Model Power I/O Modules & Mounting Racks

FEATURES

- *4000VAC Optical Isolation*
- *Transient Protection: Meets the Requirements of IEEE 472, "Surge Withstanding Capability Test"*
- *UL Recognized*
- *CSA Certified*
- *CE Certified*
- *3 Standard Sizes*

DESCRIPTION

Single Point I/O Modules

This line of pluggable input and output modules provide a low cost, versatile method for interconnecting real world analog and digital signals to data acquisition, monitoring, or control systems. All modules provide an optically isolated barrier between sensitive microprocessor or digital logic circuits and field devices. The case color of these modules indentify their function. The industry standard for I/O module case color is:

Digital AC Output Module: Black Case
Digital DC Output Module: Red Case
Digital AC Input Module: Yellow Case
Digital DC Input Module: White Case

Digital Output Modules

Digital output modules are used to switch AC and DC loads such as soleniods, motors, or lamps from logic signal levels. There inputs are directly compatible with TTL or CMOS interface circuitry. AC output modules have zero voltage turn-on of the load to greatly reduce generated EMI and RFI. They are highly immune to electrical transients, and have built-in RC snubber networks for increased capability with inductive loads. The DC output modules can operate DC loads over a wide voltage range and have built-in voltage spike protection.

Digital Input Modules

Digital input modules are used to monitor the status of a load or a sensor, such as a limit switch, pressure switch, or temperature switch. The output of these modules is a logic level signal which corresponds to the status of the device being monitored. A high level output signal indicates the load is off (the switch is open). A low level output signal indicates the load is on (the switch is closed). Input modules are designed to give fast, clean switching by providing filtering and hysteresis. Input and output modules are compatible in that the output of one can drive the input of the other.

SPECIFICATIONS

AC OUTPUT MODULES

Common to All AC Output Modules

Output Specifications

Load Current Range (rms)

0.03 to 3.5A: Standard and G-Series
0.03 to 3.0A: Small

Maximum Surge Current (peak)

80A @ 60Hz, 1 cycle
25A @ 60Hz, 60 cycles

Maximum Zero Voltage Offset

8V peak

Static dV/dT

3000V per microsecond, typ
(measured under open circuit conditions, not to exceed peak blocking voltage).

Turn-On Time (60Hz)

8.3mSec max

Turn-Off Time (60Hz)

8.3mSec max

On State Voltage Drop

1.5V max

Power Dissipation

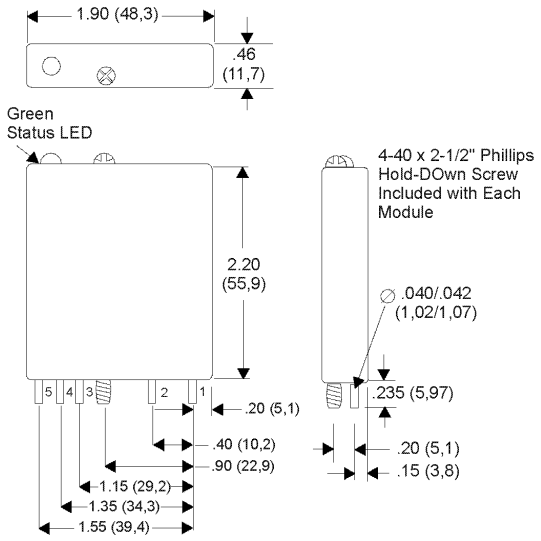
1.0Watt/Amp typical

I/O MODULE DIMENSIONS

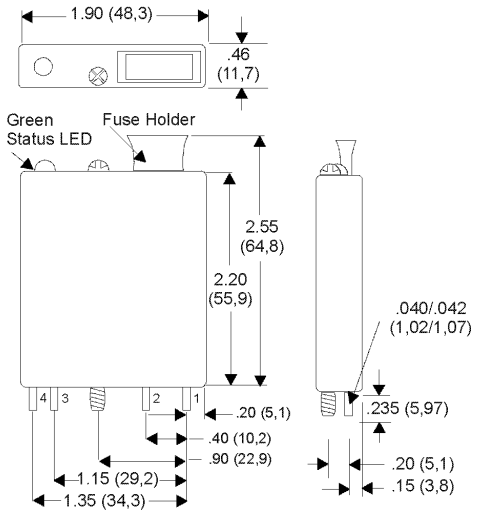
G-Series Modules

Dimensions shown in inches
(and millimeters).
Tolerances are ± .010 (0,25)
unless indicated otherwise.

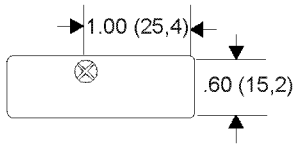
Input Modules

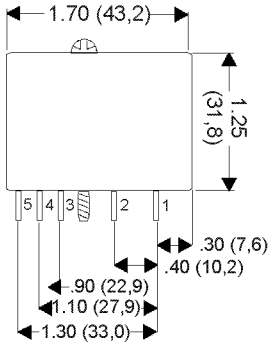


Output Modules

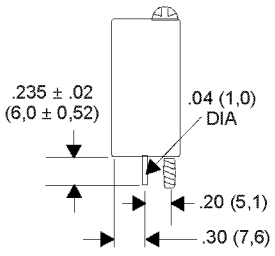


Standard Module





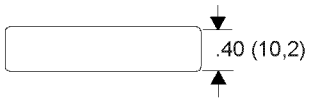
4-40 x 1-1/2" Philips
Hold-Down Screw
Included with Each
Module

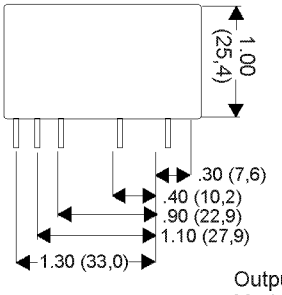


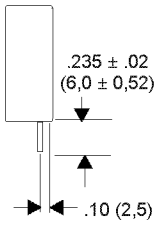
Output
Modules
have only
Terminals
Number 1-4

Terminals are
0.040/.042 DIA.
(4 or 5 places)

Miniature Module







Output
Modules
have only
Terminals
Number 1-4

Terminals are
0.040/.042 DIA.
(4 or 5 places)

SPECIFICATIONS

Load Power Factor
0.4 minimum

Frequency Range
25 to 70Hz

Input to Output Capacitance
6pF typical

SPECIFICATIONS BY PART NUMBER STANDARD & SMALL

Type/Function		Part Number	
Small, Normally Open, Zero Voltage Turn-on		**SML-OAC5**	**SML-OAC5A**
Standard, Normally Open, Zero Voltage Turn-On		**OAC5**	**OAC5A**
Specfication	**Units**		
Nominal Line Voltage	VAC	120	240
Load Voltage Range	VAC	24-140	24-280
Min Peak Blocking Voltage	Volts	400	600
Max Off-State Leakage @ 60Hz	mA rms	2	4
Nominal Logic Voltage (Vcc)	VDC	5	5
Logic Voltage Range	VDC	2.5-10	2.5-10
Max Logic Supply Current @ Nominal Vcc	mA	16	16
Nominal Input Resistance (Rx)	Ohms	240	240
Minimum Drop Out Voltage	VDC	1	1
Maximum Reverse Logic Voltage	VDC	-5	-5

G MODULES

Type/Function		Part Number	
Fusible, Normally Open, Zero Voltage Turn-on		**G-OAC5**	**G-OAC5A**
Specfication	**Units**		
Nominal Line Voltage	VAC	120	240
Load Voltage Range	VAC	24-140	24-280
Min Peak Blocking Voltage	Volts	400	600
Max Off-State Leakage @ 60Hz	mA rms	2	4
Nominal Logic Voltage (Vcc)	VDC	5	5
Logic Voltage Range	VDC	4-8	4-8
Max Logic Supply Current @ Nominal Vcc	mA	20	20
Nominal Input Resistance (Rx)	Ohms	100	100
Minimum Drop Out Voltage	VDC	1	1
Maximum Reverse Logic Voltage	VDC	-5	-5

SPECIFICATIONS CONT.

DC OUTPUT MODULES

Common to All DC Output Modules Output Specifications

Load Current Range

0.02 to 3.5A: Standard & G-Series
0.02 to 3.0A: Small
0.02 to 1.0A: xODC5A

Power Dissipation

1.0Watt/Amp typ.
1.5Watt/Amp typ. (xODC5A)

Surge Current

5A max for 1 second

On State Voltage Drop

1.2V max
1.75V max for xODC5A

Clamping Voltage

80VDC max
360VDC max for xODC5A

Transient Power Dissipation

400Watts @ 1mS non-recurring

Input to Output Capacitance

10pF typical

SPECIFICATIONS BY PART NUMBER STANDARD & SMALL

Type/Function		Part Number	
Small, Normally Open		**SML-ODC5**	**SML-ODC5A**
Standard, Normally Open		**ODC5**	**ODC5A**
Specfication	**Units**		
Nominal Line Voltage	VDC	60	200
Load Voltage Range	VDC	3-60	4-200
Max Off-State Leakage @ 60Hz	mA	1.5	0.01
Max Turn-On Time	µSec	20	75
Max Turn-Off Time	µSec	50	750
Nominal Logic Voltage (Vcc)	VDC	5	5
Logic Voltage Range	VDC	2.5-10	2.5-10
Max Logic Supply Current @ Nominal Vcc	mA	14	18
Nominal Input Resistance (Rx)	Ohms	300	220
Minimum Drop Out Voltage	VDC	1	1
Maximum Reverse Logic Voltage	VDC	-5	-5

G MODULES

Type/Function		Part Number	
Fusible, Normally Open		**G-ODC5**	**G-ODC5A**
Specfication	**Units**		
Nominal Line Voltage	VDC	60	200
Load Voltage Range	VDC	3-60	4-200
Max Off-State Leakage @ 60Hz	mA rms	2	4
Max Turn-On Time	µSec	20	75
Max Turn-Off Time	µSec	50	750
Nominal Logic Voltage (Vcc)	VDC	5	5
Logic Voltage Range	VDC	4-10	4-10
Max Logic Supply Current @ Nominal Vcc	mA	13	13
Nominal Input Resistance (Rx)	Ohms	150	150
Minimum Drop Out Voltage	VDC	1	1
Maximum Reverse Logic Voltage	VDC	-5	-5

SPECIFICATIONS CONT.

AC INPUT MODULES

Common to All AC Input Modules Output Specifications

Output Current Range
1 to 50mA

Breakdown Voltage
50VDC minimum

Off-State Leakage Current
1µA Max

Turn-On Time
20mSec max

Turn-Off Time
20mSec max

On State Voltage Drop
0.45VDC @ 50mA max

Input to Output Capacitance
6pF typical

SPECIFICATIONS BY PART NUMBER STANDARD, SMALL, & G-SERIES

Type/Function		Part Number	
Small		**SML-IAC5**	**SML-IAC5A**
Standard		**IAC5**	**IAC5A**
G-Series, Status LED		**G-IAC5**	**G-IAC5A**
Specfication	**Units**		
Nominal Input Voltage	VAC	120	240
Input Voltage Range	VAC/VDC	90-140	180-280
Input Current @ Max Input V	mA rms	8	6
Nominal Logic Voltage (Vcc)	VDC	5	5
Logic Voltage Range: Std & Small	VDC	3-6	3-6
G-Series	VDC	4.5-6	4.5-6
Max Logic Supply Current @ Nominal Vcc	mA	10	10
Nominal Input Resistance (Rx)	Ohms	22k	60k
Minimum Drop Out V (Output High)	VAC	25	50
Maximum Pickup V (Output Low)	VAC	90	180

DC INPUT MODULES

Common to All DC Input Modules Output Specifications

Output Current Range
1 to 50mA

Breakdown Voltage
50VDC min

Off State Leakage Current
1µA max

On State Voltage Drop
0.45VDC @ 50mA max

Input to Output Capacitance
6pF typical

SPECIFICATIONS BY PART NUMBER STANDARD, SMALL, & G-SERIES

Type/Function		Part Number
Small, Polarized		**SML-IDC5**
Standard, Polarized		**IDC5**
G-Series, Polarized		**G-IDC5**
Specfication	**Units**	
Maximum Input Voltage	VDC	32
Input Voltage Range	VDC	3 - 32
Input Current @ Max Input V	mA rms	18
Max Turn-on Time	mSec	0.20
Max Turn-off Time	mSec	0.40
Nominal Logic Voltage (Vcc)	VDC	5
Logic Voltage Range: Std & Small	VDC	3-6
G-Series	VDC	4.5-6
Max Logic Supply Current @ Nominal Vcc	mA	10
Nominal Input Resistance (Rx)	Ohms	1.8k
Minimum Drop Out V (Output High)	VDC	1
Maximum Pickup V (Output Low)	VDC	3

COMMON TO ALL MODULE TYPES

General Characteristics

Insulation Resistance (Input to Output; Input or Output to Case)

$\geq 10^{10}$ Ohms

Dielectric Strength Input to Output

4000 VAC (rms) minimum

Vibration

20G's peak or .06 double amplitude 10-2000Hz per MIL-STD-202, Method 204, Condition D

Mechanical Shock

1500G's 0.5mS half-sine per Mil-STD-202 Method 213 Condition F

Storage Temperature

-40 to +125°C

Operating temperature

-40 to +100°C

Materials & Finishes

Terminals

Copper wire, tin plated

Case

Solvent resistant thermoplastic, meets UL94V-0

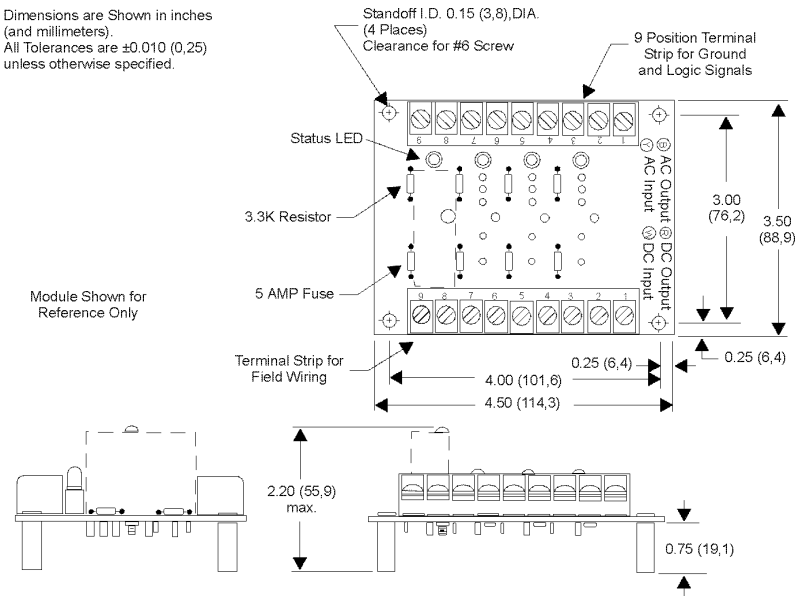
Potting

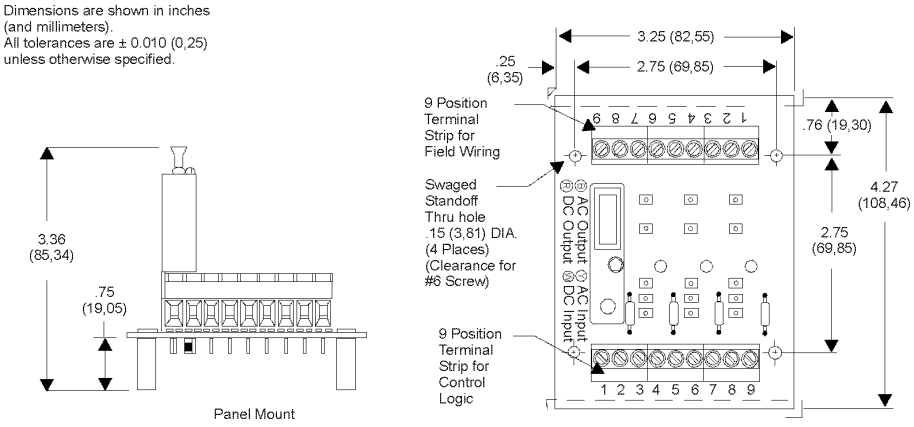
High thermal conductive epoxy

MOUNTING RACKS & CABLES

4 Module Racks

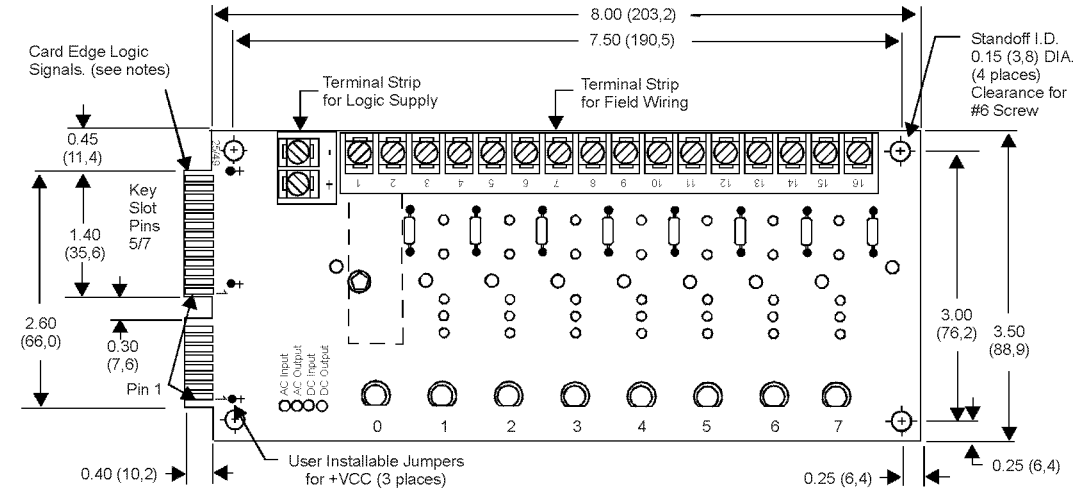
Four module racks are available for the Standard and G Series modules only. The Small modules do not have a 4 position rack available. Cabling for the 4 position racks is by screw terminal only for both the logic and signal lines. There are no cables available from Industrial Computer Source for these racks.

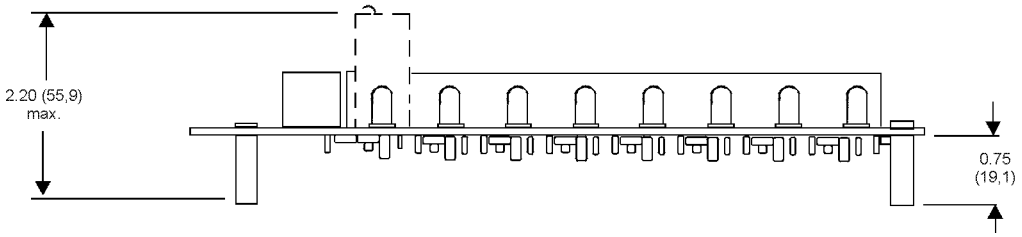


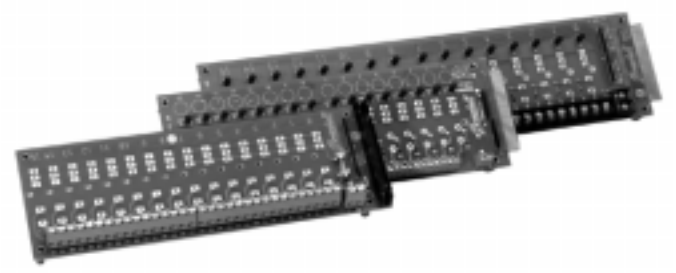


8 Module Racks

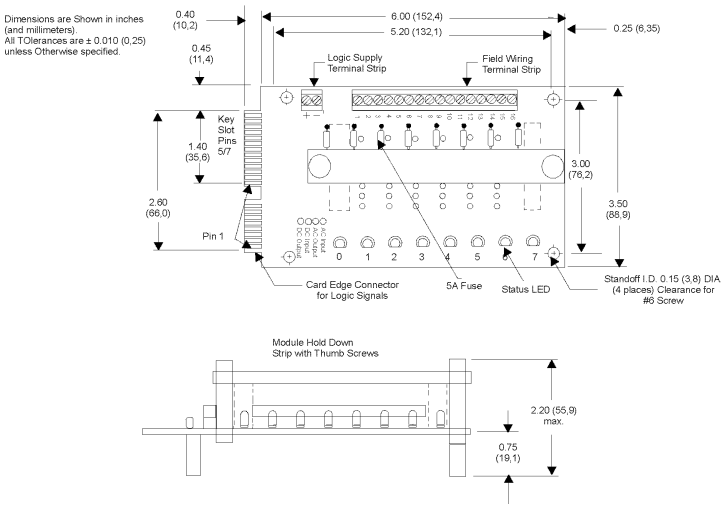
Eight position racks are available for all three sizes of modules, Small, Standard and the G-Series. The Standard modules use the Model PB8. The Small modules require the PB8-SML. Connection from either of these racks to the digital I/O card requires a Model CAB50-x cable, which has a 50-pin header connector on the I/O card end and a 50-pin edge connector on the rack end. The G-Series modules mount on the Model PB8-G rack. This rack does not have an edge connector available, but uses a 50-pin header connector. The cable required for the PB8-G is the Model CAB50A-6 which has a 50-pin header on each end of the cable.

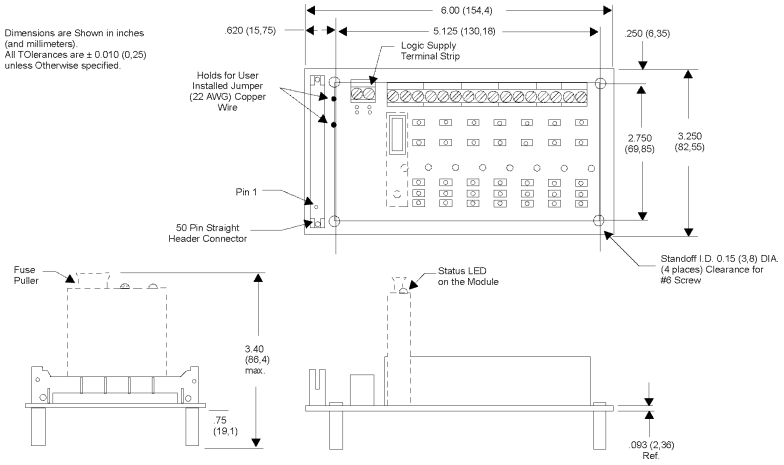


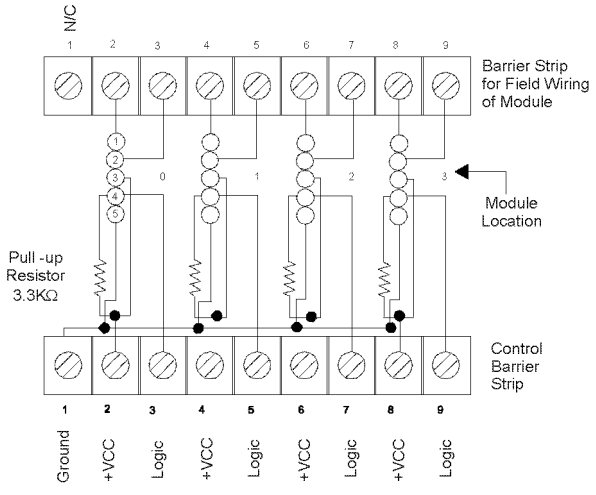


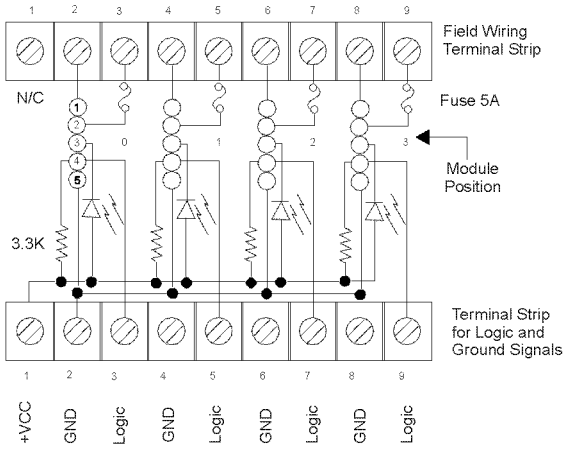


MOUNTING RACKS & CABLES

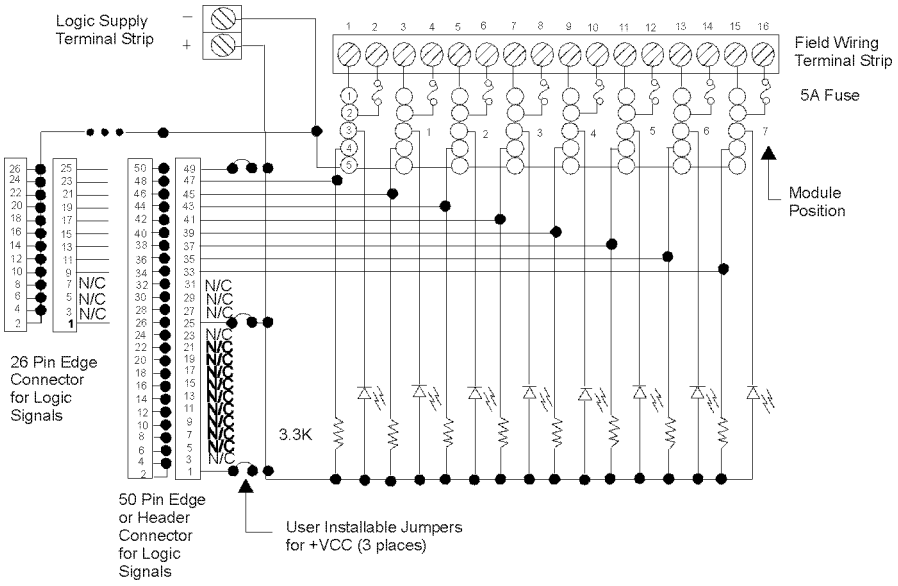


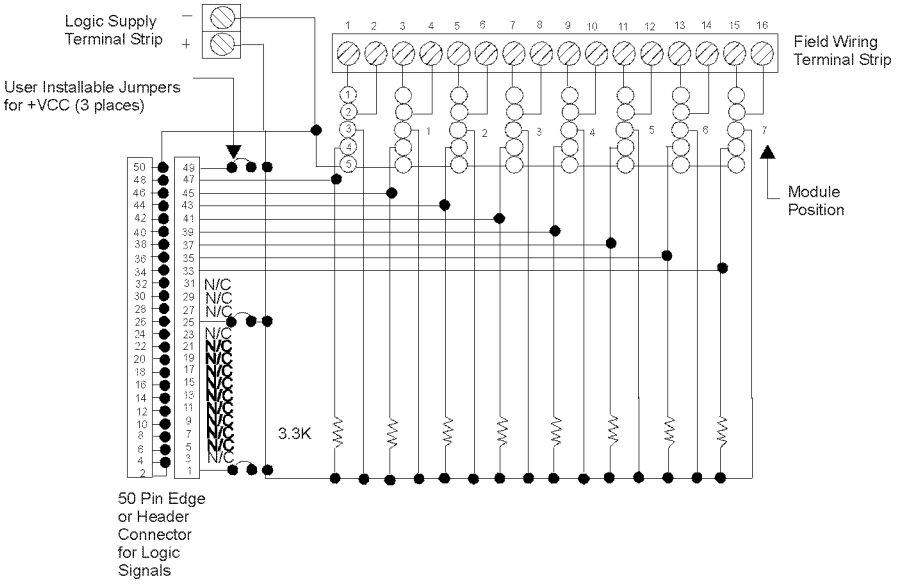






MOUNTING RACKS & CABLES

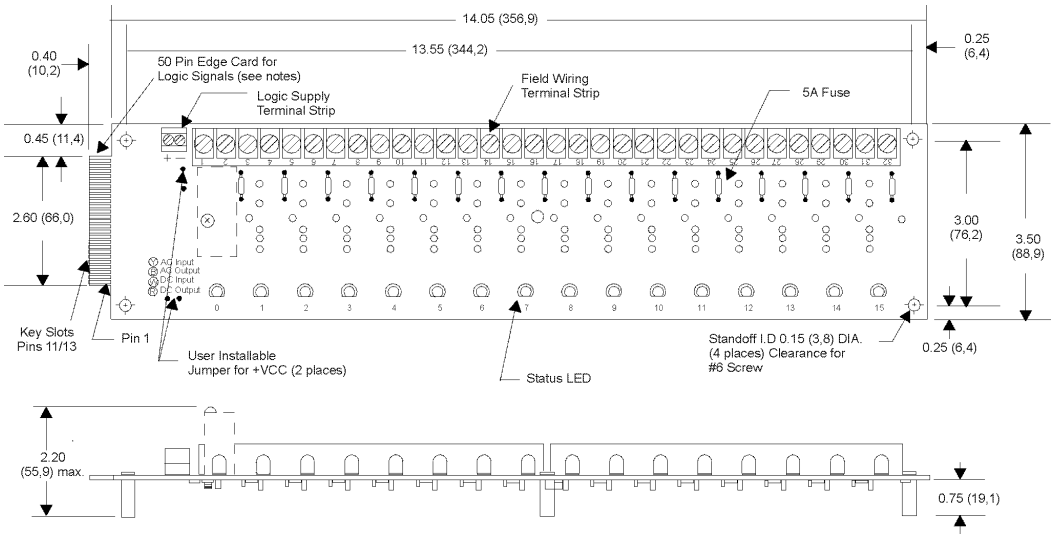


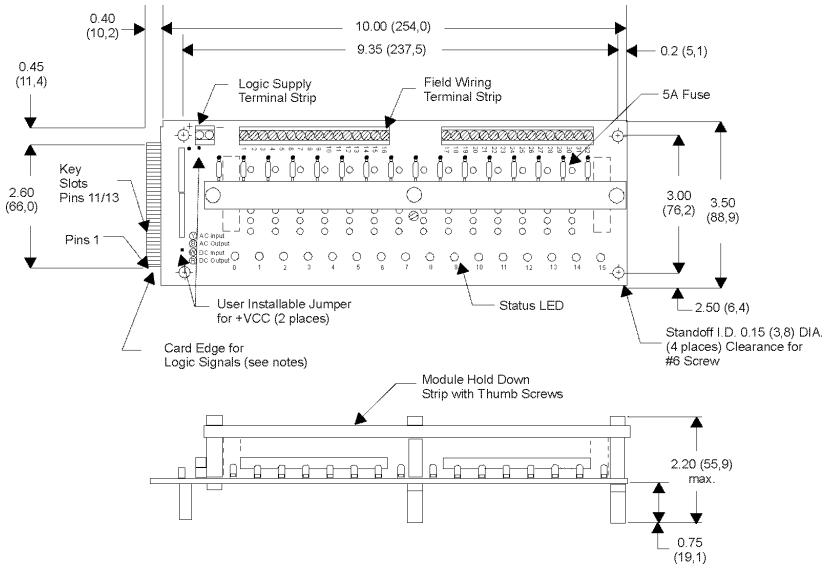


MOUNTING RACKS & CABLES

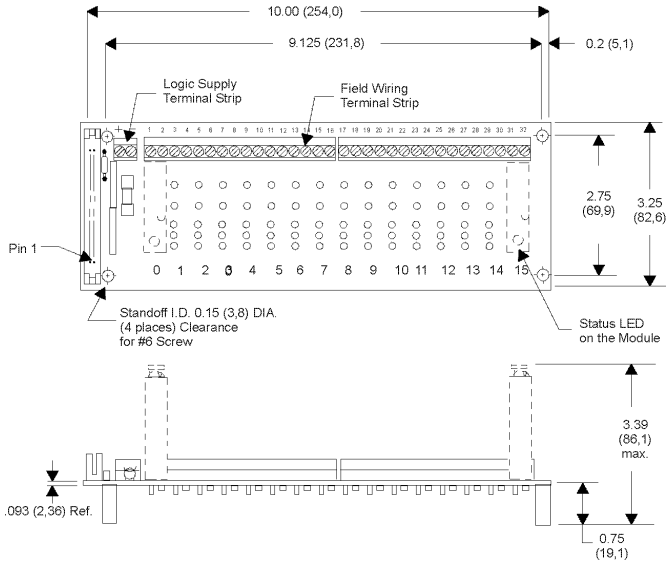
16 Module Racks

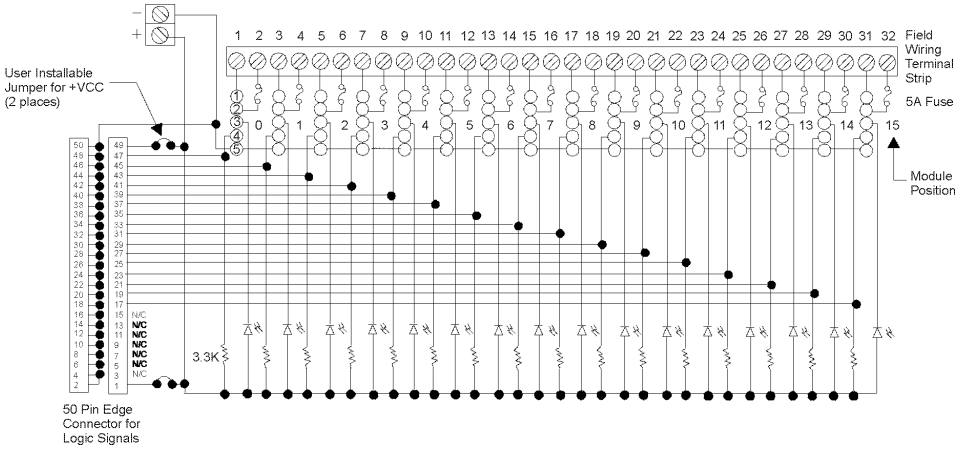
Sixteen position racks are available for all three sizes of modules, Small, Standard and the G-Series. The Standard modules use the Model PB16A. The Small modules require the PB16-SML. Connection from either of these racks to the digital I/O card requires a Model CAB50-x cable, which has a 50-pin header connector on the I/O card end and a 50-pin edge connector on the rack end. The G-Series modules mount on the Model PB16-G rack. This rack does not have an edge connector available, but uses a 50-pin header connector. The cable required for the PB16-G is the Model CAB50A-6 which has a 50-pin header on each end of the cable.

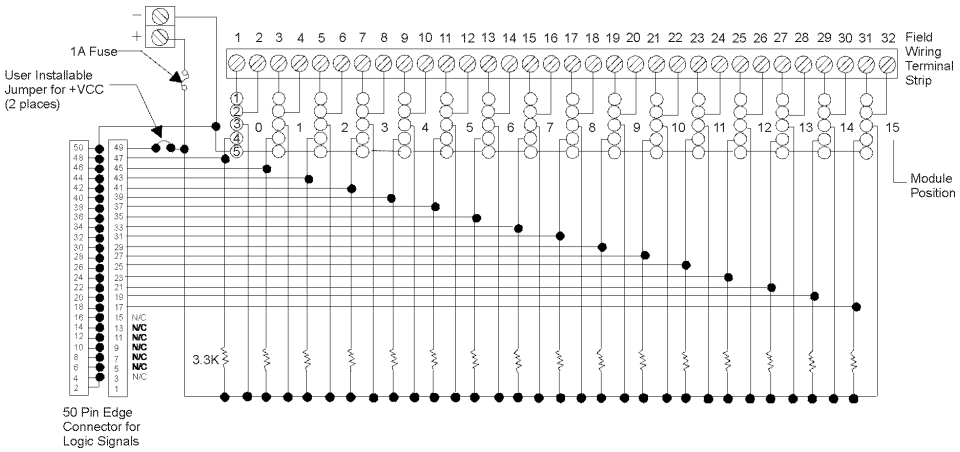




MOUNTING RACKS & CABLES

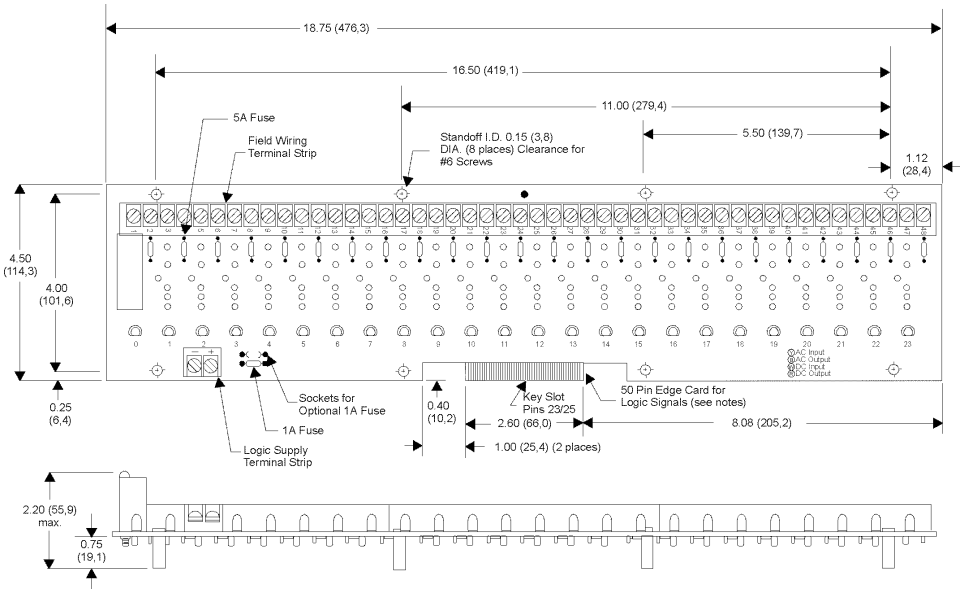


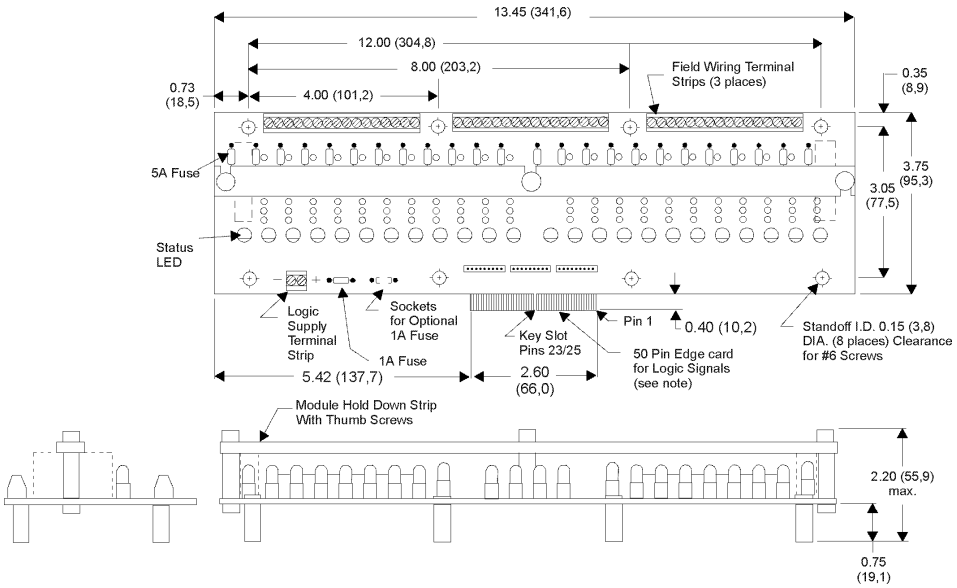




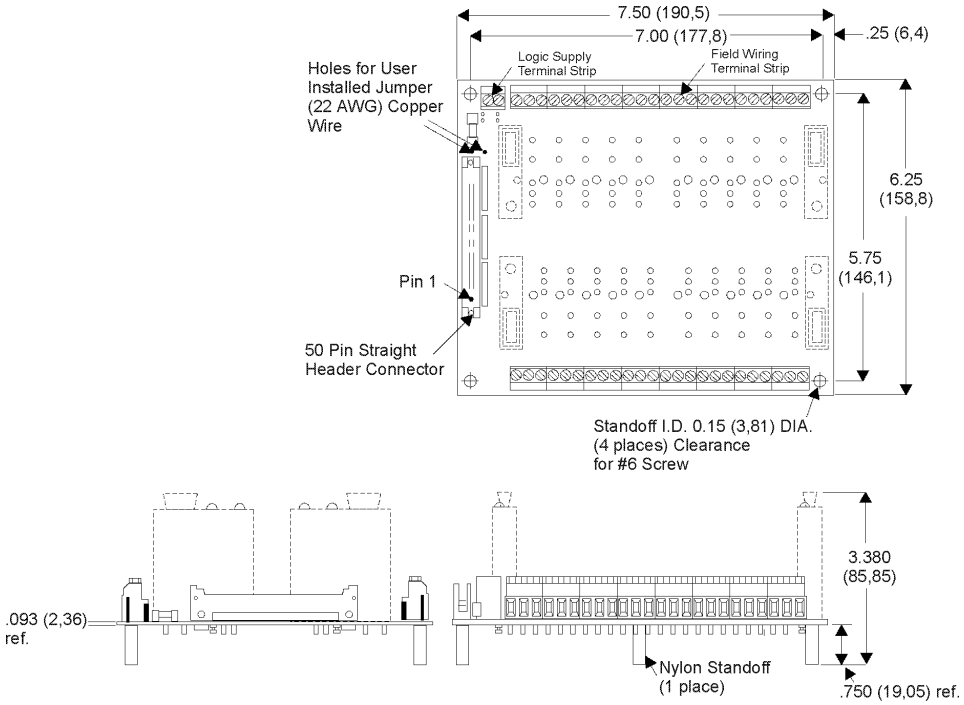
24 Module Racks

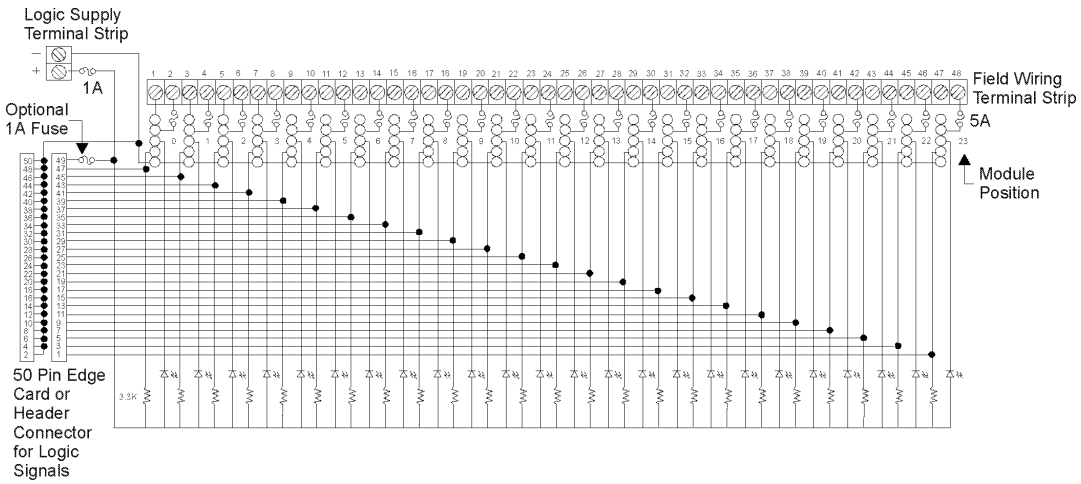
Twenty-four position racks are available for all three sizes of modules, Small, Standard and the G-Series. The Standard modules use the Model PB24. The Small modules require the PB24-SML. Connection from either of these racks to the digital I/O card requires a Model CAB50-x cable, which has a 50-pin header connector on the I/O card end and a 50-pin edge connector on the rack end. The G-Series modules mount on the Model PB24-G rack. This rack is different from all the other racks in that the modules are mounted in two rows of 12 each. This rack does not have an edge connector available, but uses a 50-pin header connector. The cable required for the PB24-G is the Model CAB50A-6 which has a 50-pin header on each end of the cable.



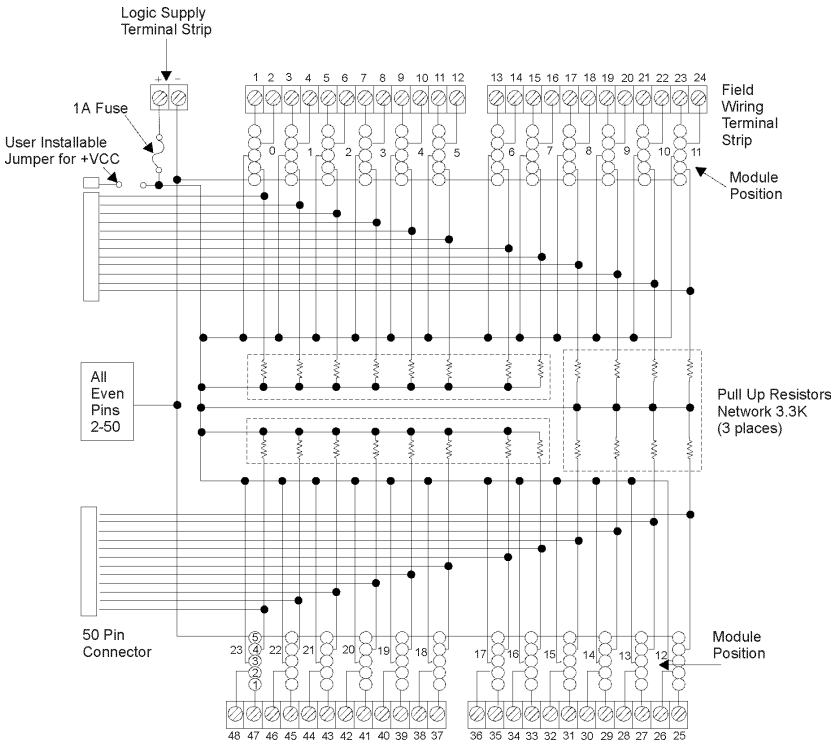


MOUNTING RACKS & CABLES





MOUNTING RACKS & CABLES



ORDERING GUIDE

Input Modules

Standard	Small	G-Series	Color
IAC5	SML-IAC5	G-IAC5	Yellow
IAC5A	SML-IAC5A	G-IAC5A	Yellow
IDC5	SML-IDC5	G-IDC5	White

Output Modules

Standard	Small	G-Series	Color
OAC5	SML-OAC5	G-OAC5	Black
OAC5A	SML-OAC5A	G-OAC5A	Black
ODC5	SML-ODC5	G-ODC5	Red
ODC5A	SML-ODC5A	G-ODC5A	Red

MOUNTING RACKS

Model	Dimensions	Required Cable
Model PB4	3.5” x 4.5” (88.9 x 114.3mm)	N/A
Model PB4-G	3.25” x 4.7” (82.6 x 119.4mm)	N/A
Model PB8	3.5” x 8.0” (88.9 x 203.2mm)	CAB50-x
Model PB8-SML	3.5” x 6.0” (88.9 x 152.4mm)	CAB50-x
Model PB8-G	3.25” x 6.0” (82.6 x 152.4mm)	CAB50A-6
Model PB16A	3.5” x 14.1” (88.9 x 356.9mm)	CAB50-x
Model PB16-SML	3.5” x 10.0” (88.9 x 254mm)	CAB50-x
Model PB16-G	3.25” x 10.0” (82.6 x 254mm)	CAB50A-6
Model PB24	4.5” x 18.8” (114.3 x 476.3mm)	CAB50-x
Model PB24-SML	3.8” x 13.5” (95.3 x 341.6mm)	CAB50-x
Model PB24-G	6.25” x 7.5” (158.8 x 190.5mm)	CAB50A-6

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