OPTO 22

DATA SHEET

Form 1001-050221

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

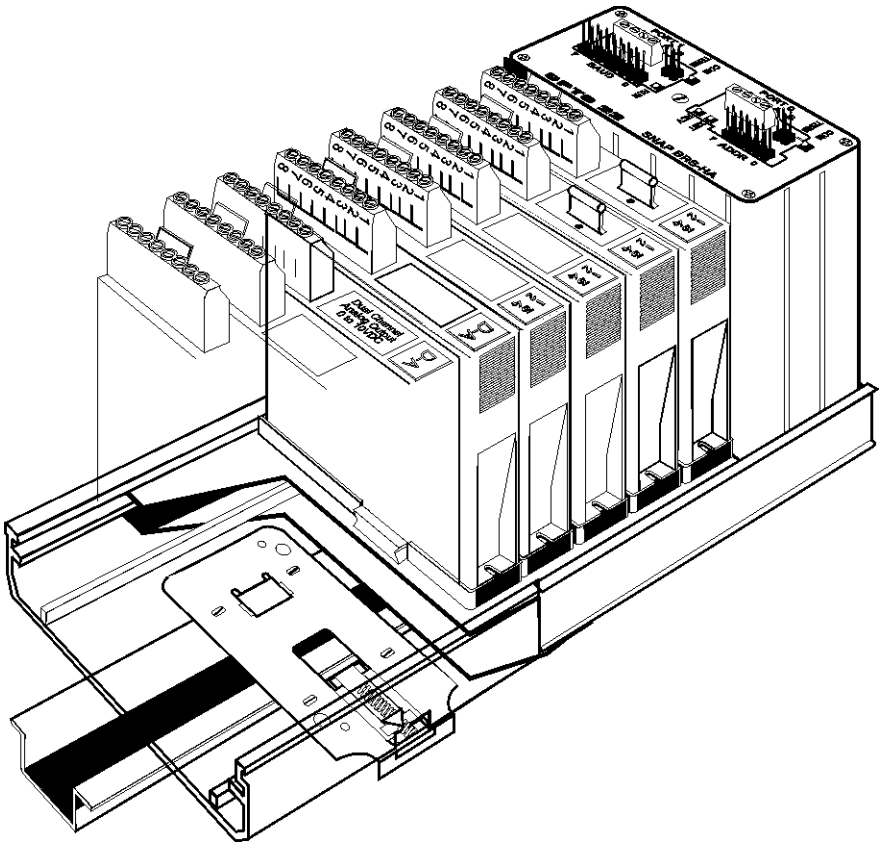
Description

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® 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®.



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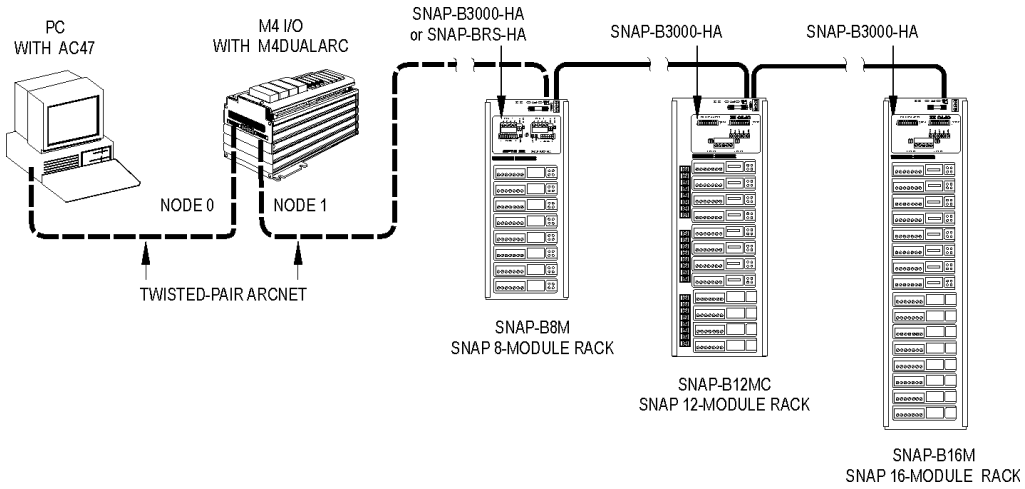
Specifications

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



Setup and System Commands

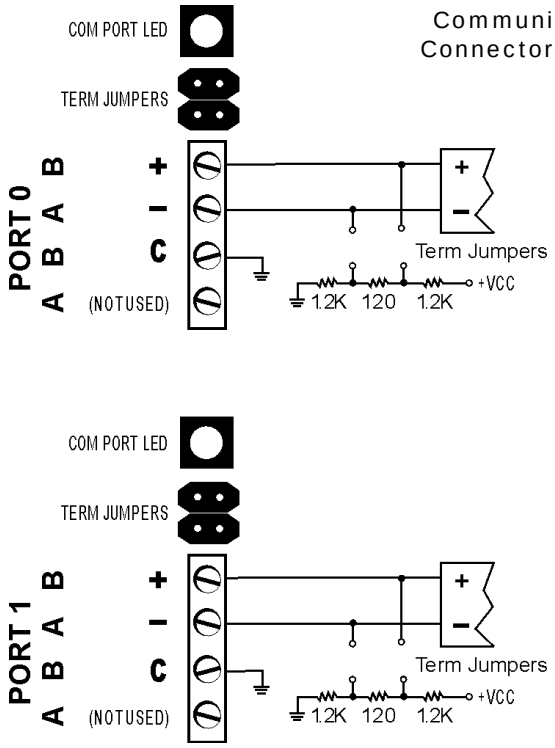
Identify unit
Power-up clear
Repeat last response
Reset
Set response delay

Digital Read/Write and Latch Commands

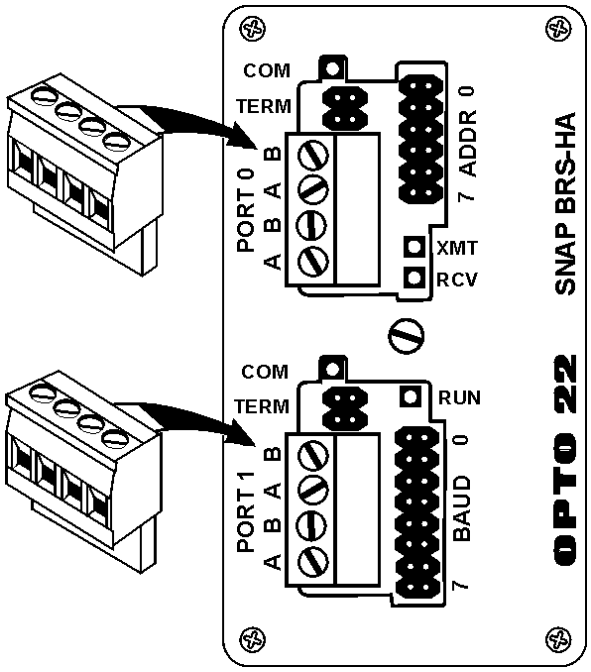
Read and optionally clear input latches (group command)
Read and optionally clear input latch
Read module status
Set output module state (group command)
Set output/clear output

Specifications (Continued)

Communication Jumpers and Wiring



Communication Connector Pinout



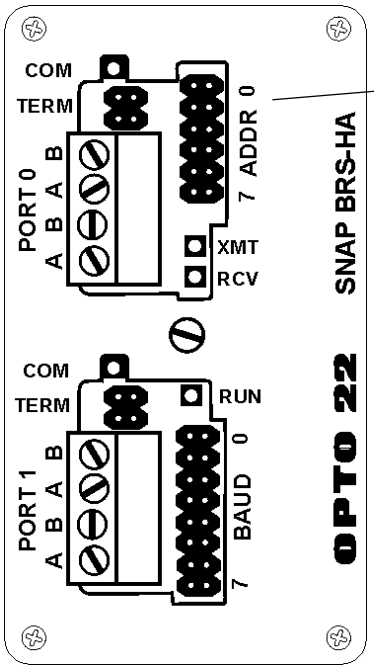
Notes:

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.

Specifications (Continued)

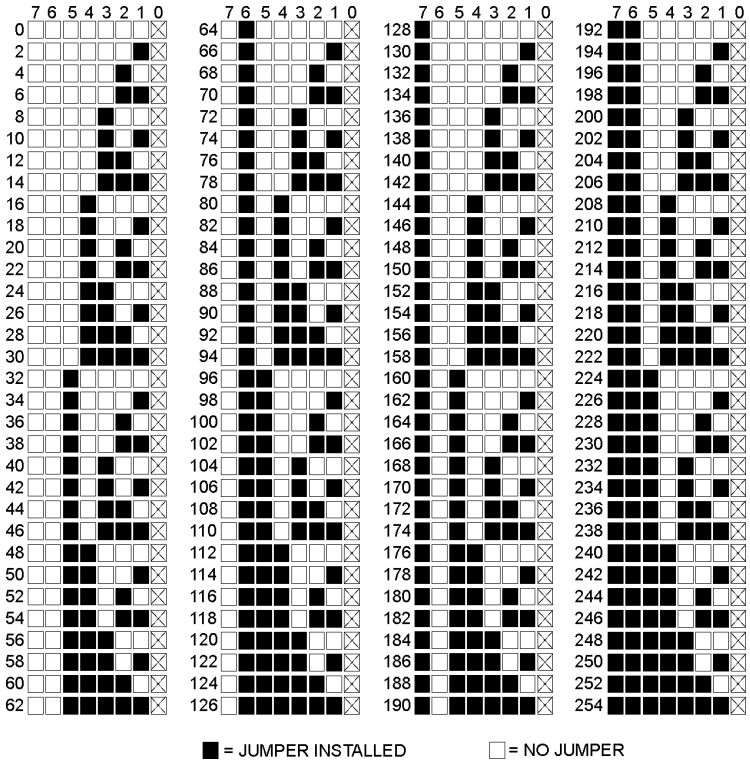
Baud/Address Jumpers and LED Descriptions

SNAP-BRS Brain



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.



Baud Rate Jumpers (0–5)

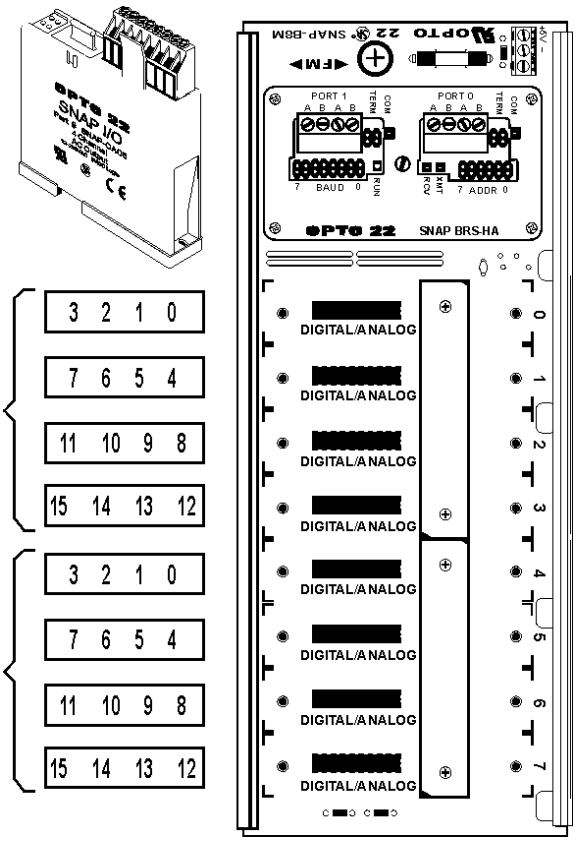
On the HA version of the SNAP-BRS, the baud rate jumpers have no function. The ARCNET communication is set at 2.5 megabits per second. Do not install jumpers on Baud 0 through Baud 5.

LED Descriptions

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

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.



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.

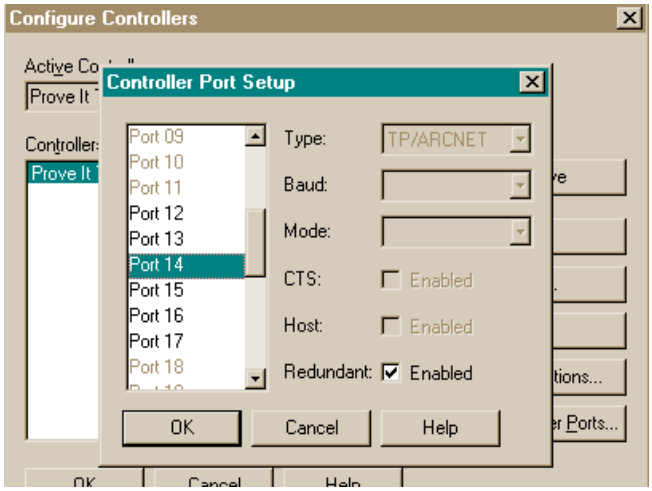
When a SNAP I/O point is configured on a digital brain, OptoControl automatically creates and configures the other three points in the module. For example, if a SNAP digital point is added at channel 5, then identical points are created atchannels 4, 6, and 7. Names are automatically created for these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

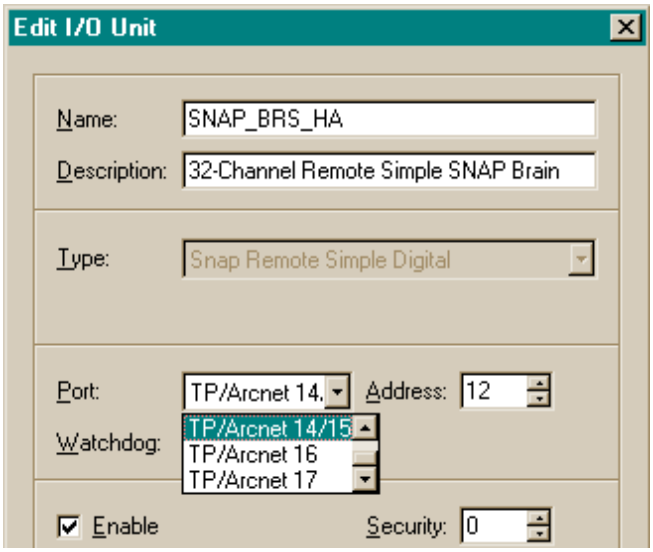
OptoControl Configuration

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.

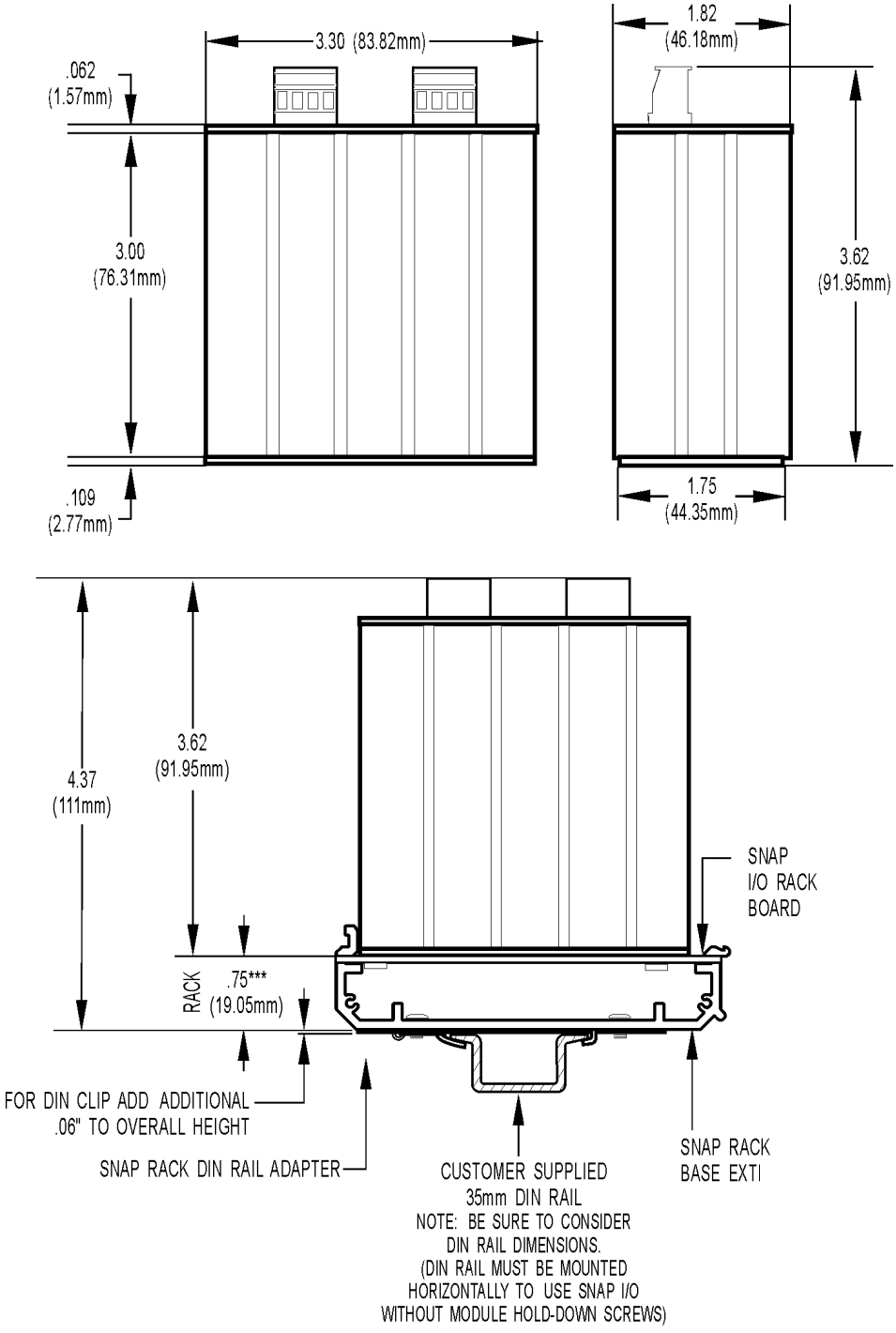


If the Redundant box is checked as shown above, the two ports are grouped together in the Add I/O Unit or Edit I/O Unit dialog box. The following figure shows the Add I/O Unit dialog box with ports 14 and 15 grouped as a redundant pair:



Dimensions

SNAP-BRS-HA Brain



Assembly

Brain

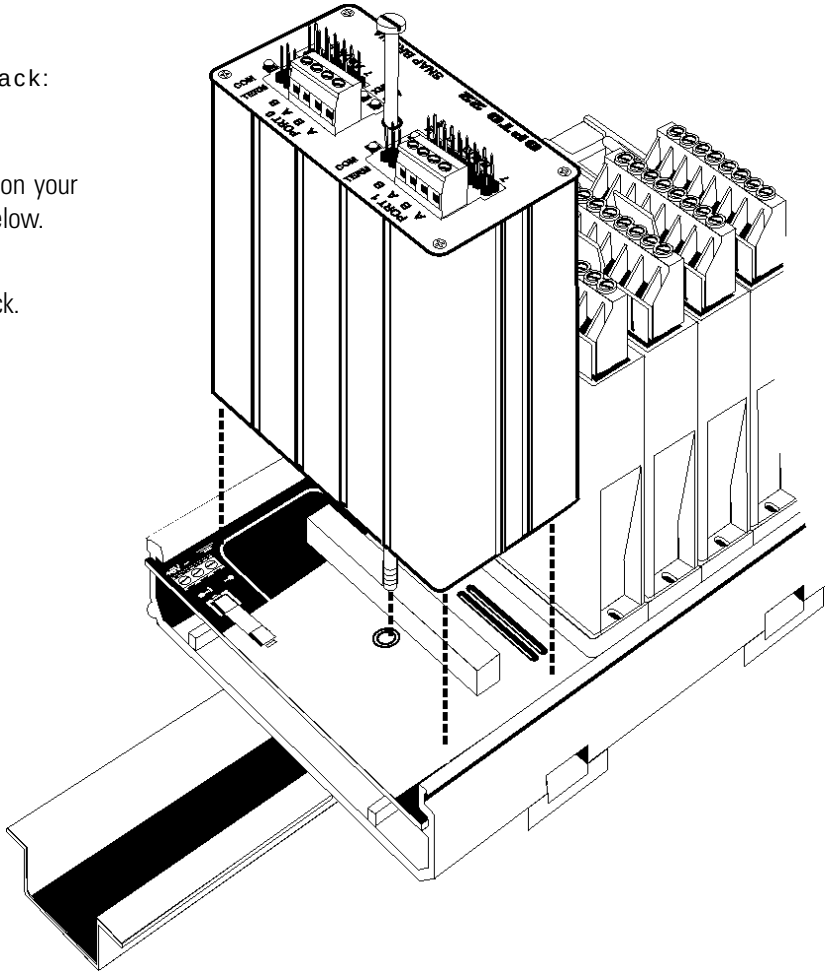
To install the brain onto a B-Series rack:

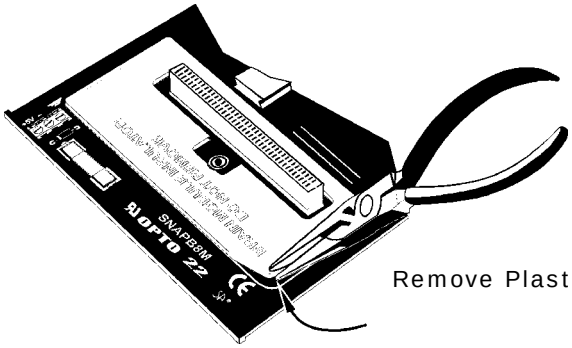
1. Turn off power to the rack assembly.
2. If a plastic brain insulator is present on your mounting rack, remove it as shown below.
3. Align the brain connector with the mating connector on the mounting rack.
4. Seat the brain onto the connector.
5. Use the integral hold-down screw to secure the brain 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

Products

Opto 22 produces a broad array of reliable, flexible hardware and software products for industrial automation, remote monitoring, enterprise data acquisition, and machine-to-machine (M2M) applications.

SNAP Ethernet Systems

Based on the Internet Protocol (IP), SNAP Ethernet systems offer flexibility in their network connectivity and in the software applications they work with. The physical network may be a wired Ethernet network, a cellular wireless network, or a modem. A wide variety of software applications can exchange data with SNAP Ethernet systems, including:

- Opto 22's own ioProject™ suite of control and HMI software
- Manufacturing resource planning (MRP), enterprise management, and other enterprise systems
- Human-machine interfaces (HMIs)
- Databases
- Email systems
- OPC client software
- Custom applications
- Modbus/TCP software and hardware.

SNAP Ethernet system hardware consists of controllers and I/O units. Controllers provide central control and data distribution. I/O units provide local connection to sensors and equipment.

SNAP OEM Systems

Opto 22 SNAP OEM I/O systems are highly configurable, programmable processors intended for OEMs, IT professionals, and others who need to use custom software with Opto 22 SNAP I/O modules.

Linux® applications running on these systems can read and write to analog, simple digital, and serial I/O points on SNAP I/O modules using easily implemented file-based operations. Applications can be developed using several common development tools and environments, including C or C++, Java, and shell scripts.

M2M Systems

Machine-to-machine (M2M) systems connect your business computer systems to the machines, devices, and environments you want to monitor, control, or collect data from. M2M systems often use wireless cellular communications to link remote facilities to central systems over the Internet, or to provide monitoring and control capability via a cellular phone.

Opto 22's Nvio™ systems include everything you need for M2M—interface and communications hardware, data service plan, and Web portal—in one easy-to-use package. Visit nvio.opto22.com for more information.

Opto 22 Software

Opto 22's ioProject and FactoryFloor® software suites provide full-featured and cost-effective control, HMI, and OPC software to power your Opto 22 hardware. These software applications help you develop control automation solutions, build easy-to-use operator interfaces, and expand your manufacturing systems' connectivity.

Quality

In delivering hardware and software solutions for worldwide device management and control, Opto 22 retains the highest commitment to quality. We do no statistical testing; each product is made in the U.S.A. and is tested twice before leaving our 160,000 square-foot manufacturing facility in Temecula, California. That's why we can guarantee solid-state relays and optically-isolated I/O modules *for life*.

Product Support

Opto 22's Product Support Group offers comprehensive technical support for Opto 22 products. The staff of support engineers represents years of training and experience, and can assist with a variety of project implementation questions. Product support is available in English and Spanish from Monday through Friday, 7 a.m. to 5 p.m. PST.

Opto 22 Web Sites

- www.opto22.com
- nvio.opto22.com
- www.internetio.com (live Internet I/O demo)

Other Resources

- OptoInfo CDs
- Custom integration and development
- Hands-on customer training classes.

About Opto 22

Opto 22 manufactures and develops hardware and software products for industrial automation, remote monitoring, enterprise data acquisition, and machine-to-machine (M2M) applications. Using standard, commercially available Internet, networking, and computer technologies, Opto 22's input/output and control systems allow customers to monitor, control, and acquire data from all of the mechanical, electrical, and electronic assets that are key to their business operations. Opto 22's products and services support automation end users, OEMs, and information technology and operations personnel.

Founded in 1974 and with over 85 million Opto 22-connected devices deployed worldwide, the company has an established reputation for quality and reliability.

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