PROCON

SERIES 7450
NETWORK
I/O
SYSTEM

8/13/02
REV 1

PROCON
SERIES 7450
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PROCON
SERIES 7450
NETWORK SYSTEM

The Series 7450 Network System is designed to provide the user with a simple to use yet technically sophisticated way to gather information and provide control for a wide variety of industrial equipment. This is done using a modular approach that insures that there is just the right hardware mix for the specific application. The user interfaces to the system via a single Ethernet or RS232 connection.

Generally, the system consists of two types of modules. The Master I/O module is the heart of the data collection and control as well as allowing for an optional Internal PC. The Slave I/O is the expansion element that allows additional I/O based on application requirements.

The minimum hardware configuration consists of the Master I/0 module alone. The high end software runs on a host system and communicates over the Ethernet or RS232 connection.

The second level brings some of the computing power on board with the addition of a Internal PC, power supply and hard drive. There is room available to mount this hardware in the Master Module Enclosure.

The third level provides additional I/O to the system. In this case the Slave I/O module would be added. It provides I/O expansion for the application. It integrates seamlessly into the network, since the Master I/O handles all of the power and communications with the Slave. The network still uses the same single Ethernet or RS232 connection. The master and slave communicate via a separate serial bus (RS485).

Each module is housed in matching 19” rack mount black aluminum enclosure. They are different heights, but the width and depth are the same. Since they are standard “u” rack heights they will mount in any combination in standard racks. Additionally, the handles and rack ears may be removed and they can be stacked. Interlocking strips are available to fix them into one large stack. Also, feet are available that will allow them to sit on the bench.

The Master I/O module use a universal power inputs that will work from 100 to 240 VAC.

I/O MASTER SPECIFICATIONS

*EXPANDABLE

A SLAVE MODULE CAN BE ADDED, INCREASING THE NUMBER OF INPUTS AND OUTPUTS.

*4 ANALOG INPUTS

EACH INPUT CAN BE CONFIGURED FOR 0 TO 5V, 0 TO 10V
0 – 20mA OR 4 –20mA OPERATION
EACH INPUT CAN BE CONFIGURED FOR SINGLE OR DIFFERENTIAL OPERATION
ALL INPUT LINES ARE “EMI” PROTECTED
ALL INPUTS ARE REVERSE POLARITY PROTECTED

*8 DIGITAL INPUTS

2 OF THE 8 INPUTS CAN BE CONFIGURED FOR COUNTER APPLICATIONS
CONFIGURABLE TO OPERATE AT 5, 12 OR 24 VDC
CONFIGURABLE FOR NPN OR PNP OPERATION
ALL INPUT LINES ARE “EMI” PROTECTED
ALL INPUTS ARE REVERSE POLARITY PROTECTED

*2 THERMOCOUPLE INPUTS

CONFIGURABLE FOR TYPE J OR TYPE K THERMOCOUPLES

*2 RTD INPUTS

CONFIGURABLE FOR 100 OHM OR 1000 OHM SENSORS
CONFIGURABLE FOR SI OR JIS TYPE, PLATINUM

*2 ANALOG OUTPUTS

SINGLE ENDED, CONFIGURABLE FOR 0 TO 5V, 0 T0 10V, 0 – 20mA OR 4 – 20mA OPERATION.
OUTPUTS REVERSED POLARITY PROTECTED
“EMI” PROTECTED

*6 DIGITAL OUTPUTS

4 RELAY OUTPUTS, DRY CONTACT – RATED 2 AMPS, 30VDC/240VAC
2 OUTPUTS, OPEN COLLECTOR TRANSISTOR
OUTPUTS REVERSED POLARITY PROTECTED
“EMI” PROTECTED

*LED INDICATORS

*ETHERNET INTERFACE, IEEE 802.3, 10/100 BASE T, RJ-45 CONNECTOR

*RS232 COMMUNICATIONS PORT
DB9 CONNECTOR
“EMI” PROTECTED
9600 TO 115K BAUD RATE, AUTO NEGOTIATED

*ALL INPUTS AND OUTPUTS ELECTRICALLY ISOLATED FROM MICROPROCESSOR

*RS485 FOR MASTER / SLAVE INTERCONNECT

*19 INCH RACK MOUNT ENCLOSURE

*LEXAN OVERLAY

*OUTPUT POWER
24 VDC, 2 AMPS
12 VDC, 2 AMPS
5 VDC, 2 AMPS

*110/220VAC, 50/60Hz INPUT POWER

*PROVISIONS FOR THE MOUNTING OF AN INTERNAL PC, POWER SUPPLY AND HARD DRIVE.

I/O SLAVE SPECIFICATIONS

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*RS485 FOR MASTER / SLAVE INTERCONNECT

*19 INCH RACK MOUNT ENCLOSURE

*LEXAN OVERLAY

ANALOG INPUTS

Each module has four analog inputs. Each input is sampled with a high-precision 16-bit Analog to Digital converter. Each input can be connected as a differential input or a common-referenced input. An earth ground connection is provided at each input for a cable shield. Each input is independently configurable for 0 to 5V, 0 to 10V, 0 - 20mA, or 4 –20 ma operation. See drawing #12-745002-30-00 (MASTER) or #12-745003-30-00 (SLAVE) for typical wiring configurations. See drawing #19-745004-30-00 for switch selections.

DIGITAL INPUTS

Each module has 8 digital inputs. The inputs can be wired for PNP, or NPN operation without any internal modifications. Inputs 1 and 2 can be used as high-speed counters, 10kHz max. The counter will record the number of pulses detected per half second. Each input has an independently selectable source of +5, +12, or +24 VDC. Each source has a total current limit of 2 amps max, (combined Master/Slave current). See drawing #12-745002-30-00 (MASTER) or #12-745003-30-00 (SLAVE) for typical wiring configurations. See drawing #19-745004-30-00 for switch selections.

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THERMOCOUPLE INPUTS

Each module has two thermocouple inputs. The inputs are either Type K or Type J, and are field-interchangeable by replacing the thermocouple board. Changing thermocouple type does not require system recalibration. Each input is provided with cold junction compensation. The inputs are read with a high-precision 16-bit Analog to Digital converter. Internally, the A/D reading is converted to a temperature. The temperature range is from –200.0 to 750.0 °C for Type J thermocouples and from -200.0 to 1250.0 °C for Type K thermocouples. The thermocouple inputs have special circuitry incorporated to detect an open thermocouple condition. If an open thermocouple is detected, an Open T/C alarm will be generated. For further alarm information, see the ALARMS section.

RTD INPUTS

Each module has two RTD inputs. An earth ground connection is provided at each input for a cable shield. Each input is switch selectable for 100 Ohm or 1000 Ohm base resistance and for the 0.00385Ω/Ω/°C or 0.00392Ω/Ω/°C temperature curve. The inputs are read with a high-precision 16-bit Analog to Digital converter. Internally, the A/D reading is converted to a temperature. The temperature range is from –200.0 to 850.0 °C. See drawing #12-745002-30-00 (MASTER) or #12-745003-30-00 (SLAVE) for typical wiring configurations. See drawing #19-745004-30-00 for switch selections.
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ANALOG OUTPUTS

Each module has two analog outputs. Each output is generated with a high-precision 16-bit Digital to Analog converter. Each output is single ended and configurable for 0 to 5V, 0 to 10V, 0 – 20mA or 4 – 20mA operation. When configured for current output mode, the module will detect an open current loop condition. This is indicated by the D/A Fault alarm. See the ALARMS section for further details. See drawing #12-745002-30-00 (MASTER) or #12-745003-30-00 (SLAVE) for typical wiring configurations. See drawing #19-745004-30-00 for switch selections.

DIGITAL OUTPUTS

Each module has 6 digital outputs. Four outputs are form C relays (NO-C-NC). The relay outputs are rated at 2 Amps, 30 VDC/240 VAC. The remaining two outputs are open collector transistors. These outputs have a common source of 5, 12, or 24 VDC, 50 mA max. JPC CONTROLS RECOMMENDS THE USE OF A QUENCH ARC FOR ANY LOAD CONNECTED TO THE OUTPUTS, USE PAKTRON #104M06QC100 OR EQUIVALENT. See drawing #12-745002-30-00 (MASTER) or #12-745003-30-00 (SLAVE) for typical wiring configurations. See drawing #19-745004-30-00 for switch selections.
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LED INDICATORS

Two LEDs are provided on the I/O modules to indicate the current system status. They are labeled POWER and STATUS. A third LED is provided in the master module when the Internal PC is installed. It is labeled CPU.

POWER - Indicates that the module has line power.

STATUS - Indicates that the micro controller in the I/O is functioning and executing the program.

CPU - Indicates that the Internal PC is functioning and executing the program.

ALARMS

The system continuously monitors for alarm conditions. All alarms have a delay period of five seconds. The alarm must exist for five consecutive seconds before the system activates the alarm.

The system contains two sets of alarm data, Actual alarms and Latched alarms. When an alarm occurs, it is saved into the Actual and Latched data. As the alarm condition is cleared, the Actual alarm will automatically clear. However, the Latched alarm will not clear until it is manually reset with the Alarm Reset command. See the Communications section for further information on clearing alarms.

A/D #X ERROR - This alarm indicates an internal malfunction in the A/D converter indicated by the X character. If any of these alarms occur, the system will not provide correct data for the indicated channel. The channel assignments are as follows:

A/D #1 – Analog inputs 1 & 2
A/D #2 – Analog inputs 3 & 4
A/D #3 – RTD inputs
A/D #4 – T/C inputs

D/A #X FAULT - This alarm is for an open analog output current loop. This alarm will occur if the Analog output channel X is set for current output and the current loop is open.

T/C #X OPEN - This alarm is for an open thermocouple. This alarm will occur if an open thermocouple is detected on the X thermocouple input.

COMMUNICATIONS

The Master module has three communications ports; one RS-232, one Ethernet, and one RS-485. This section contains a brief description of these three ports as well as the JPC Protocol used in the system

RS-232 - The internal ACIA utilizes a full duplex interrupt driven transmission scheme. Thus, the unit may receive and transmit simultaneously, as well as continue to perform its normal functions. Therefore, the Controller may be interrogated even though it is performing its normal functions.

This port has an auto-negotiating baud rate from 2400 baud to 115200. Available baud rates are 2400, 4800, 9600, 19200, 38400, 57600, and 115200. On power-up the default baud rate is 115200. The controller will echo any character sent to this port. When changing baud rates, the character "U" should be sent until a "U" is correctly echoed from the module.

ETHERNET – This is an auto detect 10/100 Ethernet port. The TCP/IP protocol is used to communicate with this port.

RS-485 – This port is strictly used as an interconnect between the Master and Slave Modules.

COMMUNICATIONS PROTOCOL

Since this system does not handle a great deal of data, the link has been optimized to allow the user, through very simple instructions, to control and interrogate the unit. The following section describes the JPC Protocol used by the Master module.
NOTE: This protocol is not used for the RS485 or Internal PC ports.

The JPC Protocol consists of 6 basic commands:

R - READ
W - WRITE
U - UPLOAD
Q - QUICKSEND
I - IP ADDRESS
S - SUBNET MASK
AR - ALARM RESET

The data format is standard ASCII and all data are BCD values.

The following is a breakdown of each of the commands and the way they are accessed.

The following commands apply to the Ethernet and RS232 ports. The unit will echo all characters that are typed to it. When used with a terminal, this will provide the appropriate display. When used with a computer system, this will provide direct feedback of the fact that unit has accepted the data.

All commands are completed with a carriage return from the computer. All commands will be acknowledged by a carriage return, line feed ($0D,$0A). If a command is not valid, the system will respond with “??”. All commands are not case sensitive.

READ COMMAND

The READ command is utilized to read from the System any of the gathered data. The command is entered as a letter followed by 2 numbers, followed by a carriage return:

R07(Return)

The 'R' indicates to the Controller that the command is to be a READ command. The next two digits indicate data location that is to be read. The carriage return indicates that the command is to be activated. The following is a listing of the data locations that may be read:

	LOCATION	ACCESS	DESCRIPTION	RANGE
MASTER MODULE DATA	01	R	COUNTER 1	0-65535 counts / half sec
	02	R	COUNTER 2	0-65535 counts / half sec
	03	R	DIGITAL INPUTS	0-255
	04	R/W	DIGITAL OUTPUTS	0-63
	05	R	ANALOG INPUT #1	0-65535
	06	R	ANALOG INPUT #2	0-65535
	07	R	ANALOG INPUT #3	0-65535
	08	R	ANALOG INPUT #4	0-65535
	09	R	RTD #1	-200.0 to 850.0
	10	R	RTD #2	-200.0 to 850.0
	11	R	T/C #1	-200.0 to 750.0 TYPE J -200.0 to 1250.0 TYPE K
	12	R	T/C #2	-200.0 to 750.0 TYPE J -200.0 to 1250.0 TYPE K
	13	R/W	ANALOG OUTPUT #1	0-65535
	14	R/W	ANALOG OUTPUT #2	0-65535
	15	R	LATCHED ALARM 1	0-65535
	16	R	LATCHED ALARM 2	0-65535
	17	R	ACTUAL ALARM 1	0-65535
	18	R	ACTUAL ALARM 2	0-65535
	19	R	+5 VOLT SUPPLY	0-255
	20	R	+12 VOLT SUPPLY	0-255
	21	R	-12 VOLT SUPPLY	0-255
	22	R	+24 VOLT SUPPLY	0-255
	23	R	SETUP SWITCH	0-255

	LOCATION	ACCESS	DESCRIPTION	RANGE
SLAVE MODULE DATA (ACCESSED FROM MASTER)	24	R	COUNTER 1	0-65535 counts / half sec
	25	R	COUNTER 2	0-65535 counts / half sec
	26	R	DIGITAL INPUTS	0-255
	27	R/W	DIGITAL OUTPUTS	0-63
	28	R	ANALOG INPUT #1	0-65535
	29	R	ANALOG INPUT #2	0-65535
	30	R	ANALOG INPUT #3	0-65535
	31	R	ANALOG INPUT #4	0-65535
	32	R	RTD #1	-200.0 to 850.0
	33	R	RTD #2	-200.0 to 850.0
	34	R	T/C #1	-200.0 to 750.0 TYPE J -200.0 to 1250.0 TYPE K
	35	R	T/C #2	-200.0 to 750.0 TYPE J -200.0 to 1250.0 TYPE K
	36	R/W	ANALOG OUTPUT #1	0-65535
	37	R/W	ANALOG OUTPUT #2	0-65535
	38	R	LATCHED ALARM 1	0-65535
	39	R	LATCHED ALARM 2	0-65535
	40	R	ACTUAL ALARM 1	0-65535
	41	R	ACTUAL ALARM 2	0-65535
	42	R	+5 VOLT SUPPLY	0-255
	43	R	+12 VOLT SUPPLY	0-255
	44	R	-12 VOLT SUPPLY	0-255
	45	R	+24 VOLT SUPPLY	0-255
	46	R	SETUP SWITCH	0-255

All data is returned in ASCII format with 5 BCD characters. The controller transmits temperature in tenths of degrees C. However, for consistency with the other data locations, the decimal point is not transmitted. For example, 10.0 °C. will be transmitted as 00100. For negative temperatures, the first zero will be replaced with a "-" character. For example, -50.0 °C will be transmitted as –0500.

When converted to binary, each bit of the Digital Output, Digital Input, Alarm data, and Setup Switch represents a specific input or output. The following table is used to identify each bit:

DIGITAL INPUTS

15- UNUSED	7- INPUT 8
14- UNUSED	6- INPUT 7
13- UNUSED	5- INPUT 6
12- UNUSED	4- INPUT 5
11- UNUSED	3- INPUT 4
10- UNUSED	2- INPUT 3
9- UNUSED	1- INPUT 2
8- UNUSED	0- INPUT 1

DIGITAL OUTPUTS

15- UNUSED	7- UNUSED
14- UNUSED	6- UNUSED
13- UNUSED	5- OUTPUT 2
12- UNUSED	4- OUTPUT 1
11- UNUSED	3- RELAY 4
10- UNUSED	2- RELAY 3
9- UNUSED	1- RELAY 2
8- UNUSED	0- RELAY 1

LATCHED ALARM 1

15-A/D #1 ERROR	7- UNUSED
14-A/D #2 ERROR	6- UNUSED
13-A/D #3 ERROR	5- UNUSED
12-A/D #4 ERROR	4- UNUSED
11-D/A #1 FAULT	3- UNUSED
10-D/A #2 FAULT	2- UNUSED
9-T/C #1 OPEN	1- UNUSED
8-T/C #2 OPEN	0- UNUSED

LATCHED ALARM 2

15- UNUSED	7- UNUSED
14- UNUSED	6- UNUSED
13- UNUSED	5- UNUSED
12- UNUSED	4- UNUSED
11- UNUSED	3- UNUSED
10- UNUSED	2- UNUSED
9- UNUSED	1- UNUSED
8- UNUSED	0- UNUSED

ACTUAL ALARM 1

15-A/D #1 ERROR	7- UNUSED
14-A/D #2 ERROR	6- UNUSED
13-A/D #3 ERROR	5- UNUSED
12-A/D #4 ERROR	4- UNUSED
11-D/A #1 FAULT	3- UNUSED
10-D/A #2 FAULT	2- UNUSED
9-T/C #1 OPEN	1- UNUSED
8-T/C #2 OPEN	0- UNUSED

ACTUAL ALARM 2

15- UNUSED	7- UNUSED
14- UNUSED	6- UNUSED
13- UNUSED	5- UNUSED
12- UNUSED	4- UNUSED
11- UNUSED	3- UNUSED
10- UNUSED	2- UNUSED
9- UNUSED	1- UNUSED
8- UNUSED	0- UNUSED

SETUP SWITCH

15- UNUSED	7- RTD 1 BASE RESISTANCE	(0 = 100 Ω, 1 = 1000 Ω)
14- UNUSED	6- RTD 1 COEFFICIENT	(0 = 0.00385, 1= 0.00392)
13- UNUSED	5- RTD 2 BASE RESISTANCE	(0 = 100 Ω, 1 = 1000 Ω)
12- UNUSED	4- RTD 2 COEFFICIENT	(0 = 0.00385, 1= 0.00392)
11- UNUSED	3- UNUSED	
10- UNUSED	2- UNUSED	
9- T/C TYPE (0=J, 1=K)	1- UNUSED	
8- RESERVED	0- OPERATION MODE	(0- = NORMAL, 1 = TCP/IP SETUP)

The power supply readings are 8 bit values and are intended for diagnostic purposes only. To convert the output to a voltage, the following equation must be used:

$$Voltage = \left(\frac{Output}{255} \right) \times (Supply \times 2)$$

For example, if the +5 volt supply read as 128, the voltage would be (128/255)*(10), or 5.02 Volts.

WRITE COMMAND

The WRITE command allows the user to update the Analog and Digital outputs. The locations for this data are shown in the table for the READ command.

The following is the format for this command:

W0400003 (Return)

The command essentially follows the same format as all the previous commands. The 'W' indicates that it is a WRITE command, the next two characters indicate the location that is to be written to and the last five characters indicate the data value that is to be entered. Again, the data is in BCD and transmitted in an ASCII format. All leading zeros must be included in the command. Only the Digital and Analog output locations can be written to. In the example above, the Relay 1 and Relay 2 outputs would be turned on.

UPLOAD COMMAND

The Upload command allows the user to read all of the system data with a single command. The data will be transmitted as a single block with each location separated by a carriage return, linefeed ($0D,$0A).

The following is the format for this command:

U (Return)

If a slave module is present in the system. The slave data will immediately follow the master data block.

QUICKSEND COMMAND

Quicksend is a feature that allows the user to receive an automatic update of all of the system data without any user interaction. When the Quicksend feature is turned ON, the system will automatically send all of the system data every half second. The Quicksend feature is toggled ON and OFF with the Quicksend command.

The following is the format for the 'Q' command:

Q(RETURN)

The data output format is the same as for the Upload command.

IP ADDRESS COMMAND

The IP Address command allows the user to read and write the system IP Address. The IP Address can be read from either the Ethernet or RS232 port. The IP Address can only be written through the RS232 port.

To read the IP address, the following syntax is used:

I(RETURN)

To write the IP address, the following syntax is used:

Ixxx.xxx.xxx.xxx(Return)

The x's denote the IP address to be written. All zeros must be included in the IP address in order for the command to execute properly. NOTE: In order to write the IP address, the system must be in IP Setup mode. To enter IP Setup mode, turn off the system power and close SW1 position 8. Then turn on the power and wait for the Status LED to blink. While the IP Address is being accessed, the Status LED will stop blinking. Wait for the Status led to resume blinking before sending further commands to the system. To return to Normal operation, the power must be turned off and SW1 position 8 must be opened. When power is turned back on, the system will be in Normal mode. NOTE: When in IP setup mode, the Ethernet port is disabled.

SUBNET MASK COMMAND

The Subnet Mask command allows the user to read and write the system Subnet Mask. The Subnet Mask can be read from either the Ethernet or RS232 port. The Subnet Mask can only be written through the RS232 port.

To read the Subnet Mask, the following syntax is used:

S(RETURN)

To write the Subnet Mask, the following syntax is used:

Sxxx.xxx.xxx.xxx(Return)

The x's denote the Subnet Mask to be written. All zeros must be included in the Subnet Mask in order for the command to execute properly. NOTE: In order to write the Subnet Mask, the system must be in IP Setup mode. To enter IP Setup mode, turn off the system power and close SW1 position 8. Then turn on the power and wait for the Status LED to blink. While the Subnet Mask is being accessed, the Status LED will stop blinking. Wait for the Status LED to resume blinking before sending further commands to the system. To return to Normal operation, the power must be turned off and SW1 position 8 must be opened. When power is turned back on, the system will be in Normal mode. NOTE: When in IP setup mode, the Ethernet port is disabled.

ALARM RESET COMMAND

The Alarm Reset command is used to reset the Latched Alarms. NOTE: If the alarm condition still exists, the alarm will not be cleared.

The following is the format for the Alarm Reset command:

AR(RETURN)

MANUAL REVISIONS

Revision #	Program #	Engineering #	Revisions Made
Rev 01	DT7450CA	DT7450	Origination

LIMITED WARRANTY

WARRANTY: JPC CONTROLS WARRANTS ITS NEW PRODUCTS TO BE FREE FROM DEFECTS IN MATERIALS AND WORKMANSHIP UNDER THE SERVICE FOR WHICH THEY ARE INTENDED. THIS WARRANTY IS EFFECTIVE FOR TWELVE MONTHS FROM THE DATE OF SHIPMENT.

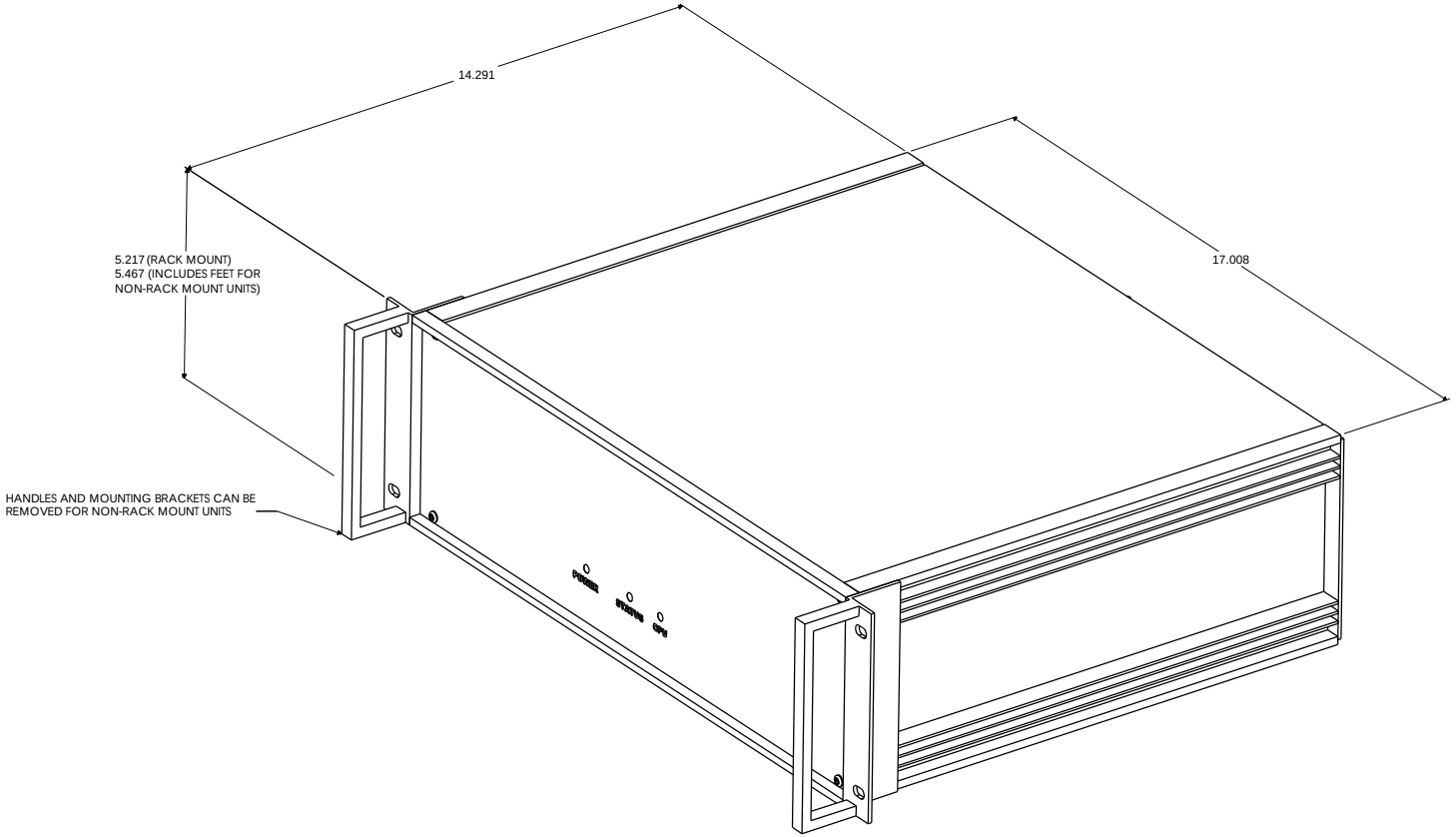
EXCLUSIONS: THIS WARRANTY IS **IN LIEU OF** ANY OTHER WARRANTY EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF **MERCHANTABILITY** OR FITNESS FOR A PARTICULAR PURPOSE.

JPC CONTROLS IS NOT LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.

NO PERSON OTHER THAN AN OFFICER IS AUTHORIZED TO GIVE ANY OTHER WARRANTY OR ASSUME ANY LIABILITY.

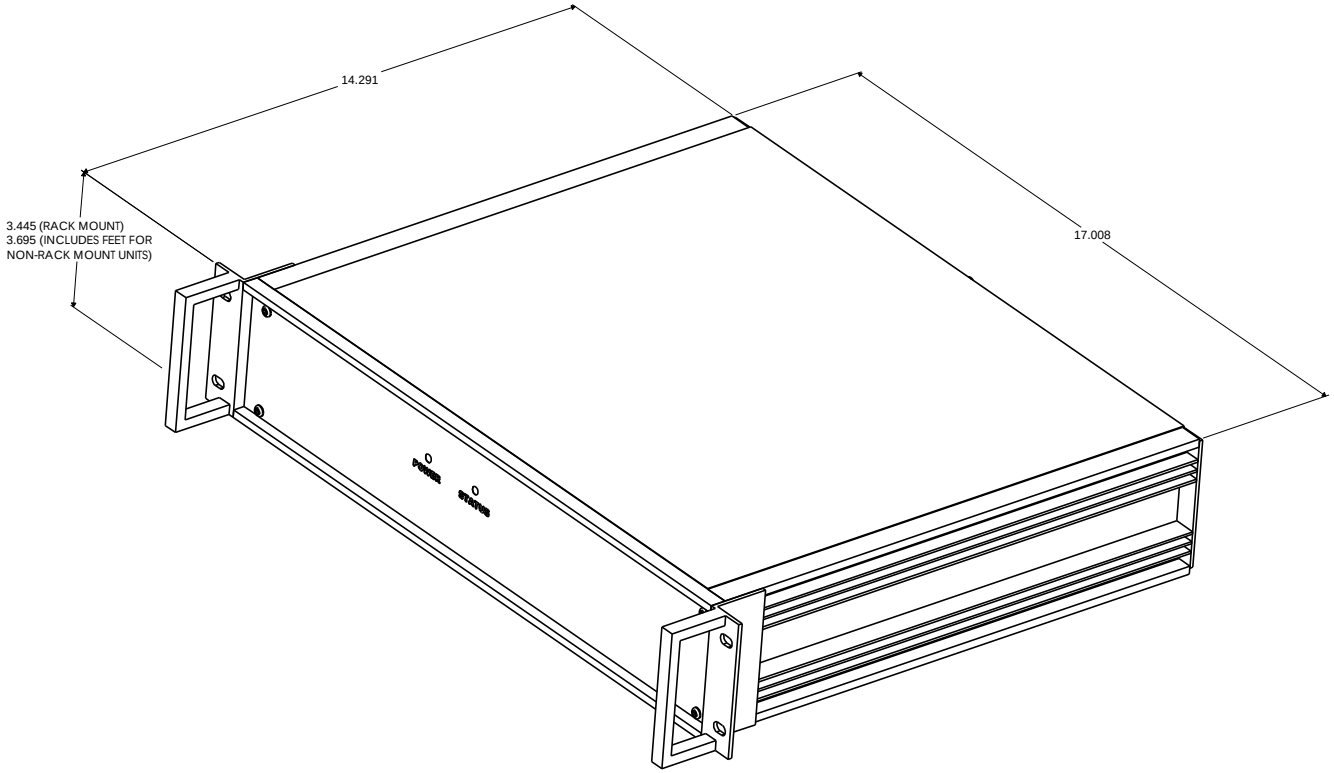
REMEDIES: THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY SHALL BE: (1) THE REPAIR OR REPLACEMENT OF DEFECTIVE PARTS OR PRODUCTS, WITHOUT CHARGE. (2) AT THE OPTION OF **JPC CONTROLS**, THE REFUND OF THE PURCHASE PRICE.

P:\MANUALS\Procon\7450_60_745000-00_REV1.doc



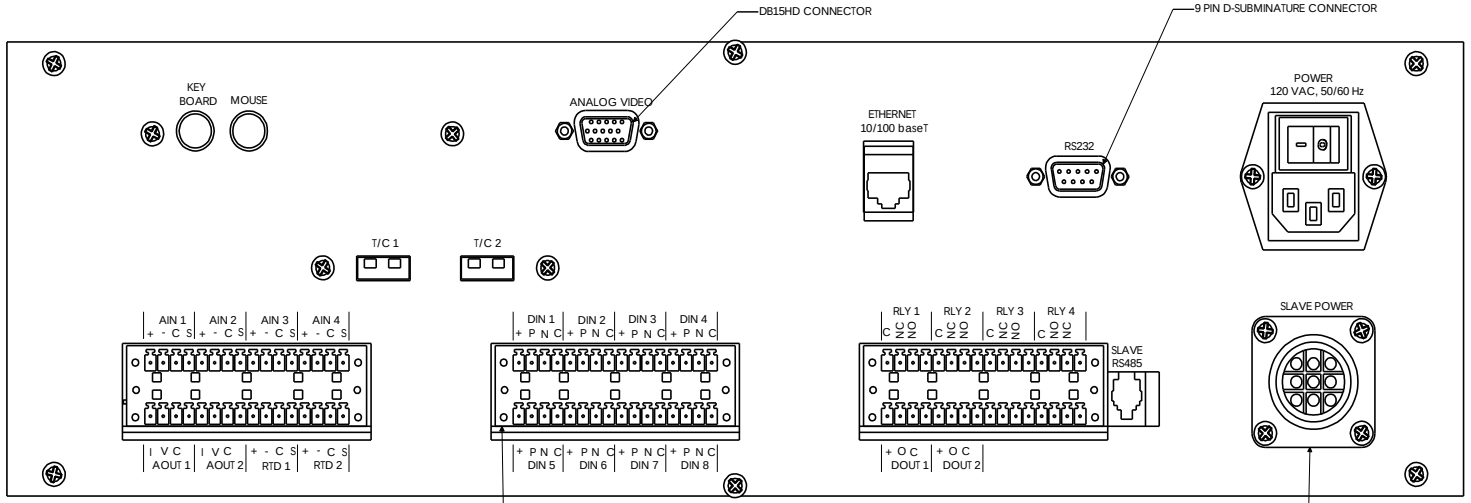
ISOMETRIC VIEW OF INPUT/OUTPUT NETWORK MASTER MODULE

TOLERANCES UNLESS OTHERWISE SPECIFIED	JPC CONTROLS	102 COMPASS PT. DR. SUITE D, ST. CHARLES, MO 63301 (636) 946-3300 FAX (636) 724-2492 www.jpccontrols.com							
	PROCON SERIES 7450 NETWORK MASTER MODULE								
	APPROVAL		DWN BY MPJ	DATE 08/13/02	SCALE 1=2	CHKD BY			
ALL DIMENSIONS ARE IN INCHES	ENG	DATE	SHEET						
PATH = E:\CC\DI7450\7450M0.SLDDRW	QA	DATE	1 OF 1		49	745000		30	00



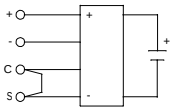
ISOMETRIC VIEW OF INPUT/OUTPUT NETWORK SLAVE MODULE

TOLERANCES UNLESS OTHERWISE SPECIFIED	JPC CONTROLS 102 COMPASS PT. DR. SUITE D, ST. CHARLES, MO 63301 (636) 946-3300 FAX (636) 724-2492 www.jpccontrols.com									
	PROCON SERIES 7450 NETWORK SLAVE MODULE									
	APPROVAL		DWN BY MPJ		DATE 08/13/02	SCALE 1=2	CHKD BY			
ALL DIMENSIONS ARE IN INCHES	ENG	DATE	SHEET		49	745001	30	00		
PATH = E:\CC\DT7450\745050.SLDDRW	QA	DATE	1 OF1							

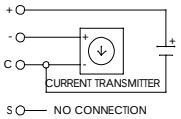


TYPICAL WIRING FOR ANALOG INPUTS AIN 1 - AIN 4

VOLTAGE INPUT WIRING (0 - 10V, 0 - 5V)

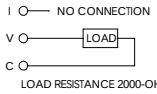


CURRENT INPUT WIRING (0 - 20mA, 4 - 20mA)



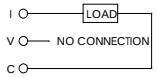
TYPICAL WIRING FOR ANALOG OUTPUTS AOUT 1 AND AOUT 2

VOLTAGE OUTPUT WIRING (0 - 5V, 0 - 10V)



LOAD RESISTANCE 2000-OHM MINIMUM

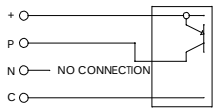
CURRENT OUTPUT WIRING (0 - 20mA, 4 - 20mA)



LOOP RESISTANCE 750-OHM MAXIMUM

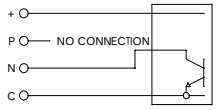
TYPICAL WIRING FOR DIGITAL INPUTS DIN 1 - DIN 8

WIRING FOR PNP DEVICE (CURRENT SOURCING)



MAXIMUM LOAD AT + TERMINAL RATED 180mA.
UNUSED INPUT SHOULD BE UNCONNECTED.

WIRING FOR NPN DEVICE (CURRENT SINKING)

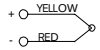


MAXIMUM LOAD AT + TERMINAL 180mA.
UNUSED INPUT SHOULD BE UNCONNECTED.

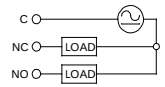
TYPICAL WIRING FOR THERMOCOUPLES T/C 1 AND T/C 2

WIRING FOR TYPE J INPUT

WIRING FOR TYPE K INPUT



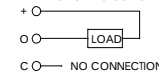
TYPICAL WIRING FOR RELAY OUTPUTS RLY 1 - RLY 4



RELAY CONTACTS 5A, 30 VDC/240 VAC

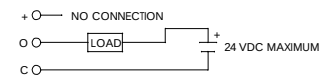
TYPICAL WIRING FOR DIGITAL OUTPUTS DOUT 1 AND DOUT 2

WIRING FOR DC OUTPUT



MAXIMUM LOAD AT + TERMINAL RATED AT 180mA.

WIRING FOR EXTERNAL SUPPLY



MAXIMUM CURRENT 500mA.

RS232

1 - NO CONNECTION
2 - RxD (IN)
3 - TxD (OUT)
4 - DTR (OUT)
5 - SIGNAL GROUND
6 - NO CONNECTION
7 - RTS (OUT)
8 - NO CONNECTION
9 - NO CONNECTION

SLAVE POWER

1 - - 12V
2 - +24V
3 - +12V
4 - COMMON
5 - COMMON
6 - +5V
7 - +5V
8 - FRAME GROUND
9 - SLAVE READY

NOTE:
KEYBOARD, MOUSE, AND ANALOG VIDEO CONNECTIONS ARE SHOWN FOR REFERENCE ONLY. THEY ARE PART OF THE OPTIONAL LOCAL PC THAT MAY BE INSTALLED.

TOLERANCES UNLESS OTHERWISE SPECIFIED

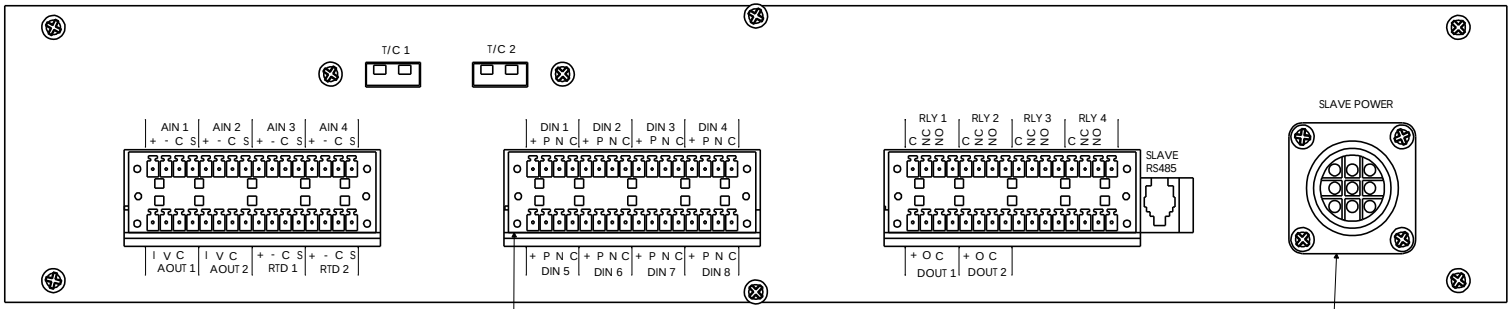
ALL DIMENSIONS ARE IN INCHES

PATH = E:\CC\D7450\7450M-WIRING0.SLDDRW

JPC CONTROLS
102 COMPASS PT. DR. SUITE D. ST. CHARLES, MO 63301
(636) 946-3300 FAX (636) 724-2492 www.jpccontrols.com

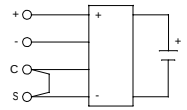
PROCON SERIES 7450 NETWORK MASTER MODULE
WIRING DIAGRAM

APPROVAL		DWN BY	MPJ	DATE 08/13/02	SCALE 1=1	CHKD BY		
ENG	DATE	SHEET						
QA	DATE	1 OF 1		12	745002		30	00

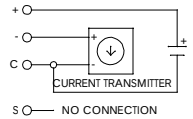


TYPICAL WIRING FOR ANALOG INPUTS AIN 1 - AIN 4

VOLTAGE INPUT WIRING (0 - 10V, 0 - 5V)

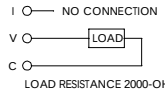


CURRENT INPUT WIRING (0 - 20mA, 4 - 20mA)



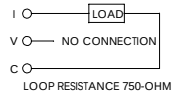
TYPICAL WIRING FOR ANALOG OUTPUTS AOUT 1 AND AOUT 2

VOLTAGE OUTPUT WIRING (0 - 5V, 0 - 10V)



LOAD RESISTANCE 2000-OHM MINIMUM

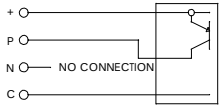
CURRENT OUTPUT WIRING (0 - 20mA, 4 - 20mA)



LOOP RESISTANCE 750-OHM MAXIMUM

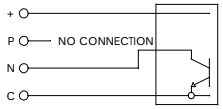
TYPICAL WIRING FOR DIGITAL INPUTS DIN 1 - DIN 8

WIRING FOR PNP DEVICE (CURRENT SOURCING)



MAXIMUM LOAD AT + TERMINAL RATED 180mA.
UNUSED INPUT SHOULD BE UNCONNECTED.

WIRING FOR NPN DEVICE (CURRENT SINKING)

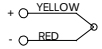


MAXIMUM LOAD AT + TERMINAL 180mA.
UNUSED INPUT SHOULD BE UNCONNECTED.

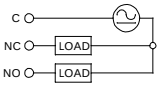
TYPICAL WIRING FOR THERMOCOUPLES T/C 1 AND T/C 2

WIRING FOR TYPE J INPUT

WIRING FOR TYPE K INPUT



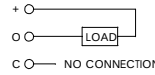
TYPICAL WIRING FOR RELAY OUTPUTS RLY 1 - RLY 4



RELAY CONTACTS 5A, 30 VDC/240 VAC

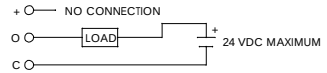
TYPICAL WIRING FOR DIGITAL OUTPUTS DOUT 1 AND DOUT 2

WIRING FOR DC OUTPUT



MAXIMUM LOAD AT + TERMINAL RATED AT 180mA.

WIRING FOR EXTERNAL SUPPLY



MAXIMUM CURRENT 500mA.

TOLERANCES UNLESS OTHERWISE SPECIFIED

ALL DIMENSIONS ARE IN INCHES

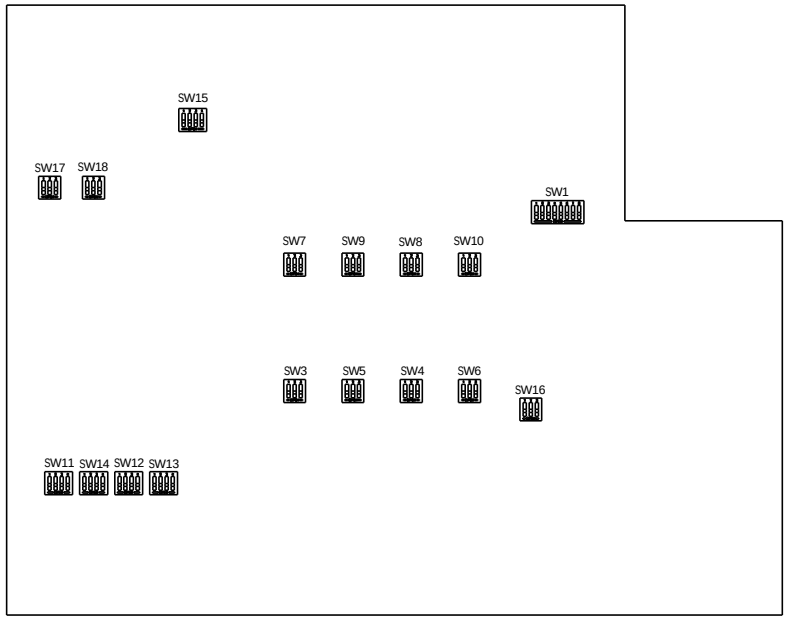
PATH = E:\CC\DT7450\7450S-WIRING0.SLDDRW

JPC CONTROLS

102 COMPASS PT. DR. SUITE D. ST. CHARLES, MO. 63301
(636) 946-3300 FAX (636) 724-2492 www.jpccontrols.com

PROCON SERIES 7450 NETWORK SLAVE MODULE
WIRING DIAGRAM

APPROVAL		DWN BY	MPJ	DATE	08/13/02	SCALE	1=1	CHKD BY	
ENG	DATE	SHEET							
QA	DATE	1 OF 1		12	745003			30	00



TOP VIEW OF CIRCUIT BOARD

ANALOG INPUTS

ANALOG INPUT	SWITCH	TYPE	SWITCH POSTION 1	2	3	4
AIN 1	SW11	0 -5V	O	O	C	O
		0 - 10V	O	O	O	C
		4 - 20 mA	C	C	O	O
		0 - 20 mA	C	C	O	O

O = OPEN C = CLOSE

ANALOG INPUT	SWITCH	TYPE	SWITCH POSITION 1	2	3	4
AIN 2	SW14	0 - 5V	O	O	C	O
		0 - 10V	O	O	O	C
		4 - 20 mA	C	C	O	O
		0 -20 mA	C	C	O	O

O = OPEN C = CLOSE

ANALOG INPUT	SWITCH	TYPE	SWITCH POSITION 1	2	3	4
AIN 3	SW12	0 -5V	O	O	C	O
		0 - 10V	O	O	O	C
		4 - 20 mA	C	C	O	O
		0 - 20 mA	C	C	O	O

O = OPEN C = CLOSE

ANALOG INPUT	SWITCH	TYPE	SWITCH POSITION 1	2	3	4
AIN 4	SW13	0 - 5V	O	O	C	O
		0 - 10V	O	O	O	C
		4 - 20 mA	C	C	O	O
		0 - 20 mA	C	C	O	O

O = OPEN C = CLOSE

ANALOG OUTPUTS

ANALOG OUTPUT	SWITCH	RANGE	SWITCH POSITION 1	2	3
AOUT 1	SW17	0 - 5V	C	C	O
		0 - 10V	C	C	C
		0 - 20 mA	C	O	O
		4 - 20 mA	O	C	O

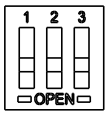
O = OPEN C = CLOSE

ANALOG OUTPUT	SWITCH	RANGE	SWITCH POSITION 1	2	3
AOUT 2	SW18	0 - 5V	C	C	O
		0 - 10V	C	C	C
		0 - 20 mA	C	O	O
		4 - 20 mA	O	C	O

O = OPEN C = CLOSE

FOR mA ANALOG OUTPUT:
1. CONNECT + TO ANALOG OUTPUT I TERMINAL.
2. CONNECT - TO ANALOG OUTPUT C TERMINAL.

FOR VOLTAGE ANALOG OUTPUT:
1. CONNECT + TO ANALOG OUTPUT V TERMINAL.
2. CONNECT - TO ANALOG OUTPUT C TERMINAL.



DETAIL VIEW OF TYPICAL ANALOG OUTPUT SWITCH

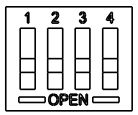
RTD INPUTS

RTD INPUT	SWITCH	SENSOR	SWITCH POSITION 1	2	3	4
RTD 1	SW15	100-OHM	C	X	X	X
		1000-OHM	O	X	X	X

O = OPEN C = CLOSE X = DOES NOT APPLY

RTD INPUT	SWITCH	SENSOR	SWITCH POSTION 1	2	3	4
RTD 2	SW15	100-OHM	X	C	X	X
		1000-OHM	X	O	X	X

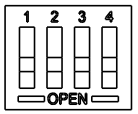
O = OPEN C = CLOSE X = DOES NOT APPLY



DETAIL VIEW OF RTD INPUT SWITCH

FOR DIFFERENTIAL ANALOG INPUT:
1. CONNECT + TO ANALOG INPUT + TERMINAL.
2. CONNECT - TO ANALOG INPUT - TERMINAL.

FOR SINGLE END ANALOG INPUT:
1. CONNECT + TO ANALOG INPUT + TERMINAL.
2. CONNECT - TO ANALOG INPUT - TERMINAL.
3. JUMPER ANALOG INPUT - TERMINAL TO ANALOG INPUT C TERMINAL.



DETAIL VIEW OF TYPICAL ANALOG INPUT SWITCH

TOLERANCES UNLESS OTHERWISE SPECIFIED

ALL DIMENSIONS ARE IN INCHES

PATH = E:\CC\DI7450\7450-SWITCH0.SLDDRW

JPC CONTROLS
102 COMPASS PT. DR. SUITE D, ST. CHARLES, MO 63301
(636) 946-3300 FAX (636) 724-2492 www.jpccontrols.com

PROCON SERIES 7450 NETWORK MODULE
SWITCH CONFIGURATION

APPROVAL ENG DATE QA DATE
DWN BY MPJ DATE 08/13/02 SCALE 1=1.5 CHKD BY
SHEET 1 OF 2
19 745004 30 00