

SNAP TEX Cables and Breakout Boards

Features

- Extend the terminals on your SNAP I/O modules for easier, cleaner wiring to field devices.
- Six-foot (1.8 meter) wiring cables plug into tops of I/O modules for quick replacement.
- Breakout boards offer options such as fusing, power to loads, and mechanical relays.
- Specialty cables integrate older G4 digital I/O with SNAP PAC I/O.

Description

SNAP TEX cables and breakout boards are part of the SNAP TEX family of wiring and mounting accessories. These parts save time and expense during installation, maintenance, and debugging by reducing the time and effort required to wire field devices to SNAP I/O modules.

Choose the cables and breakout boards for your modules based on the table that starts on [page 2](#).

Specifications, dimensions, and wiring diagrams begin on [page 5](#).

SNAP TEX Cables

SNAP TEX cables provide convenient connections from I/O modules to field wiring. Most cables are designed to connect to breakout

Part Numbers

Part	Description
Cables	
SNAP-TEX-CBO6	6 ft. (1.8 m), 8-wire cable for SNAP I/O modules. Odd terminals commoned.
SNAP-TEX-CBE6	6 ft. (1.8 m), 8-wire cable for SNAP I/O modules. Even terminals commoned.
SNAP-TEX-CBS6	6 ft. (1.8 m), 8-wire cable for SNAP I/O modules. Straight-through; no common terminals.
SNAP-HD-ACF6	6 ft. (1.8 m) wiring harness assembly for SNAP 16-point digital modules
SNAP-HD-BF6	6 ft. (1.8 m) wiring harness for 32-channel modules and breakout boards.
SNAP-HD-CBF6	6 ft. (1.8 m) wiring harness with flying leads for most 32-point modules
SNAP-HD-G4F6	6 ft. (1.8 m) header cable for SNAP-ODC-32-SNK digital modules and G4PB16 mounting racks



SNAP TEX Family

boards; some cables have flying leads for direct connection to field devices.

SNAP TEX Breakout Boards

SNAP TEX breakout boards move terminals away from the crowded rack area for easier installation and maintenance. Some breakout boards, such as the SNAP-AIMA-HDB, work only with specific modules; others are designed to be used with several types of modules. See the tables starting on [page 2](#) to determine the breakout board and cable harness to use for your modules.

Part Numbers (continued)

Part	Description
Breakout Boards	
SNAP-TEX-32	32-point breakout board for SNAP I/O modules
SNAP-TEX-FB16-H	16-point breakout board for SNAP I/O modules, with fuses, fuse-blown indicators, & bussed power (120–240 V).
SNAP-TEX-FB16-L	16-point breakout board for SNAP I/O modules, with fuses, fuse-blown indicators, & bussed power (12–24 V).
SNAP-TEX-MR10-4	Mechanical relay breakout board for a 4-channel SNAP digital output module
SNAP-TEX-MR10-16	Mechanical relay breakout board for one high-density or four 4-channel SNAP digital output modules
SNAP-IDC-HDB SNAP-IDC-HDB-FM*	Fused breakout board for SNAP 32-point digital input modules
SNAP-ODC-HDB SNAP-ODC-HDB-FM*	Fused breakout board for SNAP 32-point digital output modules
SNAP-AIMA-HDB SNAP-AIMA-HDB-FM*	Breakout boards for SNAP-AIMA-32 and SNAP-AIMA-32-FM analog input modules
SNAP-AIV-HDB SNAP-AIV-HDB-FM*	Breakout boards for SNAP-AIV-32 and SNAP-AIV-32-FM analog modules

* Factory Mutual approved

SNAP TEX Cables and Breakout Boards

Module, Breakout Board, and Cable Compatibility Charts

Look in the left column for the module you have. Choose the breakout board in the right columns. Compatible cables are shown in the table cells in the center.

4-Channel Digital Modules

Module	Breakout Board		
	SNAP-TEX-32	SNAP-TEX-FB16-H SNAP-TEX-FB16-L	SNAP-TEX-MR10-4 SNAP-TEX-MR10-16
Digital input modules—4-channel			
SNAP-IAC5 SNAP-IAC5A SNAP-IAC5AFM SNAP-IAC5FM SNAP-IAC5MA SNAP-IDC5 SNAP-IDC5-FAST-A SNAP-IDC5-HT SNAP-IDC5-SW SNAP-IDC5-SW-NC SNAP-IDC5D SNAP-IDC5DFM SNAP-IDC5FAST SNAP-IDC5FM SNAP-IDC5G SNAP-IDC5MA SNAP-IDC5Q	SNAP-TEX-CBE6 SNAP-TEX-CBO6 SNAP-TEX-CBS6	SNAP-TEX-CBO6 SNAP-TEX-CBS6	Not used for inputs
Digital output modules—4-channel			
SNAP-ODC5-I SNAP-ODC5-IFM SNAP-ODC5A-I SNAP-ODC5A-IFM	SNAP-TEX-CBS6 SNAP-TEX-CBO6 SNAP-TEX-CBE6	SNAP-TEX-CBS6 SNAP-TEX-CBO6	SNAP-TEX-CBO6
SNAP-OAC5-I SNAP-OAC5-IFM SNAP-OAC5MA SNAP-ODC5MA	SNAP-TEX-CBS6 SNAP-TEX-CBO6 SNAP-TEX-CBE6	SNAP-TEX-CBS6 SNAP-TEX-CBO6	Not used
SNAP-ODC5SRC	SNAP-TEX-CBS6 SNAP-TEX-CBO6	SNAP-TEX-CBS6 SNAP-TEX-CBO6	SNAP-TEX-CBO6 SNAP-TEX-CBS6
SNAP-OAC5 SNAP-OAC5FM SNAP-ODC5ASNK SNAP-ODC5R SNAP-ODC5R5 SNAP-ODC5R5FM SNAP-ODC5RFM SNAP-ODC5SNK SNAP-ODC5SNKFM SNAP-ODC5SRCFM	SNAP-TEX-CBS6 SNAP-TEX-CBO6	SNAP-TEX-CBS6 SNAP-TEX-CBO6	Not used

SNAP TEX Cables and Breakout Boards

Module, Breakout Board, and Cable Compatibility Charts (continued)

Look in the left column for the module you have. Choose the breakout board in the right columns. Compatible cables are shown in the table cells in the center.

1-, 2-, and 4-Channel Analog Modules

Module	Breakout Board	
	SNAP-TEX-32	SNAP-TEX-FB16-H SNAP-TEX-FB16-L
Analog input modules (not thermocouples)		
SNAP-AIMV2-4 SNAP-AIV-4 SNAP-AIR40K-4 SNAP-AIMA-4 SNAP-AIMV-4	SNAP-TEX-CBS6 SNAP-TEX-CBE6	Not used for analog modules
SNAP-AIMA SNAP-AIV-72 SNAP-AIVRMS SNAP-AIV SNAP-AIARMS SNAP-AICTD SNAP-AIRATE SNAP-AIRTD SNAP-AICTD-4 SNAP-AIMA-i SNAP-AIMA2-i SNAP-AIV-i SNAP-AIV2-i SNAP-AIARMS-i SNAP-AIARMS-i-FM SNAP-AIVRMS-i SNAP-AIVRMS-i-FM SNAP-AIPM	SNAP-TEX-CBS6	Not used for analog modules
SNAP-AILC SNAP-AILC-2 SNAP-pH/ORP SNAP-AIMA-iSRC SNAP-AIMA-iSRC-FM SNAP-AITM-i * SNAP-AITM2-i * SNAP-AITM * SNAP-AITM-2 *	No cable available	Not used for analog modules
Analog output modules		
SNAP-AOA-23 SNAP-AOA-28 SNAP-AOA-3 SNAP-AOV-25 SNAP-AOV-27 SNAP-AOV-5 SNAP-AOA-23-iSRC SNAP-AOA-23-iSRC-FM	SNAP-TEX-CBS6	Not used for analog modules
SNAP-AOD-29	SNAP-TEX-CBS6 SNAP-TEX-CBE6	Not used for analog modules

* Do not use breakout boards with thermocouples.

SNAP TEX Cables and Breakout Boards

Module, Cable, and Breakout Board Compatibility Charts (continued)

Look in the left column for the module you have. Choose the breakout board in the right columns. Compatible cables are shown in the table cells in the center.

High-Density Digital Modules

Module	Breakout Board					Without a breakout board
	SNAP-TEX-32	SNAP-TEX-FB16-H SNAP-TEX-FB16-L	SNAP-TEX-MR10-4 SNAP-TEX-MR10-16	SNAP-IDC-HDB SNAP-IDC-HDB-FM	SNAP-ODC-HDB SNAP-ODC-HDB-FM	
SNAP-IAC-16 SNAP-IAC-A-16 SNAP-IAC-K-16 SNAP-IDC-16 SNAP-IDC-HT-16	SNAP-HD-ACF6 (2 modules/board)	SNAP-HD-ACF6				SNAP-HD-ACF6
SNAP-IDC-32 SNAP-IDC-32-FM SNAP-IDC-32N	SNAP-HD-CBF6	SNAP-HD-CBF6 (2 boards/module)		SNAP-HD-BF6		SNAP-HD-CBF6
SNAP-ODC-32-SNK SNAP-ODC-32-SNK-FM	SNAP-HD-CBF6	SNAP-HD-CBF6 (2 boards/module)	Do not use		SNAP-HD-BF6	SNAP-HD-CBF6
SNAP-ODC-32-SRC SNAP-ODC-32-SRC-FM			SNAP-HD-CBF6			

Analog Modules with More Than 4 Points

Module	Breakout Board							Without a breakout board
	SNAP-TEX-32	SNAP-TEX-FB16-H SNAP-TEX-FB16-L	SNAP-TEX-MR10-4 SNAP-TEX-MR10-16	SNAP-IDC-HDB SNAP-IDC-HDB-FM	SNAP-ODC-HDB SNAP-ODC-HDB-FM	SNAP-AIMA-HDB SNAP-AIMA-HDB-FM	SNAP-AIV-HDB SNAP-AIV-HDB-FM	
SNAP-AITM-8 SNAP-AITM-8-FM SNAP-AIV-8 SNAP-AIMA-8 SNAP-AICTD-8	Can be used; no cable currently available	Not used with analog modules						
SNAP-AIV-32 SNAP-AIV-32-FM	SNAP-HD-CBF6	Not used with analog modules					SNAP-HD-BF6	SNAP-HD-CBF6
SNAP-AIMA-32 SNAP-AIMA-32-FM	Not recommended				SNAP-HD-BF6			Not recommended

SNAP TEX Cables and Breakout Boards

SNAP-TEX-CBO6, SNAP-TEX-CBE6, SNAP-TEX-CBS6 Cables

These three cables provide neat, protected wiring from the top of the module to the breakout board. Each cable snaps into the top of one module and terminates at the breakout board with 18-gauge, color-coded flying leads, already stripped and ready for wiring. The leads attach easily to the breakout board with spring connectors.

SNAP-TEX-CBO6—Odd-numbered terminals are commoned.

SNAP-TEX-CBE6—Even-numbered terminals are commoned.

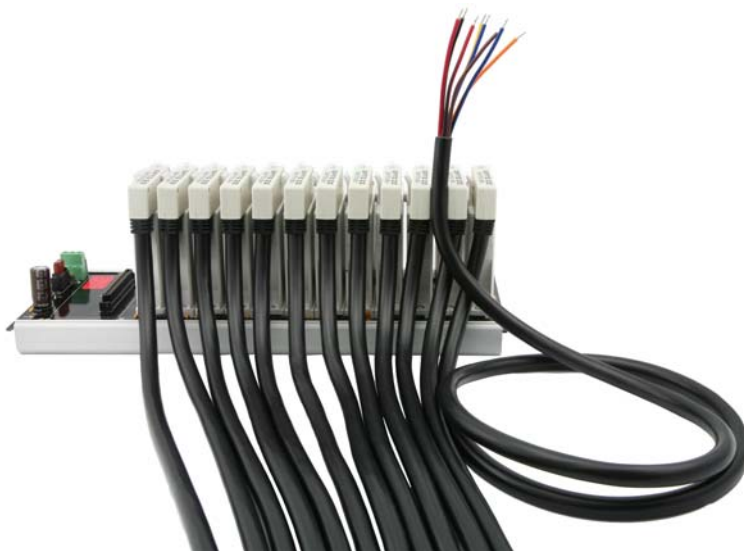
SNAP-TEX-CBS6—No common terminals; wiring is straight through.

See the table starting on [page 2](#) to determine the correct cable for your module and breakout board.



This photo shows the contrast between a regularly wired SNAP PAC rack (at upper left) and one using SNAP-TEX-CBE6, -CBO6, and -CBS6 cables (at lower right).

The cables protect top-of-module connections and wires, and make it easier to follow wiring to field devices.



Cables terminate in color-coded flying leads, already stripped and ready for wiring.

Installation, maintenance, and troubleshooting are faster and simpler using the SNAP TEX cables.

SNAP TEX Cables and Breakout Boards

SNAP-TEX-CBO6, SNAP-TEX-CBE6, SNAP-TEX-CBS6 Cables (continued)

Cable Specifications

Feature	SNAP-TEX-CBO6	SNAP-TEX-CBE6	SNAP-TEX-CBS6
Cable length	6 feet (1.8 meters)	6 feet (1.8 meters)	6 feet (1.8 meters)
Connector	8 pins, 0.2 in. (5.08 mm) center-to-center	8 pins, 0.2 in. (5.08 mm) center-to-center	8 pins, 0.2 in. (5.08 mm) center-to-center
Wires	8 pre-stripped, color-coded, 18 gauge	8 pre-stripped, color-coded, 18 gauge	8 pre-stripped, color-coded, 18 gauge
Bussing	Odd-numbered pins connected	Even-numbered pins connected*	No connected
Agency Approvals	CE, RoHS, DFARS	CE, RoHS, DFARS	CE, RoHS, DFARS
Warranty	30 months	30 months	30 months

*Do NOT USE the CBE6 with a SNAP-TEX-FB16-H or -L breakout board. The FB16s have odd-numbered pins connected.

Wire Colors

Point	Pin	Color wire
0	1	black
	2	red
1	3	blue
	4	orange

Point	Pin	Color wire
2	5	yellow
	6	brown
3	7	red/black
	8	blue/black



Compatible SNAP I/O Modules

See table starting on [page 2](#) for detailed module, cable, and breakout board compatibility.

Modules	SNAP-TEX-CBO6	SNAP-TEX-CBE6	SNAP-TEX-CBS6
Use with	SNAP 4-channel digital input and output modules	SNAP 4-channel digital input modules Isolated and -MA digital output modules 4-channel analog modules, except SNAP-AICTD-4 SNAP-AOD-29	SNAP 4-channel digital input and output modules Most 1-, 2-, and 4-channel analog modules
DO NOT use with	Thermocouples Analog modules Modules with more than 4 points	Fused digital output modules Thermocouples Analog modules not listed above Modules with more than 4 points	Thermocouples Modules with more than 4 points SNAP-AITM family, SNAP-pH/ORP, SNAP-AILC family, SNAP-AIMA-iSRC

SNAP TEX Cables and Breakout Boards

SNAP-HD-ACF6, SNAP-HD-CBF6, and SNAP-HD-BF6 Cables

The SNAP-HD-ACF6, SNAP-HD-CBF6, and SNAP-HD-BF6 cables connect 16- and 32-channel modules to field wiring or breakout boards. Each cable is 6 ft. (1.8 m) long.

The **SNAP-HD-ACF6** and the **SNAP-HD-CBF6** have connectors at one end that attach to the top of a module and flying leads at the other end for field wiring. The ACF6 is for 16-channel modules and the CBF6 is for 32-channel modules.

The **SNAP-HD-BF6** has connectors at both ends, one for a 32-channel module and the other for a suitable breakout rack.



SNAP-HD-CBF6



SNAP-HD-BF6

Cable Specifications

See table starting on [page 2](#) for detailed module, cable, and breakout board compatibility.

Feature	SNAP-HD-ACF6	SNAP-HD-CBF6	SNAP-HD-BF6
Cable length	6 feet (1.8 meters)	6 feet (1.8 meters)	6 feet (1.8 meters)
Connectors	Two-connector assembly at module end, each with 16 pins; flying leads at other end	One 40-pin connector at module end; flying leads at other end	One connector at module end; one connector at breakout board end
Wires	Pre-stripped, color-coded, 22-gauge wires	Pre-stripped, color-coded, 24-gauge wires	24 gauge wires
Use with	Modules: SNAP-IAC-16 SNAP-IAC-A-16 SNAP-IAC-K-16 SNAP-IDC-16 SNAP-IDC-HT-16	Modules: SNAP-IDC-32 SNAP-IDC-32-FM SNAP-IDC-32N SNAP-ODC-32-SNK SNAP-ODC-32-SNK-FM SNAP-ODC-32-SRC SNAP-ODC-32-SRC-FM SNAP-AIV-32 SNAP-AIV-32-FM	Modules to breakout boards (regular and -FM versions of all): SNAP-IDC-32 to SNAP-IDC-HDB SNAP-IDC-32N to SNAP-IDC-HDB SNAP-ODC-32-SNK to SNAP-ODC-HDB SNAP-ODC-32-SRC to SNAP-ODC-HDB SNAP-AIV-32 to SNAP-AIV-HDB SNAP-AIMA-32 to SNAP-AIMA-HDB
Agency Approvals	CE, RoHS, DFARS	CE, RoHS, DFARS	CE, RoHS, DFARS
Warranty	30 months	30 months	30 months

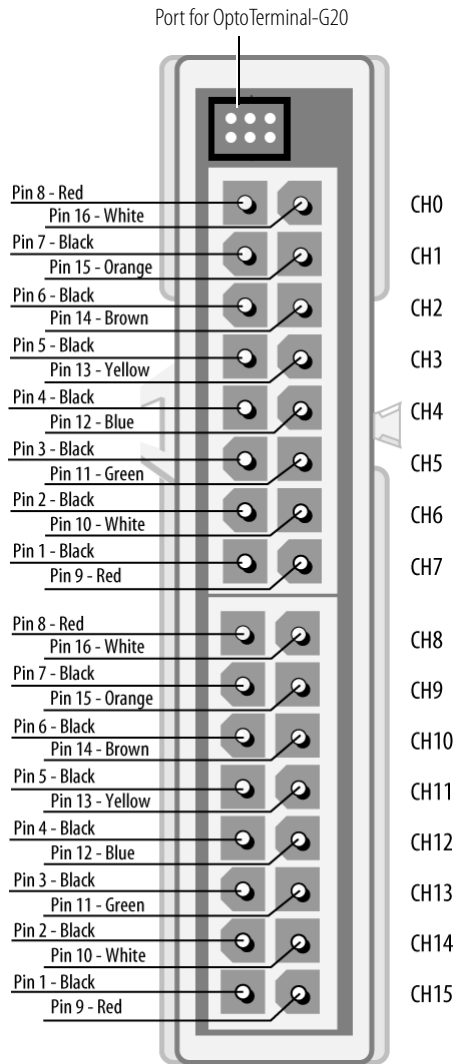
SNAP TEX Cables and Breakout Boards

SNAP-HD-ACF6, SNAP-HD-CBF6, and SNAP-HD-BF6 Cables (continued)

Wiring—From SNAP-HD-ACF6 Cable to SNAP 16-Point Digital Module

The following diagram shows 16-channel module connector wiring for the SNAP-HD-ACF6 wiring harness. Applies to the following modules (top view of module):

- SNAP-IDC-16
- SNAP-IDC-HT-16
- SNAP-IAC-16
- SNAP-IAC-A-16
- SNAP-IAC-K-16



SNAP TEX Cables and Breakout Boards

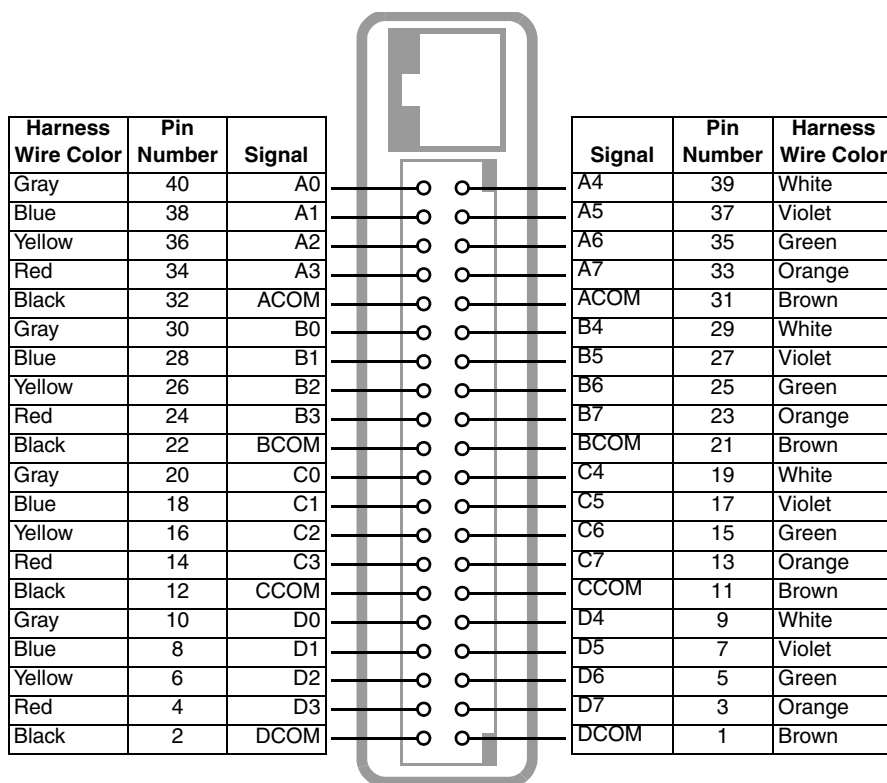
SNAP-HD-ACF6, SNAP-HD-CBF6, and SNAP-HD-BF6 Cables (continued)

Wiring—SNAP-HD-CBF6 Cable

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. Each set contains color-coded wires.

Set A			Set B			Set C			Set D		
Wires		Point	Wires		Point	Wires		Point	Wires		Point
A0	Gray	0	B0	Gray	8	C0	Gray	16	D0	Gray	24
A1	Blue	1	B1	Blue	9	C1	Blue	17	D1	Blue	25
A2	Yellow	2	B2	Yellow	10	C2	Yellow	18	D2	Yellow	26
A3	Red	3	B3	Red	11	C3	Red	19	D3	Red	27
A4	White	4	B4	White	12	C4	White	20	D4	White	28
A5	Violet	5	B5	Violet	13	C5	Violet	21	D5	Violet	29
A6	Green	6	B6	Green	14	C6	Green	22	D6	Green	30
A7	Orange	7	B7	Orange	15	C7	Orange	23	D7	Orange	31
ACOM	Blk/Brn	com	BCOM	Blk/Brn	com	CCOM	Blk/Brn	com	DCOM	Blk/Brn	com

The four sets relate to point numbers on the module as shown below.



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

SNAP TEX Cables and Breakout Boards

SNAP-HD-G4F6 Cable

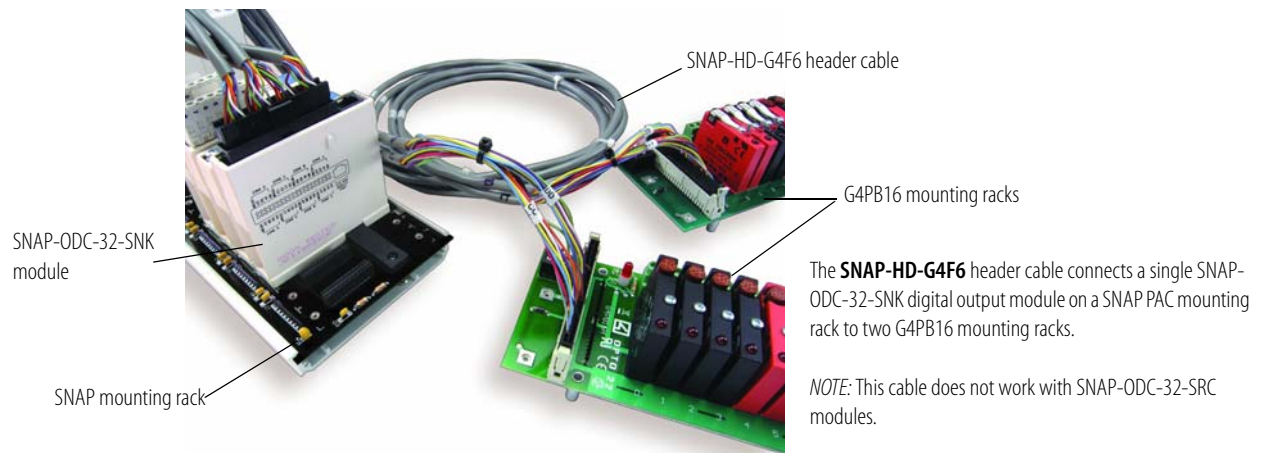
The SNAP-HD-G4F6 cable is used to connect a SNAP-ODC-32-SNK high-density digital (HDD) output module or a SNAP-IDC-32N digital input module to G4PB16 mounting racks in order to integrate older G4 (or even G1) digital output I/O systems with modern PAC Project software and SNAP PAC Ethernet-based controllers.

This connection makes available the G4 I/O's up to 3-amp switching and sensing capability, which can provide twelve times the 0.25 amp capability of the high-density digital modules themselves. (For

details of individual G4 module capabilities, see Opto 22 form #727, the *G4 Digital I/O Data Book*.)

The header cable connects two 16-channel mounting racks to one 32-channel digital module. The cable can also be used to connect G1 mounting racks with header connectors to these modules. See the table below for module and rack compatibility.

For more information on HDD modules, see form #1556, the *SNAP High-Density Digital Module Data Sheet*.



NOTE: For the SNAP-IDC-32N module, you must use 15 volt or 24 volt G1 or G4 modules. The 5 volt modules will not work.

SNAP-HD-G4F6 Cable—Compatible Modules and Racks

Cable	Module	Racks	Integrated I/O
SNAP-HD-G4F6	SNAP-ODC-32-SNK SNAP-ODC-32-SNK-FM SNAP-IDC-32N*	Outputs only: G4PB16 PB16H G4PB16H PB16HC G4PB1-HC	G4PB16L PB16L

* With the SNAP-IDC-32N module, use 15 volt or 24 volt G1 or G4 modules. The 5 volt modules will not work.

SNAP TEX Cables and Breakout Boards

SNAP-TEX-32, SNAP-TEX-FB16-H, SNAP-TEX-FB16-L Breakout Boards

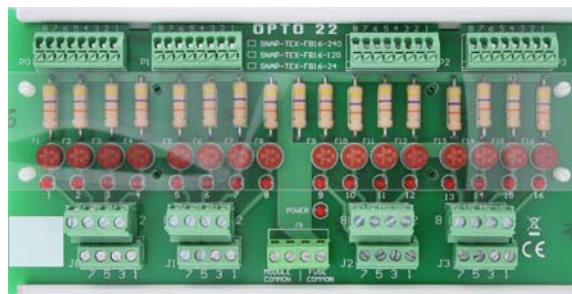
The **SNAP-TEX-32** is a simple breakout board with straight-through wiring. Designed primarily for 2- and 4-channel analog inputs/outputs and for 4-channel digital inputs, the breakout board is used with SNAP-TEX cables.

The SNAP-TEX-32 can also be used with 8-, 16-, or 32-channel SNAP analog modules (not thermocouples). See the table beginning on [page 2](#) for recommended cable and board combinations for your modules.

The **SNAP-TEX-FB16-H** and **SNAP-TEX-FB16-L** breakout boards provide a fuse and a fuse-blown indicator for each of their 16 channels. In addition, they provide power to loads: the SNAP-TEX-F16-H provides 120–240 volts, and the SNAP-TEX-F16-L provides 12–24 volts. Simply attach the power source to a single spot in the middle of the rack, and power goes out to solenoids or switches,

depending on the module you're using. These breakout boards are used primarily for digital inputs and outputs.

CAUTION: Odd pins on the SNAP-TEX-FB16-H and SNAP-TEX-FB16-L breakout boards are commoned. Use *only* straight-through or odd cables with these boards.



SNAP-TEX-FB16-H

Specifications

See the table beginning on [page 2](#) for recommended cable and board combinations.

Feature	SNAP-TEX-32	SNAP-TEX-FB16-H	SNAP-TEX-FB16-L
Use with I/O modules	2- or 4-channel analog inputs/outputs; 4-channel digital inputs/outputs *	4-channel digital inputs and outputs 16- and 32-ch digital inputs/outputs	4-channel digital inputs and outputs 16- and 32-ch digital inputs/outputs
Use with cables	SNAP-TEX-CBE6 (even pins connected), SNAP-TEX-CBO6 (odd pins connected), or SNAP-TEX-CBS6 (no connections), depending on module.	4-ch modules: SNAP-TEX-CBO6 (odd pins connected)** or SNAP-TEX-CBS6 (straight-through), depending on module. 16-ch modules: SNAP-HD-ACF6 32-ch modules: SNAP-HD-CBF6	4-ch modules: SNAP-TEX-CBO6 (odd pins connected)** or SNAP-TEX-CBS6 (straight-through), depending on module. 16-ch modules: SNAP-HD-ACF6 32-ch modules: SNAP-HD-CBF6
Connectors	32 spring connectors; accommodates eight 4-channel modules	16 spring connectors; accommodates four 4-channel modules	16 spring connectors; accommodates four 4-channel modules
Fusing	none	1 A, 250 V, fast-acting fuse for each I/O point (16 total). Replace with Opto 22 PN SNAP-FUSE1AC (Wickman PN 19373-1A)	1 A, 250 V, fast-acting fuse for each I/O point (16 total). Replace with Opto 22 PN SNAP-FUSE1AC (Wickman PN 19373-1A)
Indicators	none	1 LED per fuse (16 LEDs total)	1 LED per fuse (16 LEDs total)
Bussed power	none	120–240 V	12–24 V
Agency Approvals	CE, RoHS, DFARS	CE, RoHS, DFARS	CE, RoHS, DFARS
Warranty	30 months	30 months	30 months

* Can also be used with 8-, 16-, or 32-channel digital and analog inputs (not thermocouples).

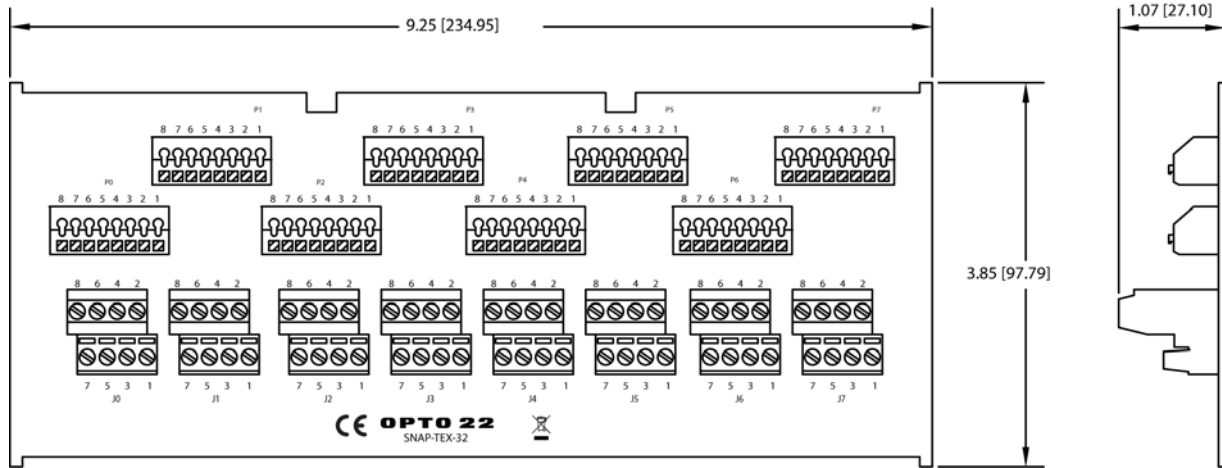
** **IMPORTANT:** Do NOT USE the FB16 breakout boards with a SNAP-TEX-CBE6 cable. The board has odd pins connected; the cable has even pins connected.

SNAP TEX Cables and Breakout Boards

SNAP-TEX-F32, SNAP-TEX-FB16-H, SNAP-TEX-FB16-L (continued)

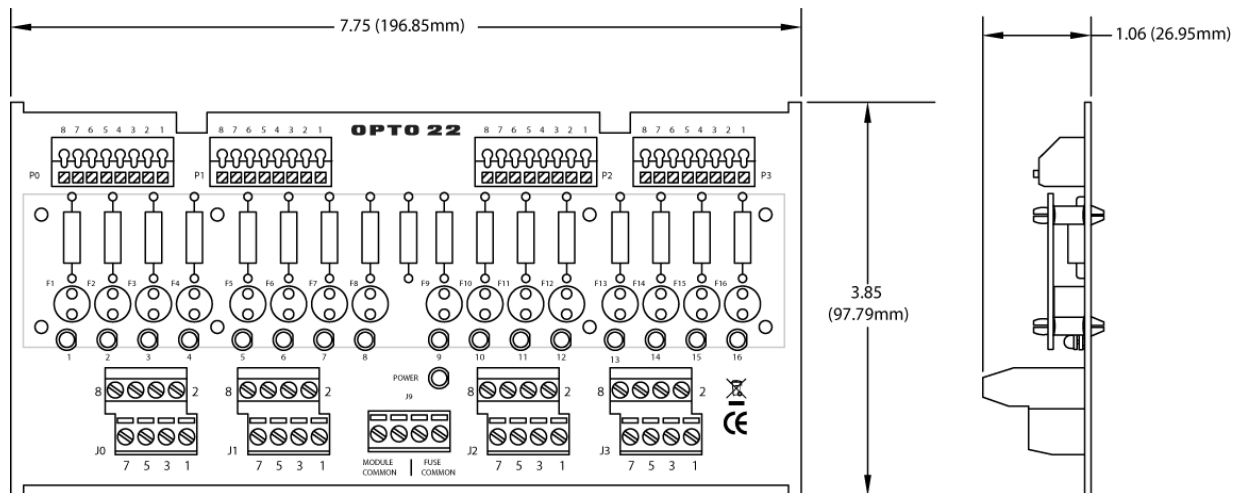
Dimensions—SNAP-TEX-32 Breakout Board

Dimensions are shown in inches (with centimeters in parentheses).



Dimensions—SNAP-TEX-FB16-H and SNAP-TEX-FB16-L Breakout Boards

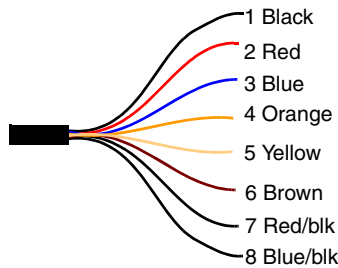
Dimensions are shown in inches (with centimeters in parentheses).



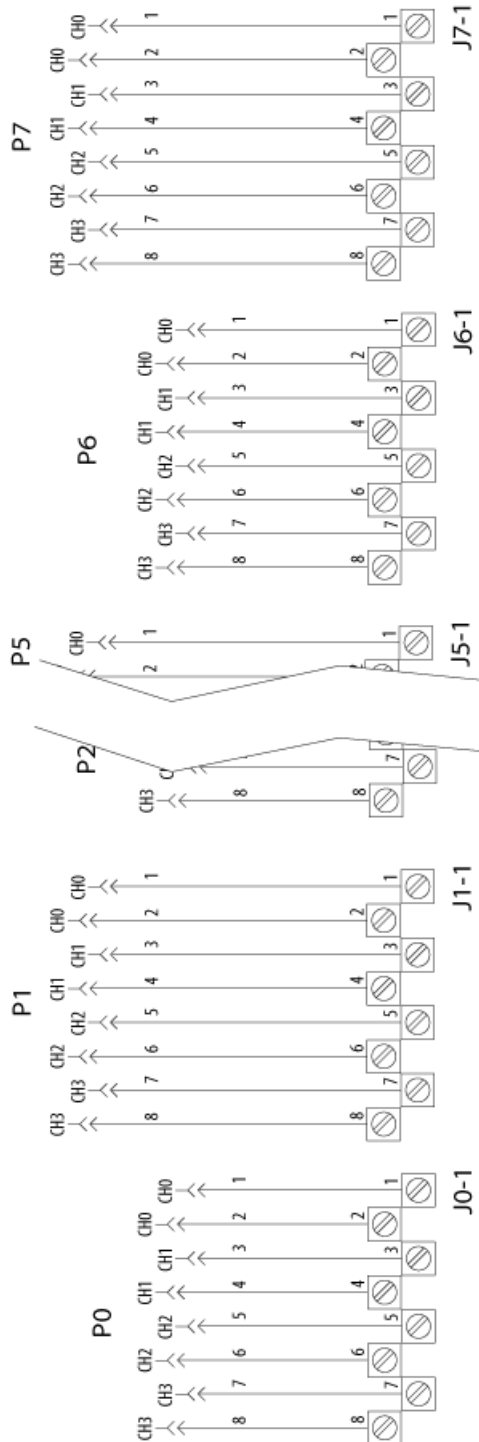
SNAP TEX Cables and Breakout Boards

SNAP-TEX-F32, SNAP-TEX-FB16-H, SNAP-TEX-FB16-L (continued)

Wiring—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.



For use with SNAP OACS, OACS-i, ODC-i, ODCS, IAC(s) and IDC(s)
For use with all 2, 4, 16, 32 CH SNAP analog except thermocouples

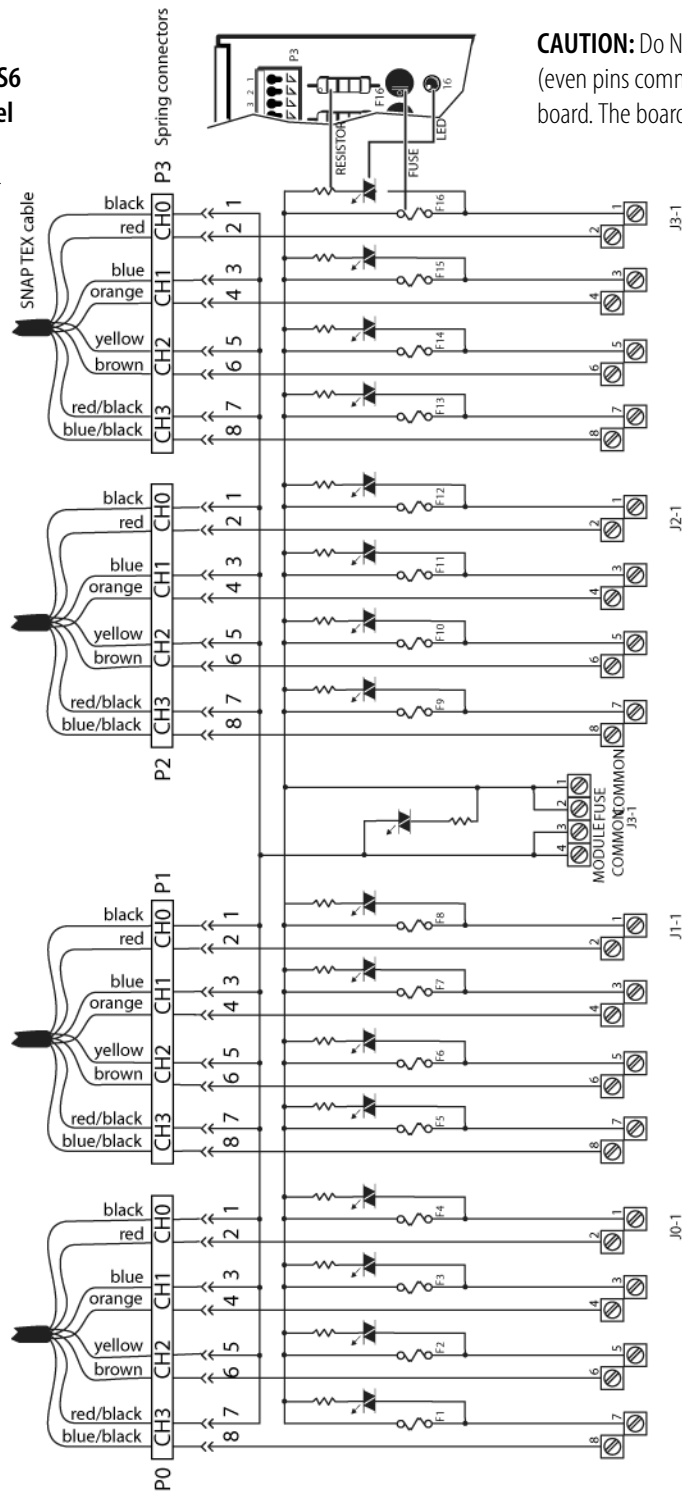
SNAP TEX Cables and Breakout Boards

SNAP-TEX-F32, SNAP-TEX-FB16-H, SNAP-TEX-FB16-L (continued)

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

This diagram shows wiring with SNAP-CB06 or SNAP-CB56 cables coming from 4-channel modules. If you are using the breakout board with a SNAP-HD-CBF6 cable coming from 16- or 32-channel modules, see page 15.

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



For use with SNAP OAC5, OAC5-i, ODC-i, IAC(s) and IDC(s)
Use 4.7K 1W for low voltage and 47K 2W for 120-240VAC
Use straight-through cable or odd pins bussed

SNAP TEX Cables and Breakout Boards

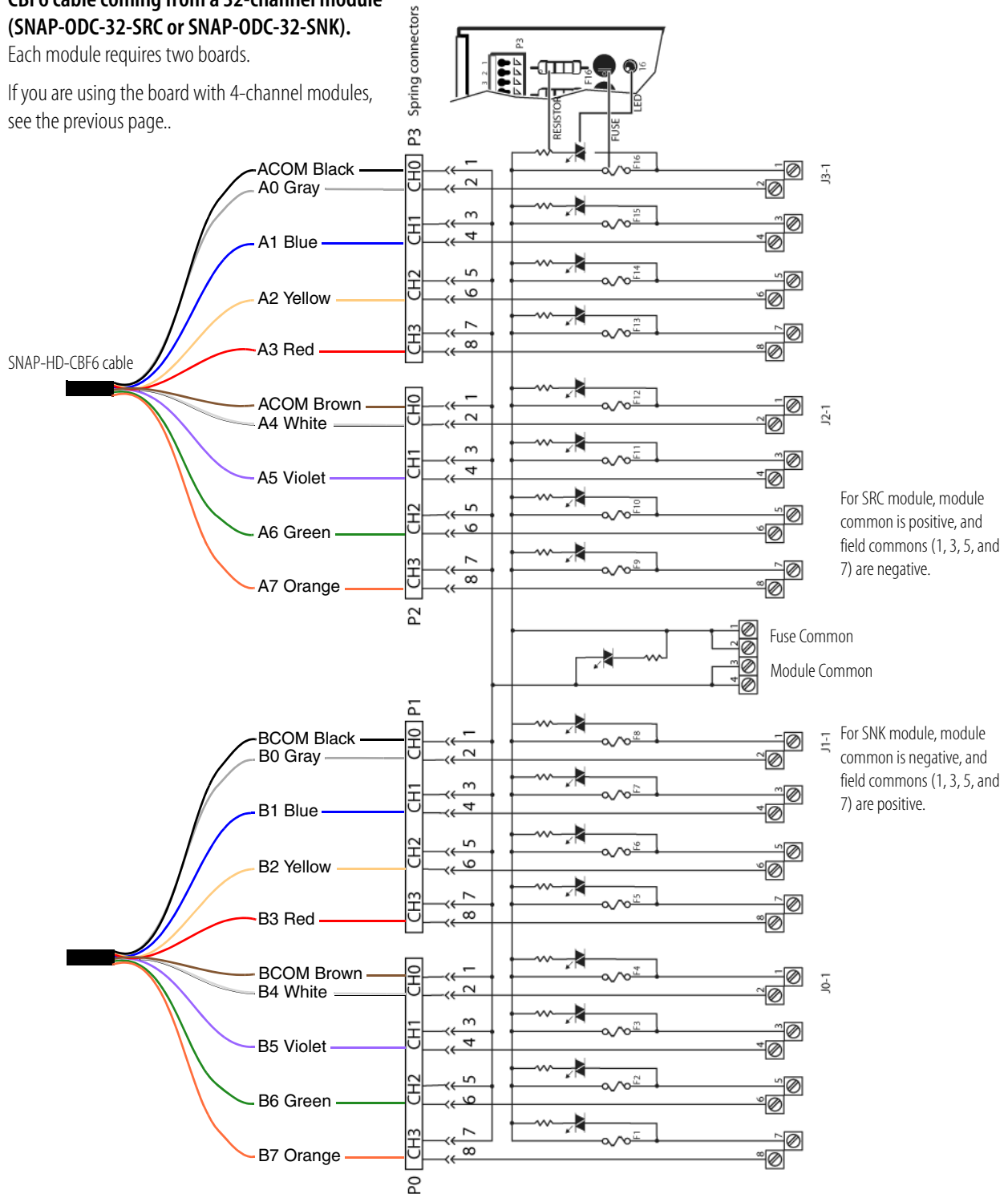
SNAP-TEX-F32, SNAP-TEX-FB16-H, SNAP-TEX-FB16-L (continued)

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

This diagram shows wiring with a SNAP-HD-CBF6 cable coming from a 32-channel module (SNAP-ODC-32-SRC or SNAP-ODC-32-SNK).

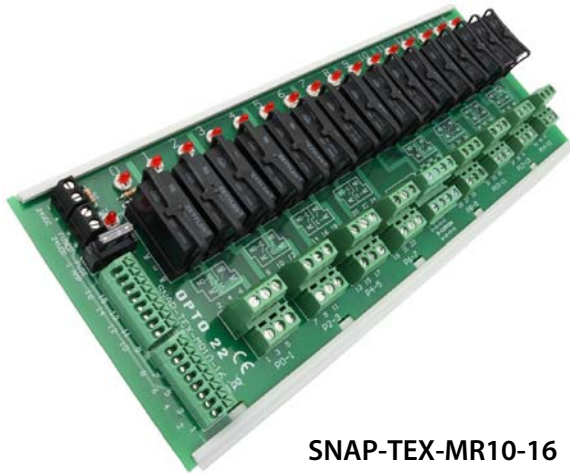
Each module requires two boards.

If you are using the board with 4-channel modules, see the previous page..



SNAP TEX Cables and Breakout Boards

SNAP-TEX-MR10-4 and SNAP-TEX-MR10-16 Breakout Boards



SNAP-TEX-MR10-16

The **SNAP-TEX-MR10-4** and **SNAP-TEX-MR10-16** breakout boards, designed for high-current switching, feature mechanical relays that can switch up to 10 A per channel. (Standard SNAP I/O modules can switch up to 0.75 A.)

These breakout boards include on/off indicators for each channel, and each channel can be wired for normally closed or normally open. The boards require 24 VDC power.

A replacement relay is available, part number SNAP-MR10.

Specifications

See the tables beginning on [page 2](#) for compatible modules and cables.

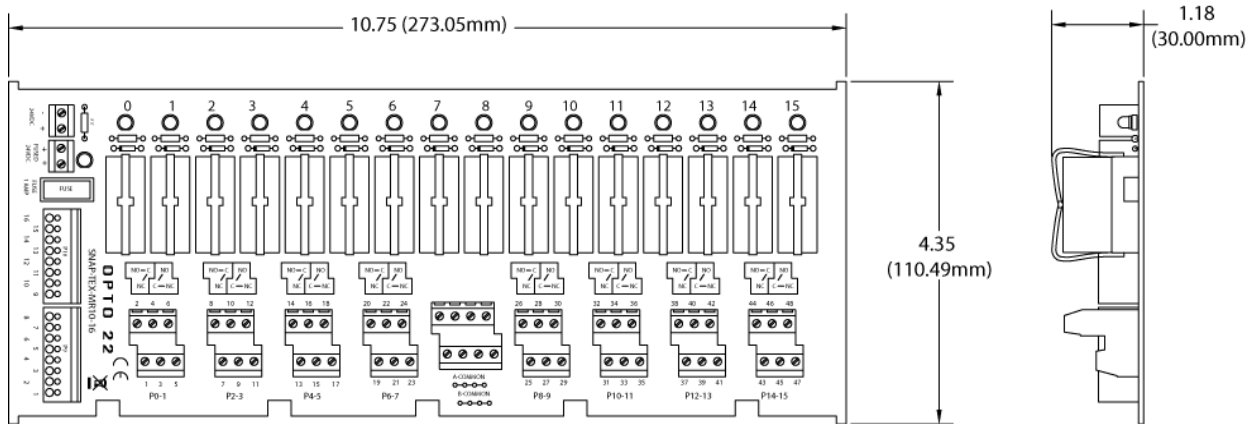
Feature	SNAP-TEX-MR10-4	SNAP-TEX-MR10-16
Use with I/O modules	SNAP-ODC5-i, SNAP-ODC5A-i, SNAP-ODC5SRC, SNAP-ODC-32-SRC	SNAP-ODC5-i, SNAP-ODC5A-i, SNAP-ODC5SRC, SNAP-ODC-32-SRC
Use with cables	SNAP-TEX-CBO6 (odd pins bussed), SNAP-TEX-CBS6 (no bussing), or SNAP-HD-CBF6, depending on module.	SNAP-TEX-CBO6 (odd pins bussed), SNAP-TEX-CBS6 (no bussing), or SNAP-HD-CBF6, depending on module.
Relay contacts	SPDT (1 Form C) Typical life expectancy (Electrical): 1×10^5	SPDT (1 Form C) Typical life expectancy (Electrical): 1×10^5
Switching capacity	10 A @ 240 VAC	10 A @ 240 VAC
Switch On time	7 ms nominal	7 ms nominal
Switch Off time	3 ms nominal	3 ms nominal
Fusing	24 V fuse for board	24 V fuse for board
Indicators	4 On/Off status indicators (one for each channel) 1 fuse-blown indicator	16 On/Off status indicators (one for each channel) 1 fuse-blown indicator
Power requirements (all positions On)	24 VDC @ 75 mA	24 VDC @ 300 mA
Agency Approvals	CE, RoHS, DFARS	CE, RoHS, DFARS
Warranty	30 months from date of manufacture	30 months from date of manufacture

SNAP TEX Cables and Breakout Boards

SNAP-TEX-MR10-4 and SNAP-TEX-MR10-16 Breakout Boards (continued)

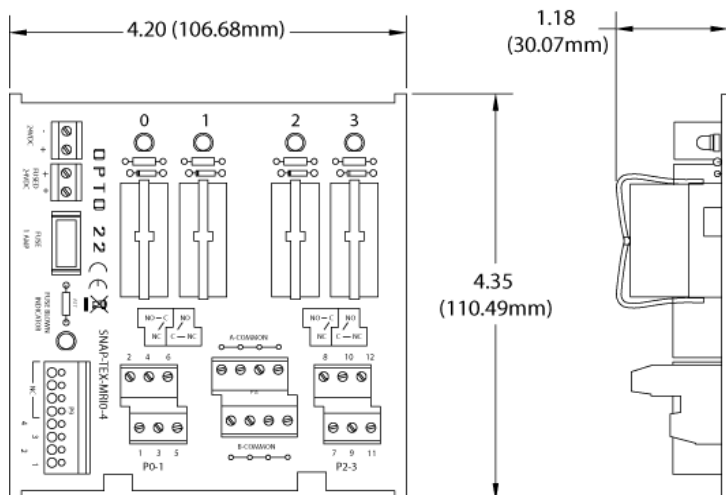
Dimensional Drawing—SNAP-TEX-MR10-16 Breakout Board

Dimensions are shown in inches (with centimeters in parentheses).



Dimensional Drawing—SNAP-TEX-MR10-4 Breakout Board

Dimensions are shown in inches (with centimeters in parentheses).



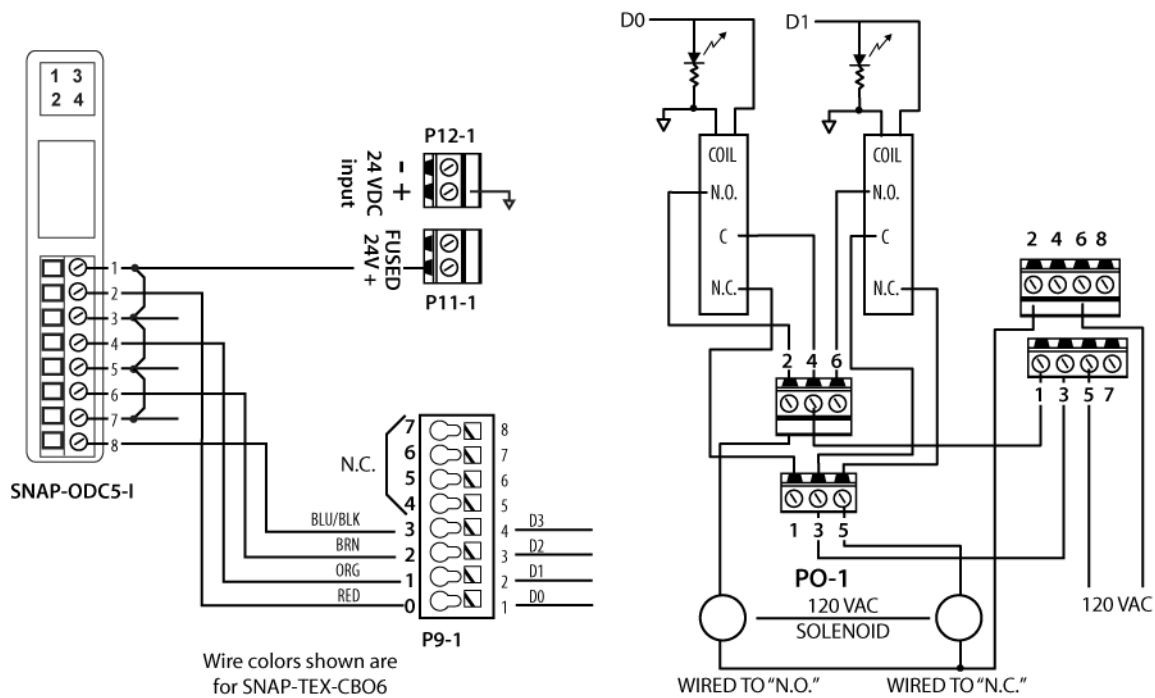
SNAP TEX Cables and Breakout Boards

SNAP-TEX-MR10-4 and SNAP-TEX-MR10-16 Breakout Boards (continued)

Wiring Diagram—SNAP-TEX-MR10-4 Breakout Board

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.

This board can also be used with other modules and cables; see the compatibility tables starting on [page 2](#).



SNAP TEX Cables and Breakout Boards

SNAP-IDC-HDB and SNAP-ODC-HDB Breakout Boards

SNAP-IDC-HDB, SNAP-IDC-HDB-FM, SNAP-ODC-HDB, and SNAP-ODC-HDB-FM breakout boards provide LED indicators and easily accessible fused connectors for points on 32-channel digital input or output modules.

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

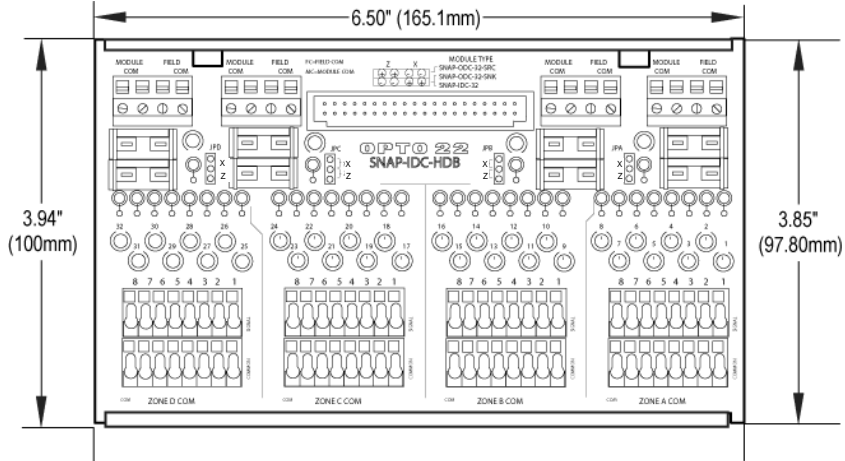
Specifications

SNAP-IDC-HDB and SNAP-IDC-HDB-FM Breakout Racks for High-Density Digital Input Modules	
Used with	SNAP-IDC-32, SNAP-IDC-32-FM, and SNAP-IDC-32N
Connectors	40-pin header connects to SNAP-IDC-32 module using SNAP-HD-BF6 header cable. 32 signal input connectors; each signal connector has a corresponding common connector. For each zone of 8 signal inputs, 1 connection for either module common or field common.
Indicators	1 LED for each signal input (32 signal LEDs total) 1 power status LED for each zone of 8 signal inputs (4 power LEDs total)
Fusing	1 A fuses; 2 fuses for each zone of 8 signal inputs (8 fuses total) Replace with Pudenz 1 A automobile mini-fuse or equivalent.
Jumpers	For each zone of 8 signal inputs, 1 jumper controls whether module common or field common is used.
Voltage	32 VDC maximum, 12-24 VDC nominal
Agency Approvals	SNAP-IDC-HDB: UL, CE, RoHS, DFARS SNAP-IDC-HDB-FM: FM, CE, RoHS, DFARS
Warranty	30 months from date of manufacture
SNAP-ODC-HDB and SNAP-ODC-HDB-FM Breakout Racks for High-Density Digital Output Modules	
Used with	SNAP-ODC-32-SRC, SNAP-ODC-32-SRC-FM, SNAP-ODC-32-SNK, and SNAP-ODC-32-SNK-FM
Connectors	40-pin header; connects to 32-channel sourcing or sinking module using SNAP-HD-BF6 header cable. 32 signal output connectors; each signal connector has a corresponding common connector. For each zone of 8 signal outputs, 1 connection for either module common or field common.
Indicators	1 LED for each signal output (32 signal LEDs total) 1 power status LED for each zone of 8 signal outputs (4 power LEDs total)
Fusing	1 A fuses; 1 fuse for each signal output (32 signal fuses total) Replace with Pudenz 1 A automobile mini-fuse or equivalent.
Jumpers	For each zone of 8 signal inputs, 1 jumper controls whether module common or field common is used.
Voltage	32 VDC maximum, 12-24 VDC nominal
Agency Approvals	SNAP-ODC-HDB: UL, CE, RoHS, DFARS SNAP-ODC-HDB-FM: FM, CE, RoHS, DFARS
Warranty	30 months from date of manufacture

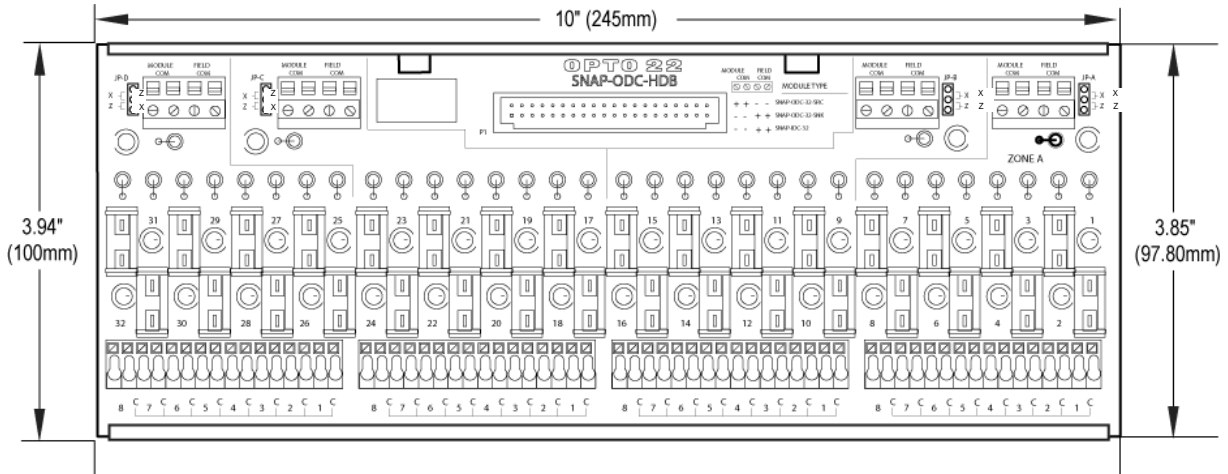
SNAP TEX Cables and Breakout Boards

SNAP-IDC-HDB and SNAP-ODC-HDB Breakout Boards (continued)

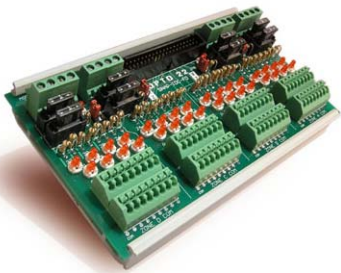
Dimensional Drawings



SNAP-IDC-HDB and SNAP-IDC-HDB-FM breakout racks



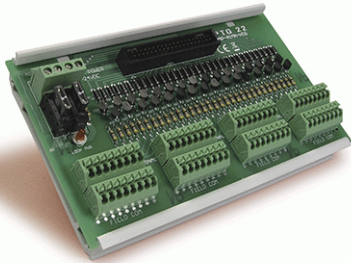
SNAP-ODC-HDB and SNAP-ODC-HDB-FM breakout racks



For wiring diagrams and jumper settings, see Opto 22 form 1547, the *SNAP High-Density Digital Module User's Guide*.

SNAP TEX Cables and Breakout Boards

SNAP-AIMA-HDB and SNAP-AIV-HDB Breakout Boards



SNAP-AIMA-HDB breakout board

The **SNAP-AIMA-HDB**, **SNAP-AIMA-HDB-FM**, **SNAP-AIV-HDB**, and **SNAP-AIV-HDB-FM** breakout boards are primarily designed for use with the SNAP-AIMA-32, SNAP-AIMA-32-FM, SNAP-AIV-32, and SNAP-AIV-32-FM analog input modules, respectively. Each of these modules provides 32 input points. The breakout boards provide easy accessibility for wiring points to field devices. Use the SNAP-HD-BF6 cable for wiring connections between the module and the breakout board.

Note for the SNAP-AIMA-32 or SNAP-AIMA-32-FM: if you are using one of these modules with loop power (2-wire) devices, connect to the SNAP-AIMA-HDB or SNAP-AIMA-HDB-FM rack as shown below. If you are using the SNAP-AIMA-32 (or -FM) 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 as shown on [page 23](#).

CAUTION: We strongly recommend that you use the breakout board with the SNAP-AIMA-32 (or -FM) module. Without the board, miswiring of any point on the module can cause severe out-of-warranty damage. The breakout board protects the module from many wiring errors.

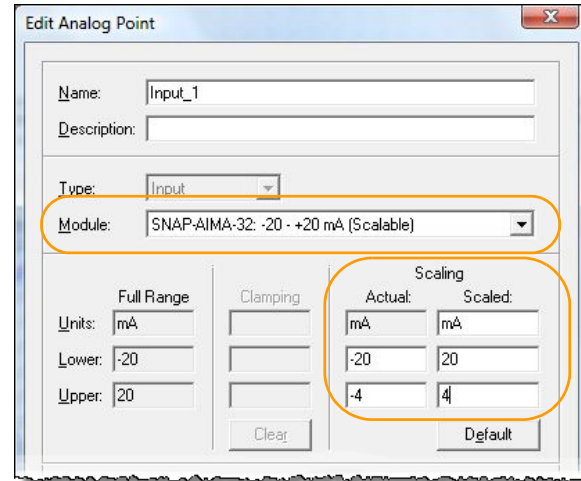
Working with Module Values

AIMA modules used with a SNAP-AIV-HDB board read normally. However, values on AIMA modules used with a SNAP-AIMA-HDB board are read as *negative values*. For example, a value of 10 mA on the module will be read as -10 mA. (Note: If no readings appear, try reversing field connections on the board.)

Because these readings are negative values, they can be confusing to work with. This section shows you how to easily change them to positive values or scale them to the positive readings you need. This section applies only with the SNAP-AIMA-HDB board.

Changing Negative to Positive Values

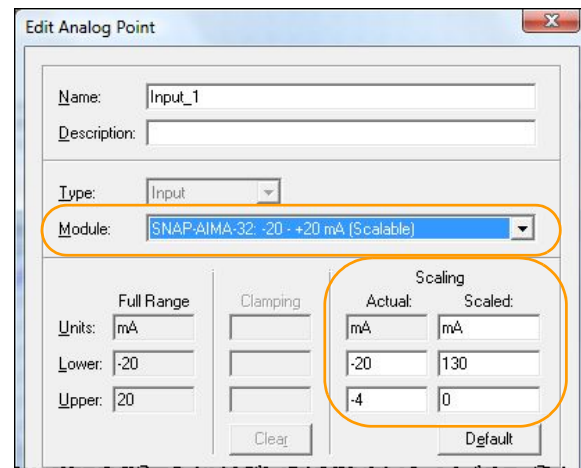
(SNAP-AIMA-HDB board only) To read positive values, when you configure points on the module, choose the scalable option and enter the corresponding positive values, like this:



This may seem odd, but it works. Don't be confused by the "Lower" and "Upper" labels for the values. Positive values sent to the module will be shown as the correct positive values within your PAC Control strategy.

Scaling Values

Similarly, if you need to scale values for your application, enter the positive values you need. The module's range is 4 to 20 mA. If you want 4 to represent 0 mA and 20 to represent 130 mA, for example, enter those values as shown below:



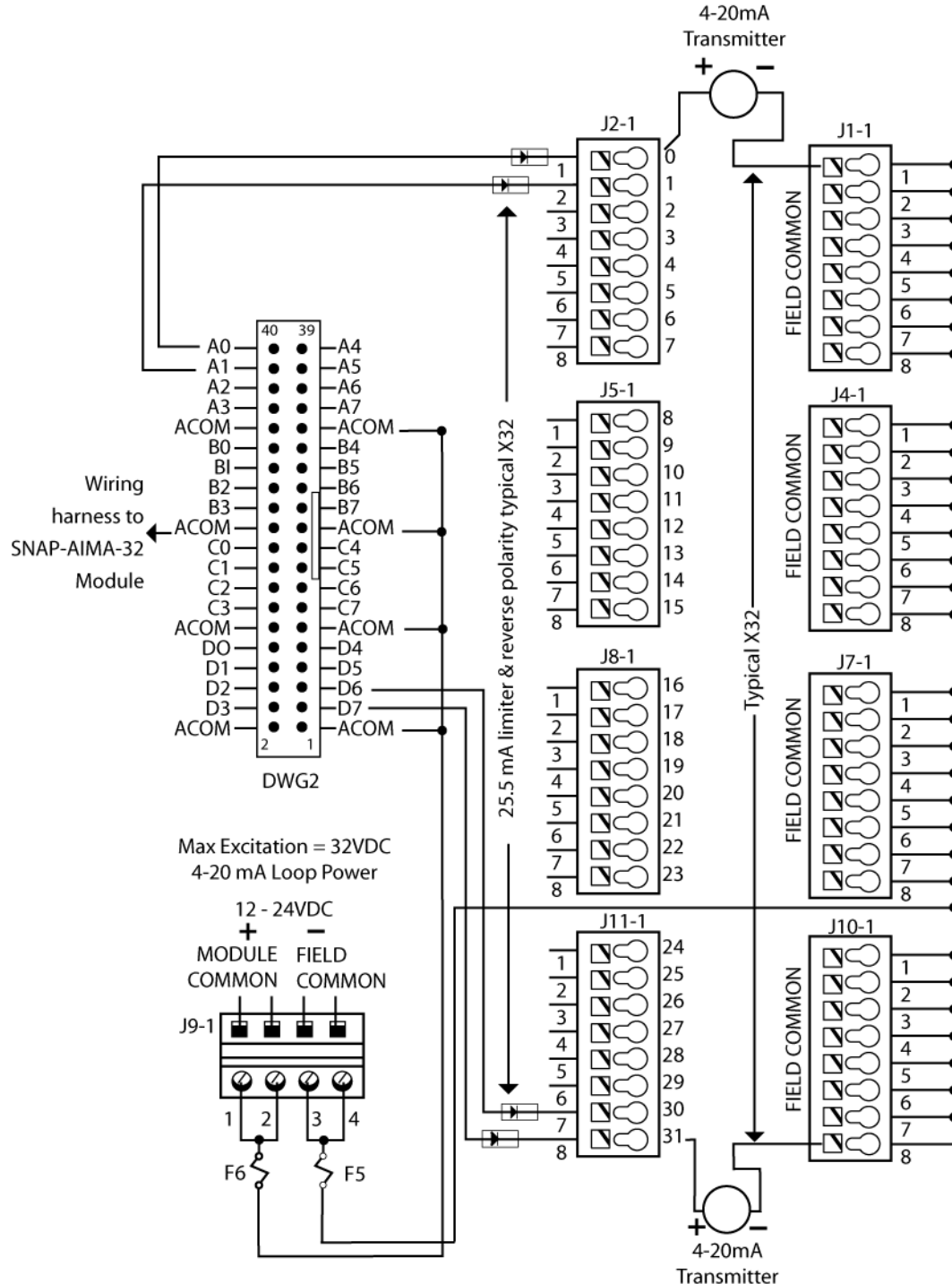
The scaled values will appear correctly in your strategy.

SNAP TEX Cables and Breakout Boards

SNAP-AIMA-HDB and SNAP-AIV-HDB Breakout Boards (continued)

Wiring diagram: SNAP-AIMA-HDB or SNAP-AIMA-HDB-FM board to SNAP-AIMA-32 or SNAP-AIMA-32-FM module

Use with loop power (2-wire) negative common devices only. For self-powered (4-wire) devices, see [page 23](#). For positive common devices, see [page 24](#). Also see "Working with Module Values" on [page 21](#).



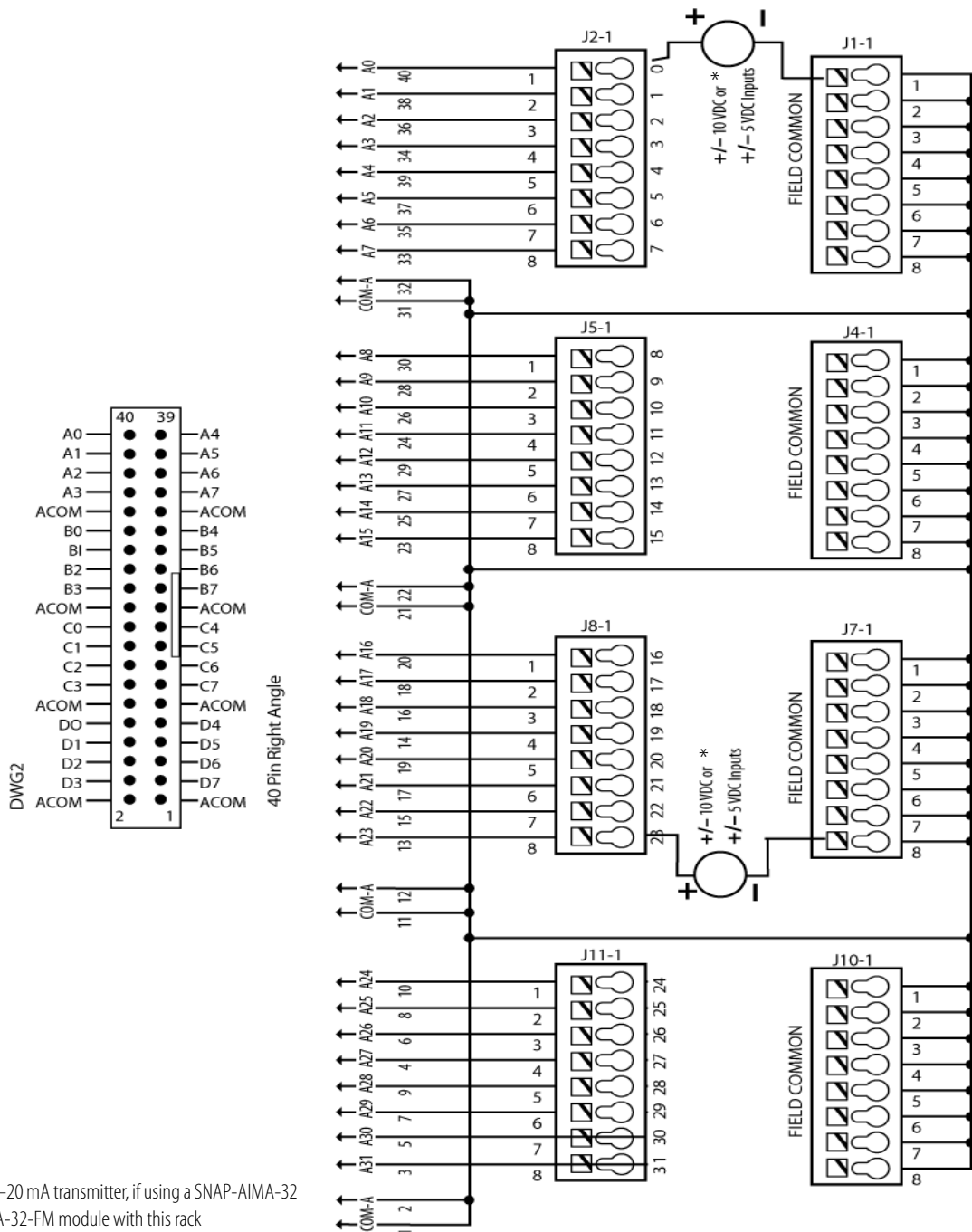
Max Excitation = 32VDC
 4-20 mA Loop Power
 12 - 24VDC
 + -
 MODULE FIELD
 COMMON COMMON

SNAP TEX Cables and Breakout Boards

SNAP-AIMA-HDB and SNAP-AIV-HDB Breakout Boards (continued)

Wiring diagram: SNAP-AIV-HDB or SNAP-AIV-HDB-FM board to SNAP-AIV-32 or SNAP-AIV-32-FM module

NOTE: This diagram is also used to wire the SNAP-AIV-HDB breakout rack to a SNAP-AIMA-32 or SNAP-AIMA-32-FM module, when the module connects to a self-powered (4-wire) device. See the module's data sheet for more information.

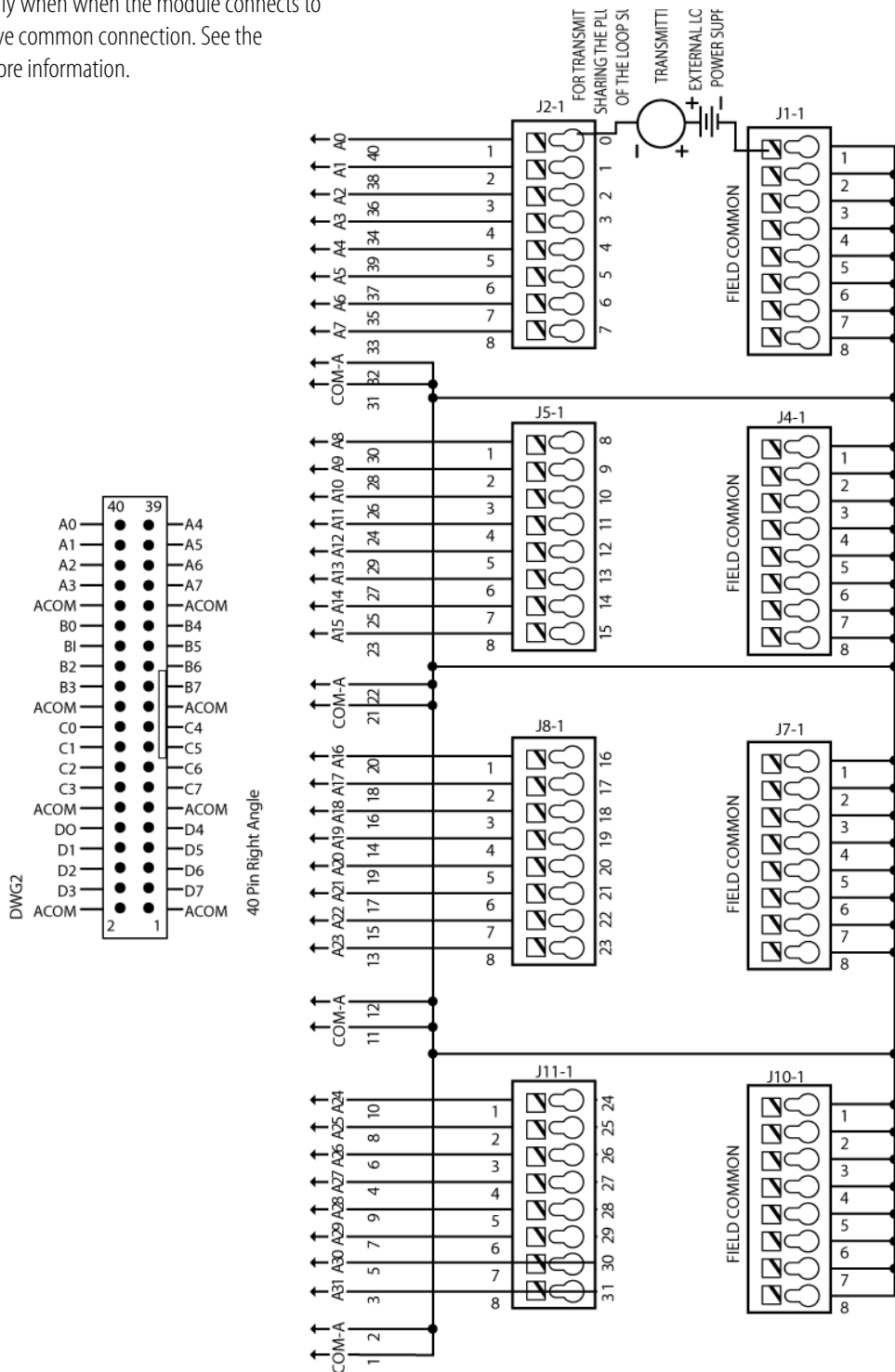


SNAP TEX Cables and Breakout Boards

SNAP-AIMA-HDB and SNAP-AIV-HDB Breakout Boards (continued)

Wiring diagram: SNAP-AIV-HDB or SNAP-AIV-HDB-FM board to SNAP-AIMA-32 or SNAP-AIMA-32-FM module

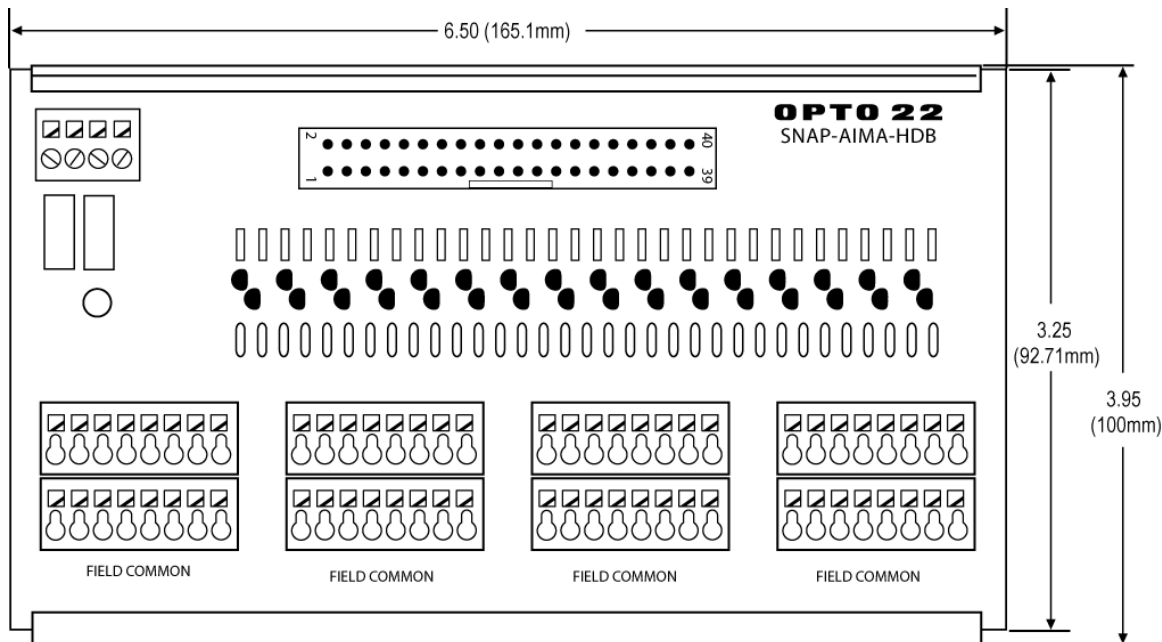
NOTE: Use this diagram only when the module connects to devices that share a positive common connection. See the module's data sheet for more information.



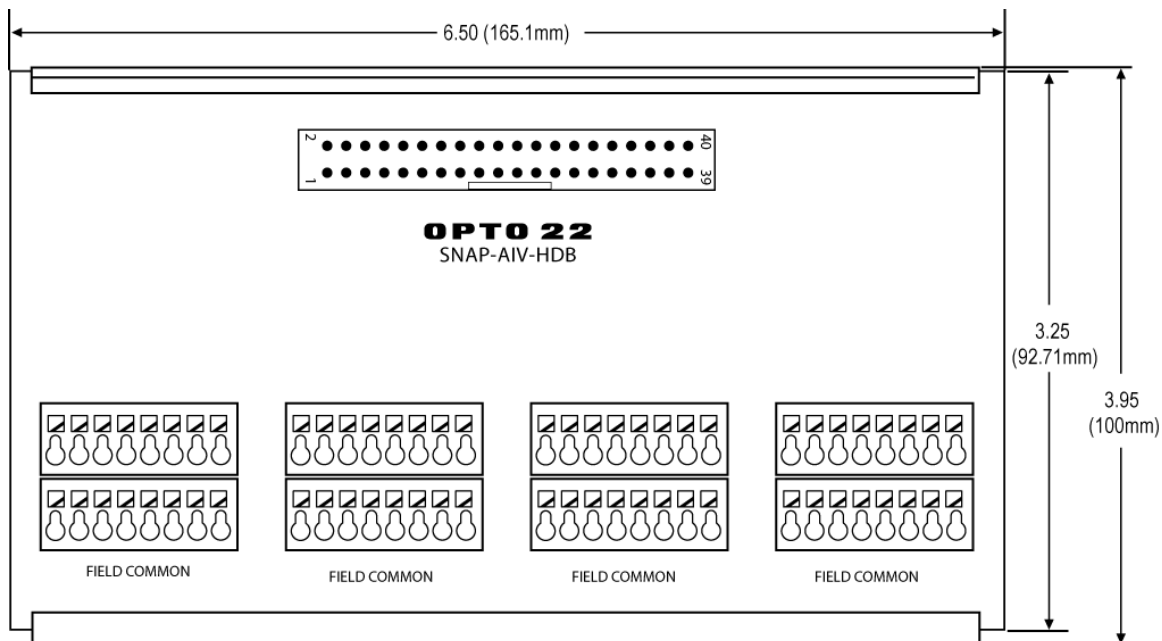
SNAP TEX Cables and Breakout Boards

SNAP-AIMA-HDB and SNAP-AIV-HDB Breakout Boards (continued)

Dimensional Drawing—SNAP-AIMA-HDB and SNAP-AIMA-HDB-FM Breakout Boards



Dimensional Drawing—SNAP-AIV-HDB and SNAP-AIV-HDB-FM Breakout Boards



More About Opto 22

Products

Opto 22 develops and manufactures reliable, flexible, easy-to-use hardware and software products for industrial automation, remote monitoring, and data acquisition applications.

SNAP PAC System

Designed to simplify the typically complex process of understanding, selecting, buying, and applying an automation system, the SNAP PAC System consists of four integrated components:

- SNAP PAC controllers
- PAC Project™ Software Suite
- SNAP PAC brains
- SNAP I/O™

SNAP PAC Controllers

Programmable automation controllers (PACs) are multifunctional, multidomain, modular controllers based on open standards and providing an integrated development environment.

Opto 22 has been manufacturing PACs for many years. The latest models include the standalone SNAP PAC S-series and the rack-mounted SNAP PAC R-series. Both handle a wide range of digital, analog, and serial functions and are equally suited to data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

SNAP PACs are based on open Ethernet and Internet Protocol (IP) standards, so you can build or extend a system without the expense and limitations of proprietary networks and protocols.

PAC Project Software Suite

Opto 22's PAC Project Software Suite provides full-featured and cost-effective control programming, HMI (human machine interface) development and runtime, OPC server, and database connectivity software to power your SNAP PAC System.

These fully integrated software applications share a single tagname database, so the data points you configure in PAC Control™ are immediately available for use in PAC Display™, OptoOPCServer™, and OptoDataLink™. Commands are in plain English; variables and I/O point names are fully descriptive.

PAC Project Basic offers control and HMI tools and is free for download on our website, www.opto22.com. PAC Project Professional, available for separate purchase, adds OptoOPCServer, OptoDataLink, options for Ethernet link redundancy or segmented networking, and support for legacy Opto 22 serial *mistic*™ I/O units.

SNAP PAC Brains

While SNAP PAC controllers provide central control and data distribution, SNAP PAC brains provide distributed intelligence for I/O processing and communications. Brains offer analog, digital, and serial functions, including thermocouple linearization; PID loop control; and optional high-speed digital counting (up to 20 kHz), quadrature counting, TPO, and pulse generation and measurement.

SNAP I/O

I/O provides the local connection to sensors and equipment. Opto 22 SNAP I/O offers 1 to 32 points of reliable I/O per module, depending on the type of module and your needs. Analog, digital, serial, and special-purpose modules are all mixed on the same mounting rack and controlled by the same processor (SNAP PAC brain or rack-mounted controller).

Quality

Founded in 1974 and with over 85 million devices sold, Opto 22 has established a worldwide reputation for high-quality products. All are made in the U.S.A. at our manufacturing facility in Temecula, California. Because we do no statistical testing and each part is tested twice before leaving our factory, we can guarantee most solid-state relays and optically isolated I/O modules for life.

Free Product Support

Opto 22's Product Support Group offers free, comprehensive technical support for Opto 22 products. Our staff of support engineers represents decades of training and experience. Product support is available in English and Spanish, by phone or email, Monday through Friday, 7 a.m. to 5 p.m. PST.

Free Customer Training

Hands-on training classes for the SNAP PAC System are offered at our headquarters in Temecula, California. Each student has his or her own learning station; classes are limited to nine students. Registration for the free training class is on a first-come, first-served basis. See our website, www.opto22.com, for more information or email training@opto22.com.

Purchasing Opto 22 Products

Opto 22 products are sold directly and through a worldwide network of distributors, partners, and system integrators. For more information, contact Opto 22 headquarters at 800-321-6786 or 951-695-3000, or visit our website at www.opto22.com.

www.opto22.com