4: Installing and Wiring System Components

Introduction

This chapter shows you how to install SNAP PAC System components and connect them to field devices. This chapter includes basic information; always consult the component's user guide or data sheet for more details on installation and wiring.

Downloading and Installing Software

The software used with the SNAP PAC System is the PAC Project software suite. The suite can be downloaded from our website, www.opto22.com. All PAC Project software, both Basic and Professional, is in one single download, and full documentation is included in Adobe Acrobat PDF format.

You can install the Basic version right away to get started. Once you've downloaded the file from our website, just double-click the file to open it and run the installer.

To install PAC Project Professional or any title within the suite, first purchase the product through our distribution channel, online, or by calling Opto 22 Sales at (800) 321-6786 or (951) 695-3000. When you have your password, run the installation again. Choose PAC Project Professional or the software titles you purchased, and enter your password. A CD and complete printed documentation will be shipped to you.

Firmware

Make sure you use the most recent firmware for all SNAP PAC controllers and brains that will be used with PAC Project software applications. Firmware is updated often to match new software versions or support new modules.

The most recent firmware is always available on our website. Simply download the firmware file and follow instructions in the *PAC Manager User's Guide* (form #1704) to install it.

Mounting Controllers

SNAP PAC S-series controllers can be either panel mounted or DIN-rail mounted. For DIN-rail mounting, purchase the optional DIN-rail mounting kit (see page 41 for compatible kits). Follow directions in the controller user's guide to mount it.

SNAP PAC R-series controllers mount on a SNAP PAC rack with the I/O modules. For mounting instructions, see the next section.

Installing Brains or Rack-Mounted Controllers and I/O Modules

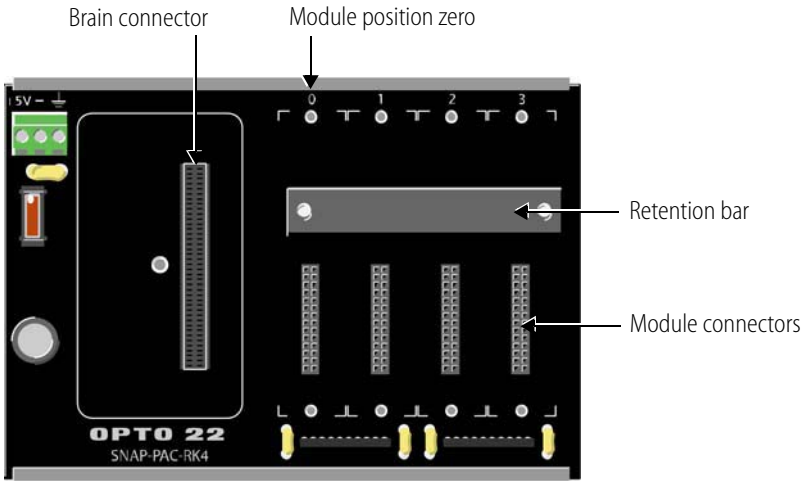
SNAP I/O modules and SNAP PAC brains and rack-mounted controllers are installed on SNAP PAC racks. Each rack mounts one processor and up to 4, 8, 12, or 16 modules. The modules can be any combination of SNAP I/O modules—analog, digital, and serial. Serial modules are limited to a maximum of 8 on any one rack and cannot be used with serial brains.

Installing I/O Modules

Modules snap into place in the row of connectors on the rack. Each module connector has a number.

1. Assemble the rack according to the directions that came with it.
2. Place the rack so that the module connector numbers are right-side up, with zero on the left.

   A four-module rack is shown below as an example.



3. Position the module over the module connector, aligning the small slot at the base of the module with the retention bar on the rack.

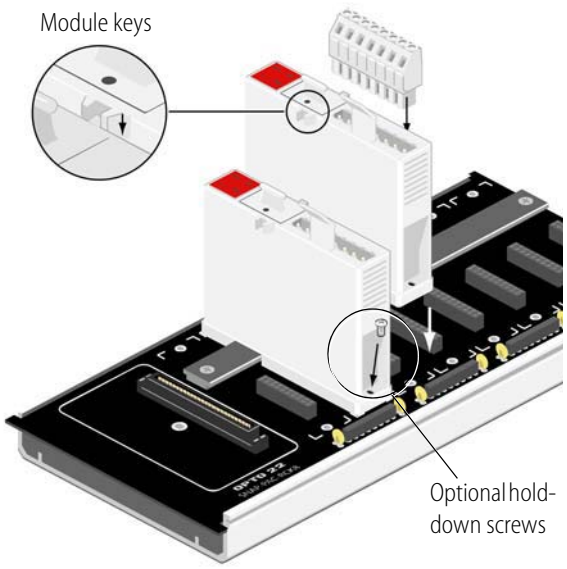
4. With the module correctly aligned over the connector, push on the module to snap it into place.

   When positioning modules next to each other, be sure to align the male and female module keys (shown in the detailed view in the illustration at right) before snapping a module into position.

   Modules snap securely into place and require a special tool (provided) for removal. To remove a module, see the next section.

5. (Optional) Use standard 4-40 x 1/2 truss-head Phillips hold-down screws to secure both sides of each module.

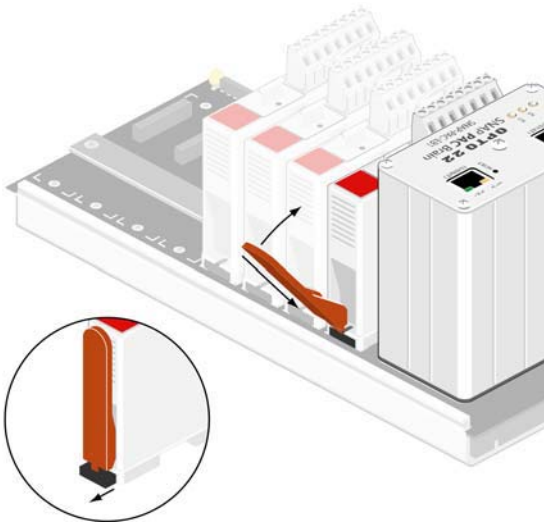
   CAUTION: *Do not over-tighten screws.*



6. Plug the wiring connector into each module to attach modules to the devices they monitor. Follow wiring diagrams beginning on page 74 or in the module data sheets. (See page 12 for a list of data sheets.)

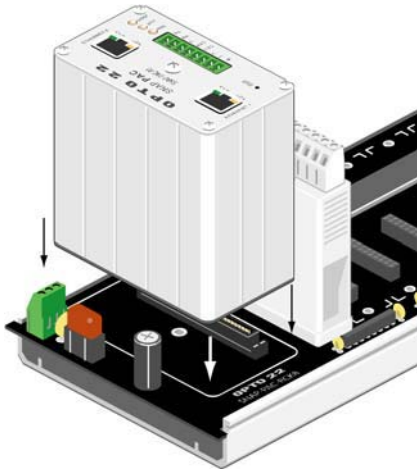
Removing a Module

1. If the modules are held in place with screws, remove them.
2. Holding the SNAP module tool (provided) as shown in the illustration at right, insert it into the notch at the base of the module.
3. Squeeze the module tool against the module to open the release latch, and pull straight up on the module to remove it.



Installing the Brain or Rack-Mounted Controller

1. Remove the processor from its packaging.
2. Turn off power to the rack assembly.
3. Align the processor's connector with the mating connector on the mounting rack.
4. Seat the processor onto the connector and use the hold-down screw to secure it in position. Do not overtighten.
5. To attach network cabling and configure addressing, skip to one of the following:
   - "Setting Up Ethernet Networking," below.
   - "Setting Up Serial Networking" on page 68.



Setting Up Ethernet Networking

*NOTE for **Wired+Wireless** models: These devices have a wireless LAN interface as well as wired interfaces, but they send a BootP only on the wired interface. First, follow the steps below to connect to them over a wired network and assign their primary IP address. Later, you can configure the wireless interface.*

1. For an R-series controller or an EB brain, use Category 5 or superior solid unshielded twisted-pair cable to connect the processor in one of the following ways:
   - (Recommended for initial configuration) Connect to a PC directly. Use an Ethernet crossover cable for R-series controllers; use any Ethernet cable for SNAP PAC brains.
   - Connect to a standard 10BASE-T or 100BASE-TX Ethernet network that has a PC on the same subnet as the brain and does NOT have a Dynamic Host Configuration Protocol (DHCP) server.

   Maximum cable or segment length is 100 meters; minimum cable length is one meter.
2. Before turning on power to the processor, read instructions in the *PAC Manager User's Guide* and assign the IP address.

Setting Up Serial Networking

Follow the SB brain diagram on page 53and the steps below to set up serial networking for SB brains and an S-series controller.

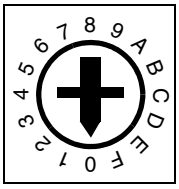
1. Attach an RS-485 serial cable to the serial port.

2. Rotate the baud rate switch to set the desired baud rate:

Baud rate	Switch position
(Reserved)	F
230400 bps	E
115200 bps	D
76800 bps	C
57600 bps	B
38400 bps	A
19200 bps	9
9600 bps	8

Baud rate	Switch position
4800 bps	7
2400 bps	6
1200 bps	5
600 bps	4
300 bps	3
(Reserved)	2
(Reserved)	1
(Reserved)	0

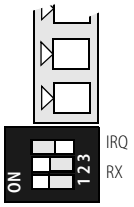
Baud Rate Switch



3. Use the three tiny termination switches to set termination:

- For half-duplex termination (2-wire 485), move switch 1 (TX/RX) to ON and switch 2 (RX) to OFF.
- For full-duplex termination (4-wire 485), move switch 1 to ON and switch 2 to ON (illustrated at right)

NOTE: Bias on a SNAP PAC SB brain is always ON.



(Switch 3 is reserved.)

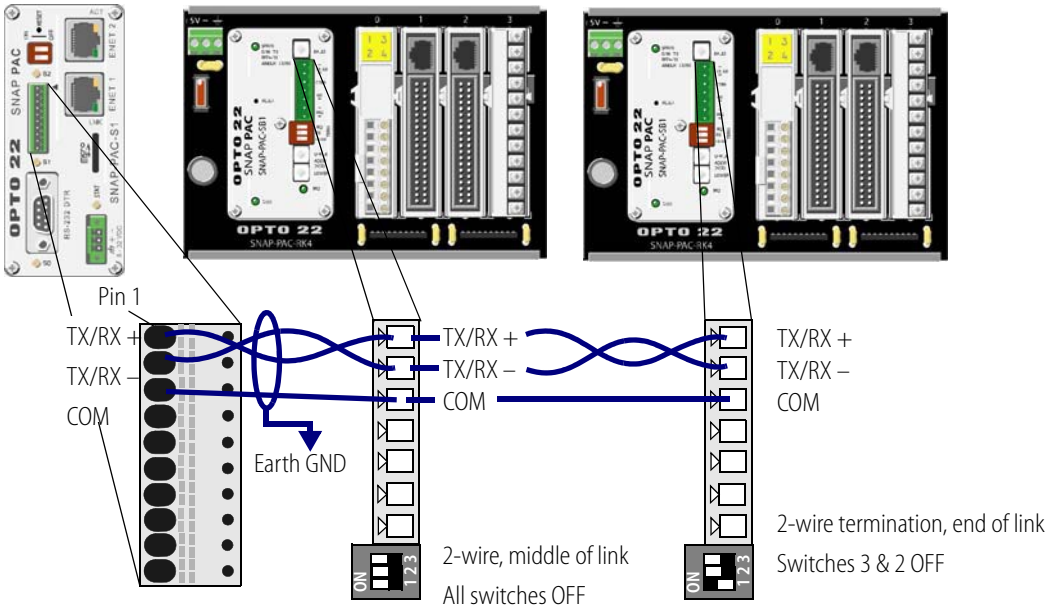
4. Use the two 16-position rotary address switches to set the unit's address.

There are 256 possible addresses, 0–255. If you need help setting the address switches, see the brain user's guide.

5. Wire and terminate the serial link as shown in the following diagrams.

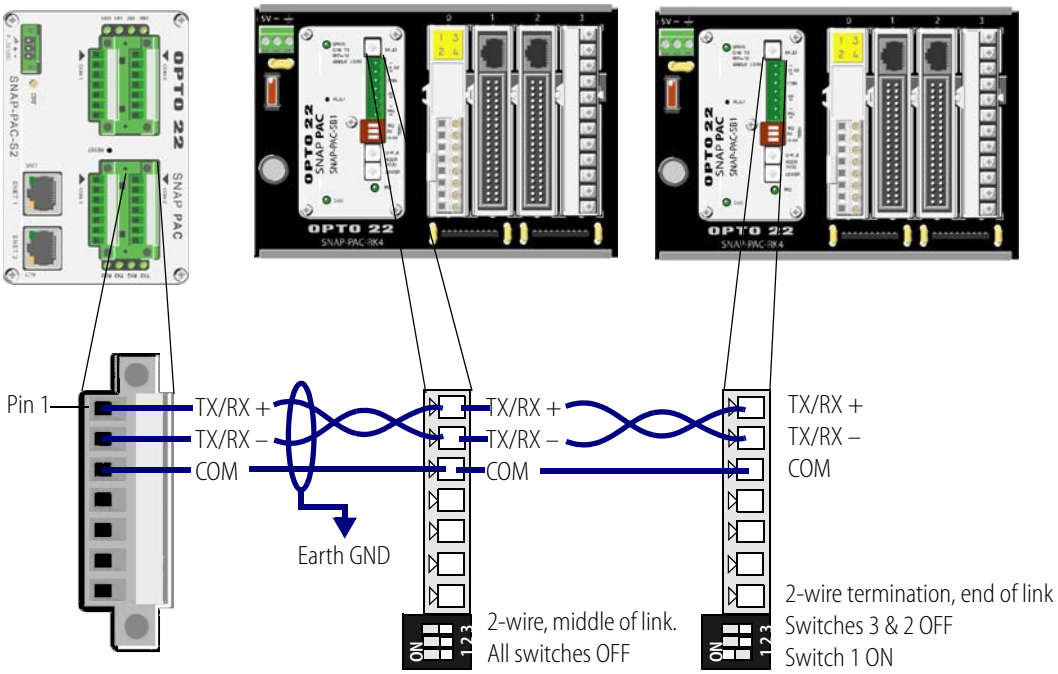
Wiring a SNAP PAC SB-Series Brain to a SNAP-PAC-S1 or SNAP-PAC-S1-FM Controller

Two-wire

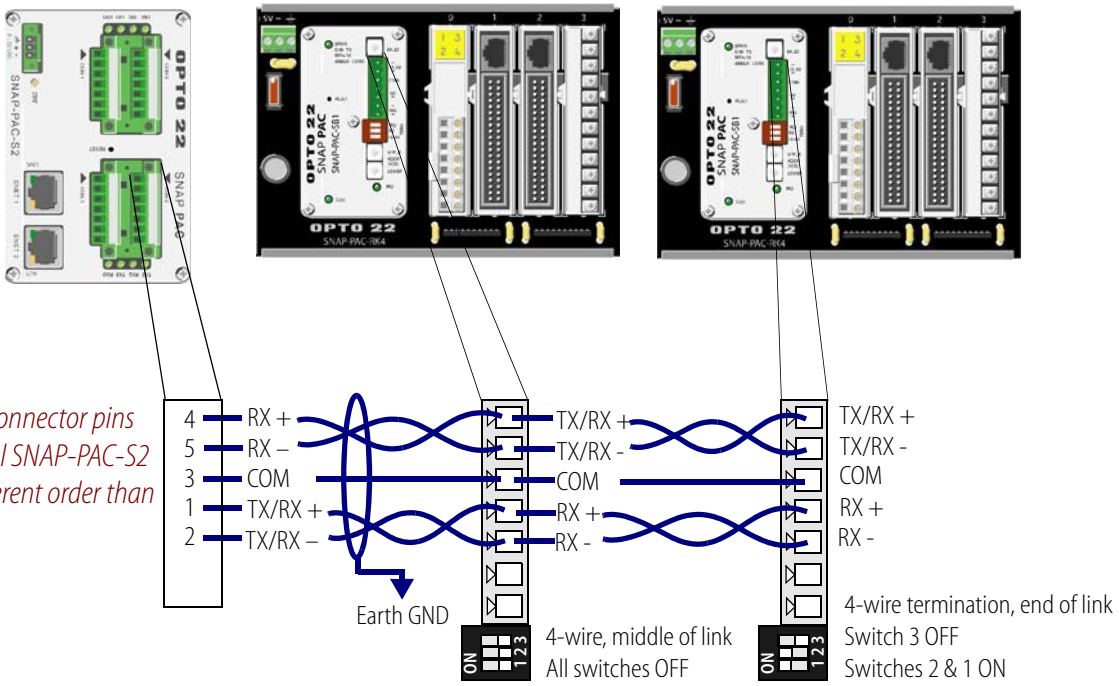


Wiring a SNAP PAC SB-Series Brain to a SNAP-PAC-S2 Controller

Two-wire



Four-wire



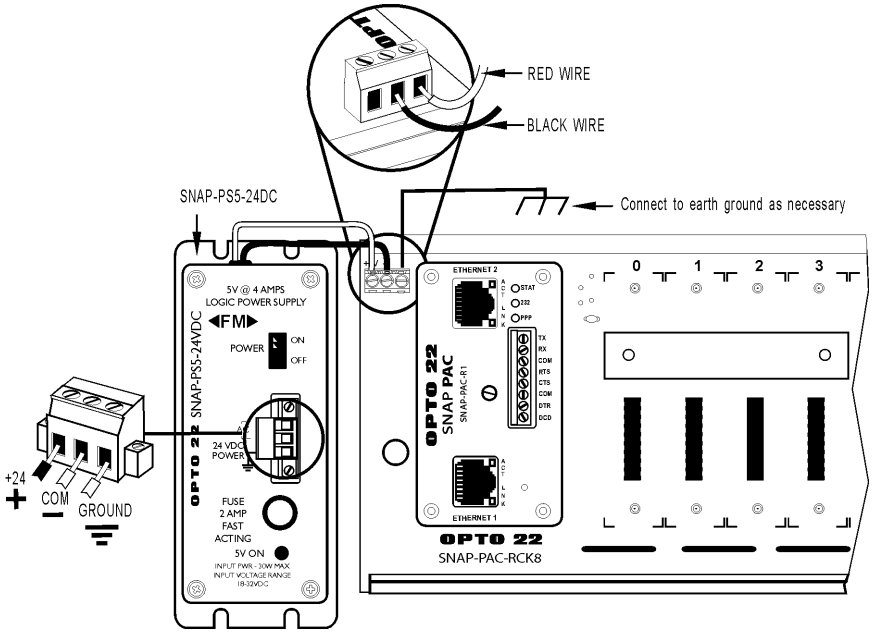
NOTE: The connector pins on an actual SNAP-PAC-S2 are in a different order than shown here.

Wiring Power Supplies

Primary Power Supply

Use one power supply per I/O unit. Use 14 AWG wire.

1. Mount the SNAP-PS5 or SNAP-PS5-24DC power supply so that the attached red and black power wires will reach the + and – power terminals on the SNAP mounting rack.
2. Using the power terminals on the SNAP PAC rack, attach the red wire to the + terminal and the black wire to the – terminal. Connect the ground terminal on the rack to ground.
3. For the **SNAP-PS5** (not illustrated): Using the removable input power connector on top of the power supply, apply 120 volts AC power between the two terminals marked "AC." Connect the ground terminal to ground.
4. For the **SNAP-PS5U** (not illustrated): Using the removable input power connector on top of the power supply, apply 240 or 120 volts AC power between the two terminals marked "AC." Connect the ground terminal to ground.
5. For the **SNAP-PS5-24DC** (illustrated below): Using the removable input power connector on top of the power supply, apply 24 volts DC power between the two terminals marked "±DC." Connect the ground terminal to ground.



Loop Power Supply

Some analog modules (such as the SNAP-AIMA and SNAP-AIMA-i) also require a current loop supply, which can be provided by the SNAP-PS24 or the SNAP-PS24U. Both offer 24 volts of DC power, the SNAP-PS24 at 0.75 A and the SNAP-PS24U at 1.25 A. Follow these steps to wire these power supplies.

1. Mount the SNAP-PS24 or SNAP-PS24U power supply in a location where the attached output power wires will reach the field connector for SNAP analog modules.

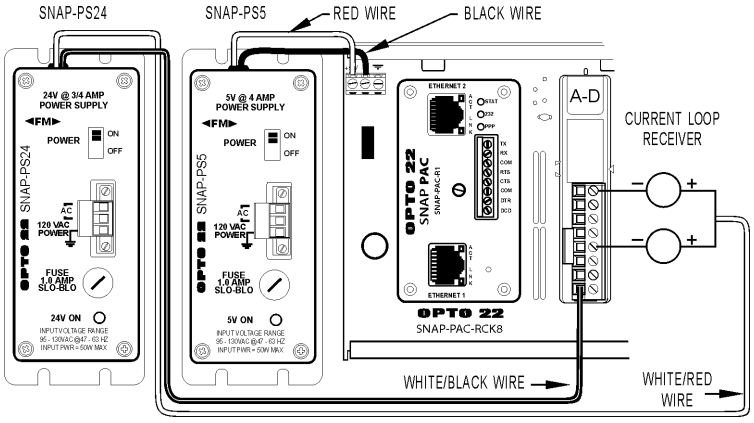
   The white and red wire is the positive wire (24 VDC). The white and black wire is the negative wire (24 VDC return).

2. If you are wiring directly to the module, see the wiring diagram for the specific module you are using.

   Examples for an input module are shown in the following diagrams.

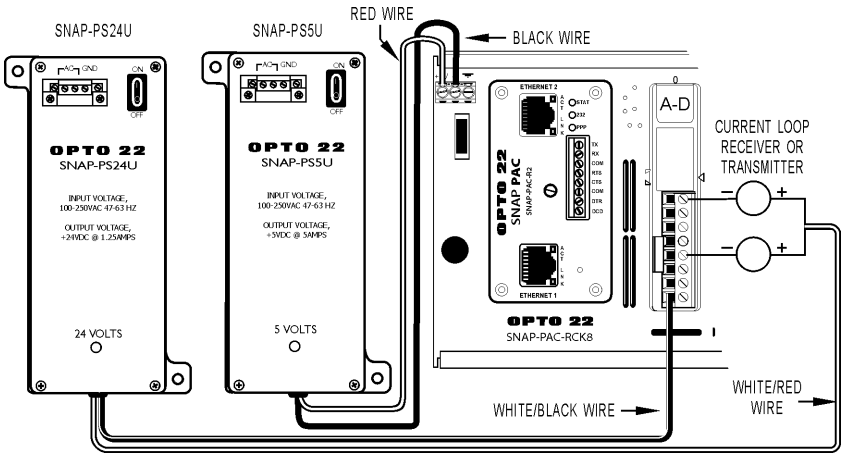
SNAP-PS24

In this diagram, the SNAP-PS24 power supply supplies power directly to the input module. The SNAP-PS5 supplies power to the rack.



SNAP-PS24U

Here, the SNAP-PS24U power supply supplies power directly to the input module. The SNAP-PS5U supplies power to the rack.



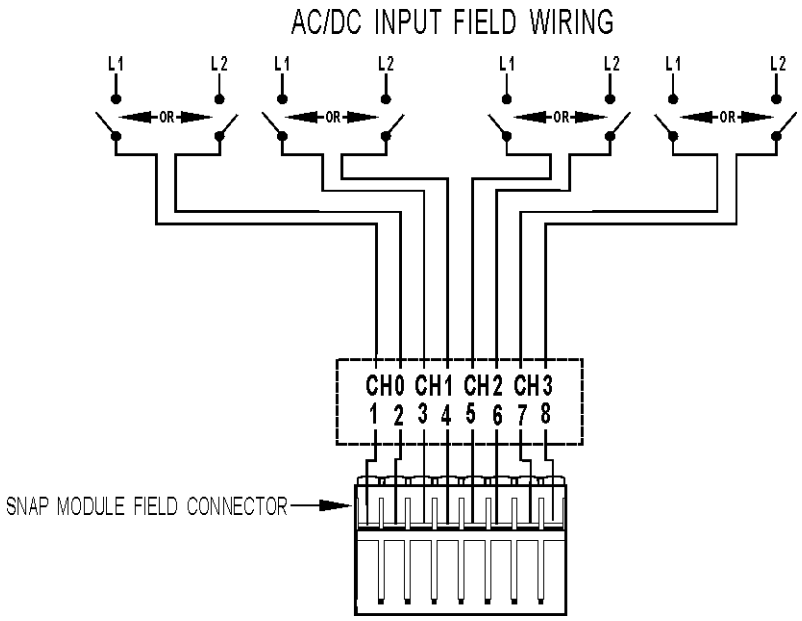
Wiring I/O Modules

See additional diagrams for wiring modules to SNAP TEX breakout boards, starting on page 107.

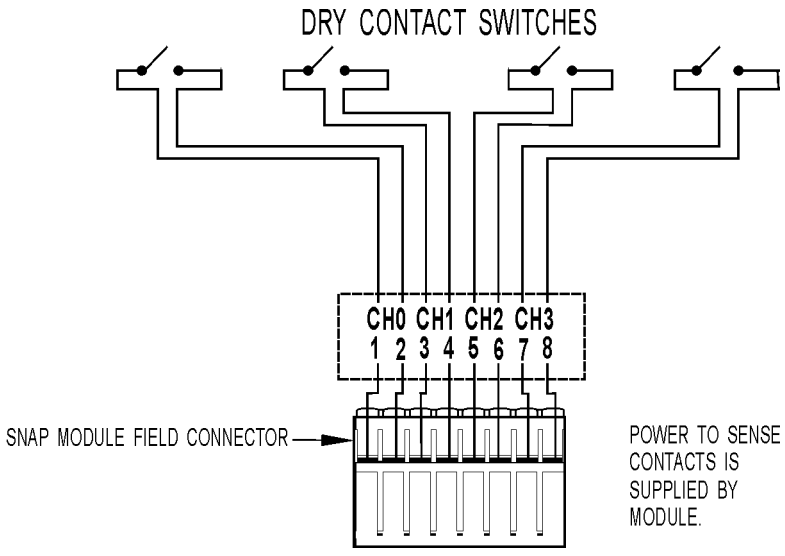
4-Channel Digital Input Modules

For high-density digital modules, see page 80.

Wiring for most 4-channel digital input modules (except SNAP-IDC5-SW and SNAP-IDC5-SW-NC)

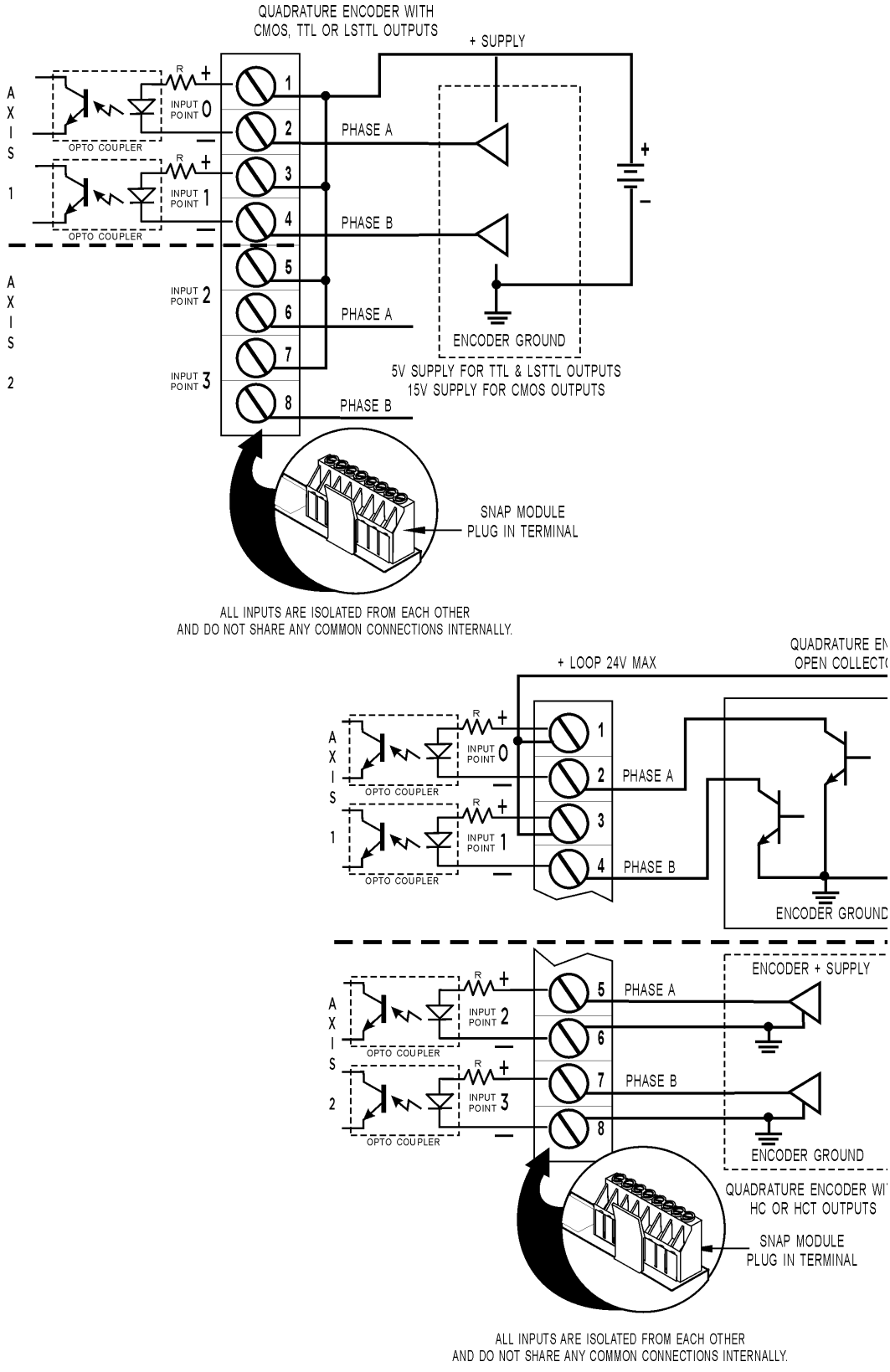


Wiring for SNAP-IDC5-SW and SNAP-IDC5-SW-NC digital input modules



CAUTION: The SNAP-IDC5-SW and SNAP-IDC5-SW-NC inputs are not intended to be used with contacts that are connected to any external user-supplied voltage or currents.

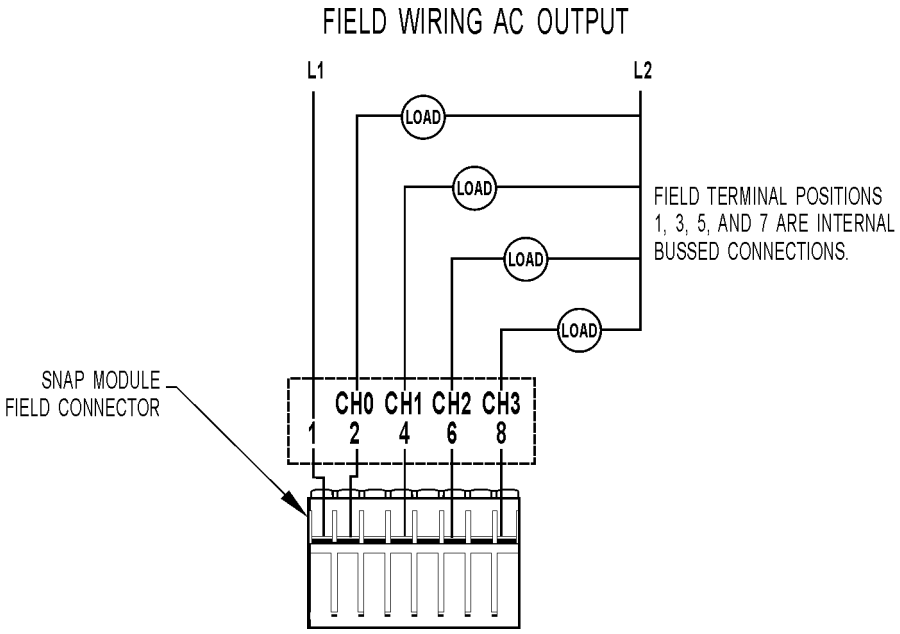
Wiring for SNAP-IDC5Q quadrature input module



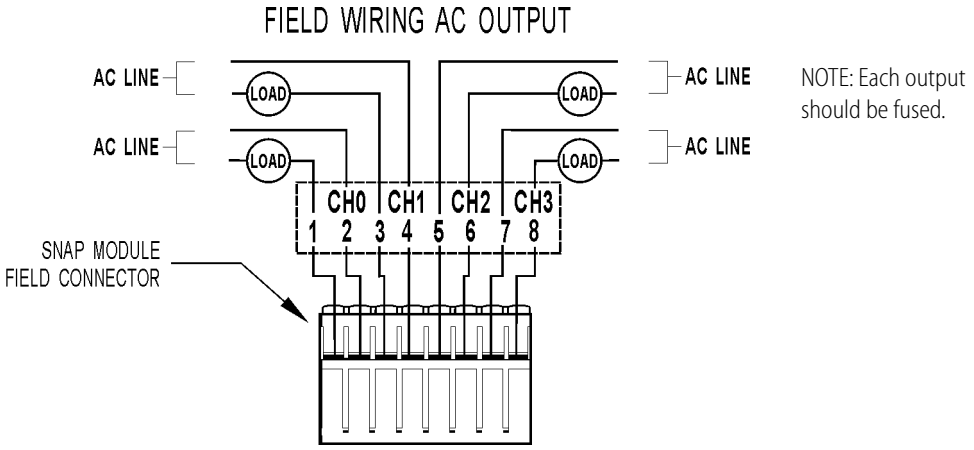
4-Channel Digital Output Modules

For high-density digital modules, see page 80.

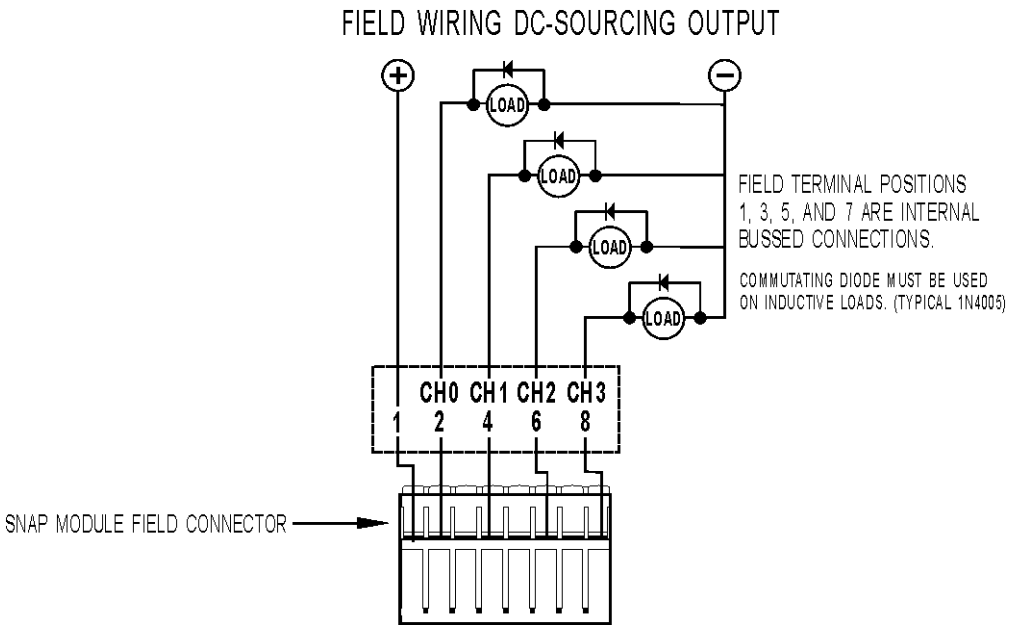
Wiring for SNAP-OAC5 and SNAP-OAC5FM digital AC output modules



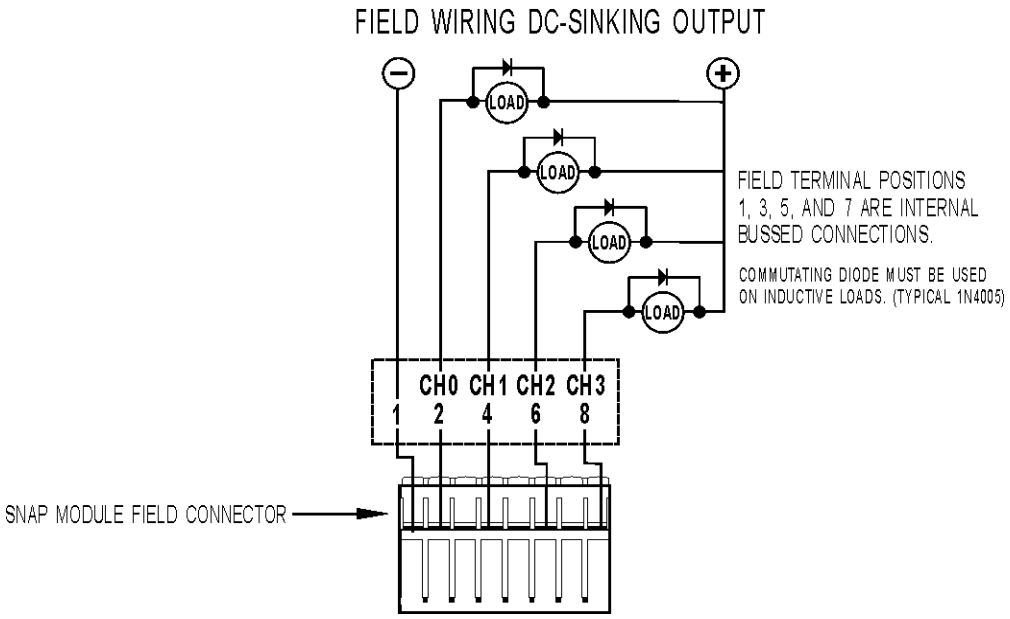
Wiring for SNAP-OAC5MA, SNAP-OAC5-i, and SNAP-OAC5-iFM digital AC output modules



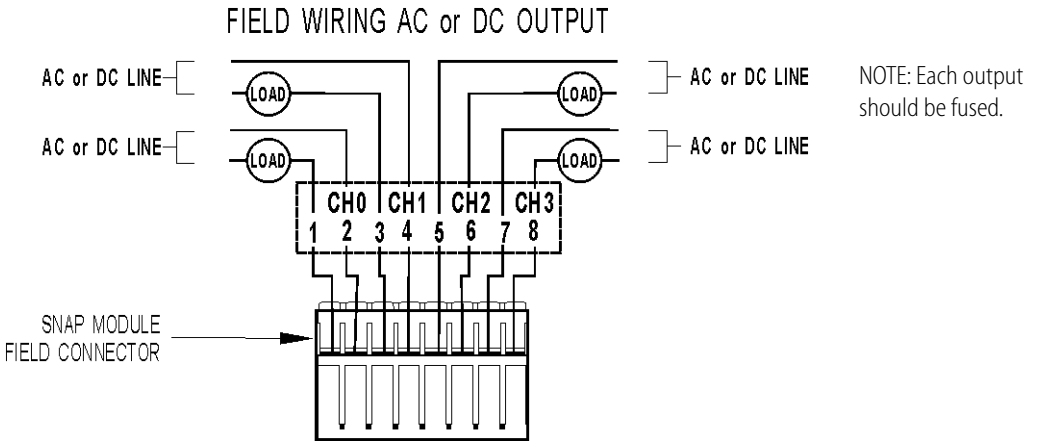
Wiring for SNAP-ODC5SRC and SNAP-ODC5SRCFM digital DC output modules



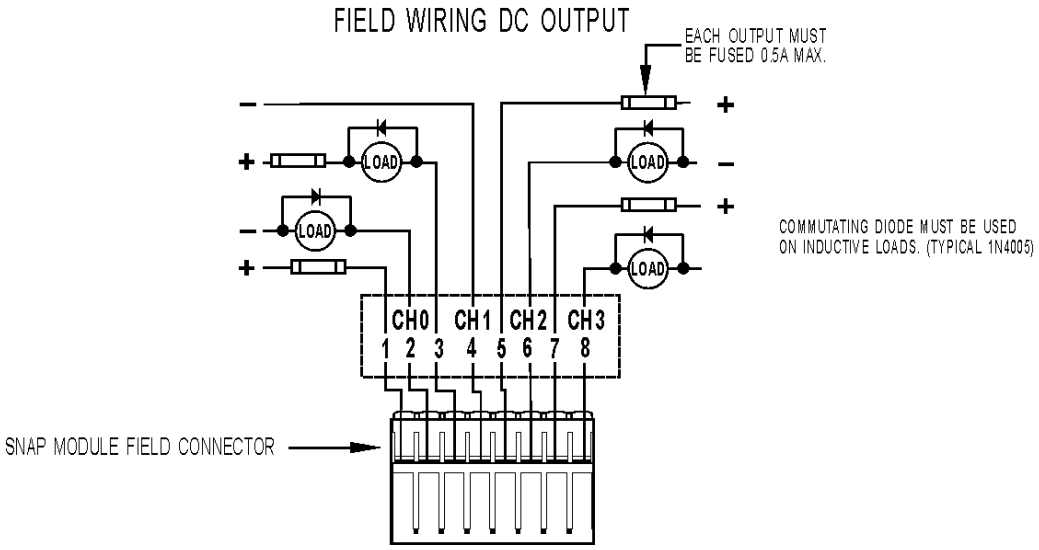
Wiring for SNAP-ODC5SNK, SNAP-ODC5ASNK, and SNAP-ODC5SNKFM digital DC output modules



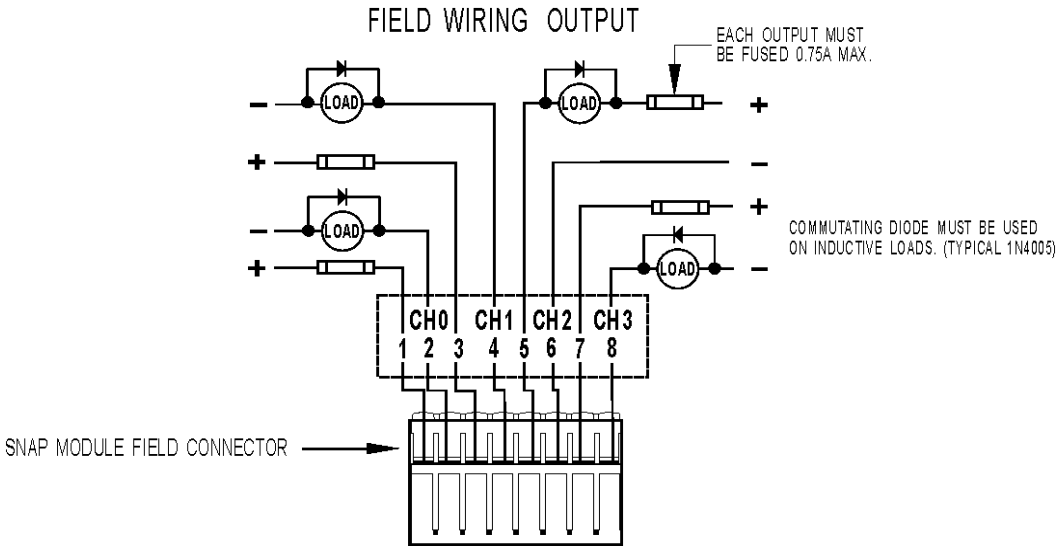
Wiring for SNAP-ODC5R, SNAP-ODC5R5, SNAP-ODC5RFM, and SNAP-ODC5R5FM dry contact output modules



Wiring for SNAP-ODC5MA digital DC output module with manual/auto switches

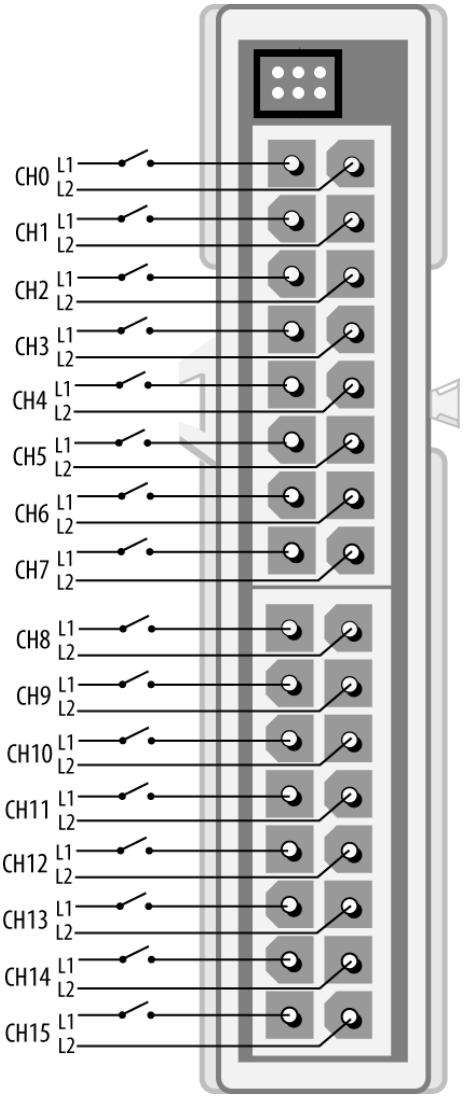


Wiring for SNAP-ODC5-i, SNAP-ODC5A-i, SNAP-ODC5-iFM, and SNAP-ODC5A-iFM isolated digital DC output modules

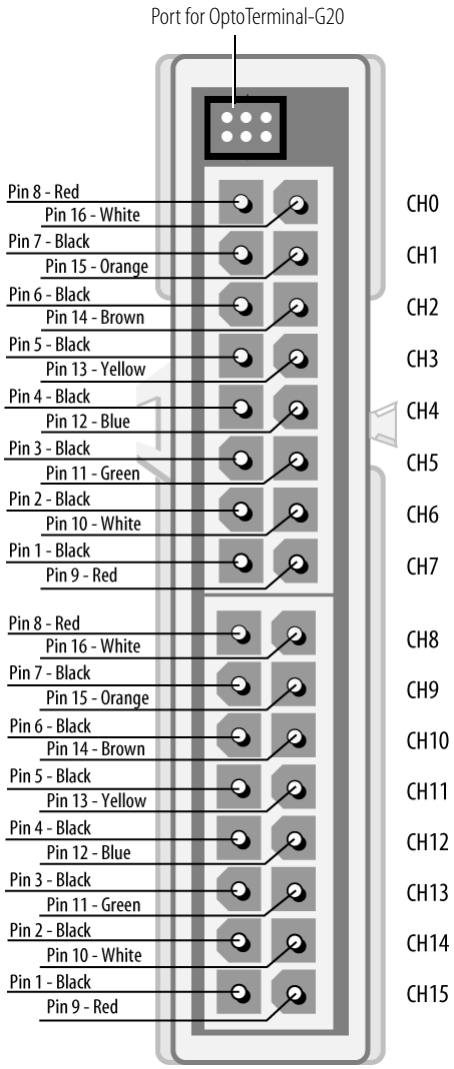


High-Density Digital Modules

Wiring for SNAP-IDC-16, SNAP-IDC-HT-16, SNAP-IAC-16, SNAP-IAC-A-16, and SNAP-IAC-K-16 digital input modules



NOTE: The connectors on these modules are not polarity-sensitive. You can connect the positive lead (+) for each channel (or point) to either L1 or L2, and this can vary from point to point on the module.

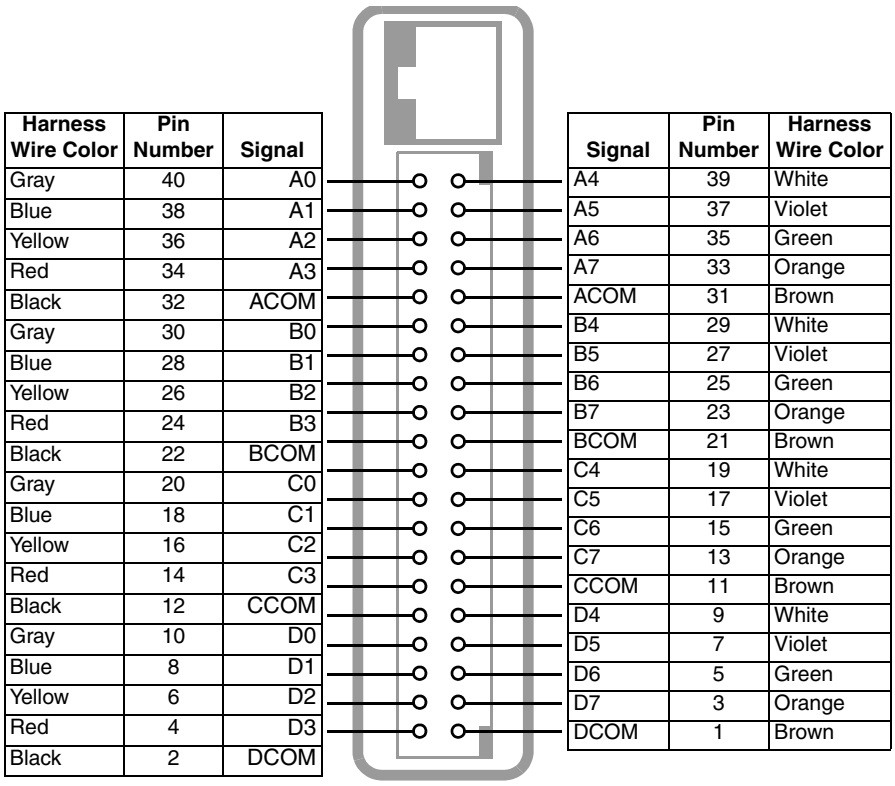


NOTES: The small four-pin connector on the top of the 16-point module connects to the optional OptoTerminal-G20 using a special adapter cable, included with the OptoTerminal.

The connectors on these modules are not polarity-sensitive. You can connect the positive lead (+) for each channel (or point) to either L1 or L2, and this can vary from point to point on the module.

See Opto 22 form 1547, the *SNAP High-Density Digital Module User's Guide*, for breakout rack wiring and jumper settings for the SNAP-IDC-HDB and SNAP-ODC-HDB and their -FM versions.

Wiring for high-density digital connector used with 32-channel input and output modules



Harness Wire Color	Pin Number	Signal
Gray	40	A0
Blue	38	A1
Yellow	36	A2
Red	34	A3
Black	32	ACOM
Gray	30	B0
Blue	28	B1
Yellow	26	B2
Red	24	B3
Black	22	BCOM
Gray	20	C0
Blue	18	C1
Yellow	16	C2
Red	14	C3
Black	12	CCOM
Gray	10	D0
Blue	8	D1
Yellow	6	D2
Red	4	D3
Black	2	DCOM

Signal	Pin Number	Harness Wire Color
A4	39	White
A5	37	Violet
A6	35	Green
A7	33	Orange
ACOM	31	Brown
B4	29	White
B5	27	Violet
B6	25	Green
B7	23	Orange
BCOM	21	Brown
C4	19	White
C5	17	Violet
C6	15	Green
C7	13	Orange
CCOM	11	Brown
D4	9	White
D5	7	Violet
D6	5	Green
D7	3	Orange
DCOM	1	Brown

Connector wiring for SNAP-ODC-32-SNK, SNAP-ODC-32-SRC, SNAP-IDC-32, -FM versions, and SNAP-IDC-32N (top view of module)

The following table shows 32-channel module connector wiring for the **SNAP-HD-CBF6** wiring harness. Wires from the wiring harness are grouped into four sets.of color-coded wires. Use this table with the diagram above..

Set A		
Wires		Ch
A0	Gray	0
A1	Blue	1
A2	Yellow	2
A3	Red	3
A4	White	4
A5	Violet	5
A6	Green	6
A7	Orange	7

Set B		
Wires		Point
B0	Gray	8
B1	Blue	9
B2	Yellow	10
B3	Red	11
B4	White	12
B5	Violet	13
B6	Green	14
B7	Orange	15

Set C		
Wires		Point
C0	Gray	16
C1	Blue	17
C2	Yellow	18
C3	Red	19
C4	White	20
C5	Violet	21
C6	Green	22
C7	Orange	23

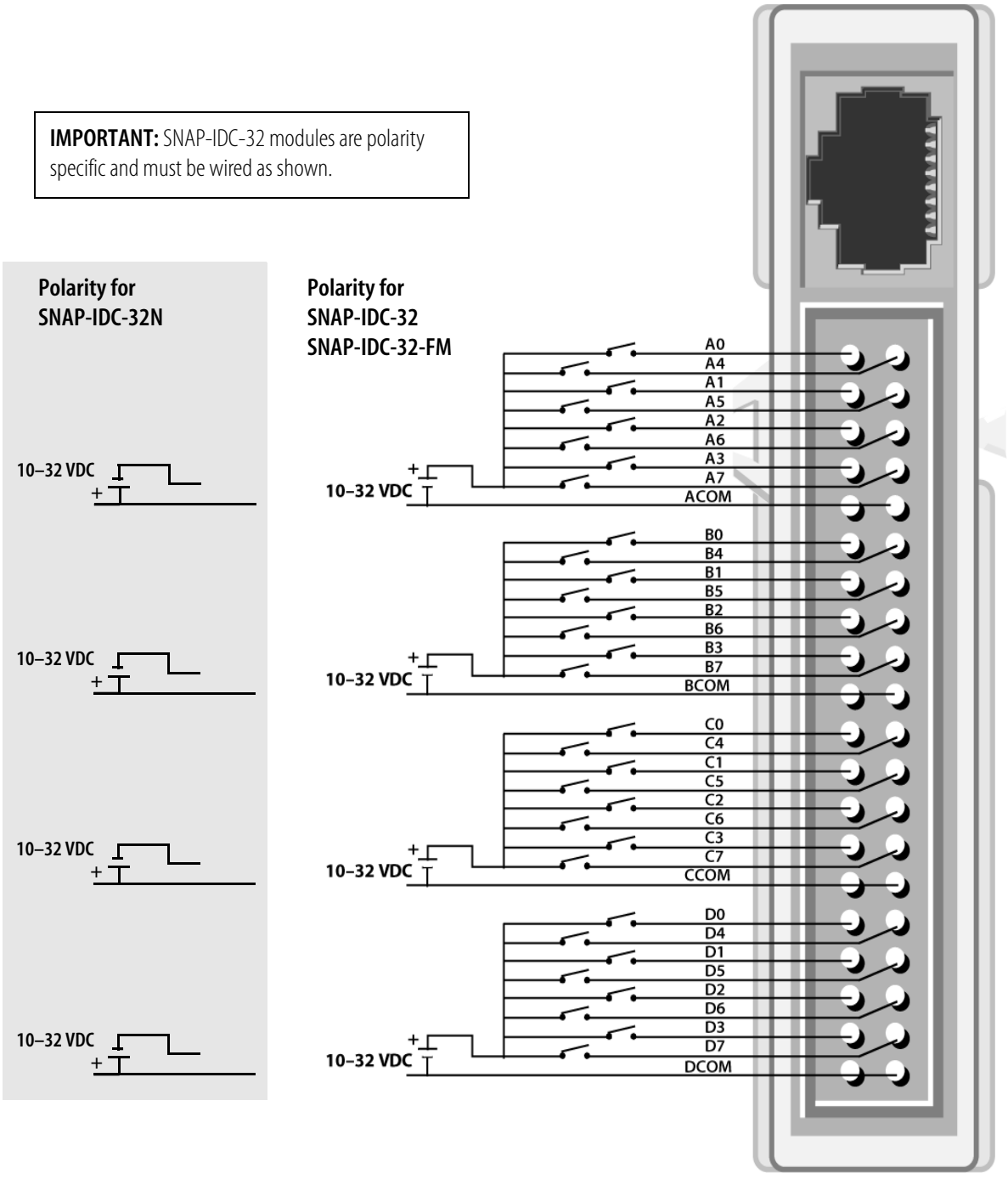
Set D		
Wires		Ch
D0	Gray	24
D1	Blue	25
D2	Yellow	26
D3	Red	27
D4	White	28
D5	Violet	29
D6	Green	30
D7	Orange	31

For additional information, see form #1547, the *SNAP High-Density Digital Module User's Guide*.

Wiring for SNAP-IDC-32 and SNAP-IDC-32-FM high-density digital inputs

Also see wiring for connector on page 82.

IMPORTANT: SNAP-IDC-32 modules are polarity specific and must be wired as shown.

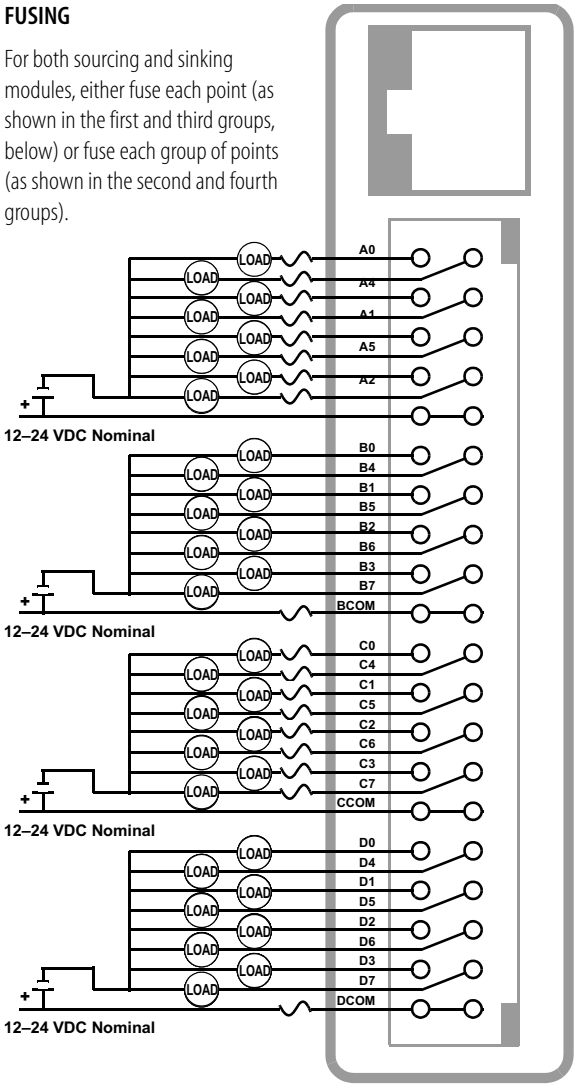


Wiring for SNAP-ODC-32-SNK and SNAP-ODC-32-SRC high-density digital outputs

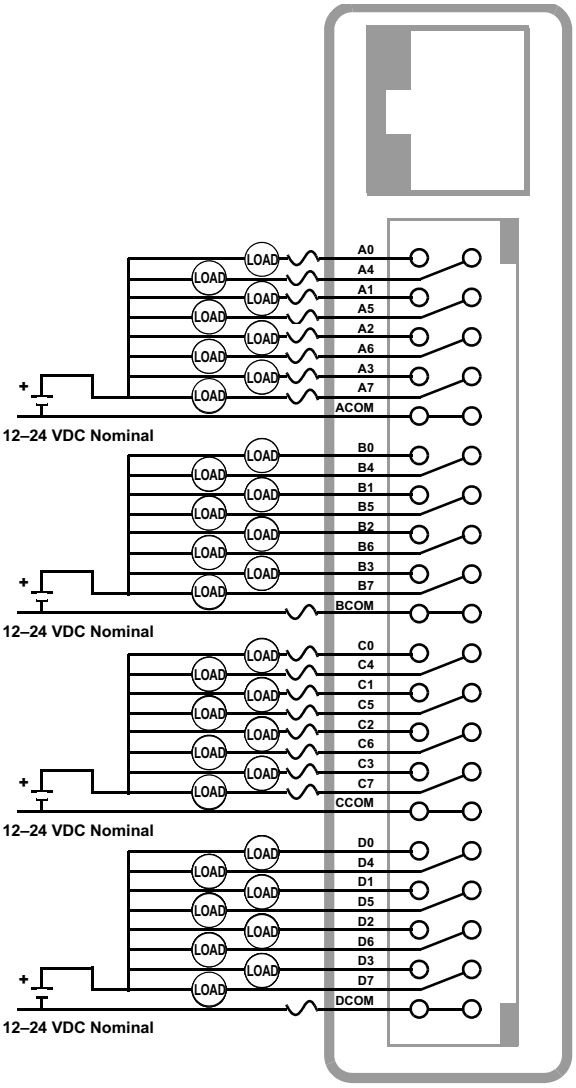
Also applies to SNAP-ODC-32-SNK-FM and SNAP-ODC-32-SRC-FM.
Also see wiring for connector on page 82.

FUSING

For both sourcing and sinking modules, either fuse each point (as shown in the first and third groups, below) or fuse each group of points (as shown in the second and fourth groups).



SNAP-ODC-32-SRC
Load Sourcing Module
(Top view of module)



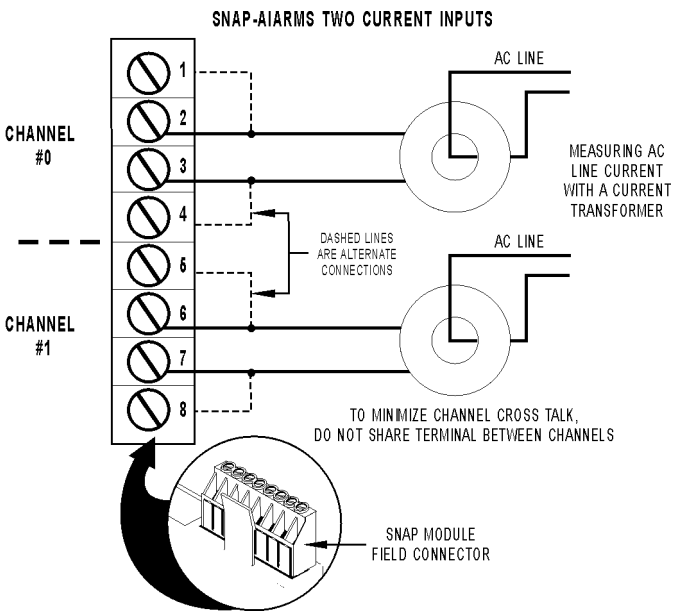
SNAP-ODC-32-SNK
Load Sinking Module
(Top view of module)

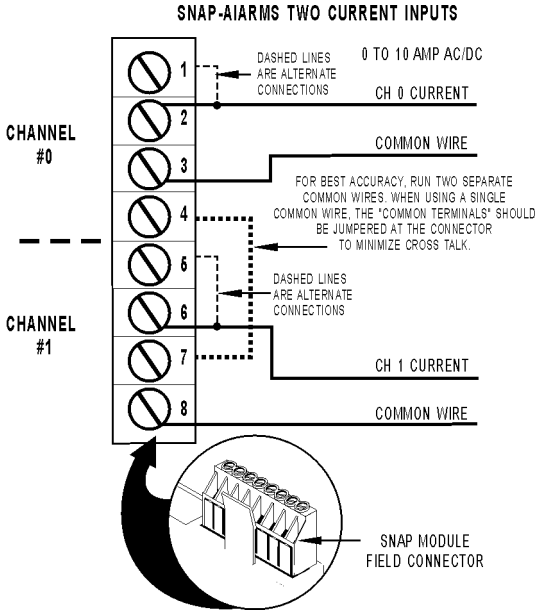
Analog Input Modules

Wiring for SNAP-AIARMS analog amps RMS AC/DC input

Two possible wiring diagrams are shown.

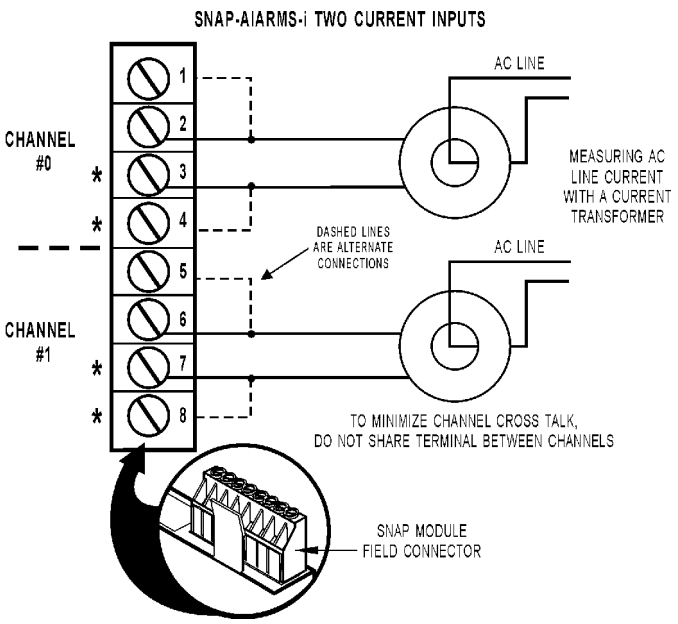
Terminals 3, 4, 7, and 8 share a common connection inside the module. **Make sure you observe polarity** when connecting the second channel. To avoid a potentially hazardous short, double-check wiring before turning on the current to be monitored.

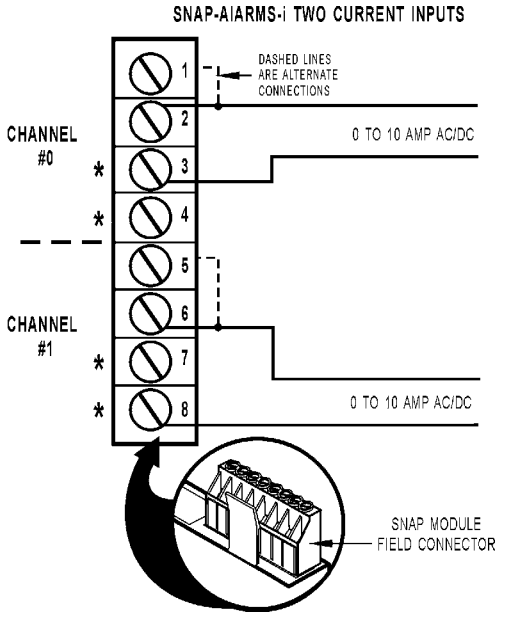




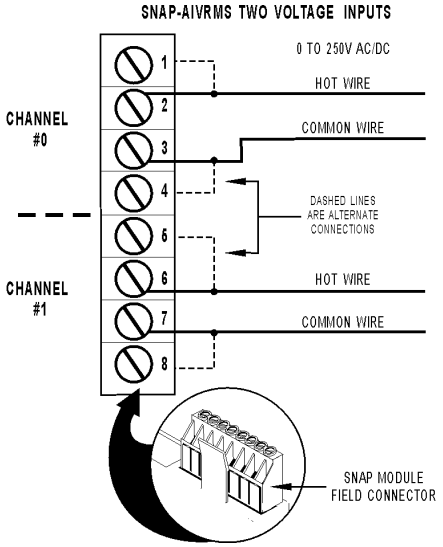
Wiring for SNAP-AIARMS-i and SNAP-AIARMS-i-FM isolated analog amps RMS AC/DC inputs

Two possible wiring diagrams are shown. The module's two points are isolated from each other.



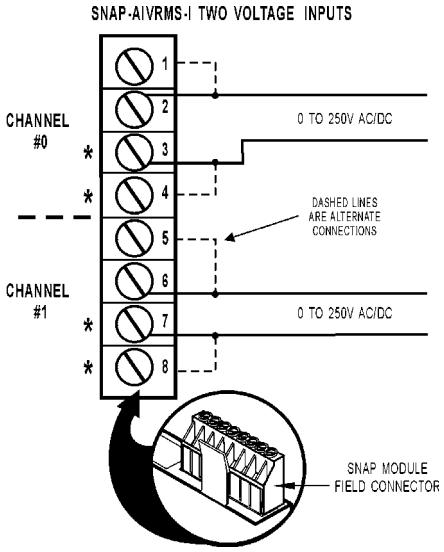


Wiring for SNAP-AIVRMS analog volts RMS AC/DC input



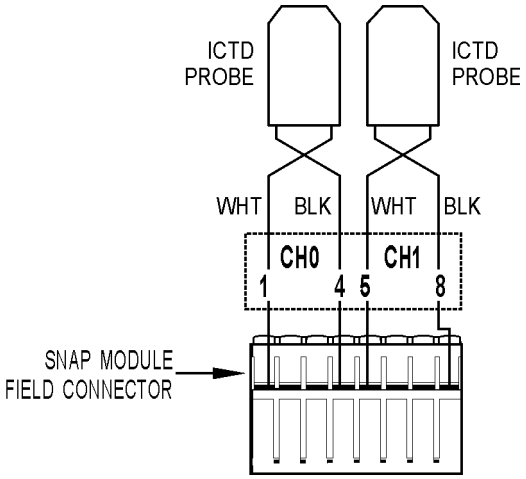
Terminals 3, 4, 7, and 8 share a common connection inside the module. **Make sure you observe polarity** when connecting the second channel. To avoid a potentially hazardous short, double-check wiring before turning on the voltage to be monitored.

Wiring for SNAP-AIVRMS-i and SNAP-AIVRMS-i-FM isolated analog volts RMS AC/DC inputs

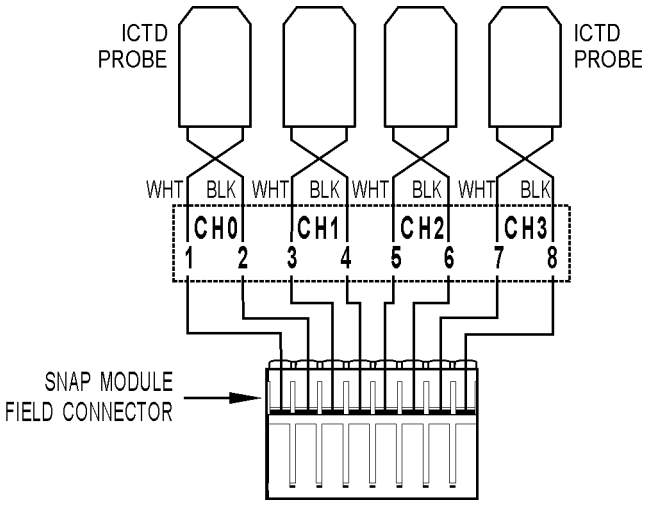


The two points on these modules are isolated from each other.

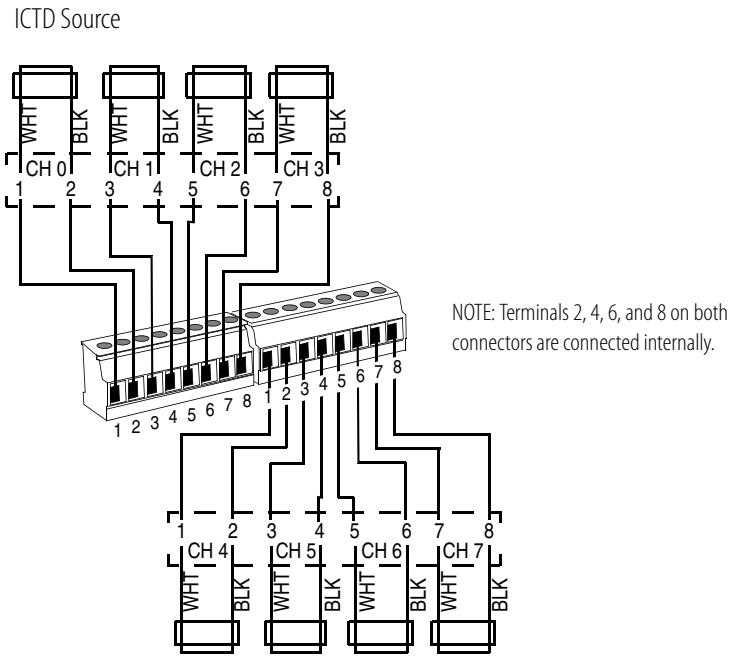
Wiring for SNAP-AICTD two-channel analog temperature input



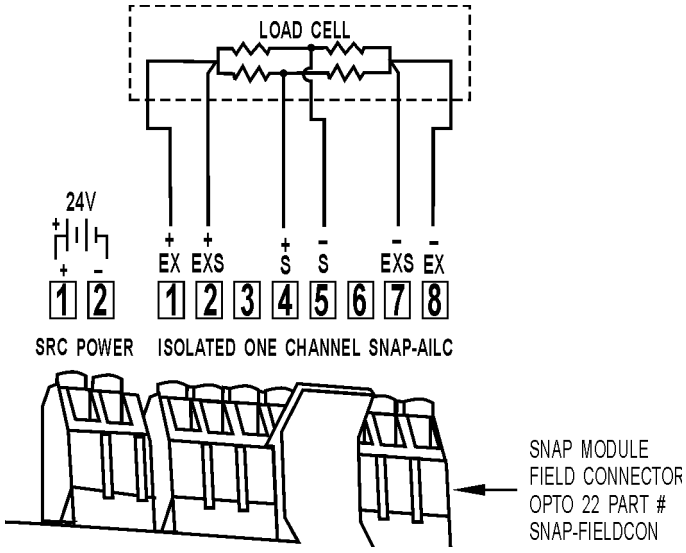
Wiring for SNAP-AICTD-4 four-channel analog temperature input



Wiring for SNAP-AICTD-8 eight-channel analog temperature input



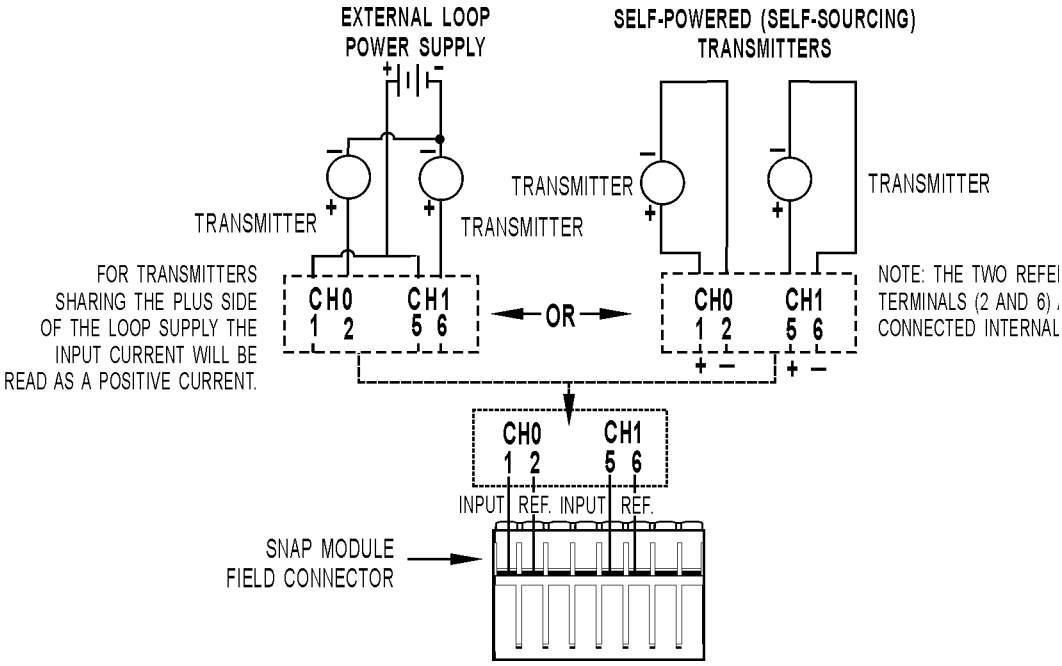
Wiring for SNAP-AILC and SNAP-AILC-2 load cell inputs



Wiring for SNAP-AIMA two-channel analog current input

Since all inputs share a common reference, the module must be installed at the beginning or end of a typical 4–20 mA loop. If you are using both standard and self-sourcing transmitters, either put the transmitters on different modules, or use different power supplies. Do not use standard and self-sourcing transmitters on the same module.

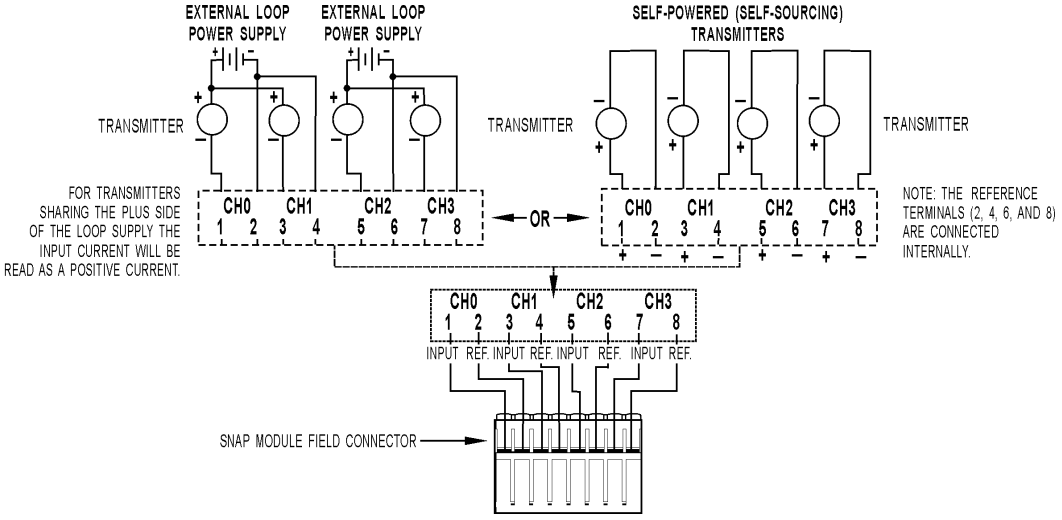
This module does NOT supply loop excitation current.



Wiring for SNAP-AIMA-4 four-channel analog current input

Since all inputs share a common reference, the module must be installed at the beginning or end of a typical 4–20 mA loop. If you are using both standard and self-sourcing transmitters, either put the transmitters on different modules, or use different power supplies. Do not use standard and self-sourcing transmitters on the same module.

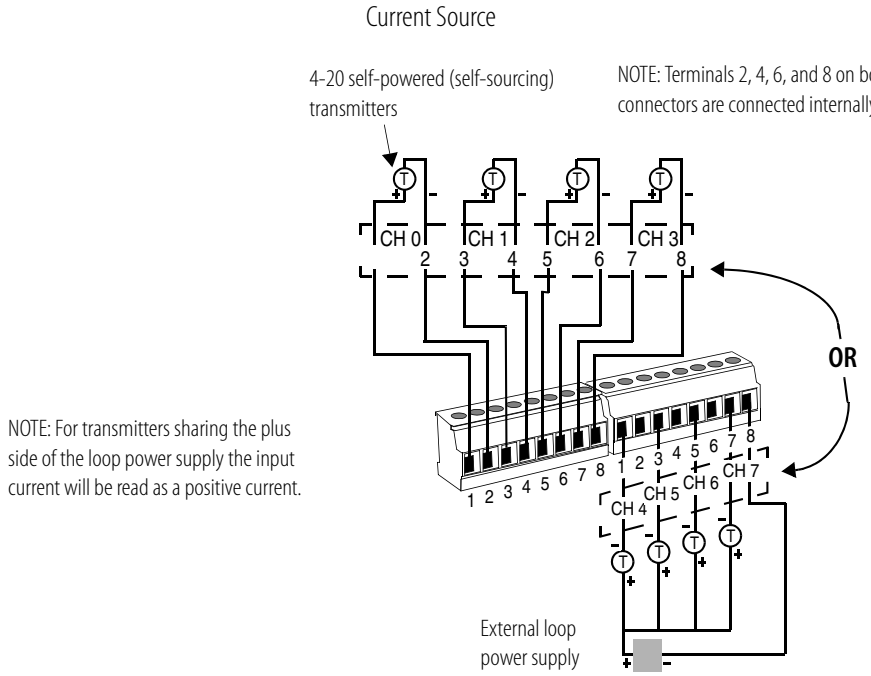
This module does NOT supply loop excitation current.



Wiring for SNAP-AIMA-8 eight-channel analog current input

Since all inputs share a common reference, the module must be installed at the beginning or end of a typical 4–20mA loop. If you are using both standard and self-sourcing transmitters, either put the transmitters on different modules, or use different power supplies. Do not use standard and self-sourcing transmitters on the same module.

This module does NOT supply loop excitation current.

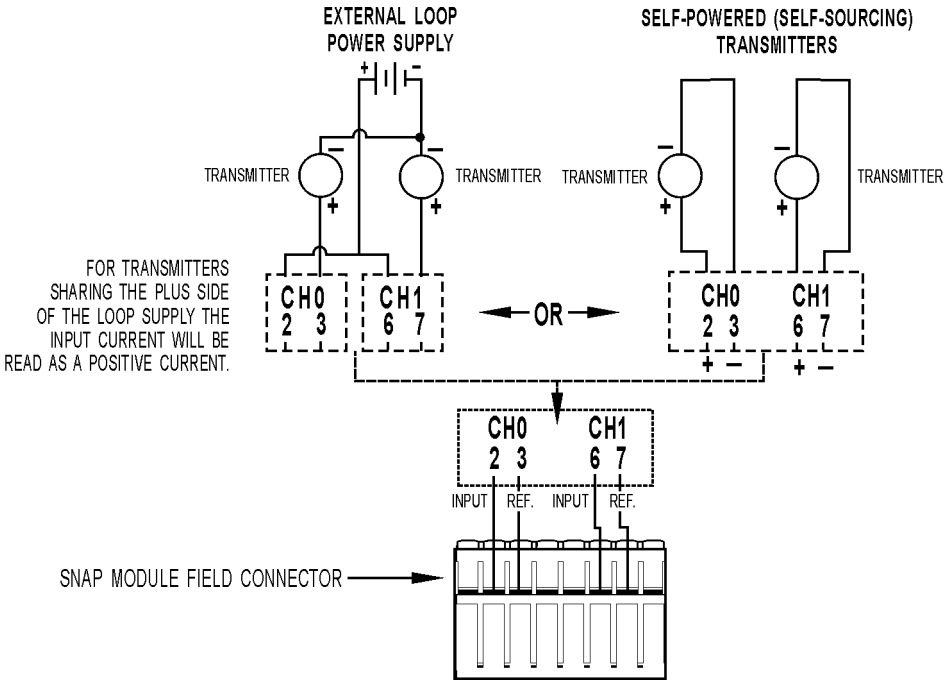


NOTE: For transmitters sharing the plus side of the loop power supply the input current will be read as a positive current.

Wiring for SNAP-AIMA-i and SNAP-AIMA2-i isolated two-channel analog current inputs

The two channels are isolated from each other.

This module does NOT supply loop excitation current.



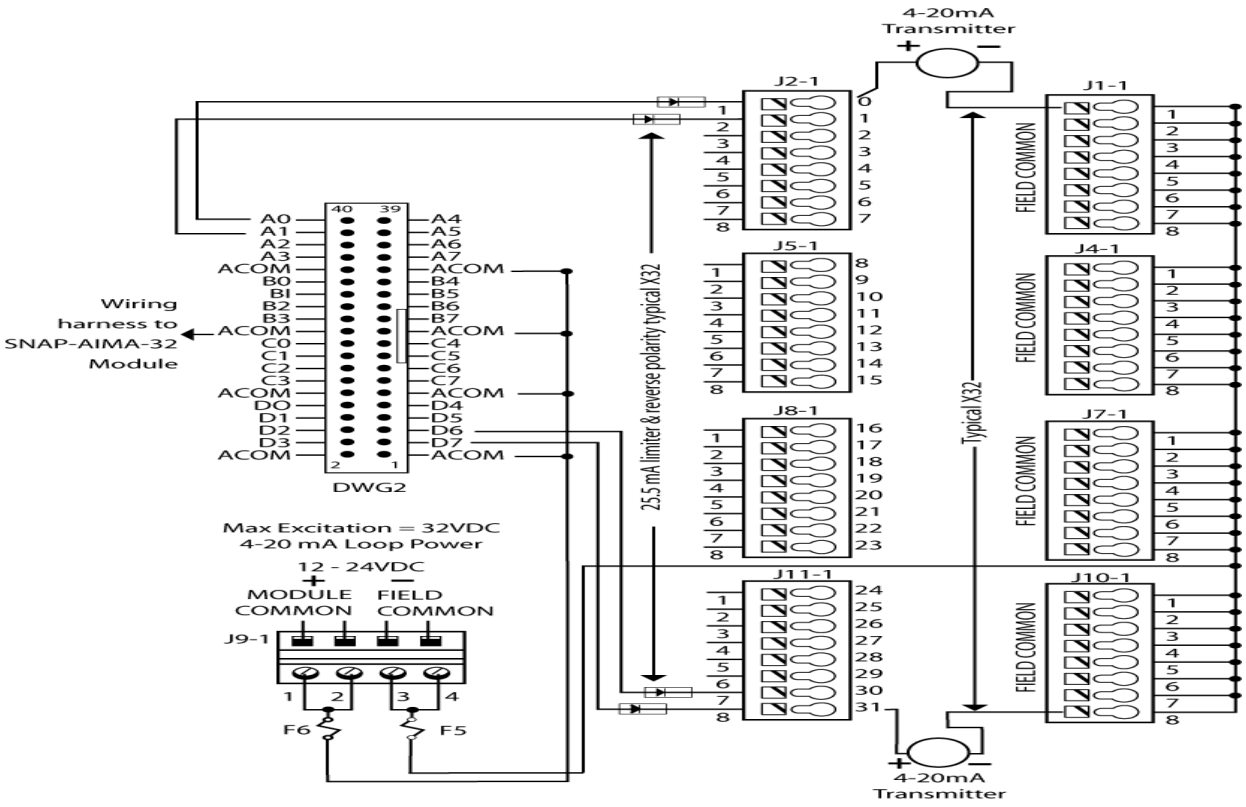
Wiring for SNAP-AIMA-32 and SNAP-AIMA-32-FM thirty-two-channel analog current input

This module does NOT supply loop excitation current.

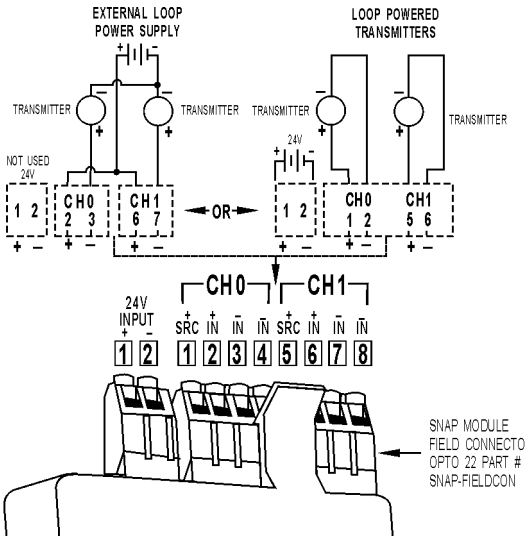
Since all inputs share a common reference, the module must be installed at the beginning or end of a typical 4–20 mA loop. If you are using both standard and self-sourcing transmitters, either put the transmitters on different modules or use different power supplies.

The following diagram shows wiring from the SNAP-AIMA-32 (or -FM) module to the SNAP-AIMA-HDB breakout rack. We strongly recommend that the breakout rack be used with the module. Miswiring of any point on the module can cause severe out-of-warranty damage. The breakout rack protects the module from many wiring errors.

NOTE: if you are using the module with loop power (2-wire) devices, connect to the SNAP-AIMA-HDB or SNAP-AIMA-HDB-FM rack. If you are using the module with self-powered devices (4-wire), do not use the SNAP-AIMA-HDB (or -FM) boards, which have a current limiter. Instead, wire to the SNAP-AIV-HDB or SNAP-AIV-HDB-FM.



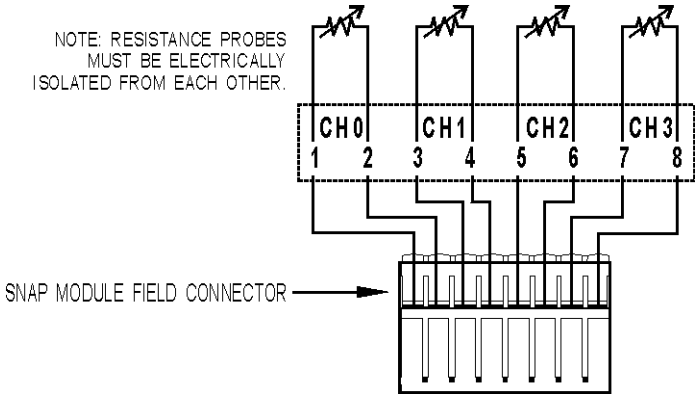
Wiring for SNAP-AIMA-iSRC and SNAP-AIMA-iSRC-FM isolated two-channel analog current inputs



The two channels are isolated from each other.

This module DOES supply loop excitation current.

Wiring for SNAP-AIR40K-4 analog thermistor input

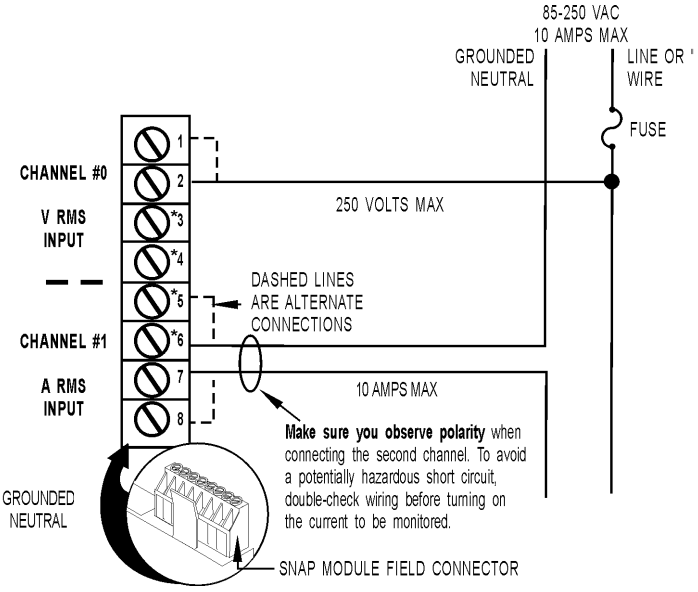


Wiring for SNAP-AIPM analog power monitoring input

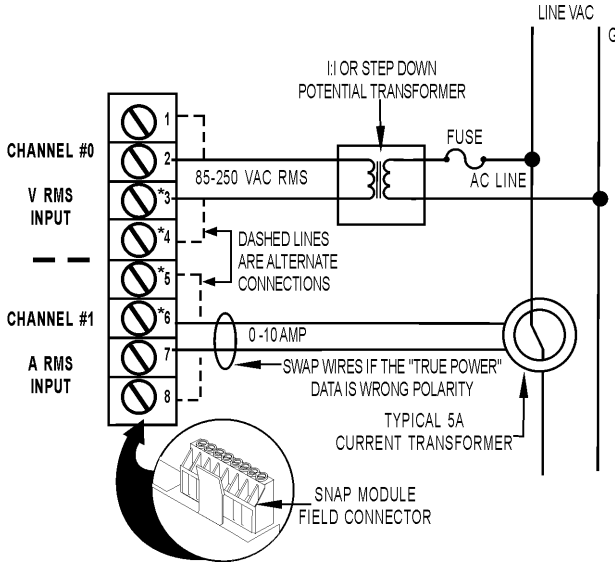
For more information about this module, see Opto 22 form #1453, the SNAP-AIPM data sheet.

CAUTION: These terminals share a common connection inside the module. **Make sure you observe polarity** when connecting the second channel. To avoid a potentially hazardous short, double-check wiring before turning on the current to be monitored.

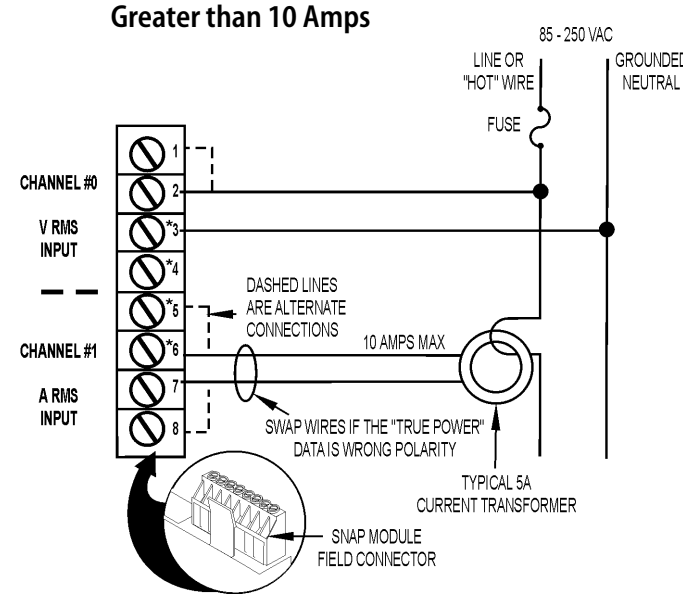
Standard Wiring Diagram



Measuring AC Line Current with a Current Transformer

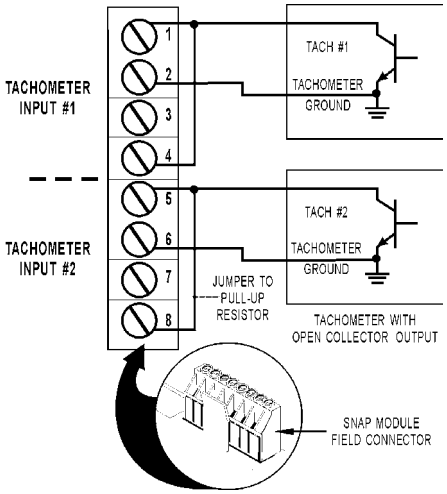


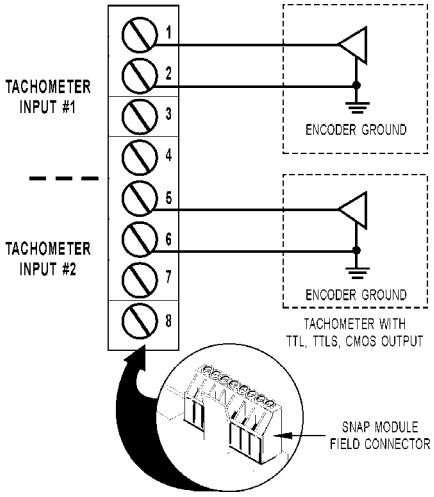
Measuring AC Line Current Greater than 10 Amps



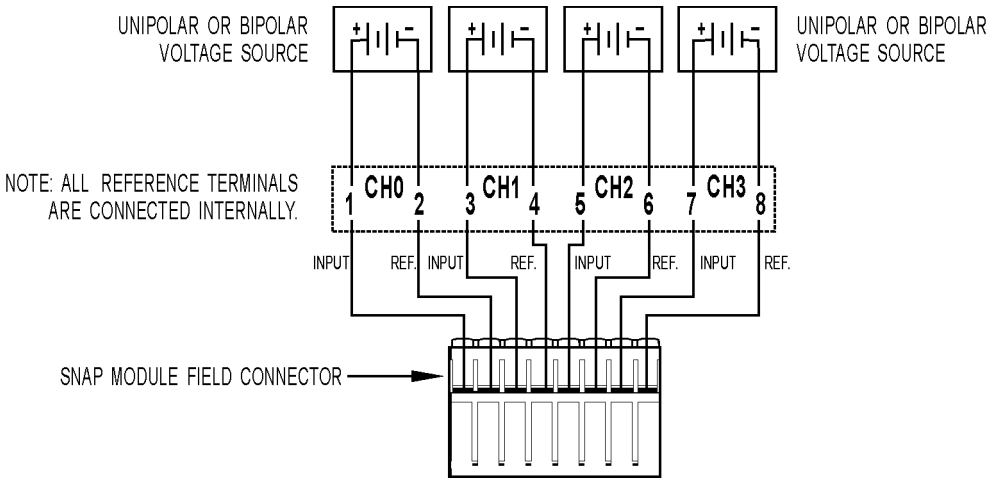
Wiring for SNAP-AIRATE analog rate input

Two possible wiring diagrams are shown:

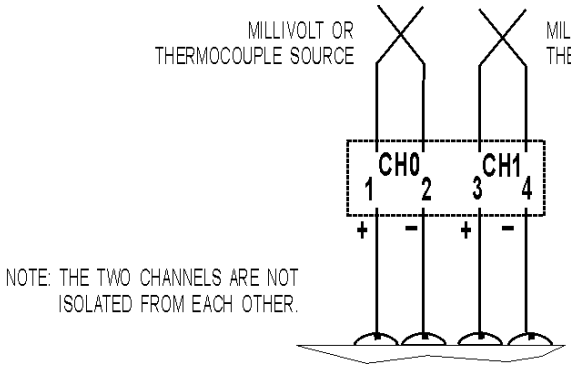




Wiring for SNAP-AIMV-4 and AIMV2-4 analog millivolt inputs

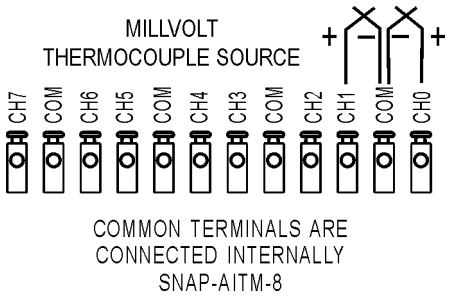


Wiring for SNAP-AITM and SNAP-AITM-2 analog thermocouple/millivolt inputs



Since both inputs share the same reference terminal, use isolated probes for thermocouple inputs.

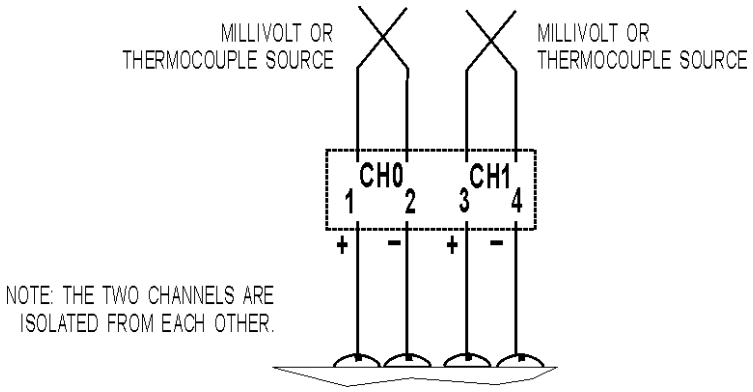
Wiring for SNAP-AITM-8 and SNAP-AITM-8-FM analog thermocouple/millivolt inputs



NOTE: For best accuracy, wire all points before calibrating, and short all unused channels.

Since all inputs share the same reference terminal, use isolated probes for thermocouple inputs.

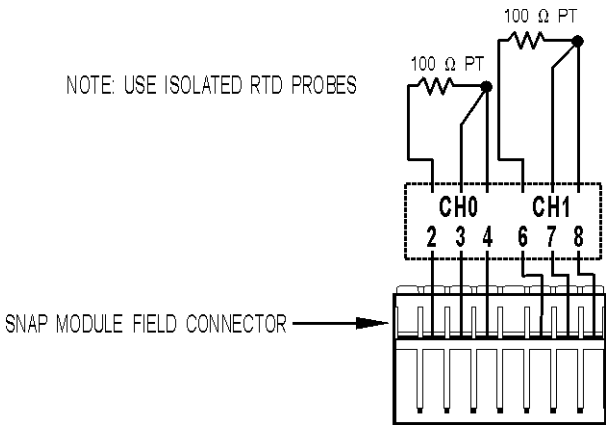
Wiring for SNAP-AITM-i and SNAP-AITM2-i isolated analog thermocouple/millivolt inputs

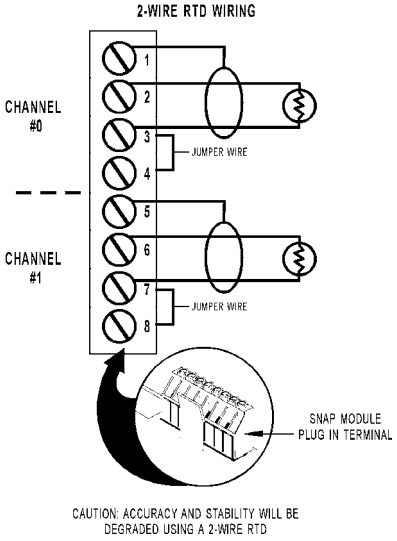


Since these channels do not share any common connections, grounded sensors and field devices may be used with them.

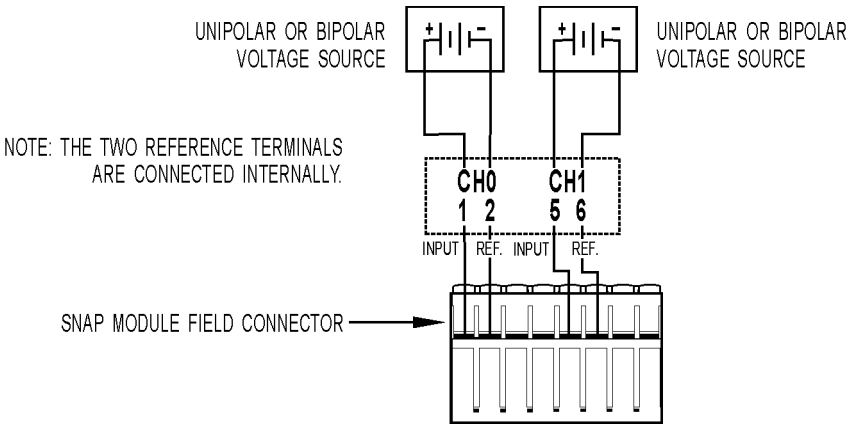
Wiring for SNAP-AIRTD analog RTD input

The SNAP-AIRTD is designed for three-wire connections, shown in the diagram at right.

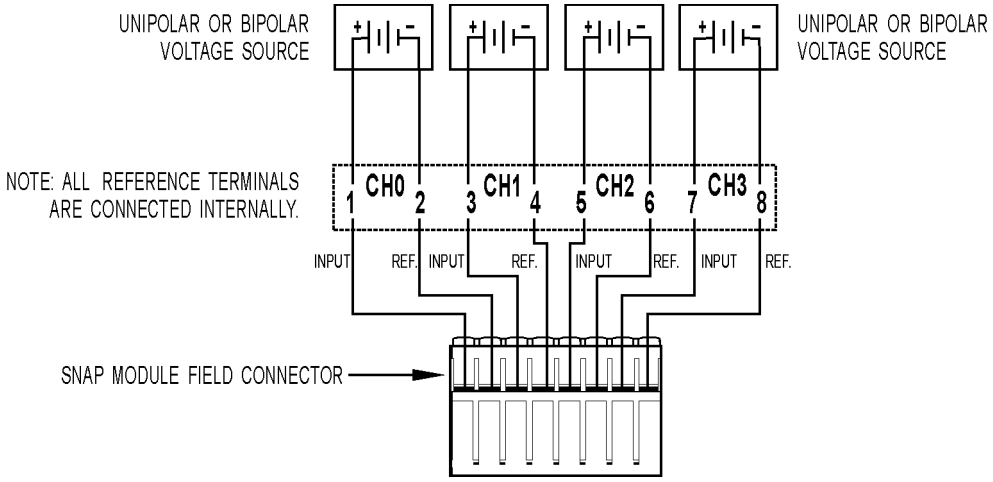




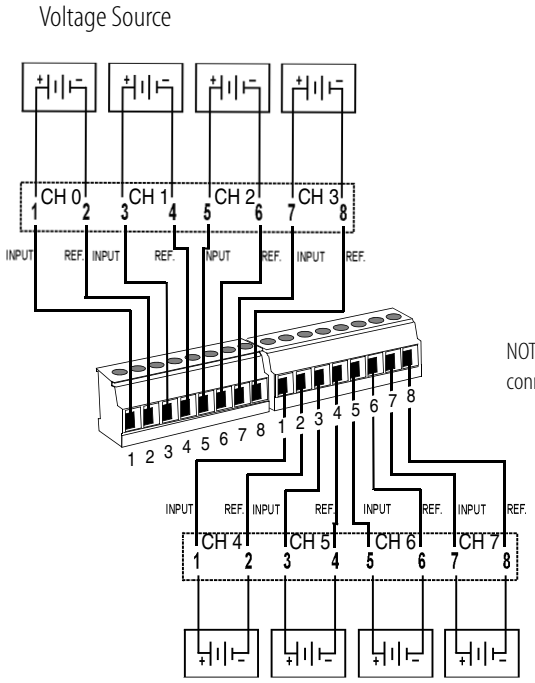
Wiring for SNAP-AIV two-channel analog voltage input



Wiring for SNAP-AIV-4 four-channel analog voltage input

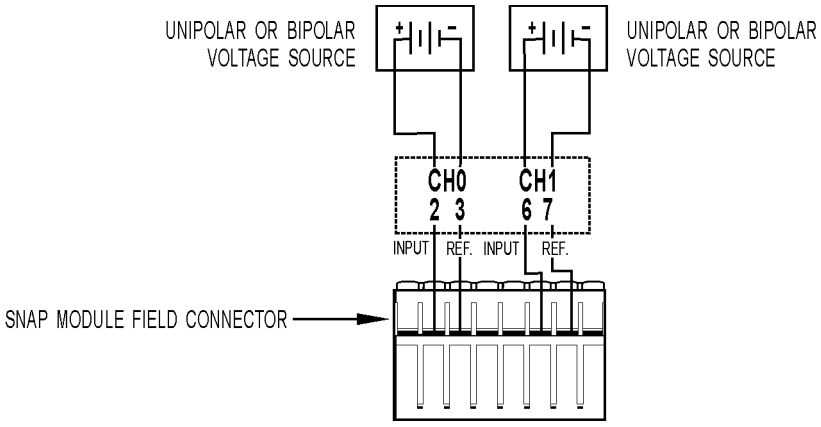


Wiring for SNAP-AIV-8 eight-channel analog voltage input



NOTE: Terminals 2, 4, 6, and 8 on both connectors are connected internally.

Wiring for SNAP-AIV-i and SNAP-AIV2-i isolated two-channel analog voltage input



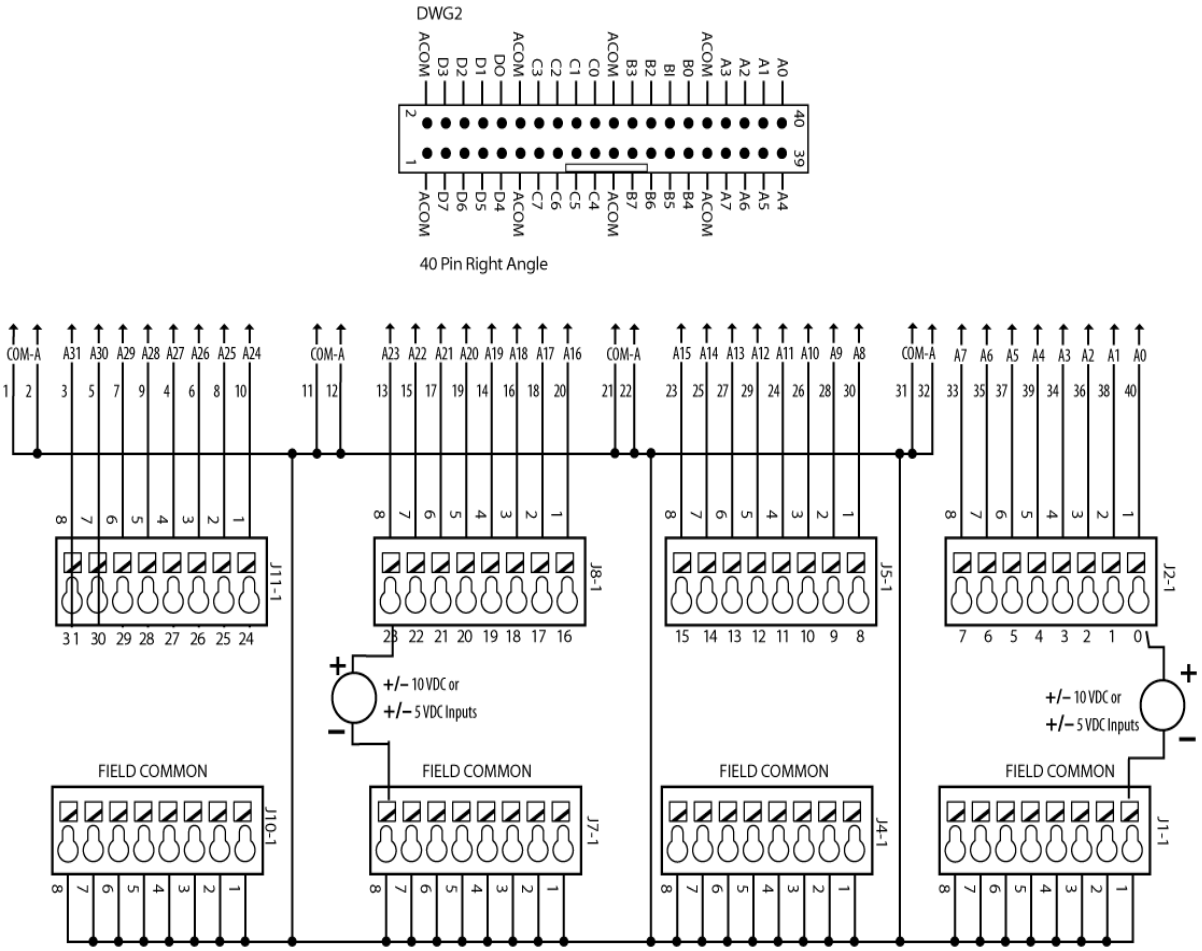
The two channels are isolated from each other. Since these channels do not share any common connections, grounded sensors and field devices may be used with them.

Wiring for SNAP-pH/ORP analog input

Input connections for the SNAP-pH/ORP are made through standard BNC connectors located on the top of the module. The two channels are isolated from each other; they do not share any field connection.

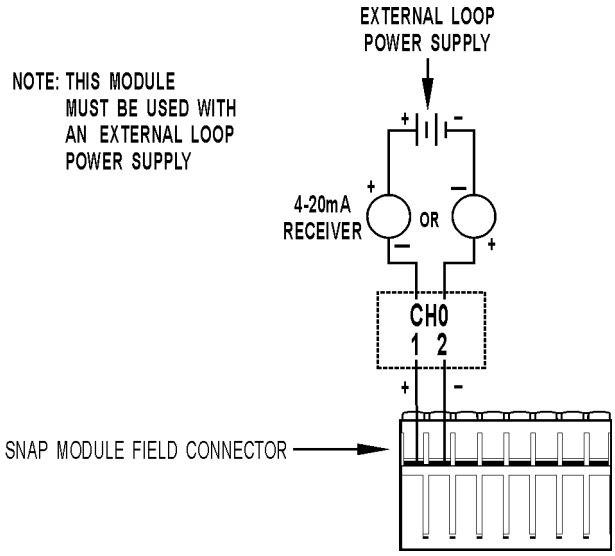
Wiring for SNAP-AIV-32 and SNAP-AIV-32-FM thirty-two-channel analog voltage inputs

The following diagram shows wiring from the SNAP-AIV-32 module to the SNAP-HDB-AIV breakout rack. Note that all channels share a common reference terminal.

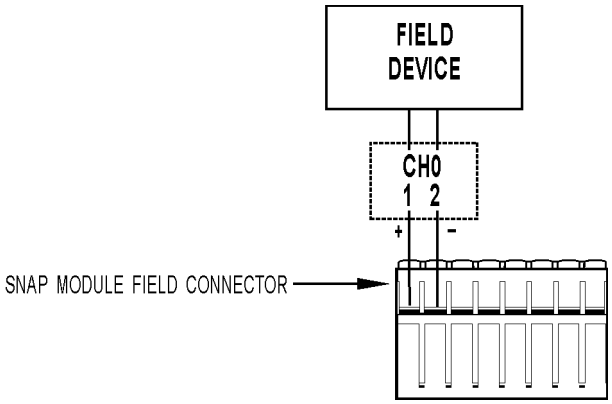


Analog Output Modules

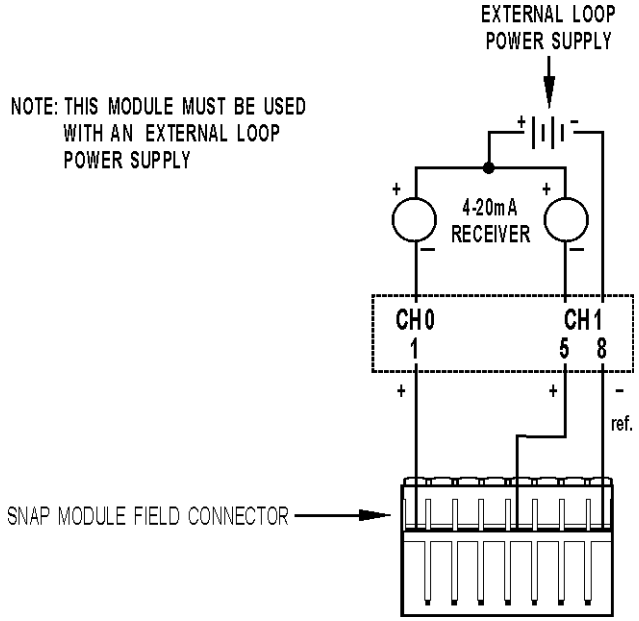
Wiring for the SNAP-AOA-3 single-channel analog current output



Wiring for the SNAP-AOV-5 single-channel analog voltage outputs

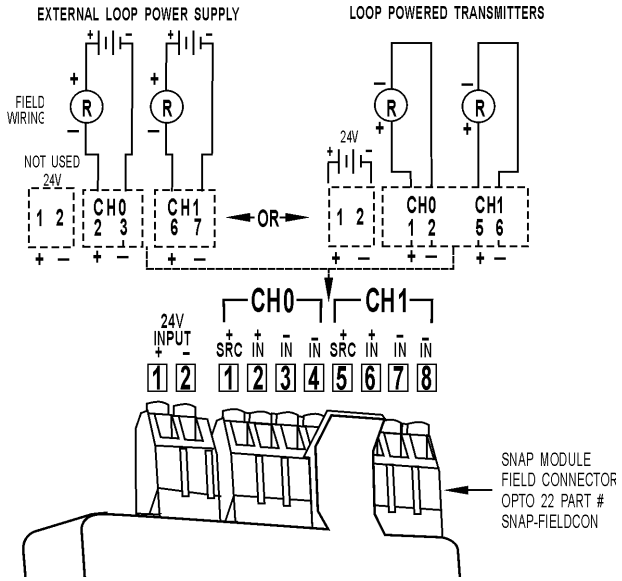


Wiring for the SNAP-AOA-23 dual-channel analog current output



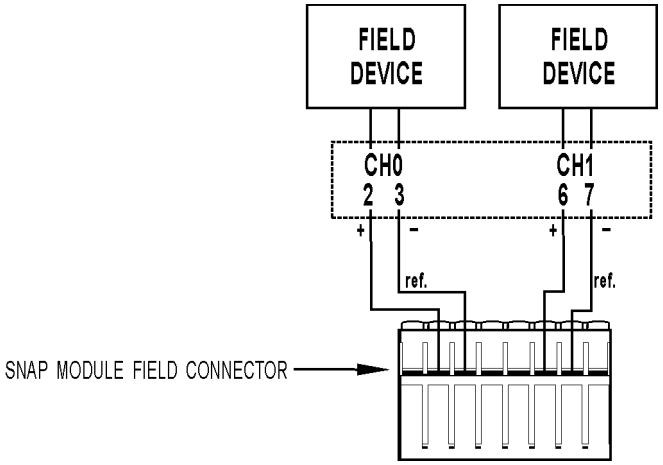
Both channels share a common reference terminal.

Wiring for the SNAP-AOA-23-iSRC and SNAP-AOA-23-iSRC-FM isolated dual-channel analog current outputs



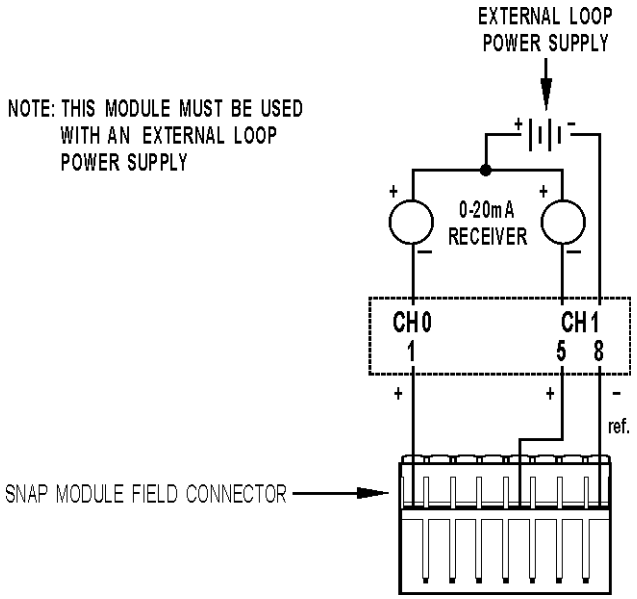
The module includes built-in loop sourcing capability. The two channels and their loop sources are isolated from each other.

Wiring for the SNAP-AOV-25 and SNAP-AOV-27 dual-channel analog voltage output



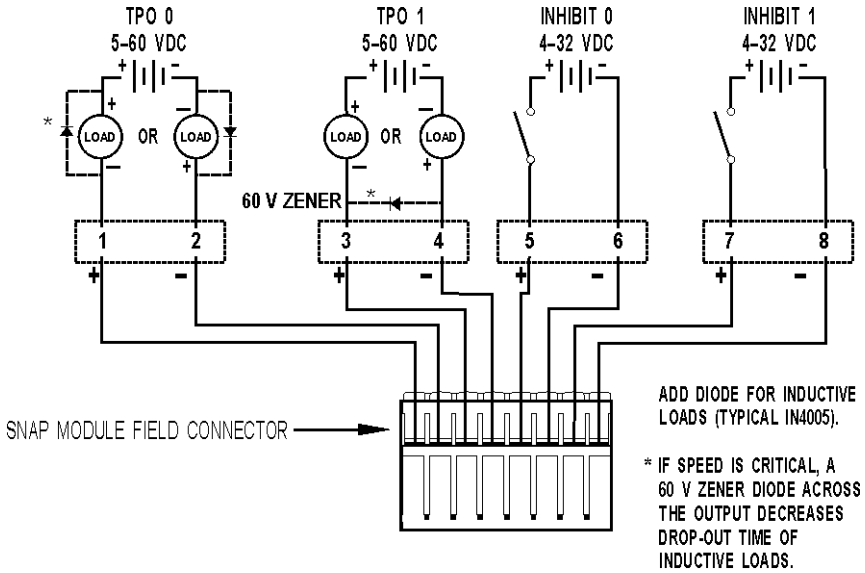
Both channels share a common reference terminal.

Wiring for the SNAP-AOA-28 dual-channel analog current output



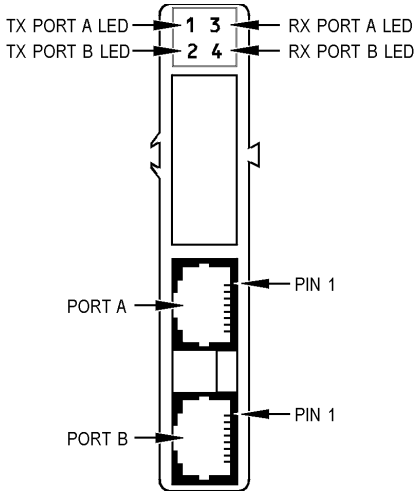
Both channels share a common reference terminal.

Wiring for the SNAP-AOD-29 dual-channel analog time-proportional digital output



Serial Communication Modules

Wiring for the SNAP-SCM-232 serial communication module

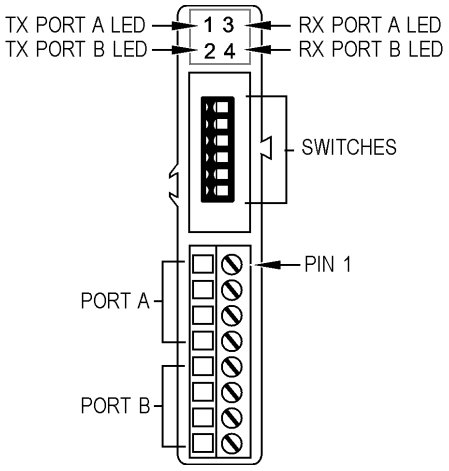


Pinouts for RJ-45 connectors on the SNAP-SCM-232:

1	Not used
2	RX (receive data)
3	TX (transmit data)
4	RTS (request to send)
5	GND (signal ground)
6	Not used
7	Not used
8	CTS (clear to send)

Refer to Opto 22 form #1191, the *SNAP Serial Communication Module User's Guide*, for more information.

Wiring for the SNAP-SCM-485-422 serial communication module



Pinouts for Two-Wire SNAP-SCM-485

Pin	Port	Description
1	A	Vcc
2	A	TX/RX +
3	A	TX/RX -
4	A	Sig Gnd
5	B	Vcc
6	B	TX/RX +
7	B	TX/RX -
8	B	Sig Gnd

Pinouts for Four-Wire SNAP-SCM-485

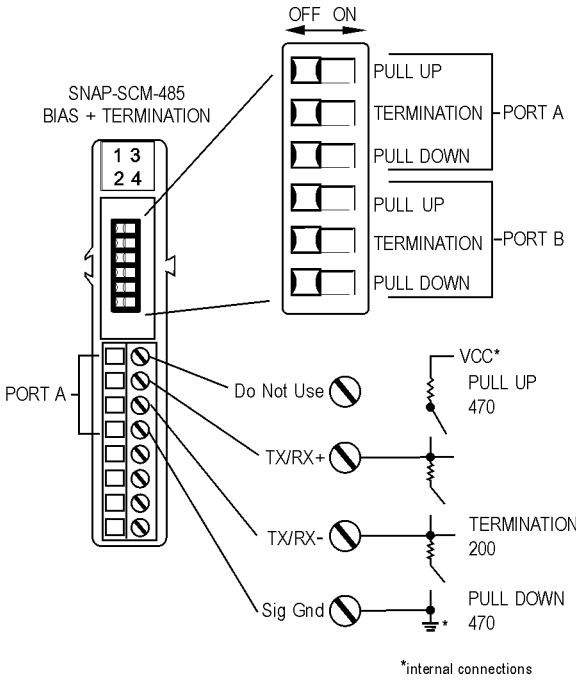
Pin	Port	Description
1	A	Vcc
2	A	TX +
3	A	TX -
4	A	Sig Gnd
5	A	Vcc
6	A	RX +
7	A	RX -
8	A	Sig Gnd

NOTE: Vcc on the SNAP-SCM-485 is 5 VDC and is supplied by the module itself. Do not use this voltage to power another device, as it can interfere with normal module operation.

Use the small switches on the top of the module to provide bias or termination on the RS-485 network as required. If the port is physically the first or last device on the RS-485 network, provide termination by moving the Term switch to ON. Also provide bias at one point on the network by moving both the Up and Down switches to ON.

Bias and termination switches are shown in the diagram at right.

Refer to Opto 22 form #1191, the *SNAP Serial Communication Module User's Guide*, for more information.



NOTE: Vcc on the SNAP-SCM-485 is 5 VDC and is supplied by the module itself. Do not use this voltage to power another device, as it can interfere with normal module operation.

Wiring for the SNAP-SCM-MCH16 motion control module

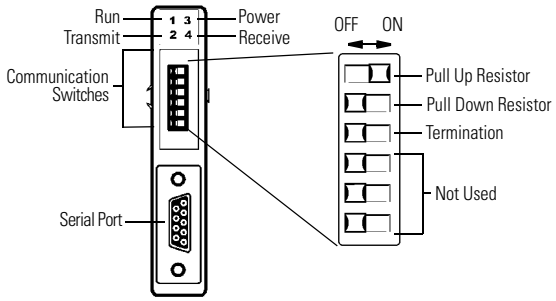
The SNAP-SCM-MCH16 module is part of the SNAP Motion Control Subsystem. Wiring, bias and termination, and other settings may depend on your system. For instructions, see Opto 22 form #1673, the *SNAP PAC Motion Control User's Guide*.

Wiring for the SNAP-SCM-PROFI serial communication module

Communication switches are shown in the diagram at right. If you are using an official PROFIBUS cable, termination is provided in the cable; therefore, switch the termination to ON in the cable and move the Term switch to OFF in the SNAP-SCM-PROFI module.

See the *SNAP Serial Communication Module User's Guide* (form #1191) for more information.

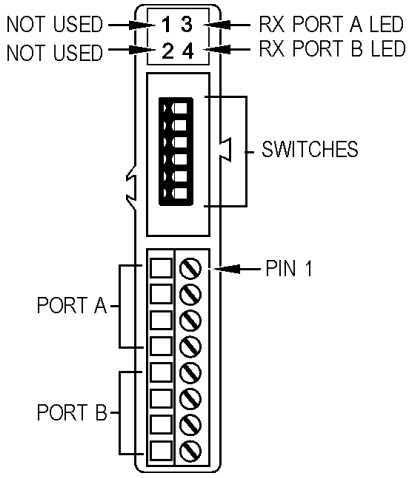
SNAP-SCM-PROFI Top View



Wiring for the SNAP-SCM-W2 serial communication module

NOTE: Use with SNAP PAC R-series, SNAP Ethernet, or SNAP Ultimate only.

SNAP-SCM-W2 Top View



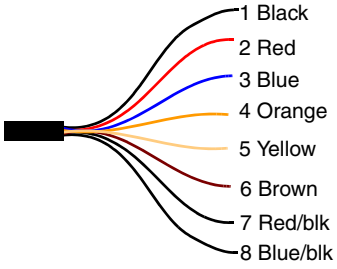
Pinouts for SNAP-SCM-W2

Pin	Port	Color	Description
1	A	Black	Common
2	A	White	Data One
3	A	Green	Data Zero
4	A	--	Not used
5	B	Black	Common
6	B	White	Data One
7	B	Green	Data Zero
8	B	--	Not used

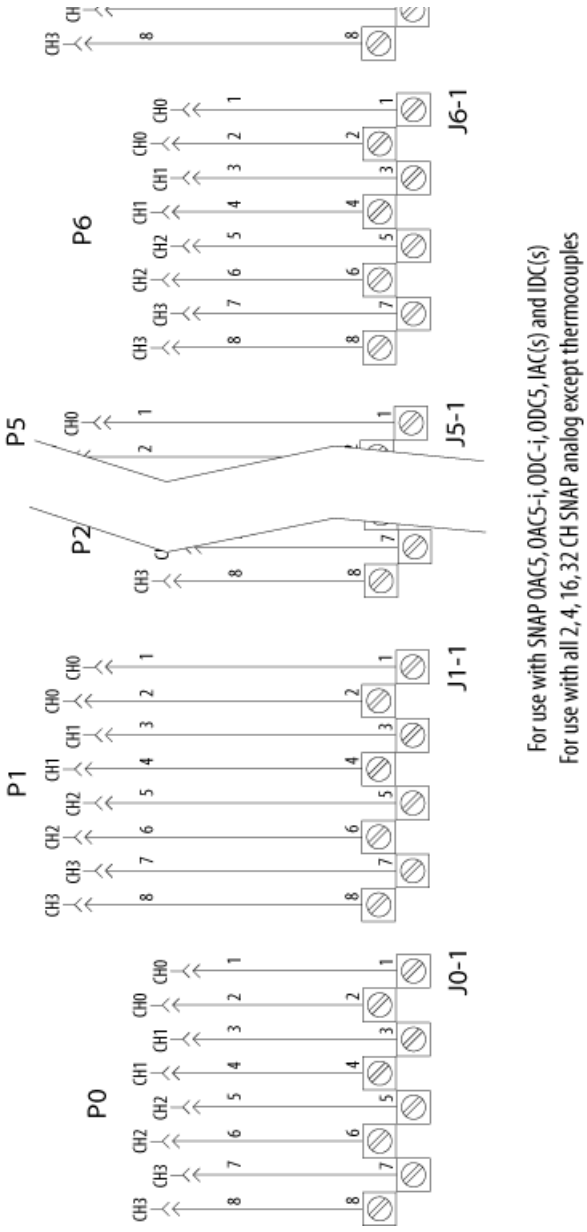
Wiring SNAP TEX Cables and Breakout Boards

Use these diagrams together with wiring diagrams for individual I/O modules on the previous pages.

Wiring for SNAP-TEX-32 Breakout Board



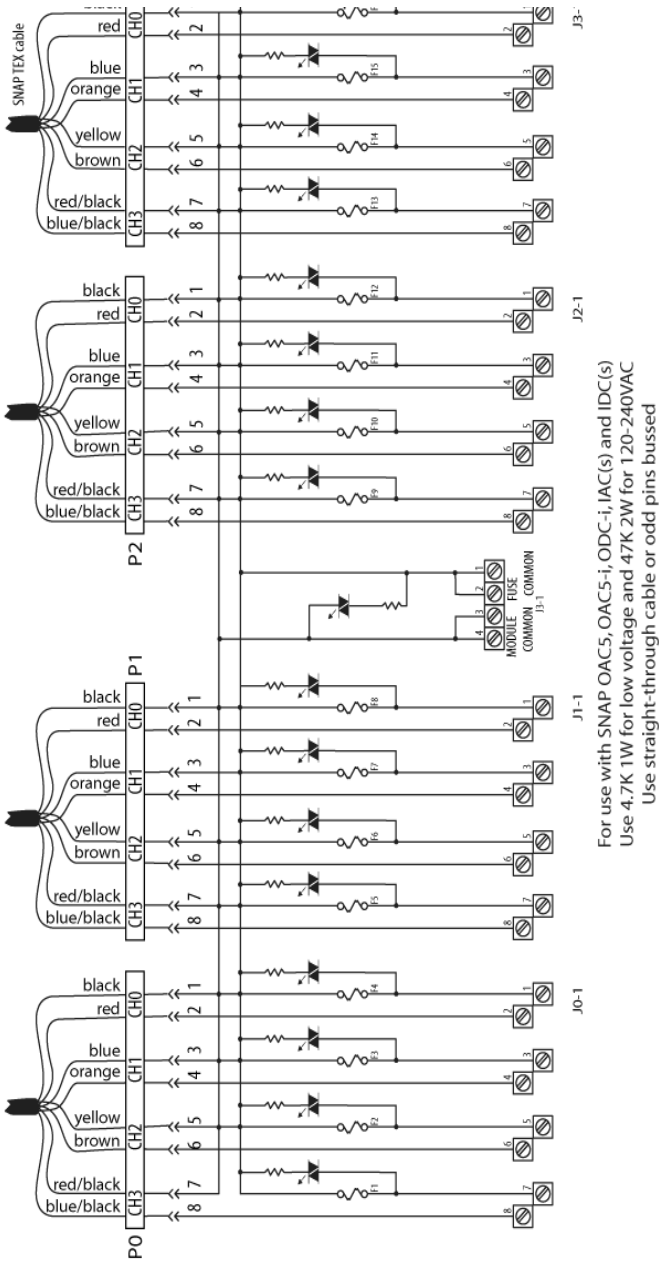
This diagram shows wiring with a SNAP-TEX cable going to a 4-channel module. If you are using the breakout board with other cables going to 16- or 32-channel modules, see the cable's data sheet for wire colors and wiring details.



Wiring for SNAP-TEX-FB16-H and SNAP-TEX-FB16-L Breakout Boards

This diagram shows wiring with SNAP-TEX cables going to 4-channel modules. If you are using the breakout board with other cables going to 16- or 32-channel modules, see the cable's data sheet for wire colors and wiring details.

CAUTION: Do NOT use the SNAP-TEX-CBE6 (even pins commoned) cable with this board. The board has odd pins commoned.



Wiring for SNAP-TEX-MR10-4 and SNAP-TEX-MR16-10 Breakout Boards

The example below shows wiring from the first two points of a SNAP-ODC5-i output module to a SNAP-TEX-MR10-4 board. Wire colors shown are for a SNAP-TEX-CBO6 cable. Wiring is similar for a SNAP-TEX-MR10-16 board, which has 16 channels rather than four.

These boards can also be used with other modules and cables; see the compatibility tables starting on page 38.