.70°C
OM5-LTC-K1-C	Type K	0°C to +1000°C (+32°F to +1832°F)	0V to +5V	±0.08%	±0.80°C
OM5-LTC-K2-C	Type K	0°C to +500°C (+32°F to +932°F)	0V to +5V	±0.08%	±0.38°C
OM5-LTC-K3-C	Type K	-100°C to +1350°C (-148°F to +2462°F)	0V to +5V	±0.08%	±1.2°C
OM5-LTC-T1-C	Type T	-100°C to +400°C (-148°F to +752°F)	0V to +5V	±0.16%	±0.80°C
OM5-LTC-T2-C	Type T	0°C to +200°C (+32°F to +392°F)	0V to +5V	±0.13%	±0.25°C
OM5-LTC-E-C	Type E	0°C to +1000°C (+32°F to +1832°F)	0V to +5V	±0.10%	±1.0°C
OM5-LTC-R-C	Type R	+500°C to +1750°C (+932°F to +3182°F)	0V to +5V	±0.10%	±1.3°C
OM5-LTC-S-C	Type S	+500°C to +1750°C (+932°F to +3182°F)	0V to +5V	±0.10%	±1.3°C
OM5-LTC-B-C	Type B	+500°C to +1800°C (+932°F to +3272°F)	0V to +5V	±0.15%	±2.0°C

†Includes conformity, hysteresis and repeatability. Does not include CJC accuracy.

OM5-AV
Voltage Output Modules

FEATURES

- ACCEPTS HIGH LEVEL VOLTAGE INPUTS TO ±10V
- PROVIDES HIGH LEVEL VOLTAGE OUTPUTS TO ±10V
- 1500 VOLT TRANSFORMER ISOLATION
- ANSI/IEEE C37.90.1e-1989 TRANSIENT PROTECTION
- 5 POLES OF FILTERING
- 110dB CMR
- 400Hz SIGNAL BANDWIDTH
- ±0.05% ACCURACY
- ±0.02% LINEARITY
- MIX AND MATCH OM5 TYPES ON BACKPANEL
- CSA CERTIFIED, FM APPROVED, CE COMPLIANT

DESCRIPTION

Each OM5-AV voltage output module provides a single channel of analog output. The track-and-hold circuit in the input stage can be operated in a hold mode where one DAC can supply many output modules, or a track mode where one DAC is dedicated to each module. In addition to the track-and-hold circuit, each module provides signal buffering, isolation, filtering, and conversion to a high level voltage output.

Setting of the track or hold mode is controlled by the logic state of WR EN\ module pin 23. When pin 23 is low, the track mode is enabled. If pin 23 is open or high, the hold mode is enabled. The module is designed with a completely isolated computer side circuit which can be floated to ±50V from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the track and hold circuit. For a low state, simply connect pin 23, the Write-Enable pin, to I/O Common, pin 19.

The OM5-BP-MUX-C backpanels allow host computer control of the WR EN\ control line, which allows multiplexing of one host DAC to up to 64 OM5-AV output modules. During power up, the output remains 0V output for 100ms, which allows the track-and-hold circuit to be initialized.

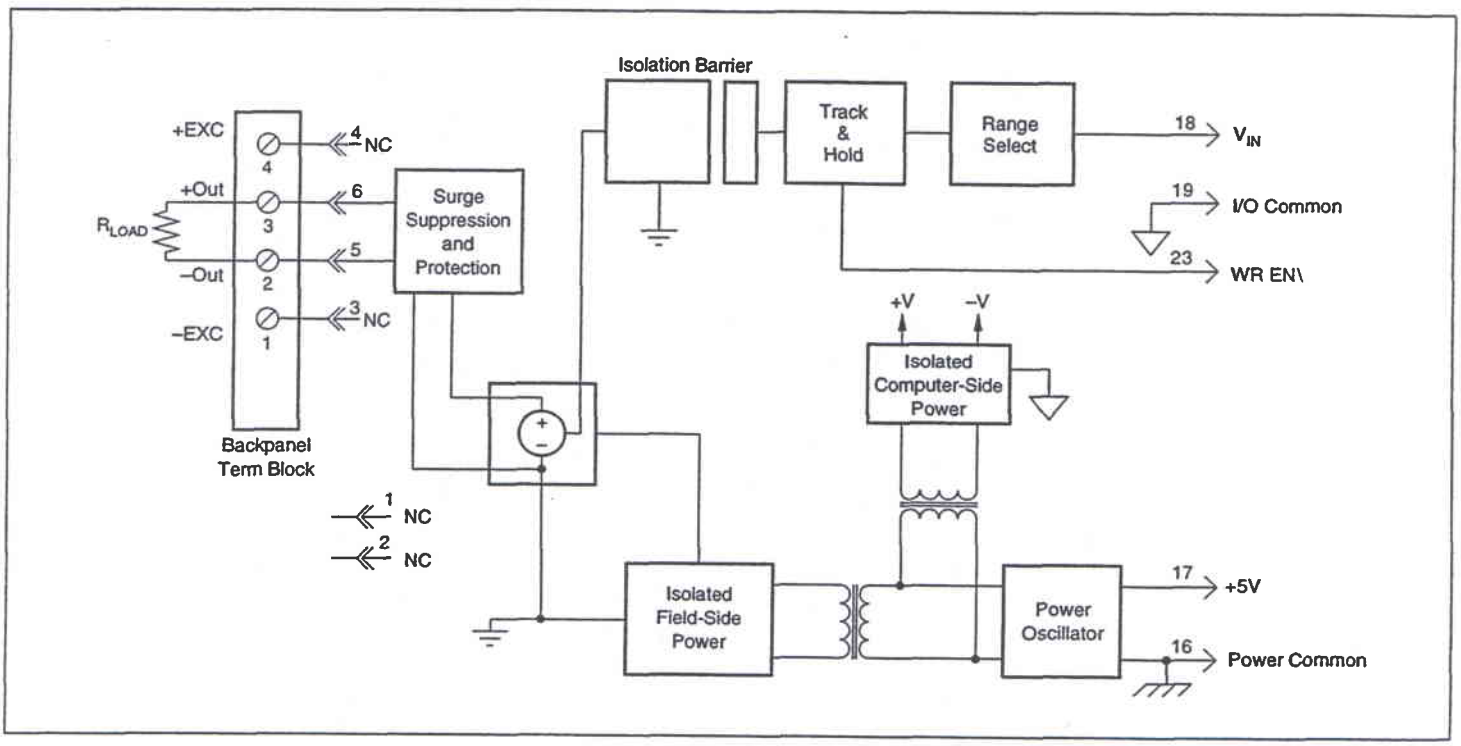


FIGURE 1. OM5-AV Block Diagram.

SPECIFICATIONS Typical at TA= +25C and +5V Power

Module	OM5-AV
Input Voltage Range	±5V, 0 to +5V, ±10V, 0 to +10V
Input Voltage Maximum	±36V (no damage)
Input Resistance	50MΩ
Output Voltage Range	±5V, 0 to +5V, ±10V, 0 to +10V
Over Range Capability	5% @ 10V output
Output Drive	50mA max
Output Resistance	0.5Ω
Output I Under Fault, Max	75mA
Output Protection	
Transient	ANSI/IEEE C37.90.1-1989
CMV, Output to Input	
Continuous	1500Vrms max
Transient	ANSI/IEEE C37.90.1-1989
CMR (50 or 60Hz)	110dB
NMR (–3dB at 400Hz)	100dB per Decade above 400Hz
Accuracy[1]	±0.05% span (0-5mA load)
Nonlinearity	±0.02% span
Stability	
Zero	±25ppm/°C
Span	±20ppm/°C
Noise	
Output Ripple, 1kHz bandwidth	2mVp-p
Bandwidth, -3dB	400Hz
Sample and Hold	
Output Droop Rate	0.2% Span/s
Acquisition Time	50µs
Track-and-Hold Enable Control	
Max Logic "0"	+0.8V
Min Logic "1"	+2.4V
Max Logic "1"	+36V
Input Current, "0"	0.5µA
Power Supply Voltage	+5VDC ±5%
Power Supply Current	350mA Full load, 135mA No load
Power Supply Sensitivity	±12.5ppm/%
Mechanical Dimensions	2.28" x 2.26" x 0.60" (58mm x 57mm x 15mm)
Environmental	
Operating Temp. Range	-40°C to +85°C
Storage Temp. Range	-40°C to +85°C
Relative Humidity	0 to 95% noncondensing
RFI Susceptibility	±0.5% Span error at 400MHz, 5W, 3ft
Emissions	EN50081-1, ISM Group 1, Class A (Radiated, Conducted)
Immunity	EN50082-1, ISM Group 1, Class A (ESD, RF, EFT)

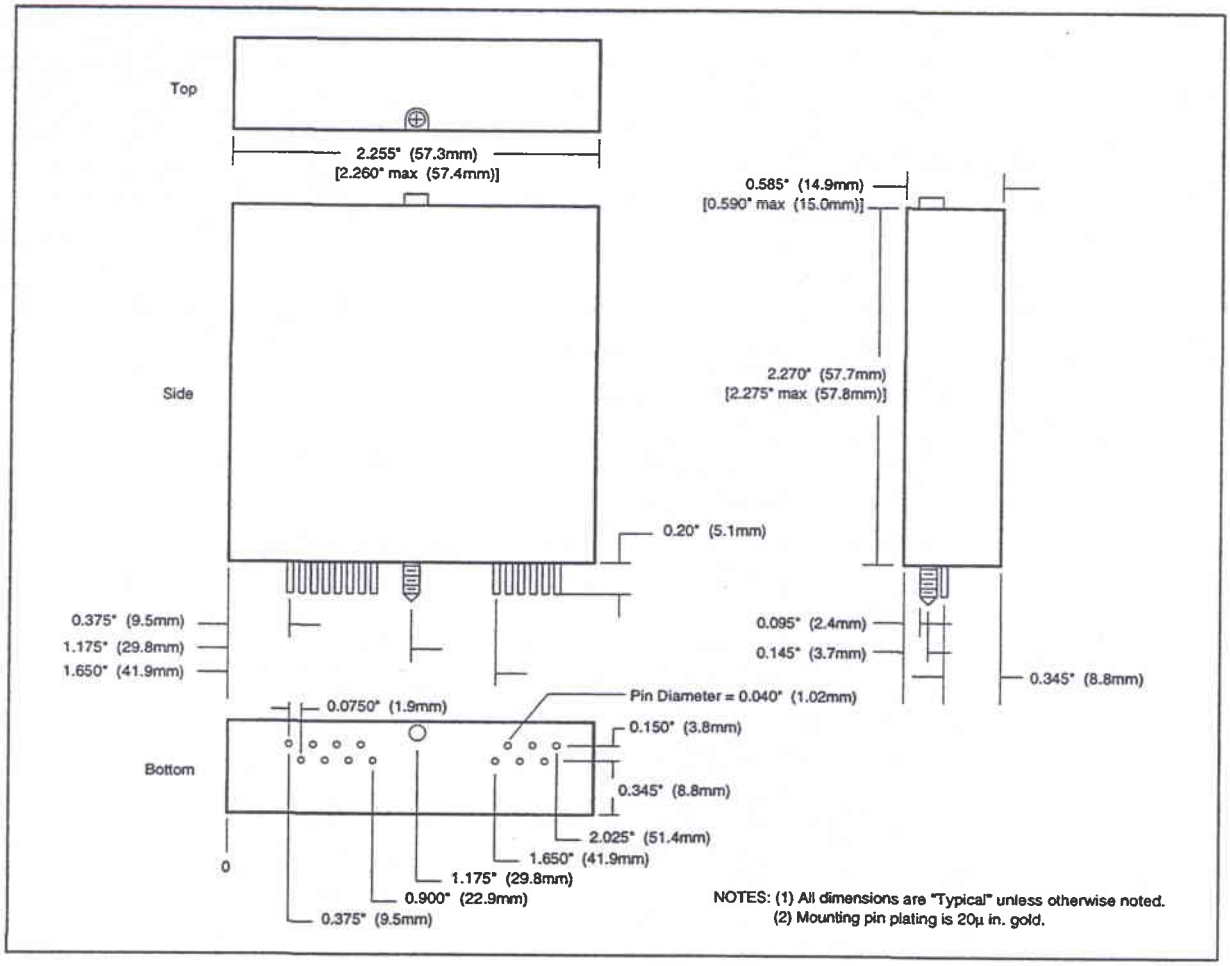
NOTES: (1) Includes nonlinearity, hysteresis and repeatability.

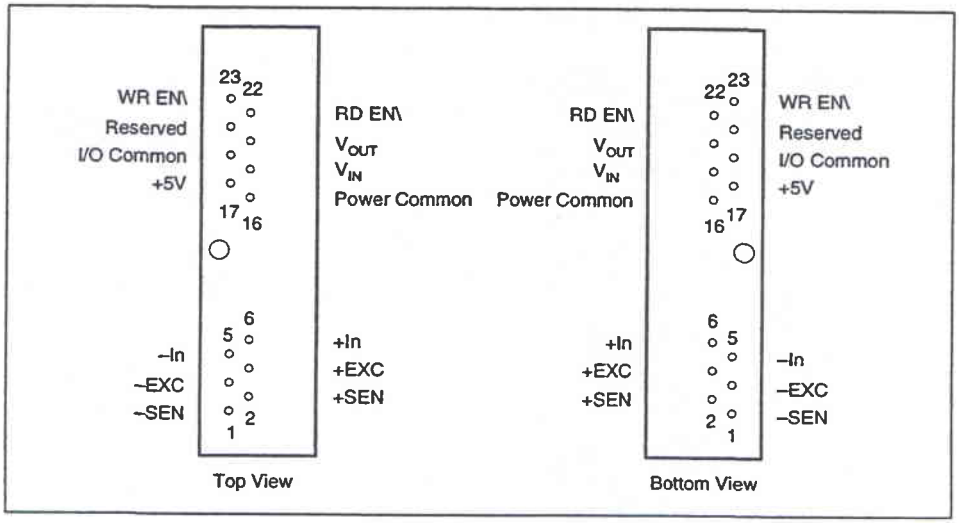
ORDERING INFORMATION

MODEL	INPUT RANGE	OUTPUT RANGE
OM5-AV-1-C	0V to +5V	-5V to +5V
OM5-AV-2-C	-5V to +5V	-5V to +5V
OM5-AV-3-C	-5V to +5V	0V to +5V
OM5-AV-4-C	0V to +10V	-10V to +10V
OM5-AV-5-C	-10V to +10V	-10V to +10V
OM5-AV-6-C	-10V to +10V	0V to +10V
OM5-AV-7-C	-5V to +5V	-10V to +10V

OM5
Module Dimensions and Pinouts

The following mechanical drawing is useful if designing circuit boards to mount the OM5 modules. Many sockets are available which accept the mounting pins. As an example, AMP Inc. provides a socket with part number 50865-5. The captive nut for the 3mm mounting screw can be obtained from PEM (Penn Engineering and Manufacturing), part number KFS2-M3.





Accessories for OM5 Analog Modules

FEATURES

- SINGLE, DUAL, 8-, AND 16-POSITION BACKPANELS
- DIN RAIL MOUNT BACKPANELS
- 19-INCH MOUNTING RACK FOR BACKPANELS
- MULTIPLEXED AND NON-MULTIPLEXED BACKPANELS
- INTERFACE CABLES
- MODULE EVALUATION BOARD
- CABLE-TO-SCREW-TERMINAL INTERFACE BOARD

OM5-BP-16-C 16 POSITION ANALOG I/O BACKPANEL, NON-MULTIPLEXED

DESCRIPTION

The OM5-BP-16-C 16 channel backpanel (Figure 1) can accept any of the OM5 analog modules in any mixture. It can be mounted on the OMX-1363-C 19-inch metal rack. The OM5-BP-16-C has 16 non-addressable analog I/O signal channels which provides each module with it's own analog bus. The module output switch is continuously "on" when using this backpanel and all sixteen module outputs are simultaneously accessible to high-speed data acquisition (ADC) boards. A set of inter-channel bridge jumpers permits connecting an input module's output to an output module's input, providing two levels of isolation. A temperature sensor is mounted on each channel to provide cold junction compensation for thermocouple input modules (See Figure 2 for schematic). Field connections are terminated with four screw terminals at each module site. Use system interface cable OM5-CA-04-01 for connection to the host system.

SPECIFICATIONS

Operating Temperature:	–40°C to +85°C 95% relative humidity, non-condensing
Interface Connector:	
Field	High Density Screw Clamp, 14 AWG Max
Logic	26-pin, male header connector

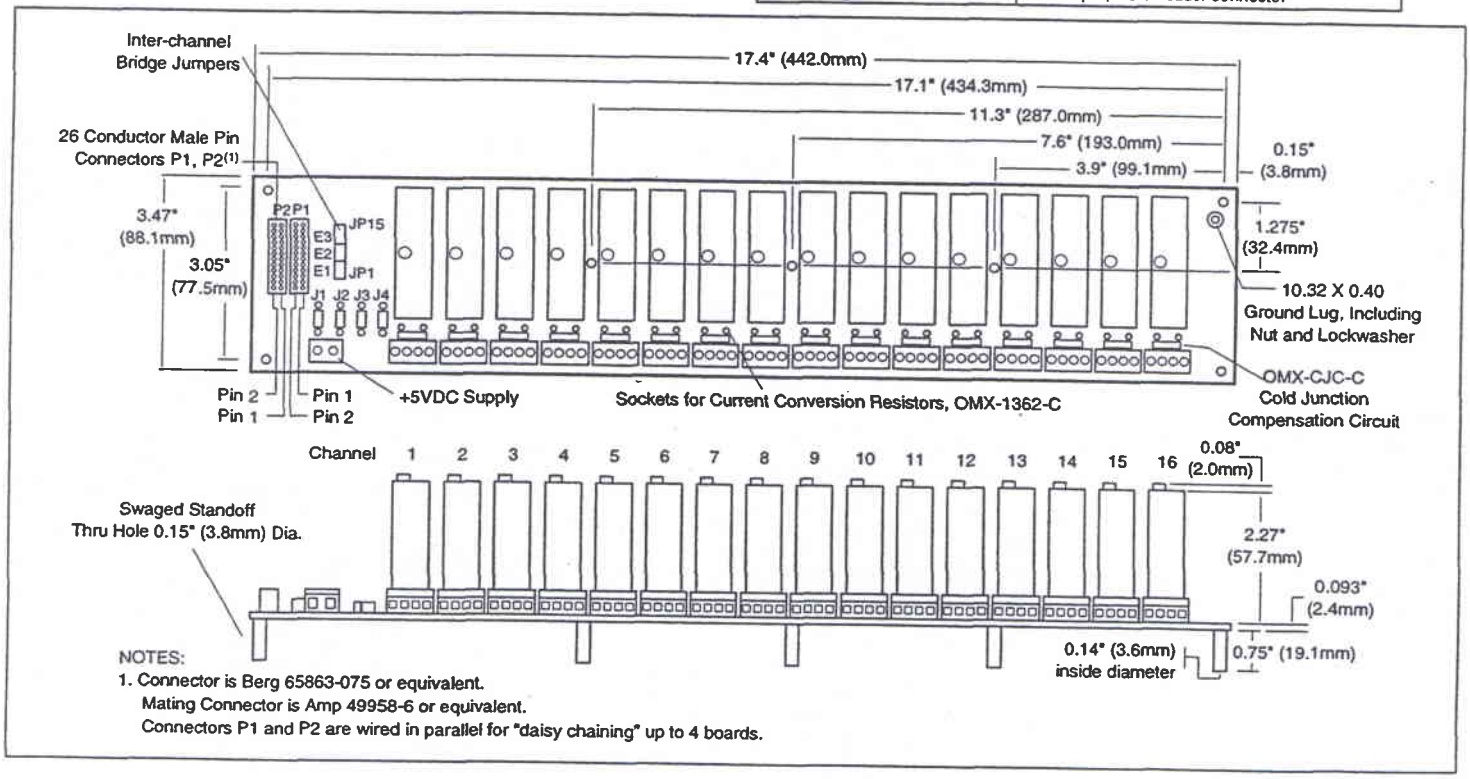
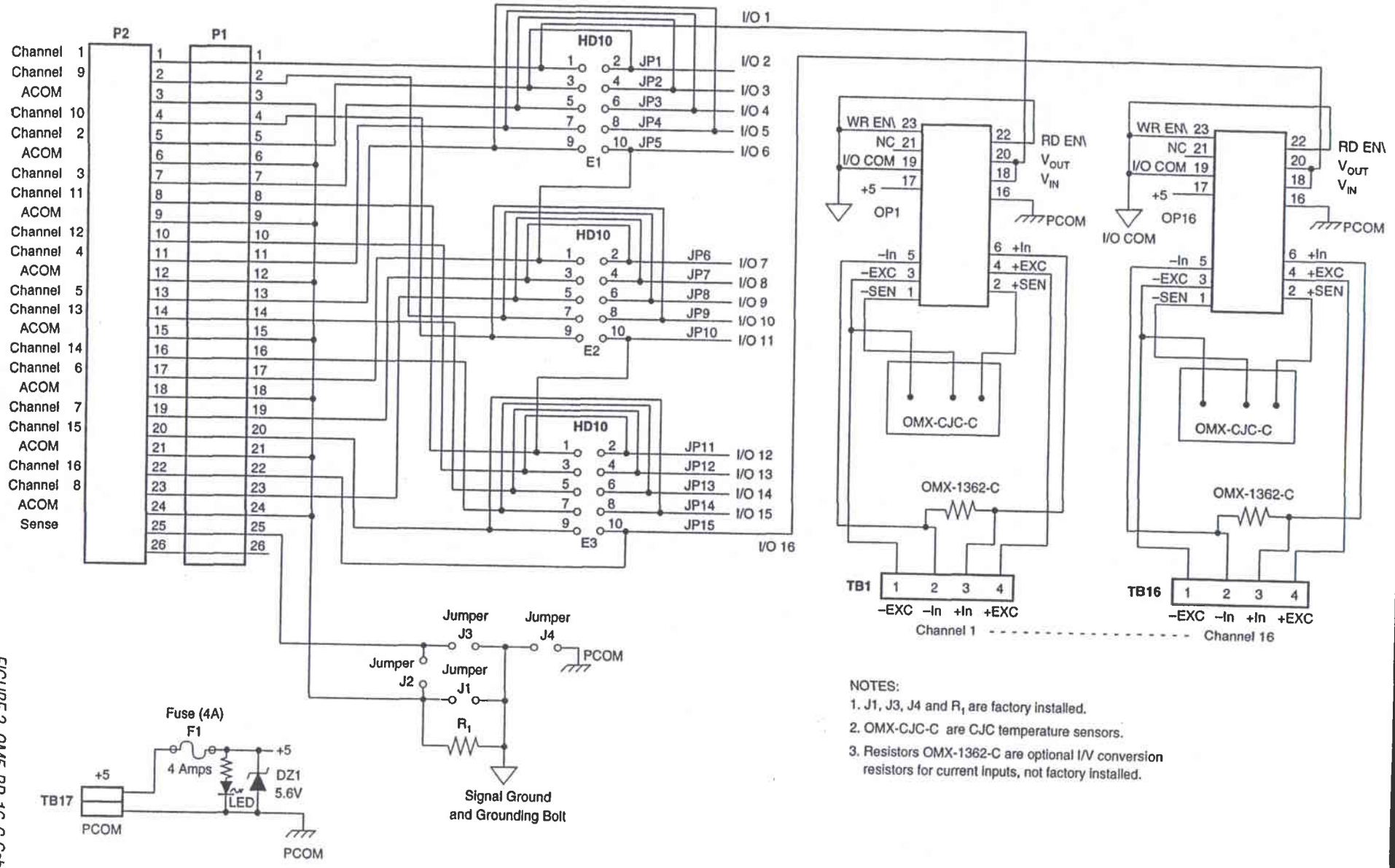


FIGURE 1. OM5-BP-16-C Analog I/O Backpanel Dimensions.



NOTES:

1. J1, J3, J4 and R_1 are factory installed.
2. OMX-CJC-C are CJC temperature sensors.
3. Resistors OMX-1362-C are optional I/V conversion resistors for current inputs, not factory installed.

FIGURE 2. OM5-BP-16-C Schematic.

ELECTRICAL

P1 AND P2 CONNECTOR

Connection to the host system is made at connectors P1 and P2. These connectors are electrically equivalent. Two connectors are provided to allow both analog input and analog output from host systems having individual input and output connectors.

ADJACENT CHANNEL JUMPERS

Adjacent channels may be connected together to provide an isolated output signal from an isolated input module, providing two levels of 1500V isolation. This capability is provided with the 15 jumpers labeled JP1 through JP15 on headers E1, E2, and E3. A simplified drawing of the OM5-BP-16-C schematic for Channel 1 through 4 is shown in Figure 3.

Example: Assume an OM5-IMV input module is installed in Channel 1 position and an OM5-IVI output module is installed in Channel 2 position. If JP1 is installed, the output of Channel 1 is connected to the input of Channel 2, which provides two levels of 1500V isolation.

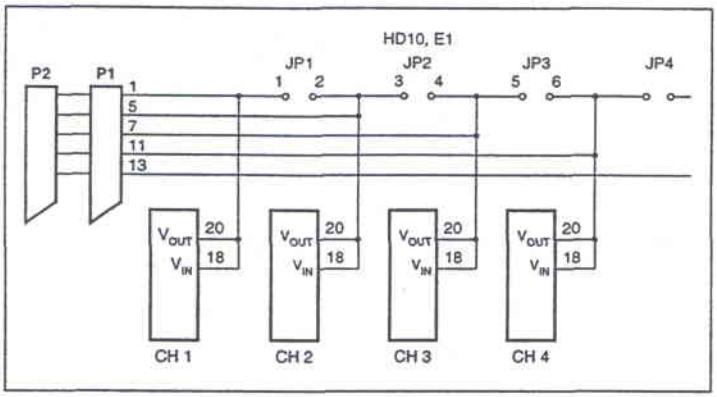


FIGURE 3. OM5-BP-16-C Adjacent Channel Jumpers.

POWER

The OM5-BP-16-C backpanel requires external +5VDC ±5% power. The chassis mounted OM5-PRT-003 power supplies have adequate capacity to power any combination of modules.

FUSING

The OM5-BP-16-C backpanel power is fuse protected through F1. This is a Littlefuse type 252004, 4 amp fuse. Zener diode DZ1 provides extra protection by clamping the input power voltage to +5.6V. If the input supply voltage connection is reversed, this zener diode will be forward biased and fuse F1 will be blown.

GROUNDING

Figure 4 details the optional ground jumper configuration available on the OM5-BP-16-C backpanel. Jumpers J1, J3, and J4 are factory installed.

Jumper J1 connects the AGND shield wires (pins 3, 6, 9, 12, 15, 18, 21, and 24) to the backpanel signal ground. This provides a ground connection between the host system and backpanel. Jumper J1 is required if output modules are used, or if there is no high impedance sense input (input low of a differential or pseudo-differential system) on the host measurement system.

Jumper J3 connects the SENSE line (pin 25) to the backpanel signal ground. If the host system has the capability, this allows measuring the OM5-BP-16-C ground potential.

For proper operation of the output switch or track-and-hold circuit when using the OM5 backpanels, a current path must exist between the host control logic power common and module I/O Common (module pin 19). This path can be established on the OM5-BP-16-C via jumper J4. If this connection exists elsewhere in the system, jumper J4 should be removed since possible ground loops could exist. Other connections of power ground and signal

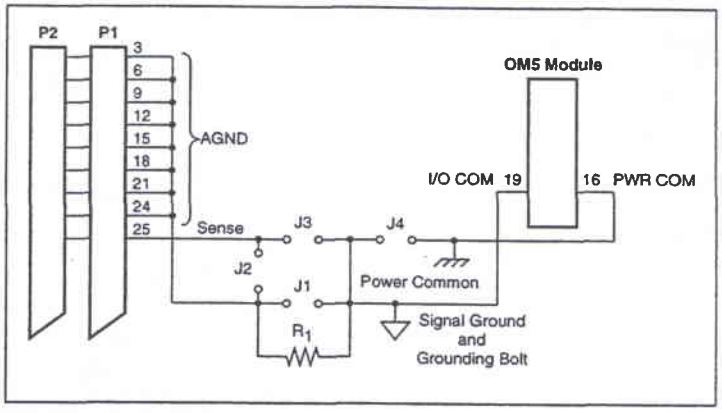


FIGURE 4. OM5-BP-16-C Grounding Diagram.

ground usually occur at the A/D or D/A converter of the host measurement system.

If the connection of power common and AGND shield wires exists in the host measurement system, an optional resistive connection between AGND and the backpanel signal ground can be made via R_1. R_1 can be as large as 10K ohms; 100 ohms is a recommended value. Jumper J2 can be used to connect the SENSE line to R_1 when this ground configuration is used.

For full protection against large electrical disturbances on the field-side of the OM5 modules, a #10-32 ground stud is provided on the backpanel. An electrical connection between this ground stud and system ground should be provided with a large gauge wire of the shortest possible length. When this connection is made, a possible ground loop could result through the AGND shield wires and backpanel signal ground. If the application involves only input modules and a differential input is used by the host measurement system, J1 should be removed. Remember that J1 is required if output modules are used or if the host system does not have differential inputs.

OM5-BP-16-MUX-C 16 POSITION ANALOG I/O BACKPANEL, MULTIPLEXED

DESCRIPTION

The OM5-BP-16-MUX-C 16 channel backpanel (Figure 5) can accept any of the OM5 analog modules in any mixture. It can be mounted on the OMX-1363-C 19-inch metal rack. The OM5-BP-16-MUX-C has two analog buses; one for analog input and one for analog output. This two-bus configuration takes advantage of the switch controlled outputs on the input modules and the track-and-hold inputs on the output modules. A temperature sensor is mounted on each channel to provide cold junction compensation for thermocouple input modules (See Figure 6 for schematic). Field connections are terminated with four screw terminals at each module site. Up to four OM5-BP-16-MUX-C backpanels may be daisy-chained. Use OMX-CAB-01-C cable for daisy chaining and OM5-CA-04-01 cable for connecting to host computer.

SPECIFICATIONS

Operating Temperature:	–40°C to +85°C 95% relative humidity, non-condensing
Interface Connector: Field Logic	 High Density Screw Clamp, 14 AWG Max 26-pin, male header connector
Address Input Logic Levels: Max Logic "0" Min Logic "1"	 0.8V 2.0V

I_I Input Current, "0" or "1"	0.1µA max at 25°C 1.0µA max –25°C to +85°C
RD EN\ or WR EN\ Signal Delay from Connector P1 to Channels 1-16 Standalone (address 0-15) Expanded (address 16-63)	 51ns at 25°C 64ns at –25°C to +85°C 100ns at 25°C 126ns at –25°C to +85°C

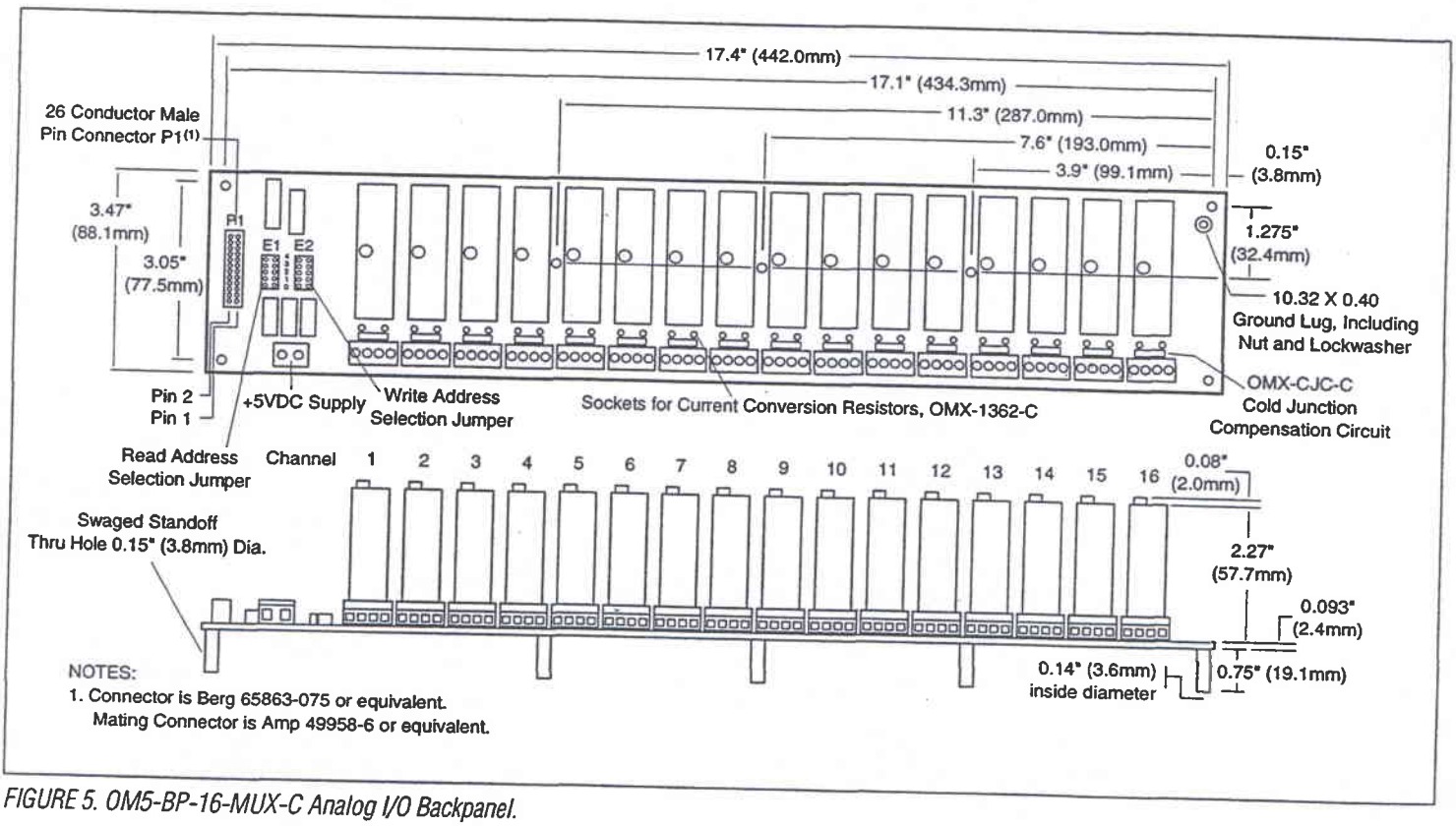


FIGURE 5. OM5-BP-16-MUX-C Analog I/O Backpanel.

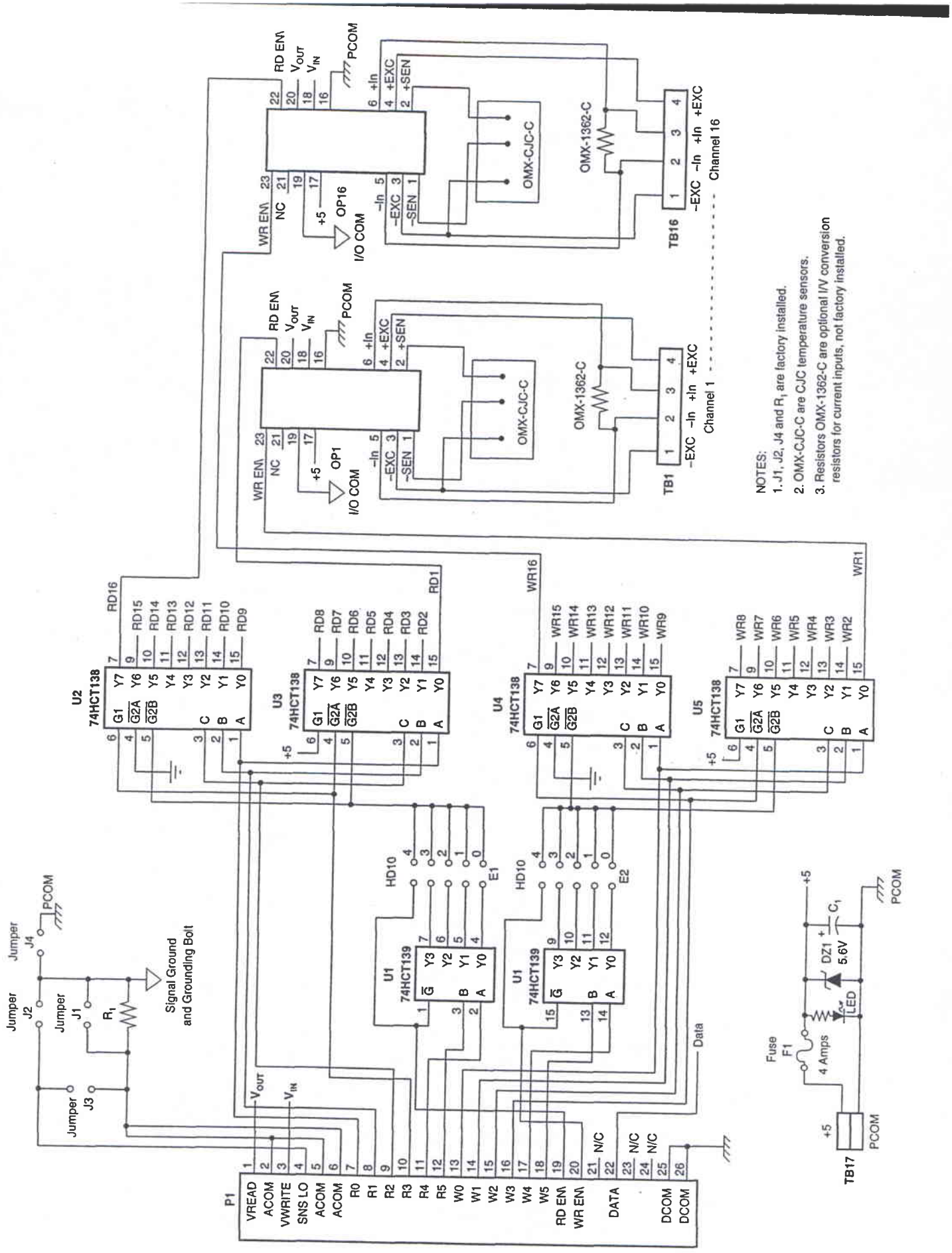


FIGURE 6. OM5-BP-16-MUX-C Schematic.

ELECTRICAL

P1 CONNECTOR

The 26 pin P1 connector provides the signal interface between the OM5-BP-16-MUX-C backpanel and the host measurement system. Two separate analog bus connections are provided; one for analog input signals and one for analog output signals. Two sets of six address lines and an enable pin allow input and output modules to be independently multiplexed onto their respective analog signal bus. R0 thru R5 and RDENAB are used for input modules, and W0 thru W5 and WRENAB are used for output modules.

ADDRESS SELECTION

The OM5-BP-16-MUX-C backpanel has address decoding circuitry to allow multiplexing any combination of up to 16 input or output modules. Capability is also provided in the address decode circuitry to expand the system to 64 channels (four OM5-BP-16-MUX-C backpanels) of multiplexed input or output. Jumpers on HD10 header, E1 and E2 group, select which set of 16 addresses are assigned to a particular backpanel. The E1 group assigns a set of 16 addresses for input modules, and the E2 group assigns a set of 16 addresses for output modules. The table below shows the correlation of jumper position to address range.

E1 Jumper Pos	E2 Jumper Pos	Address Range/Mode
4	4	0-15, STAND ALONE
3	3	48-63, EXPANDED
2	2	32-47, EXPANDED
1	1	16-31, EXPANDED
0	0	0-15, EXPANDED

To connect multiple OM5-BP-16-MUX-C backpanels in this expanded configuration, use interconnect cable OM5-CAB-01-C.

POWER

The OM5-BP-16-MUX-C backpanel requires external +5VDC ±5% power. The chassis mounted OM5-PRT-003 power supplies have adequate capacity to power any combination of modules.

FUSING

The OM5-BP-16-MUX-C backpanel power is fuse protected through F1. This is a Littlefuse type 252004, 4 amp fuse. Zener diode DZ1 provides extra protection by clamping the input power voltage to +5.6V. If the input supply voltage connection is reversed, this zener diode will be forward biased and fuse F1 will be blown.

GROUNDING

Figure 7 below details the optional ground jumper configuration available on the OM5-BP-16-MUX-C backpanel. Jumpers J1, J2, and J4 are factory installed.

Jumper J1 connects the SIG COM shield wires (pins 2, 5, and 6) to the backpanel signal ground. This provides a ground connection between the host system and backpanel. Jumper J1 is required if output modules are used, or if there is no high impedance sense input (input low of a differential or pseudo-differential system) on the host measurement system.

Jumper J2 connects the SNS LO line (pin 4) to the backpanel signal ground. If the host system has the capability, this allows measuring the OM5-BP-16-MUX-C ground potential.

For proper operation of the output switch or track-and-hold circuit when using the OM5-BP-16 backpanels, a current path must exist between the host control logic power common and module I/O Common (module pin 19). This path can be established on the OM5-BP-16-MUX-C via jumper J4. If this connection exists elsewhere in the system, jumper J4 should be removed since possible ground loops could exist. Other connections of power ground and signal ground usually occur at the A/D or D/A converter of the host measurement system.

If the connection of power common and SIG COM shield wires exist in the host measurement system, a resistive connection between SIG COM and the backpanel signal ground can be made via R_1. R_1 can be as large as 10K ohms; 100 ohms is a recommended value. Jumper J3 can be used to connect the SNS LO line to R_1 when this ground configuration is used.

For full protection against large electrical disturbances on the field-side of the OM5 modules, a #10-32 ground stud is provided on the backpanel. An electrical connection between this ground stud and system ground should be provided with a large gauge wire of the shortest possible length. When this connection is made, a possible ground loop could result through the SIG COM shield wires and backpanel signal ground. If the application involves only input modules and a differential input is used by the host measurement system, J1 should be removed. Remember that J1 is required if output modules are used or if the host system does not have differential inputs.

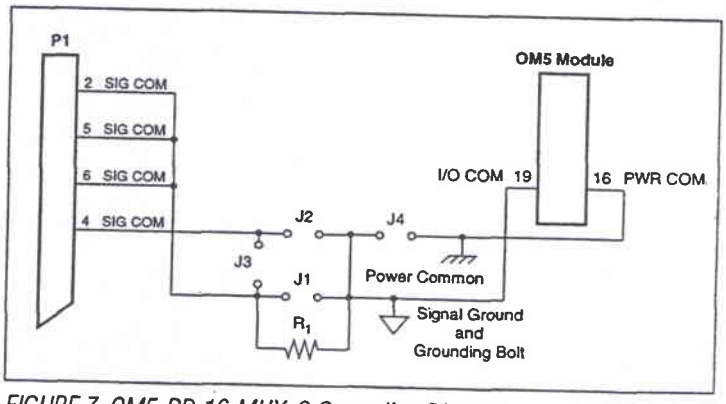


FIGURE 7. OM5-BP-16-MUX-C Grounding Diagram.

OM5-BP-SKT-C /-2-C ONE / TWO POSITION ANALOG I/O BACKPANELS

DESCRIPTION

The OM5-BP-SKT-C is a single channel mounting panel for the OM5 modules. The OM5-BP-2-C is a dual channel mounting panel for the OM5 modules. They both are DIN rail compatible.

See Figures 9 and 10 for wiring diagrams, Figures 11 and 12 for schematics.

The following accessories are required for mounting one OM5-BP-SKT- or -2-C panel (Figure 8):

Qty	Model	Description
1	OM7-DIN-SF	Base element with snap foot
2	OM7-DIN-SE	Side element

The following accessories are required for mounting two or more OM5-BP-SKT- or -2-C panels:

Qty	Model	Description
2	OM7-DIN-SF	Base element with snap foot
2	OM7-DIN-SE	Side element
(# panels)-2	OM7-DIN-WSF	Base element without snap foot
(4 x (# panels))-4	OM7-DIN-CP	Connection pins

The following DIN rail styles are available. Specify length in meters (-XX)

EN 50022-35x7.5 (slotted steel)
EN 50035-G32 (slotted steel)
EN 50022-35x15 (slotted steel)

SPECIFICATIONS

Operating Temperature:	–40°C to +85°C 95% relative humidity, non-condensing
Interface Connector: Field Logic	 High Density Screw Clamp, 14 AWG Max High Density Screw Clamp, 14 AWG Max

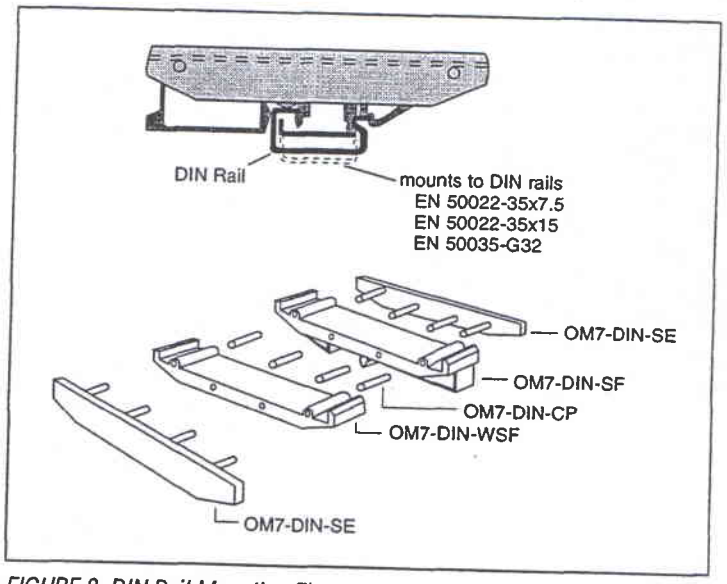


FIGURE 8. DIN Rail Mounting Elements.

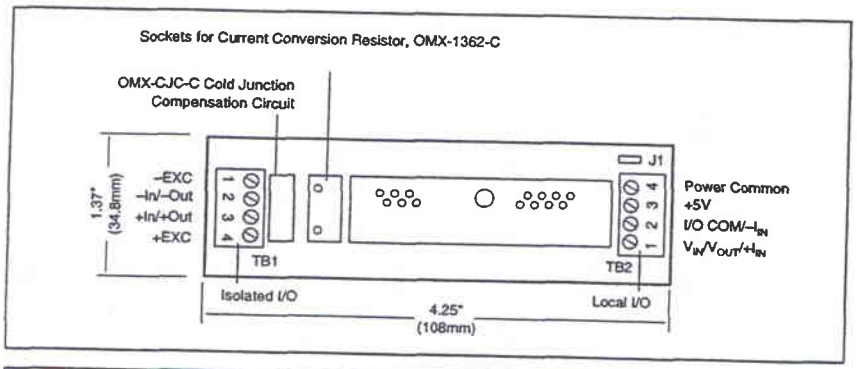


FIGURE 9. OM5-BP03-C Wiring Diagram.

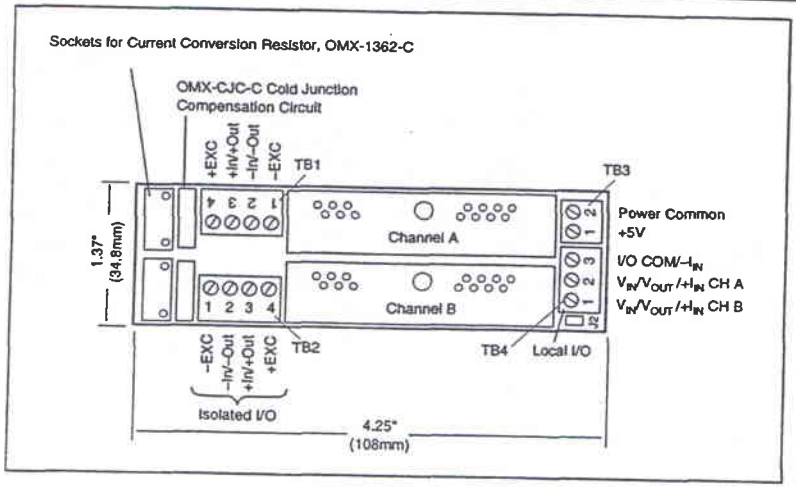


FIGURE 10. OM5-BP04-C Wiring Diagram.

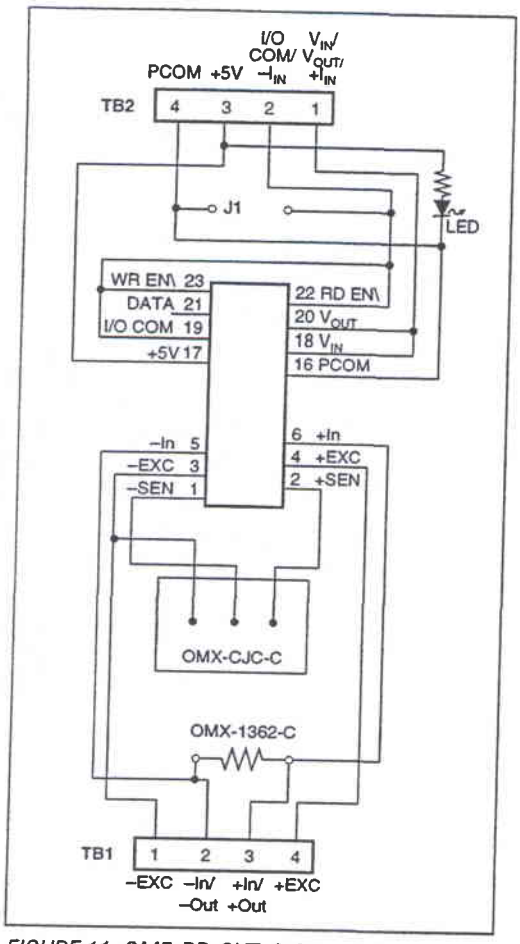


FIGURE 11. OM5-BP-SKT-C Schematic.

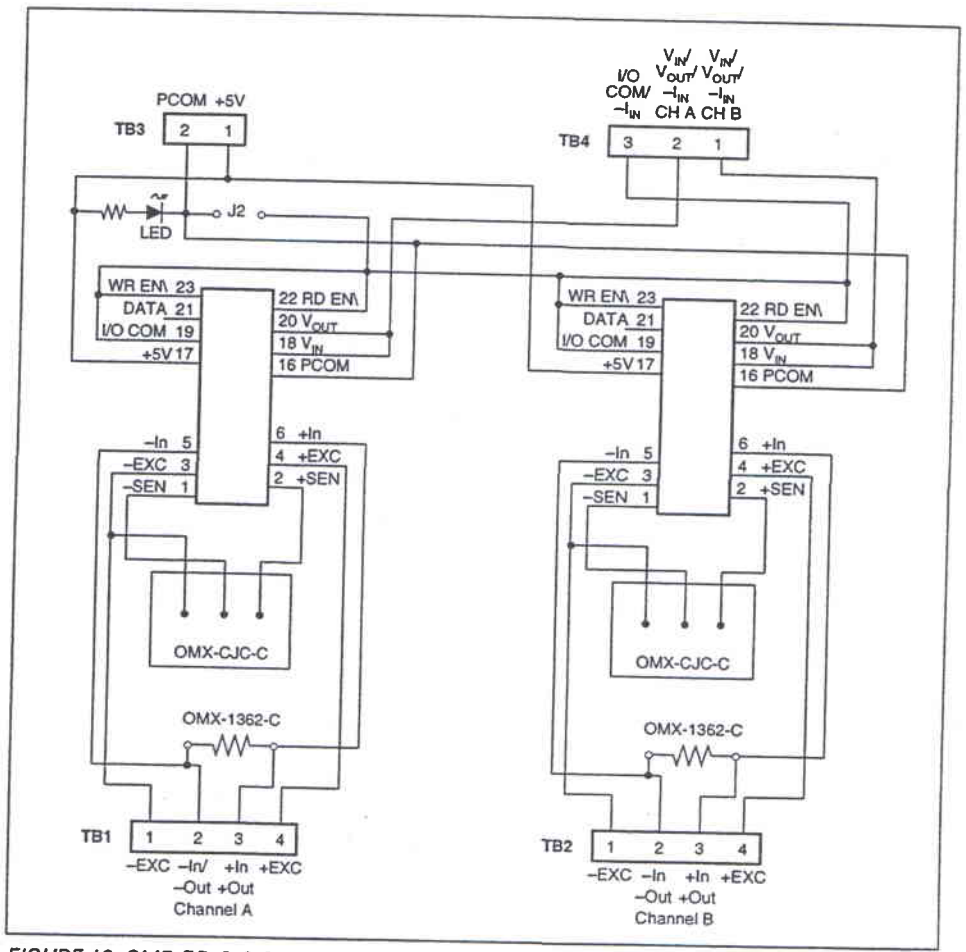


FIGURE 12. OM5-BP-2-C Schematic.

*NOTE: OMX-1362-C resistors are not installed at factory.

OM5-BP-8-C 8 POSITION ANALOG I/O BACKPANEL, NON-MULTIPLEXED

DESCRIPTION

The OM5-BP-8-C analog module mounting board has a capacity of eight analog input and/or output modules in any combination. It can be mounted on the OMX-1363-C 19-inch metal rack. A separate analog signal path is provided for each channel and each channel's signal is accessible at redundant 26-pin connectors. The module output switch is continuously "on" when using this backpanel and all eight module outputs are simultaneously accessible to high-speed data acquistion (ADC) boards.

On-board jumpers permit paralleling two OM5-BP-8-C boards to form a OM5-BP-16-C equivalent. An additional set of inter-channel bridge jumpers permits connecting an input module's output to an output module's input, providing two levels of isolation (Figures 13, 14).

Jumpers on the OM5-BP-8-C permit user selection of low (i.e. channels 0-7) or high (i.e. channels 8-15) addresses.

A temperature sensor is mounted on each channel to provide cold junction compensation for thermocouple input modules (See Figure 14 for Schematic-

SPECIFICATIONS

Operating Temperature:	–40°C to +85°C 95% relative humidity, non-condensing
Interface Connector:	
Field Logic	High Density Screw Clamp, 14 AWG Max 26-pin, male header connector

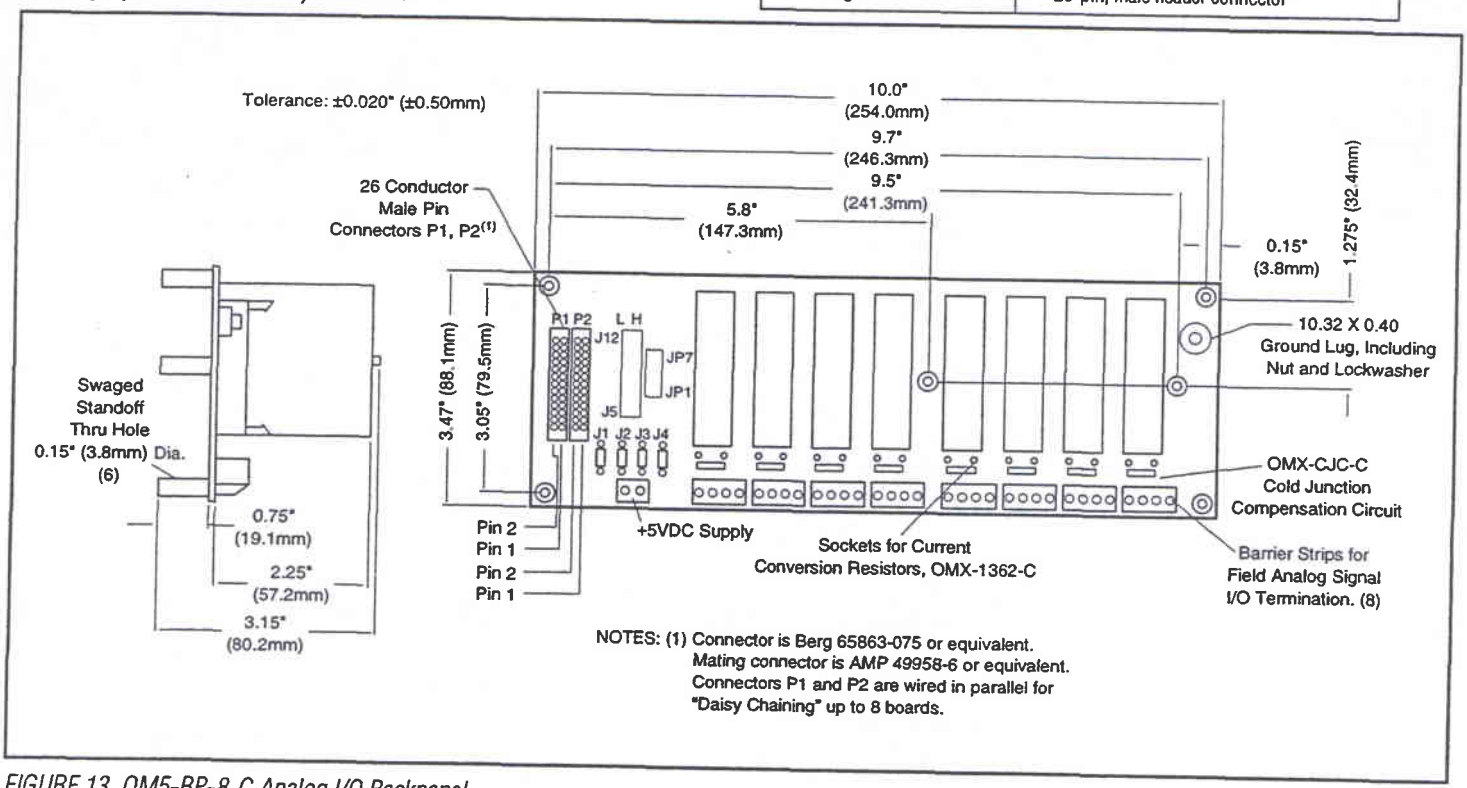


FIGURE 13. OM5-BP-8-C Analog I/O Backpanel.

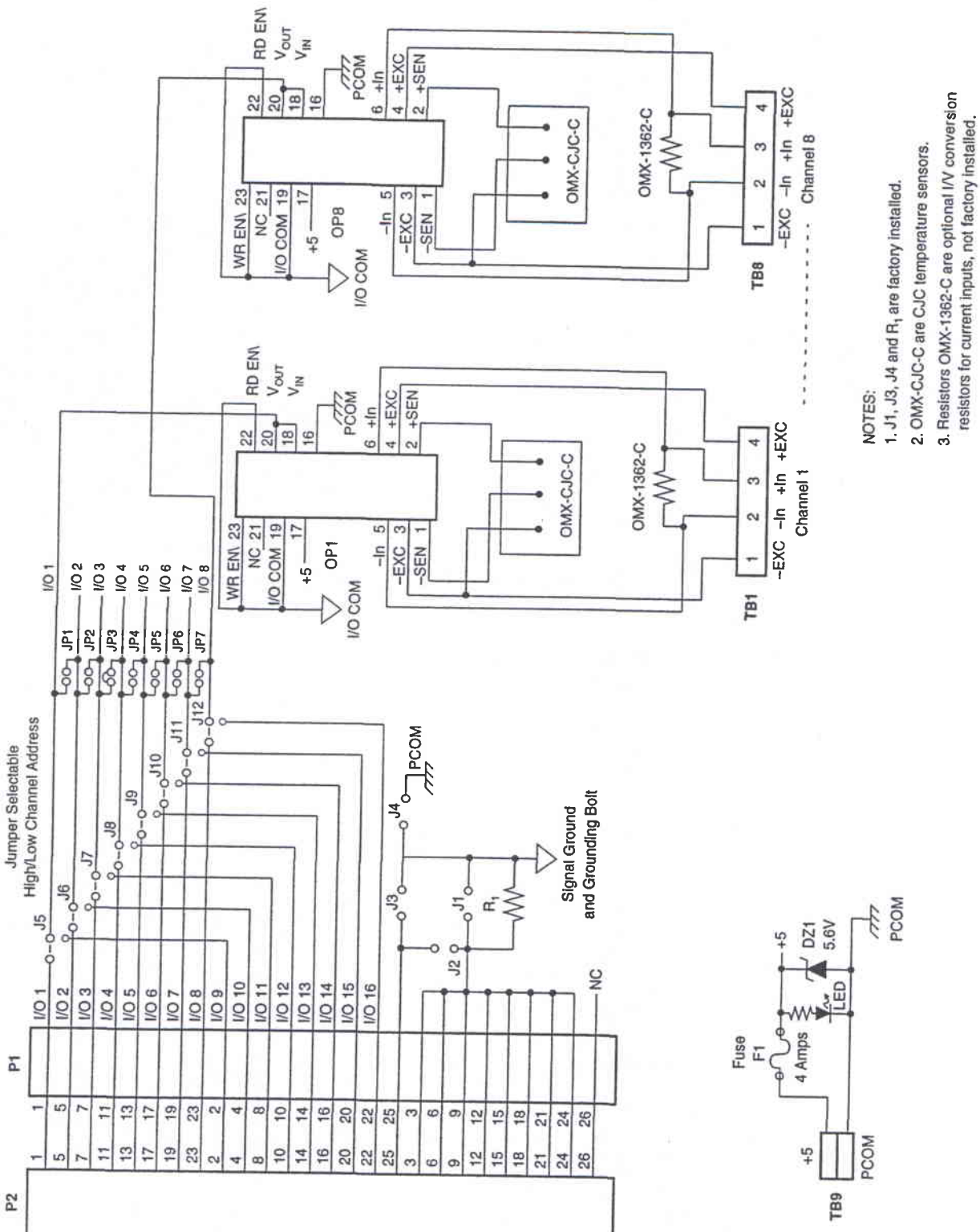
ELECTRICAL

ADDRESS SELECTION

Module addresses may be selected as low (channels 0-7) or high (channels 8-15) using the sets of 3 pins labeled J5 through J12. Place a jumper over the two pins closest to the ribbon cable connectors, P1 and P2, to select a low address (factory configuration) or over the two pins furthest from the ribbon cable connectors, P1 and P2, to select a high address.

ADJACENT CHANNEL JUMPERS

Adjacent channels may be connected together to provide an isolated output signal from an isolated input module, providing two levels of 1500V isolation. This capability is provided with the seven jumpers labeled JP1–JP7.



NOTES:
1. J1, J3, J4 and R_1 are factory installed.
2. OMX-CJC-C are CJC temperature sensors.
3. Resistors OMX-1362-C are optional I/V conversion resistors for current inputs, not factory installed.

FIGURE 14. OM5-BP-8-C Schematic.

OM5-BP-8-MUX-C 8 POSITION ANALOG I/O BACKPANEL, MULTIPLEXED

DESCRIPTION

The OM5-BP-8-MUX-C backpanel (Figure 15) can accept up to eight OM5 modules in any combination. It can be mounted on the OMX-1363-C 19-inch metal rack. The OM5-BP-8-MUX-C has two analog buses; one for analog input and one for analog output. This two-bus configuration takes advantage of the switch controlled outputs on the input modules and the track-and-hold inputs on the output modules. A temperature sensor is mounted on each channel to provide cold junction compensation for thermocouple input modules (See Figure 16 for schematic). Field connections are terminated with four screw terminals at each module site. Up to eight OM5-BP-8-MUX-C backpanels may be daisy-chained. Use OMX-CAB-01-C cable for daisy chaining and OM5-CA-04-01 cable for connecting to host computer.

Jumpers on the OM5-BP-8-MUX-C permit user selection of low (i.e. channels 0-7) or high (i.e. channels 8-15) addresses.

SPECIFICATIONS

Operating Temperature:	–40°C to +85°C 95% relative humidity, non-condensing
Interface Connector: Field Logic	 High Density Screw Clamp, 14 AWG Max 26-pin, male header connector
Address Input Logic Levels: Max Logic "0" Min Logic "1"	 0.8V 2.0V

I_I Input Current, "0" or "1"	0.1µA max at 25°C 1.0µA max –25°C to +85°C
RD EN\ or WR EN\ Signal Delay from Connector P1 to Channels 0-7 Standalone (address 0-7) Expanded (address 8-63)	 51ns at 25°C 64ns at –25°C to +85°C 100ns at 25°C 126ns at –25°C to +85°C

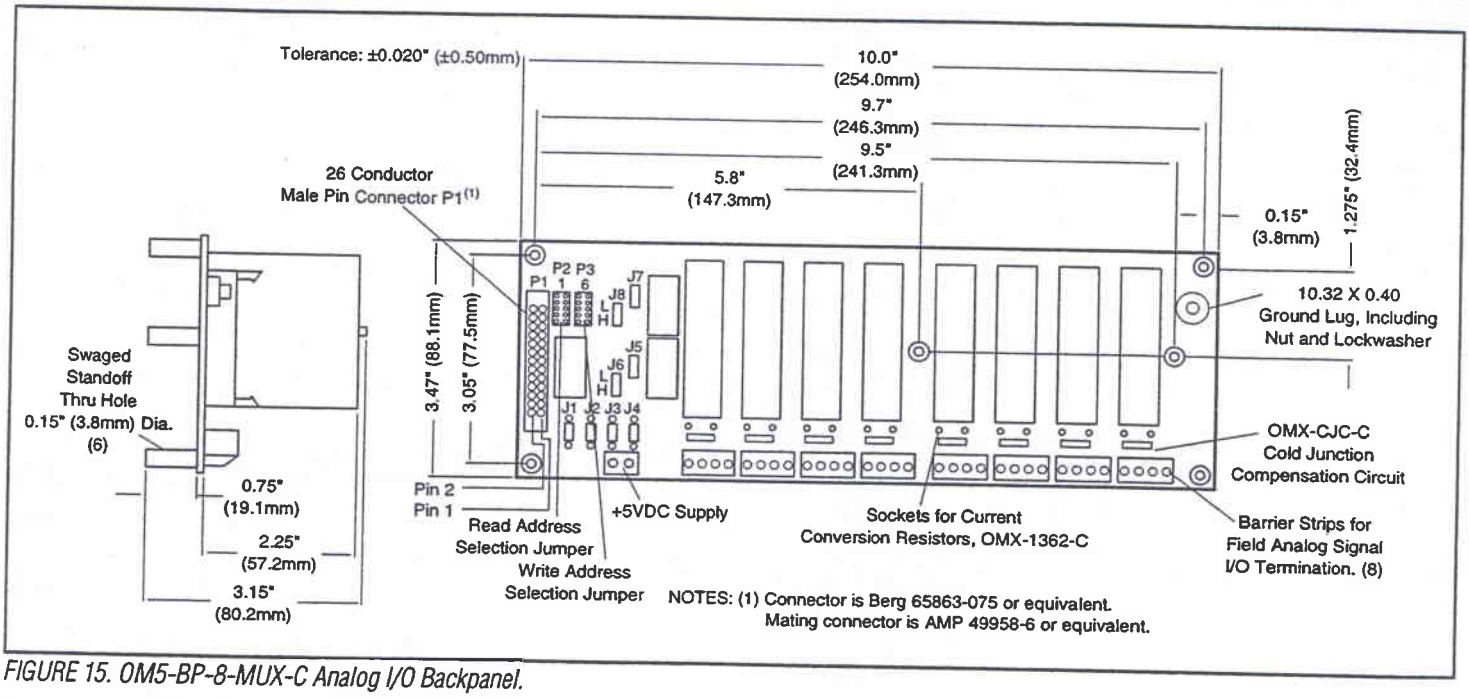


FIGURE 15. OM5-BP-8-MUX-C Analog I/O Backpanel.

ELECTRICAL

ADDRESS SELECTION

Module read and write addresses may be selected as low (channels 0-7) or high (channels 8-15) using the four sets of 3 position jumpers labeled J5 through J8. Place a jumper over the two pins furthest from the field I/O termination blocks on all four sets to select a low address (factory configuration) or over the two pins closest to the field I/O termination blocks on all four sets to select a high address.

The OM5-BP-8-MUX-C backpanel has address decoding circuitry to allow multiplexing any combination of up to 8 input or output modules. Capability is also provided in the address decode circuitry to expand the system to 64 channels (eight OM5-BP-8-MUX-C backpanels) of multiplexed input or output. Jumpers select which set of 16 addresses are assigned to a particular backpanel. The Read Address group assigns a set of 16 addresses for input modules, and the Write Address group assigns a set of 16 addresses for output modules. The table below shows the correlation of jumper position to address range.

Address Selection Jumpers

Read Address Jumper (P2)	Write Address Jumper(P3)	Address Range
1	6	0-15 Stand alone
2	7	48-63 Expanded
3	8	32-47 Expanded
4	9	16-31 Expanded
5	10	0-15 Expanded

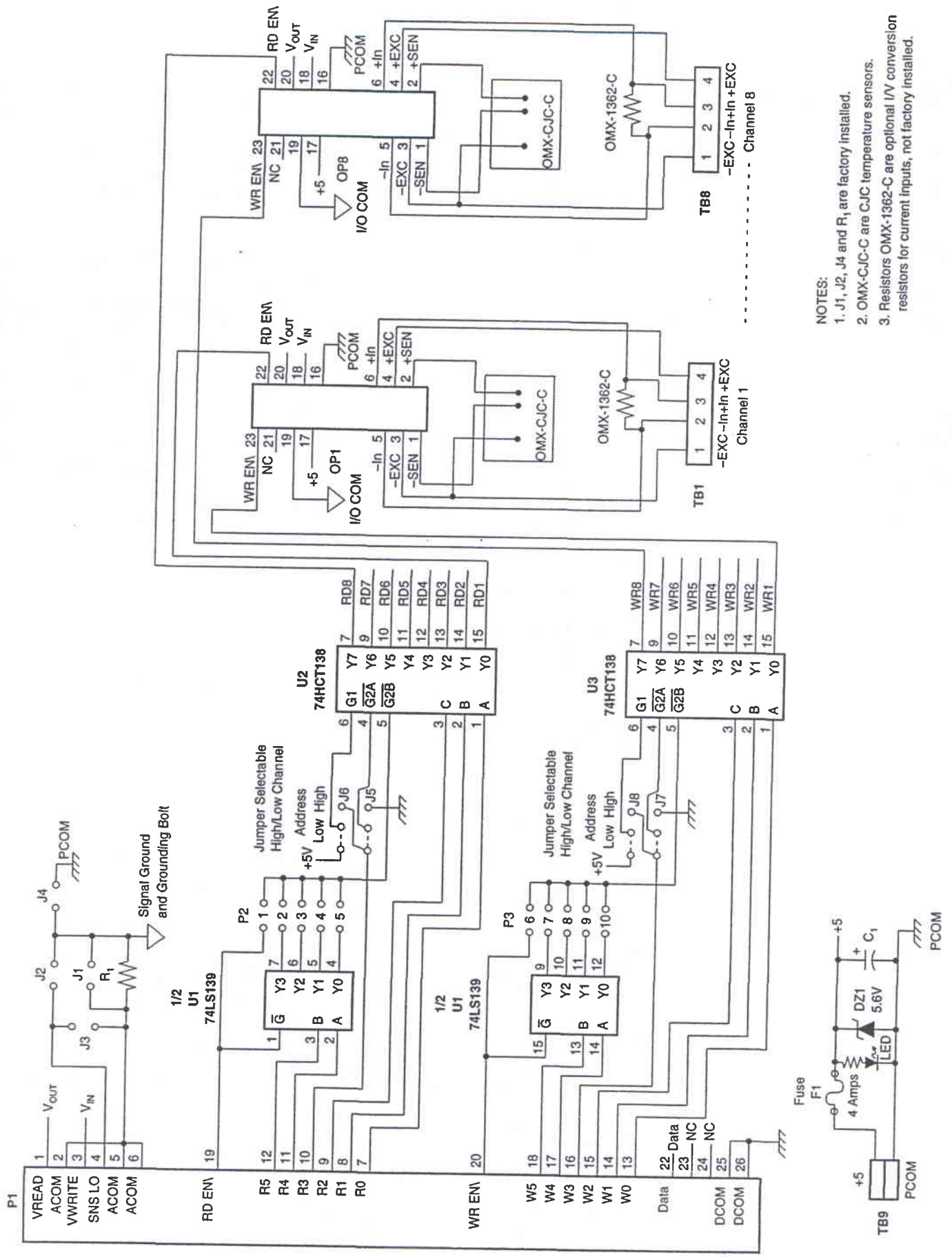


FIGURE 16. OM5-BP-8-MUX-C Schematic.

OM5-BP-16-DIN-C, OM5-BP-16-MUX-DIN-C, OM5-BP-8-DIN-C, OM5-BP-8-MUX-DIN-C

DESCRIPTION

These are the OM5-BP 8 or 16 channel backpanels with a DIN rail mounting option. These backpanels are attached to a 0.062" thick piece of black anodized aluminum, which in turn is captured using the OM7-DIN-SF and OM7-DIN-SE DIN rail mounting elements. These backpanels come fully assembled.

OMX-1363-C 19 INCH METAL MOUNTING RACK

DESCRIPTION

The OMX-1363-C is a 19-inch metal rack for mounting the OM5-BP backpanels. It also provides capability to mount the OM5-PRT-003 power supplies, and the OM7-IF interface board (See Figure 17 for dimensions).

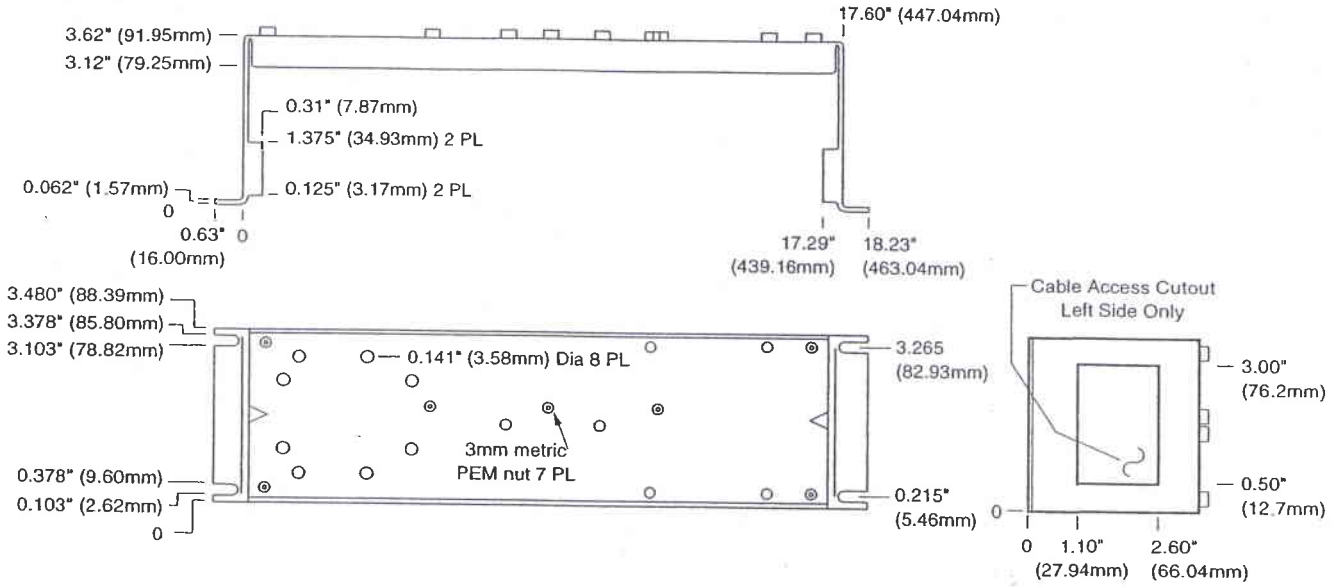


FIGURE 17. OMX-1363-C Analog Rack Dimensions.

OM7-IF UNIVERSAL INTERFACE BOARD

DESCRIPTION

The OM7-IF is a universal interface board which converts a 26-pin ribbon cable input to 26 screw terminals for discrete wire. It can be mounted on the back of the OMX-1363-C mounting rack or on a DIN rail. Required mounting hardware is included. Use OM5-CA-04-01 cable (See Figure 18 for dimensions).

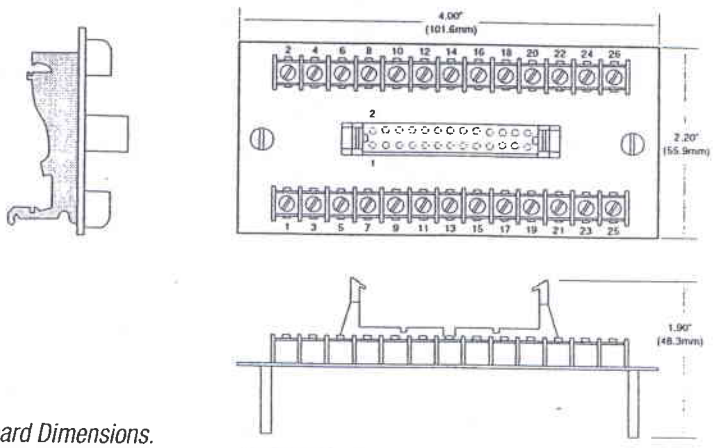


FIGURE 18. OM7-IF Universal Interface Board Dimensions.

OM5-BP-SKT-C ANALOG MODULE EVALUATION BOARD

DESCRIPTION

The OM5-BP-SKT-C is a single channel board with a test socket for OM5 module evaluation (Figure 19). All signal input/output, control, and power connections are connected to terminal blocks for ease of user access. A cold junction temperature sensor circuit is included for evaluation of thermocouple modules. (See Figure 20 for schematic).

The OM5-BP-SKT-C is mechanically compatible with DIN rail mounting using the following elements:

2 OM7-DIN-SF base elements with snap foot
2 OM7-DIN-SE side elements
4 OM7-DIN-CP connection pins

Two jumpers are provided for customer use. The first, J1, provides a current path between +5V Power Common (module pin 16) and I/O Common (module pin 19). A path must exist between the host control logic power common and module I/O Common for proper operation of the module output switch or track-and-hold circuit. If this connection exists elsewhere in the system, jumper J1 should be removed since possible ground loops could exist. Other connections of power ground and signal ground usually occur at the A/D or D/A converter of the host measurement system.

Jumper J2 is used in the cold junction compensation circuit. If it is installed, the compensation circuit is enabled and will provide the proper compensation voltage to correct for the thermoelectric effect at the +In and –In screw terminals. If an external simulation voltage is desired for cold junction compensation, J2 should be removed. The external voltage is applied at the sockets labled CJC+ and CJC–. An external voltage of 510.0 mV corresponds to an ambient temperature of +25 °C. The transfer function of the onboard compensation circuit is $V_{CJC} = 0.510 - 0.0025(T-25)V$.

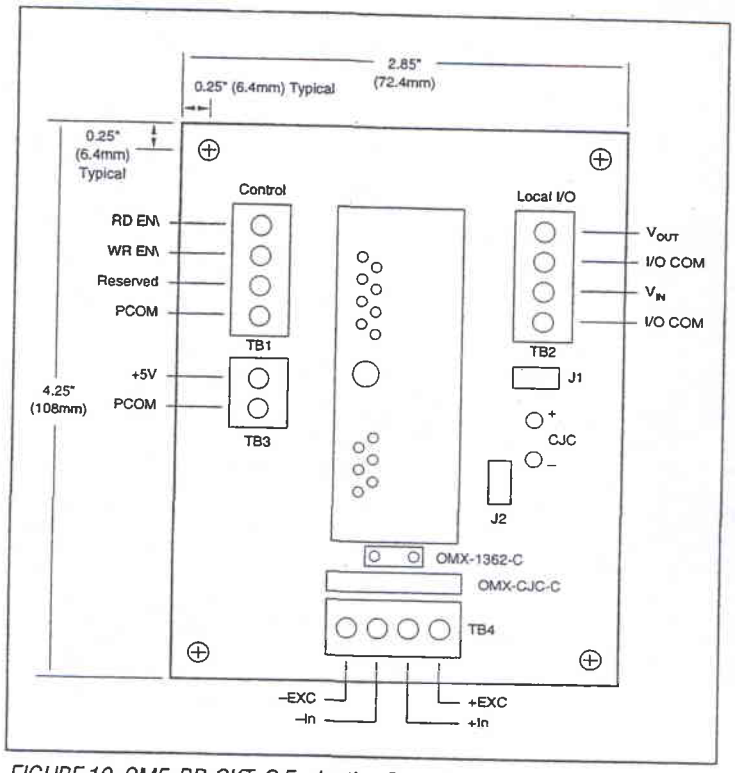


FIGURE 19. OM5-BP-SKT-C Evaluation Board Dimensions And Pin Layout.

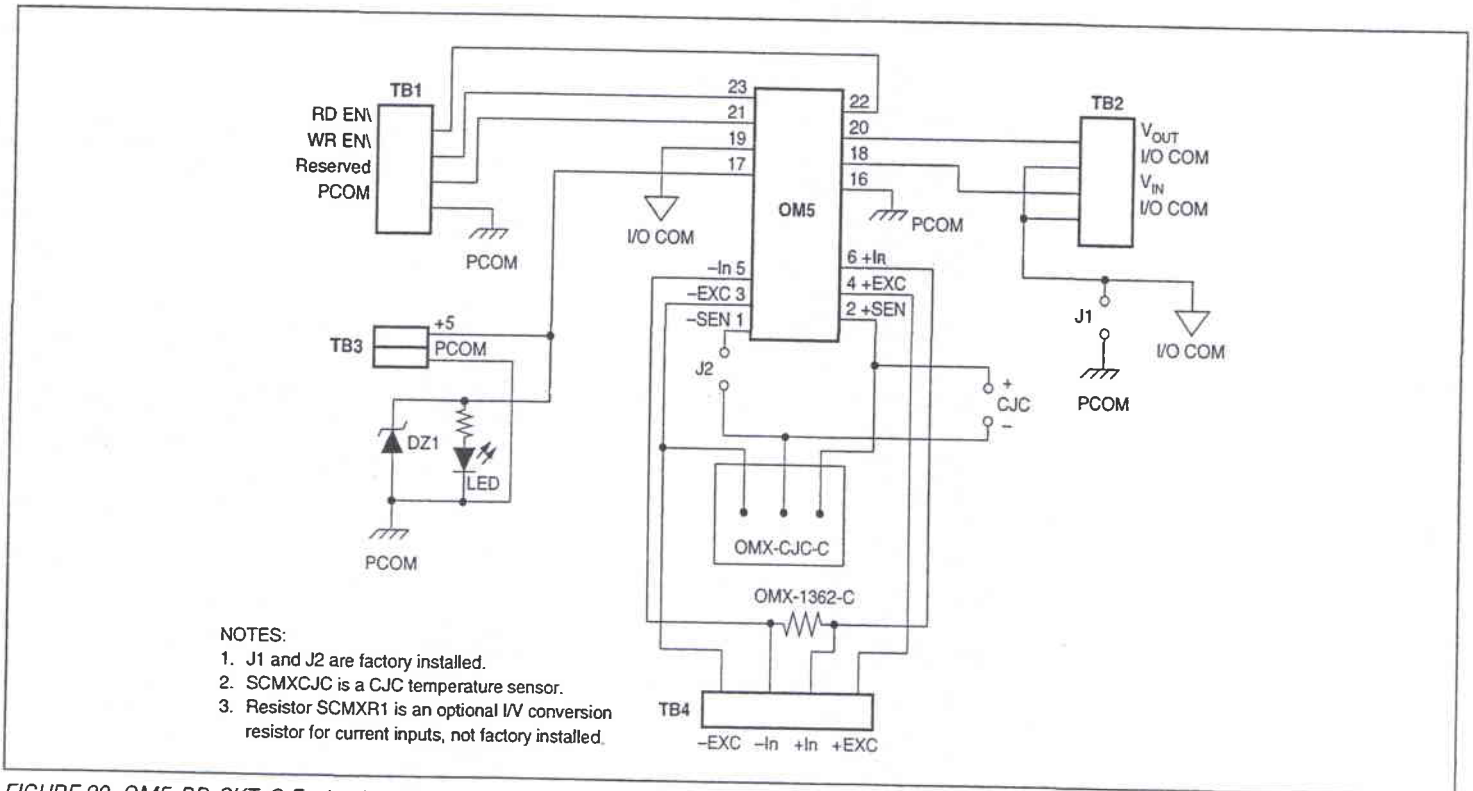


FIGURE 20. OM5-BP-SKT-C Evaluation Board Schematic.

OM5-CA-04-01, OMX-CAB-013-C INTERFACE CABLES

DESCRIPTION

OM5-CA-04-01

System interface cable for the OM5-BP-16-C/OM5-BP-16-MUX-C/OM5-BP-8-C/OM5-BP-8-MUX-C backpanels. This is a 1m 26 conductor ribbon cable with a mass-terminated socket connector installed on each end. (Figure 21).

OM5-CAB-01-C

Daisy-chain cable provides interconnection between a maximum of four OM5-BP-16-MUX-C and eight OM5-BP-8-MUX-C backpanels (Figure 22).

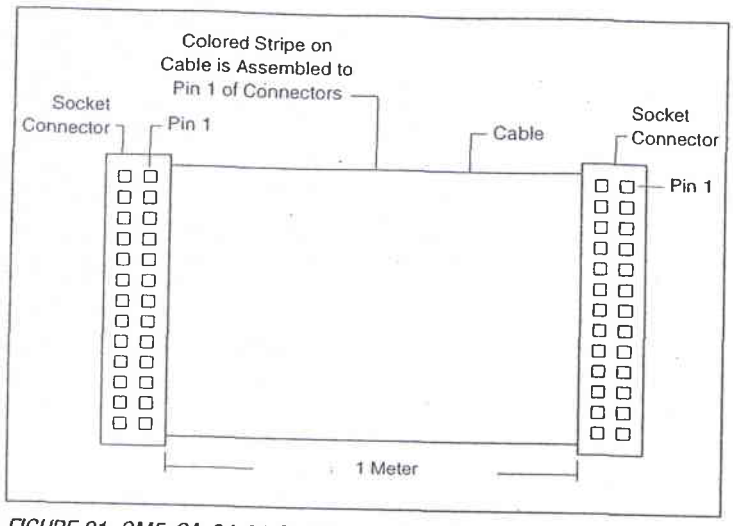


FIGURE 21. OM5-CA-04-01 System Interface Cable

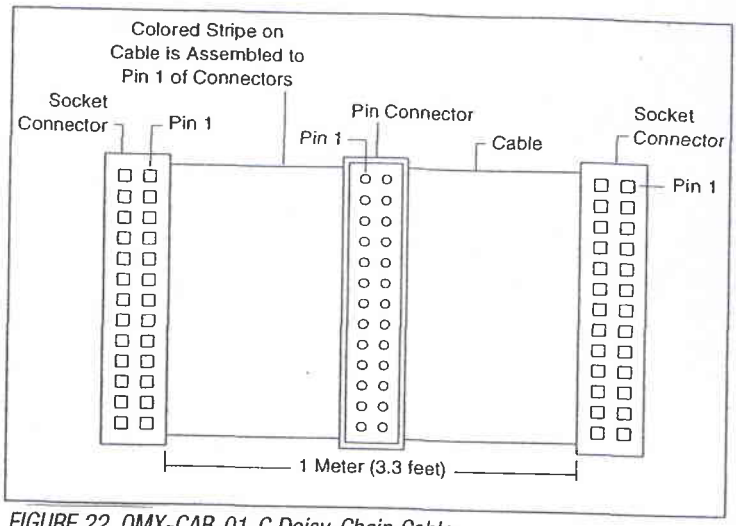


FIGURE 22. OMX-CAB-01-C Daisy-Chain Cable

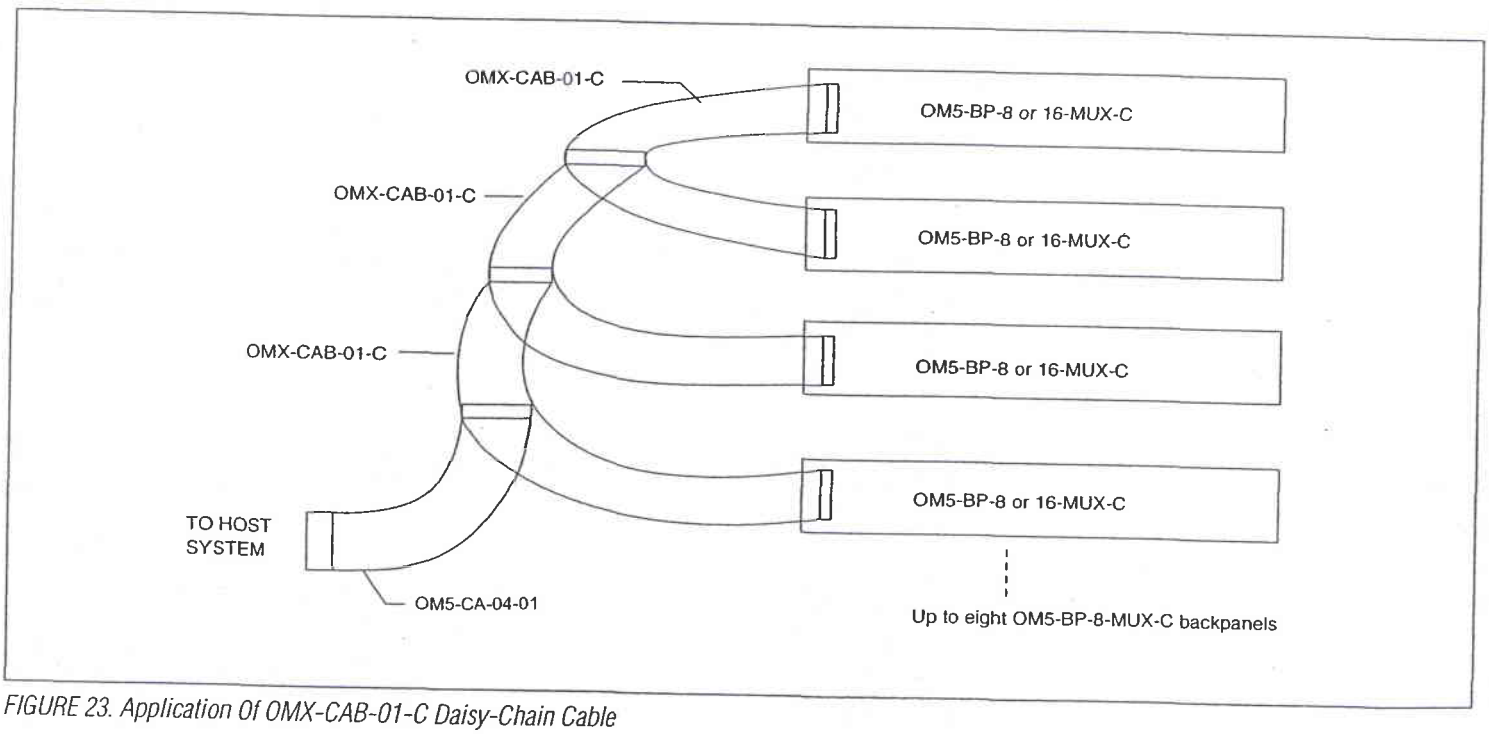


FIGURE 23. Application Of OMX-CAB-01-C Daisy-Chain Cable

OMX-CJC-C ENCAPSULATED COLD JUNCTION COMPENSATION

DESCRIPTION

The OMX-CJC-C is the identical circuit used on the OM5-BP backpanels except it is packaged as a component for use in customer designed mounting boards (Figure 24). When interfaced to an OM5-ITC or OM5-LTC module, the transfer function of the voltage across the +SEN and –SEN pins is $V_{CJC} = 0.510 - 0.0025(T - 25)V$.

SPECIFICATIONS

Accuracy	+25°C	±0.25°C
	+5°C to +45°C	±0.5°C
	–40°C to +85°C	±1.25°C

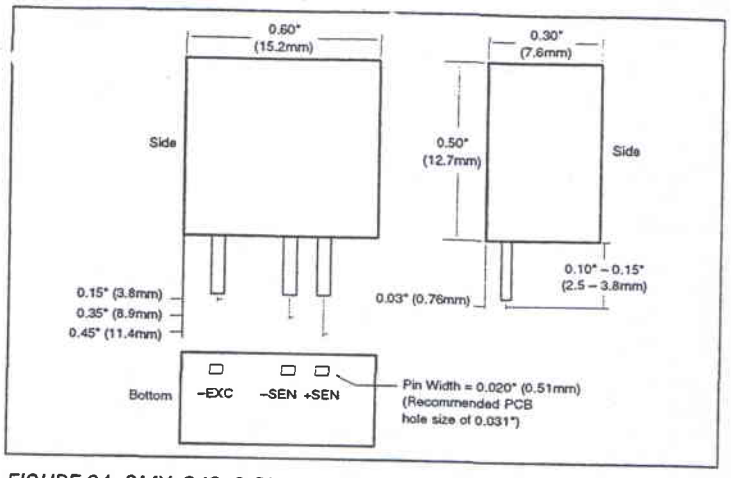


FIGURE 24. OMX-CJC-C Physical Dimensions And Pin Layout.

OMX-1344 JUMPERS

DESCRIPTION

Package of 10 jumpers for connecting adjacent input/output modules on the OM5-BP-16-C backpanel. This connection is made if it is desired to direct the output of any input module to the input of an adjacent output module. The jumpers can also be used for configuring I/O addresses on the OM5-BP-16-MUX-C backpanel.

OMX1362-C CURRENT CONVERSION RESISTOR

DESCRIPTION

A precision 20Ω, 0.1%, 10ppm/°C resistor used with the OM5-II current input module or OM5-TX two-wire transmitter interface module (Figure 25). Sockets are provided on all backpanels to allow installation of this resistor. One OMX-1362-C is shipped with each module.

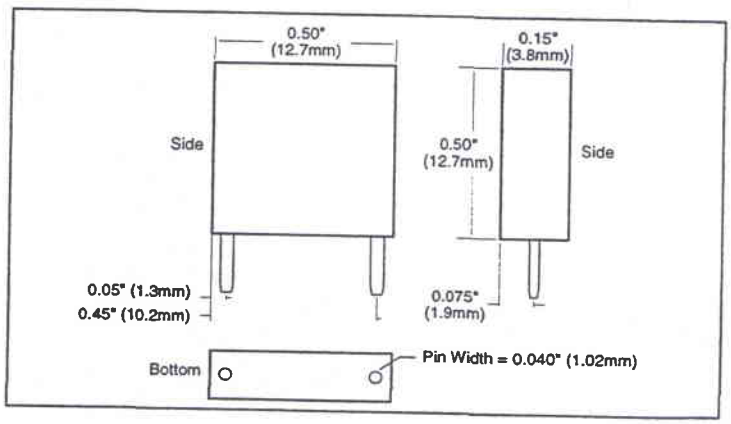


FIGURE 25. OMX-1362-C Physical Dimensions.

OM5-PRT-003, OM5-PRT-003-220 POWER SUPPLIES

DESCRIPTION

The OM5-PRT-003 Linear Power Supplies are available in 120VAC or 220VAC input. They have sufficient output current capacity to supply any combination of OM5 modules. The OMX-1363-C metal rack provides mounting capability for the OM5-PRT-003 power supplies.

SPECIFICATIONS

Module	OM5-PRT-003	OM5-PRT-003-220
Input Voltage Range, 47Hz to 63Hz	104-132VAC	207-265VAC
Output Voltage	5VDC ±1%	5VDC ±1%
Output Current (at +70°C)	3A	3A
Output Current (at +50°C)	6A	6A
Operating Temp	0 to +70°C	0 to +70°C
Dielectric Withstand Voltage (input to ground)	3750VAC	3750VAC
Line Regulation (10% line change)	±0.05%	±0.05%
Load Regulation (50% load change)	±0.05%	±0.05%
Output Ripple (max)	5mVp-p	5mVp-p
Overvoltage Protection (factory set)	6.2V ±0.4V	6.2V ±0.4V

Both supplies are tested and certified by TUV to VDE 0806 and IEC 380. They are UL Recognized (File Number E55974) and CSA Certified (CSA File Number LR38879).

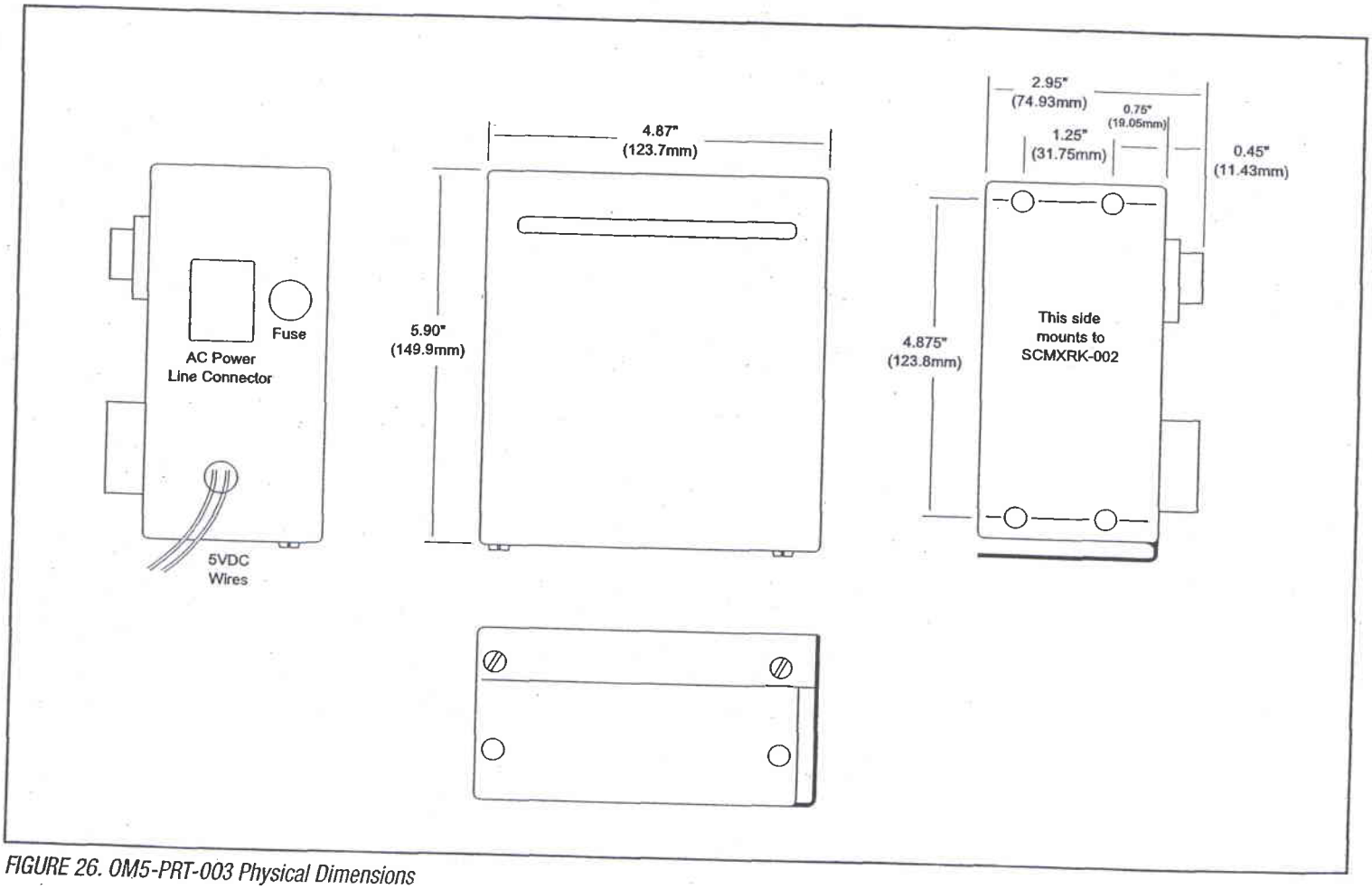


FIGURE 26. OM5-PRT-003 Physical Dimensions

MADE IN USA

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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
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