This product is obsolete.

OPTO 22

DATA SHEET

Form 1001-230222

Description

*** This product is Obsolete. ***

The SNAP-BRS-HA brain is a high-performance digital brain that remotely controls up to 32 digital I/O modules using Opto 22's SNAP "B Series" I/O mounting racks. The SNAP-BRS-HA can be used with either an Opto 22 controller or a host computer. On-board intelligence offers distributed control functions. SNAP-BRS-HA brains can be combined with SNAP "B Series" racks and other brains to provide the world's most powerful and sophisticated I/O handling systems.

The SNAP-BRS-HA communicates with a host processor via high-speed ARCNET twisted-pair wiring and supports the advanced Mistic® protocol. Designed for high-speed input and output, the functions supported by the BRS family include reading, writing, and latching.

By using the SNAP-BRS-HA family with the Mistic protocol and a controller, you can take advantage of FactoryFloor, Opto 22's suite of Microsoft® Windows®

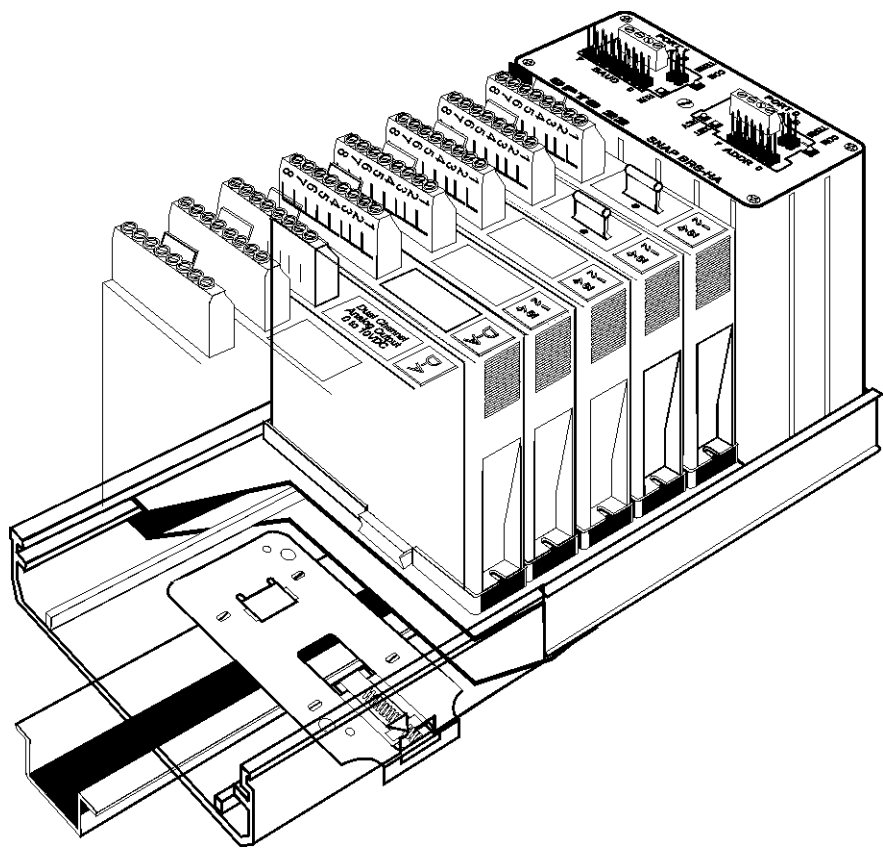| Part Number	Description
SNAP-BRS-HA	32-channel Remote Digital Brain

32-bit software. OptoControl, the programming cornerstone of FactoryFloor, uses the distributed control capability of the SNAP-BRS-HA brain and takes advantage of the graphical Windows 95 or Windows NT® interface to make it easy to configure, design, and troubleshoot your control system.

For applications not using FactoryFloor, Opto 22's OptoDriver Toolkit—Mistic I/O and Optomux—can be used for direct communications from a host PC to the SNAP-BRS-HA. The toolkit includes 32-bit Windows drivers, 16-bit Windows drivers, and Opto 22's Classic DOS drivers. The kit also provides the files, documentation, and examples needed to write Microsoft Windows and DOS software applications. Programmers can access the Opto 22 I/O hardware using high-level languages such as Microsoft Visual C++® or Microsoft Visual Basic®.

Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • Phone: (951) 695-3000 • (800) 321-OPTO • Fax: (951) 695-3095 • www.opto22.com

Inside Sales: (800) 321-OPTO • Product Support: (800) TEK-OPTO • (951) 695-3080 • Fax: (951) 695-3017 • E-mail: sales@opto22.com

OPTO 22

BRAINS
SNAP
ANALOG AND DIGITAL

DATA SHEET page 2/8

Form 1001-230222

Specifications [Obsolete]

Power Requirements	5.0 VDC ±0.1 VDC at 1.0 A max
Operating Temperature	0° to 70° C, 5–95% humidity, non-condensing
Communications	Dual, twisted-pair ARCNET ports, single or redundant
Data Rate	2.5 megabits per second, not selectable
LED Indicators	RUN (Power On), RX (not functional), and TX (Activity)
Cable	CAT-3 or CAT-5 UTP

System Architecture

PC WITH AC47
M4 I/O WITH M4DUALARC
SNAP-B3000-HA or SNAP-BRS-HA
SNAP-B3000-HA
SNAP-B3000-HA

NODE 0   NODE 1

TWISTED-PAIR ARCNET

SNAP-B8M
SNAP 8-MODULE RACK

SNAP-B12MC
SNAP 12-MODULE RACK

SNAP-B16M
SNAP 16-MODULE RACK
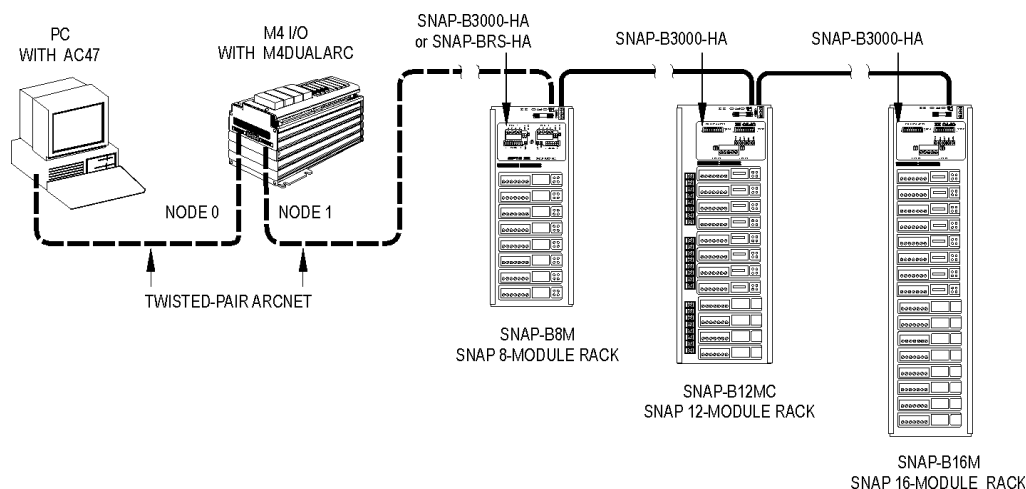
Setup and System Commands

Identify unit
Power-up clear
Repeat last response
Reset
Set response delay

Digital Read/Write and Latch Commands

Read and optionally clear input latches (group command)
Read and optionally clear input latch
Read module status
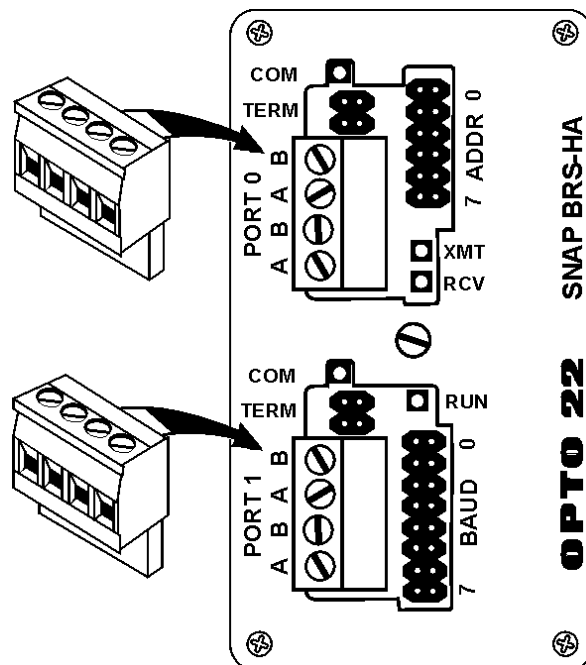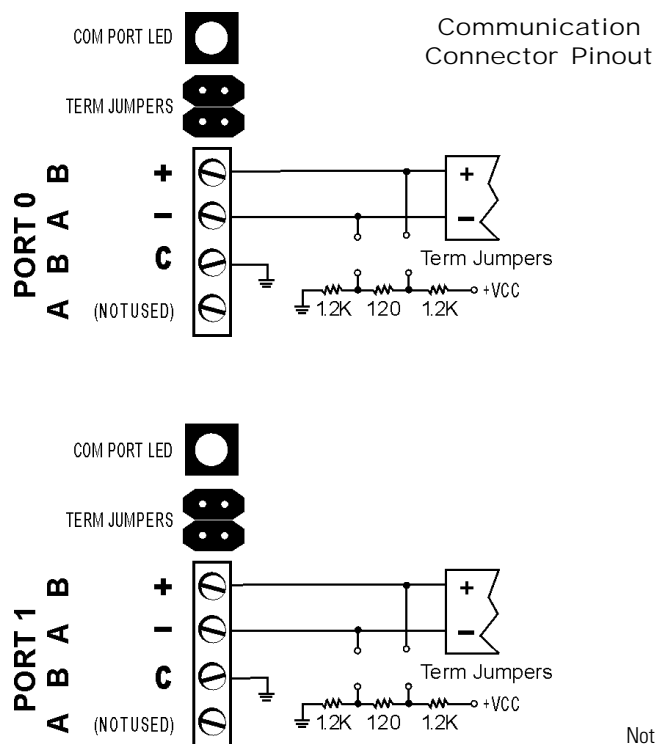Set output module state (group command)
Set output/clear output

OPTO 22
BRAINS
SNAP
ANALOG AND DIGITAL

DATA SHEET
page 3/8

Form 1001-230222

Specifications (Continued)
Communication Jumpers and Wiring

COM PORT LED

TERM JUMPERS

Communication Connector Pinout

PORT 0
A B A B

+
−
C
(NOT USED)

Term Jumpers

1.2K   120   1.2K   +VCC

COM PORT LED

TERM JUMPERS

PORT 1
A B A B

+
−
C
(NOT USED)

Term Jumpers

1.2K   120   1.2K   +VCC

COM
TERM
PORT 0
A B A B
XMT
RCV
7 ADDR 0
SNAP BRS-HA

COM
TERM
PORT 1
A B A B
RUN
7 BAUD 0
OPTO 22

Notes:

1. CAT-3 or CAT-5 UTP cable must be used.
2. The unused pairs (wires) of the cable should be grounded at one end only.
3. When connecting devices on an ARCNET network, be sure to connect the positive terminal of one device to the positive terminal of the next device, and the negative terminal of one device to the negative terminal of the next device.
4. Node termination jumpers are provided to terminate the ARCNET transmission line if this brain is at the end of the data link. Install both node jumpers if this brain is at the end of the link. Do not install any jumpers if this brain is located in the middle of the communication link.
5. The two "nodes" are not two separate addresses, but the same address. The second node is for redundant communications only.

BRAINS
SNAP
ANALOG AND DIGITAL

OPTO 22

DATA SHEET
page 4/8

Form 1001-230222

Specifications (Continued)
Baud/Address Jumpers and LED Descriptions

SNAP-BRS Brain

COM
TERM
PORT 0 B A B A
7 ADDR 0
XMT
RCV
SNAP BRS-HA

COM
TERM RUN
PORT 1 B A B A
7 BAUD 0
OPTO 22
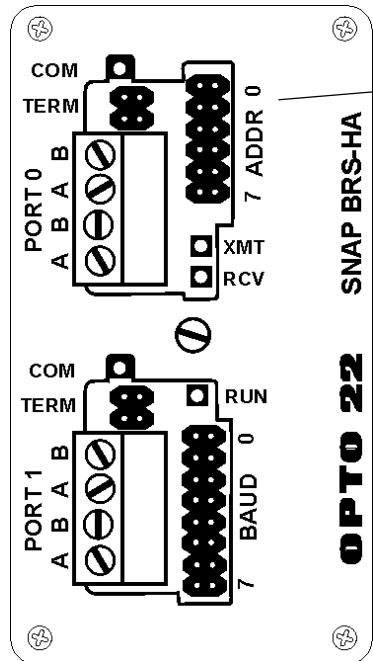
Address Jumpers (0–7)
Set address jumpers 1 through 7 to the desired base address for the SNAP-BRS-HA brain. The SNAP-BRS-HA contains two logical brains, one set to the base address and the other set to base address +1. The base address must be an even number. Do not install jumper 0. Address 0 is NOT a valid address.

7 6 5 4 3 2 1 0 — Address jumper chart for addresses 0 through 254 (even numbers).
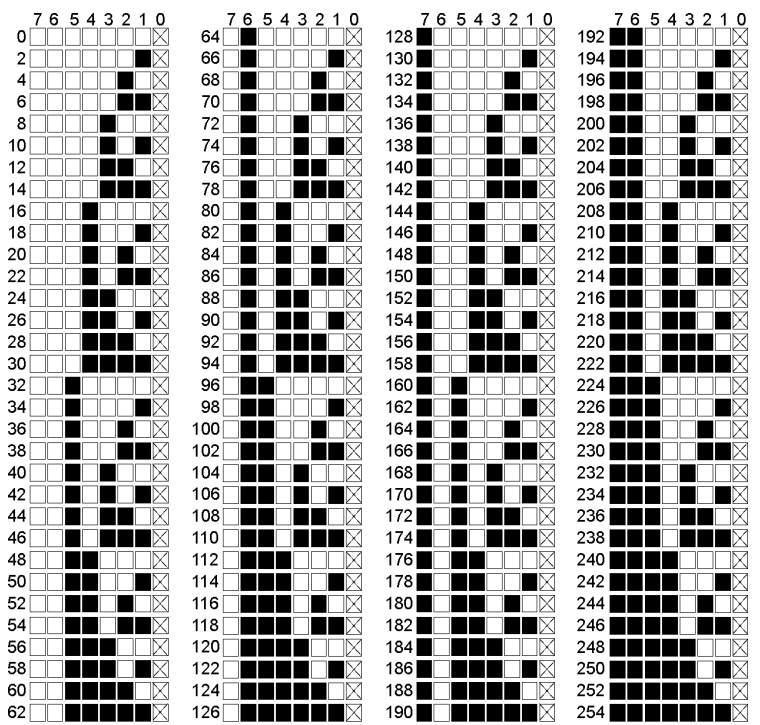
■ = JUMPER INSTALLED   □ = NO JUMPER

Baud Rate Jumpers (0–5)
On the HA version of the SNAP-BRS, the baud rate jumpers have no function. The ARCNET communication is set at 2.5 megabits per second. Do not install jumpers on Baud 0 through Baud 5.

LED Descriptions

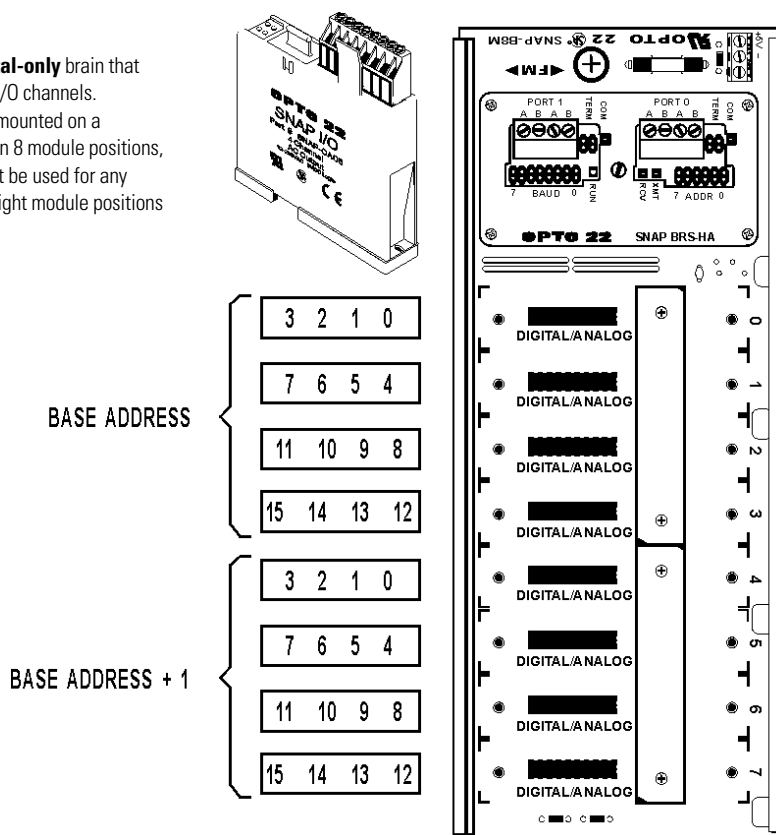| LED	Description
RCV	Not functional.
XMT	Indicates activity on the communication line.
RUN	Processor has power (at least 4.75 VDC).

OPTO 22

DATA SHEET

Form 1001-230222

SNAP Digital I/O Mapping

Notes:
1. The SNAP-BRS-HA is a **digital-only** brain that can address up to 32 digital I/O channels.
2. IF SNAP-BRS-HA brains are mounted on a mounting rack with more than 8 module positions, positions 8 and above cannot be used for any purpose; however, the first eight module positions will function normally.

BASE ADDRESS

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

BASE ADDRESS + 1

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

SNAP I/O Addressing

A SNAP-BRS-HA is capable of addressing a maximum of 32 channels of digital I/O and has no analog capability. I/O on the SNAP-BRS-HA is divided into two addresses, base+0 and base+1, each with 16 channels of I/O.

For example, if a SNAP-BRS-HA brain is configured at address 12, the addresses would be 12 and 13. Address 12 would talk to the modules in positions 0–3; their points would be numbered 0–15 in the software. Address 13 would talk to module positions 4–7; again their points would be numbered 0–15.

When configuring the brain in OptoControl, select two consecutive addresses. In the Add I/O Unit dialog box, add two separate brains. In the Type field, configure both

addresses as SNAP Remote Simple Digital I/O units.

When a SNAP I/O point is configured on a digital brain, OptoControl automatically creates and configures the other three points in the module. For example, if a SNAP digital point is added at channel 5, then identical points are created atchannels 4, 6, and 7. Names are automatically created for these new points based on the name entered for the original point.

You can change the name, description, features, default, and watchdog for each point independently. Note that if the module type of one digital point is changed, then the module type for the other three points in that module is automatically changed to match.
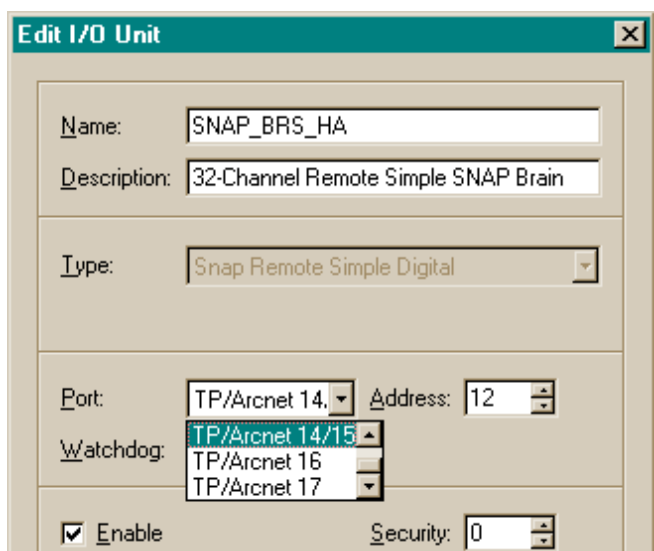
OPTO 22
DATA SHEET
Form 1001-230222

BRAINS
SNAP
ANALOG AND DIGITAL

page 6/8

OptoControl Configuration

Several I/O port designations in OptoControl support twisted-pair ARCNET on PCs and M4 controllers. Ports 12 through 17 are configured as ARCNET ports and can be used as individual ports or in pairs for redundant communication. For redundant communication, the pair must begin on an even boundary (12, 14, or 16).

In the Configure Controllers dialog box, click the Set Up Controller Ports button. Choose the port number. For redundant communication, check the Redundant box to configure a pair of ports beginning with an even address, 12, 14, or 16.
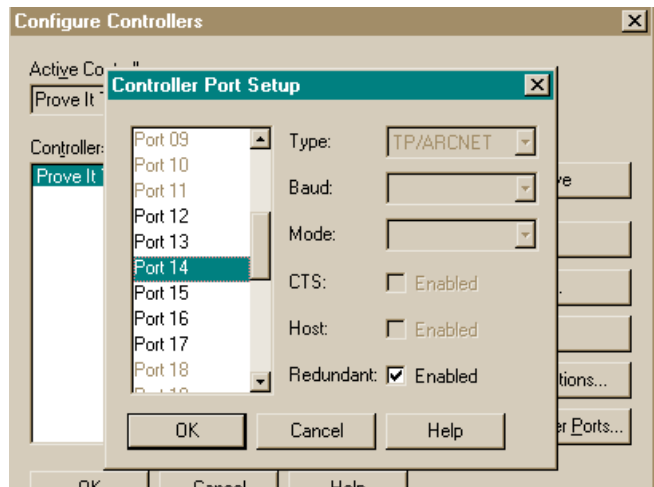
If the Redundant box is checked as shown above, the two ports are grouped together in the Add I/O Unit or Edit I/O Unit dialog box. The following figure shows the Add I/O Unit dialog box with ports 14 and 15 grouped as a redundant pair:

Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • Phone: (951) 695-3000 • (800) 321-OPTO • Fax: (951) 695-3095 • www.opto22.com

Inside Sales: (800) 321-OPTO • Product Support: (800) TEK-OPTO • (951) 695-3080 • Fax: (951) 695-3017 • E-mail: sales@opto22.com

OPTO 22

BRAINS
SNAP
ANALOG AND DIGITAL

DATA SHEET

page 7/8

Form 1001-230222

Dimensions

SNAP-BRS-HA Brain

3.30 (83.82mm)

.062 (1.57mm)

3.00 (76.31mm)

.109 (2.77mm)

1.82 (46.18mm)

3.62 (91.95mm)

1.75 (44.35mm)

4.37 (111mm)

3.62 (91.95mm)

SNAP I/O RACK BOARD

RACK .75*** (19.05mm)

FOR DIN CLIP ADD ADDITIONAL .06" TO OVERALL HEIGHT

SNAP RACK DIN RAIL ADAPTER

CUSTOMER SUPPLIED 35mm DIN RAIL
NOTE: BE SURE TO CONSIDER DIN RAIL DIMENSIONS.
(DIN RAIL MUST BE MOUNTED HORIZONTALLY TO USE SNAP I/O WITHOUT MODULE HOLD-DOWN SCREWS)

SNAP RACK BASE EXTI

LEGEND
-.010"
-.020"
-.030"
-.060"
:NCE ONLY

Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • Phone: (951) 695-3000 • (800) 321-OPTO • Fax: (951) 695-3095 • www.opto22.com

Inside Sales: (800) 321-OPTO • Product Support: (800) TEK-OPTO • (951) 695-3080 • Fax: (951) 695-3017 • E-mail: sales@opto22.com

OPTO 22

DATA SHEET

Form 1001-230222

BRAINS
SNAP
ANALOG AND DIGITAL
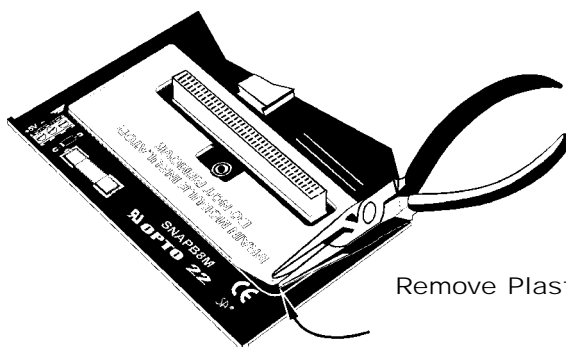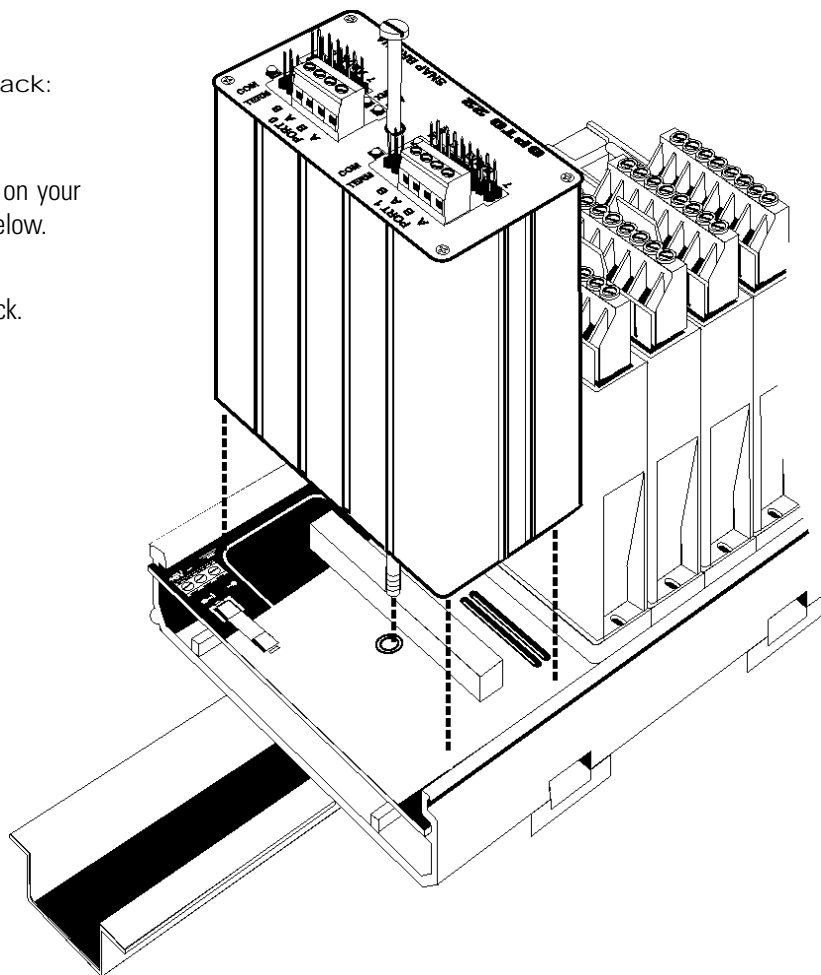
page 8/8

Assembly

Brain

To install the brain onto a B-Series rack:

1. Turn off power to the rack assembly.

2. If a plastic brain insulator is present on your mounting rack, remove it as shown below.

3. Align the brain connector with the mating connector on the mounting rack.

4. Seat the brain onto the connector.

5. Use the integral hold-down screw to secure the brain in position.

   DO NOT OVERTIGHTEN!

To remove the brain from a B-Series rack:

1. Turn off power to the rack assembly.

2. Loosen the integral hold-down screw on the brain.

3. Pull up on the brain.

Remove Plastic Insulator

Opto 22 • 43044 Business Park Drive • Temecula, CA 92590-3614 • Phone: (951) 695-3000 • (800) 321-OPTO • Fax: (951) 695-3095 • www.opto22.com

Inside Sales: (800) 321-OPTO • Product Support: (800) TEK-OPTO • (951) 695-3080 • Fax: (951) 695-3017 • E-mail: sales@opto22.com

More about Opto 22

OPTO 22

PRODUCTS

Opto 22 develops and manufactures reliable, easy-to-use, open standards-based hardware and software products. Industrial automation, process control, remote monitoring, data acquisition, and industrial internet of things (IIoT) applications worldwide all rely on Opto 22.

groov RIO®

groov RIO edge I/O offers a single, compact, PoE-powered industrial package with web-based configuration and IIoT software built in, support for multiple OT and IT protocols, and security features like a device firewall, data encryption, and user account control.

Standing alone, groov RIO connects to sensors, equipment, and legacy systems, collecting and securely publishing data from field to cloud. Choose a universal I/O model with thousands of possible field I/O configurations, with or without Ignition from Inductive Automation®, or a RIO EMU energy monitoring unit that reports 64 energy data values from 3-phase loads up to 600 VAC, Delta or Wye.

You can also use groov RIO with a Modbus/TCP master or as remote I/O for a groov EPIC system.

groov EPIC® System

Opto 22's groov Edge Programmable Industrial Controller (EPIC) system gives you industrially hardened control with a flexible Linux®-based processor with gateway functions, guaranteed-for-life I/O, and software for your automation and IIoT applications.

groov EPIC Processor

The heart of the system is the groov EPIC processor. It handles a wide range of digital, analog, and serial functions for data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

In addition, the EPIC provides secure data communications among physical assets, control systems, software applications, and online services, both on premises and in the cloud. No industrial PC needed.

Configuring and troubleshooting I/O and networking is easier with the EPIC's integrated high-resolution color touchscreen. Authorized users can manage the system locally on the touchscreen, on a monitor connected via the HDMI or USB ports, or on a PC or mobile device with a web browser.

groov EPIC I/O

groov I/O connects locally to sensors and equipment. Modules have a spring-clamp terminal strip, integrated wireway, swing-away cover, and LEDs indicating module health and discrete channel status. groov I/O is hot swappable, UL Hazardous Locations approved, and ATEX compliant.

groov EPIC Software

The groov EPIC processor comes ready to run the software you need:

- Programming: Choose flowchart-based PAC Control, CODESYS Development System for IEC61131-3 compliant programs, or secure shell access (SSH) to the Linux OS for custom applications
- Node-RED for creating simple IIoT logic flows from pre-built nodes
- Efficient MQTT data communications with string or Sparkplug data formats
- Multiple OPC UA server options
- HMI: groov View to build your own HMI viewable on touchscreen, PCs, and mobile devices; PAC Display for a Windows HMI; Node-RED dashboard UI
- Ignition or Ignition Edge® from Inductive Automation (requires license purchase) with OPC-UA drivers to Allen-Bradley®, Siemens®, and other control systems, and MQTT communications

Older products

From solid state relays, to world-famous G4 and SNAP I/O, to SNAP PAC controllers, older Opto 22 products are still supported and working hard at thousands of installations worldwide. You can count on us for the reliability and service you expect, now and in the future.

QUALITY

Founded in 1974, 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 test each product twice before it leaves our factory rather than testing a sample of each batch, we can afford to guarantee most solid-state relays and optically isolated I/O modules for life.

FREE PRODUCT SUPPORT

Opto 22's California-based Product Support Group offers free technical support for Opto 22 products from engineers with decades of training and experience. Support is available in English and Spanish by phone or email, Monday–Friday, 7 a.m. to 5 p.m. PST.

Support is always available on our website, including free online training at OptoU, how-to videos, user's guides, the Opto 22 KnowledgeBase, and OptoForums.

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** (toll-free in the U.S. and Canada) or **+1-951-695-3000**, or visit our website at www.opto22.com.

OPTO 22 • www.opto22.com
43044 Business Park Dr. Temecula, CA 92590-3614

SALES • sales@opto22.com
800-321-6786 • 1-951-695-3000

SUPPORT • support@opto22.com
800-835-6786 • 1-951-695-3080

MADE IN THE USA