This product is obsolete.

OPTO 22

DATA
SHEET

Form 956-231010

Part Number	Description
SNAP-BRS	Remote Digital Brain, Serial, Mistic Protocol

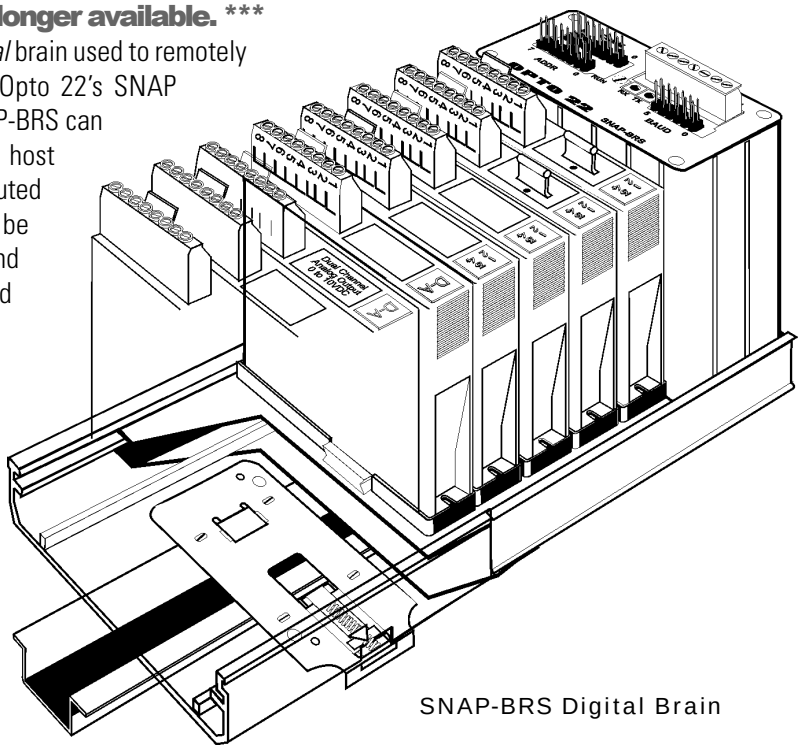
Description

***** This product is obsolete and no longer available. *****

The SNAP-BRS is a high-performance *digital* brain used to remotely control up to 32 digital I/O channels using Opto 22's SNAP "B Series" 8-position I/O mounting racks. SNAP-BRS can be used with either an Opto 22 controller or a host computer. On-board intelligence enables distributed control functions. The SNAP-BRS brain can be combined with other SNAP "B Series" racks and brains to provide the world's most powerful and sophisticated I/O handling systems.

The SNAP-BRS communicates with a host processor serially over RS-485 twisted pair wiring, and supports the advanced Mistic® protocol. Designed for high-speed input and output, the functions supported by the BRS family include read, write, and latching.

By using the SNAP-BRS family with the Mistic protocol and a controller, SNAP I/O customers can take advantage of FactoryFloor®, Opto 22's impressive new suite of Windows® 32-bit software that delivers total control to industrial automation customers. FactoryFloor consists of four integrated components:



SNAP-BRS Digital Brain

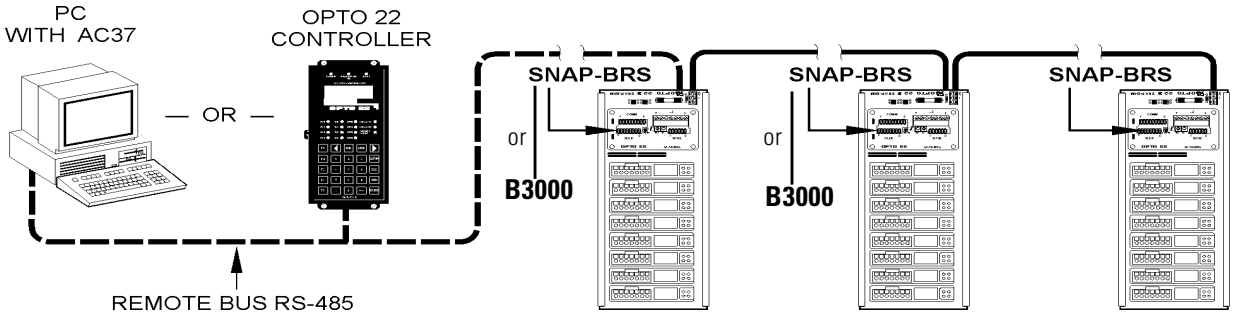
- OptoControl™, a graphical, flowchart-based development environment for control solutions
- OptoDisplay™, a graphical, multimedia operator interface package
- OptoServer™, a robust data server that connects the controller network with the PC-based FactoryFloor network
- OptoConnect™, a drag-and-drop database utility that makes building SQL Server and Access databases a snap.

OptoControl is the cornerstone of Opto 22's FactoryFloor software, and is the programming environment that leverages all the power of Opto 22's distributed hardware platform. OptoControl utilizes the distributed control capability of the SNAP-BRS brain and takes advantage of the graphical Windows 95 or NT interface to make it easy to configure, design, and troubleshoot your control system.

Opto 22's OptoDriver Toolkit may be used for direct communications from a host PC to the SNAP-BRS. The toolkit includes new 32-bit Windows-compatible drivers, Windows 16-bit drivers, and Opto 22's Classic DOS drivers.

Description

System Architecture



Specifications [Obsolete]

General

Power Requirements	5.0 VDC ± 0.1 VDC @ 1.0A max.
Operating Temperature	0 to 70° C, 95% humidity, non-condensing
CPU	8-bit 8051 processor
Communications Interface	Supports 2-wire or 4-wire RS-485 using twisted pair cable with shield
Data Rates	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 76800, and 115200 baud
Range: (Multidrop)	Up to 3,000 feet and 32 stations maximum between repeaters
LED Indicators	RUN (Power On), RCV (Receive), XMT (Transmit)
Options: Jumper Selectable	Address, communication, baud rate, CRC/Checksum, Binary/ASCI

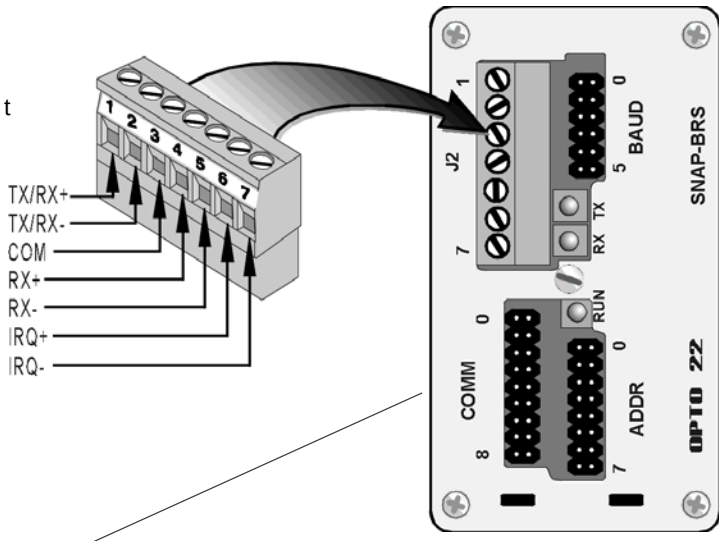
Command Set: Setup And System Commands

Setup and System Commands	Digital Read/Write, Latch Commands
Identify Unit	Read and optionally clear input latches (group command)
Power up clear	Read and optionally clear input latch
Repeat last response	Read module status
Reset	Set output module state (group command)
Set response delay	Set output Clear output

Specifications

Communication Jumpers/Wiring

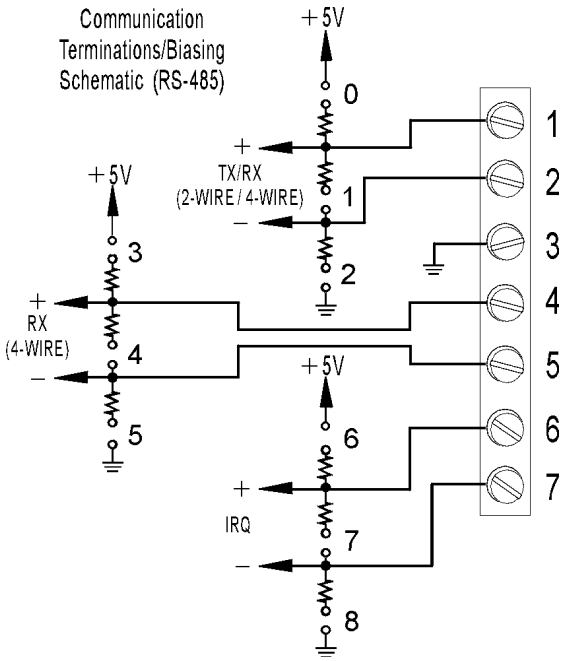
Communication Connector Pinout



Communication Jumper Descriptions

Jumper	Description
0	Pull-up for TX/RX+
1	Terminator for TX/RX
2	Pull-down for TX/RX-
3	Pull-up for RX+
4	Terminator for RX line
5	Pull-down for RX line
6	Pull-up for IRQ+
7	Terminator for IRQ
8	Pull-down for IRQ-

Communication Terminations/Biasing Schematic (RS-485)



Specifications

Baud/Address Jumpers, LED Descriptions

SNAP-BRS Brain

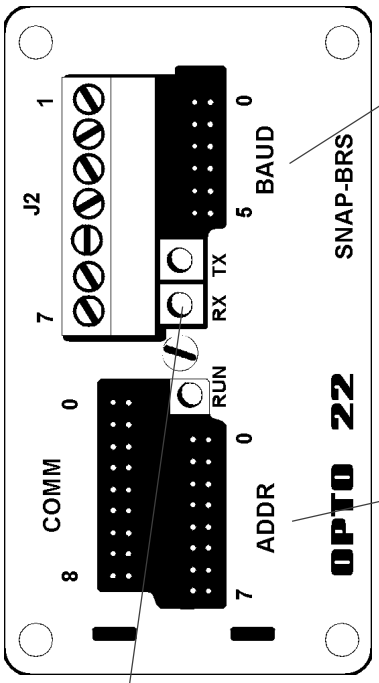


Table 1: Baud Rate Jumpers (0 - 5)

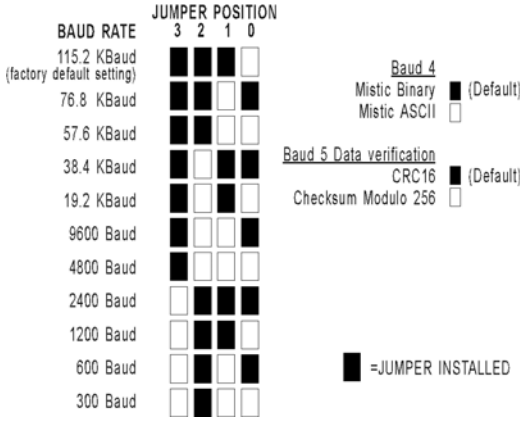


Table 2: Address Jumpers (0 - 7)

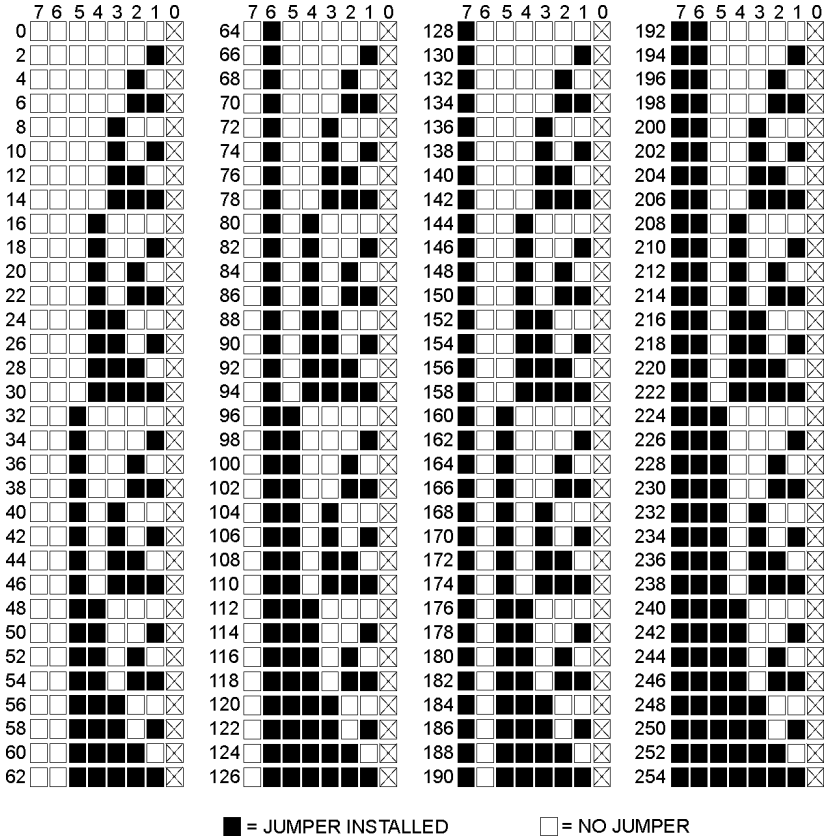


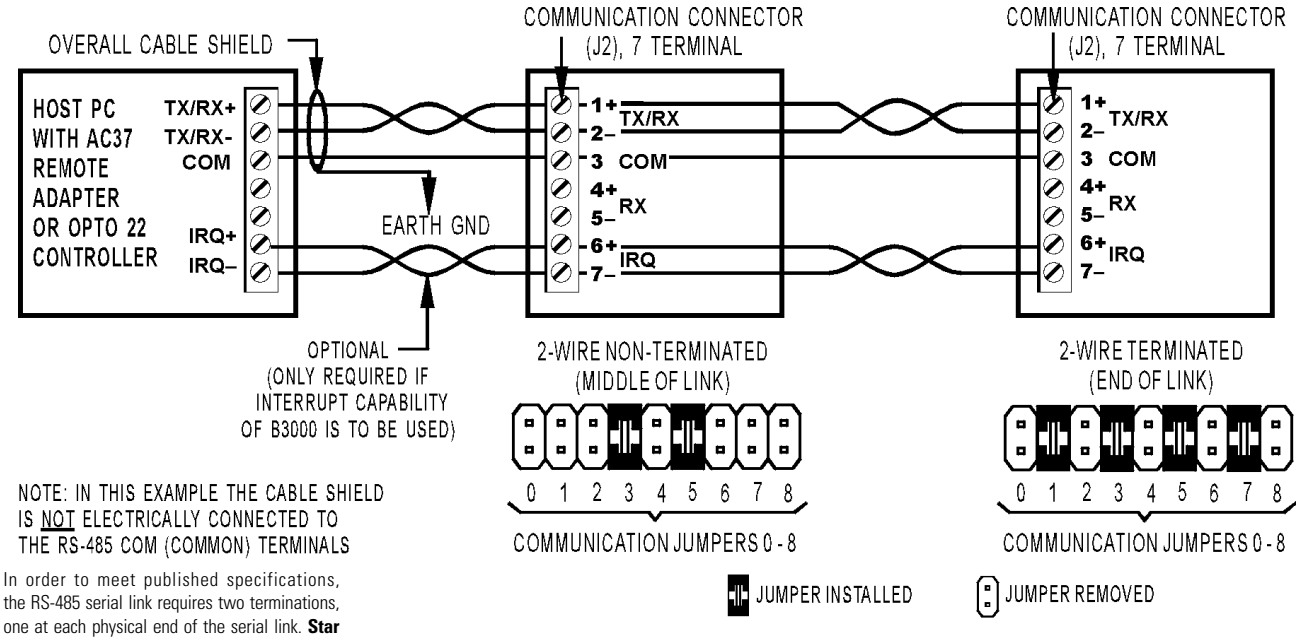
Table 3: LED Descriptions

LED	Description
RX	Processor is currently receiving data on communication line.
TX	Processor is currently transmitting data on communication line.
RUN	Power on processor (at least 4.75 VDC)

Specifications

Communication Jumpers/Wiring

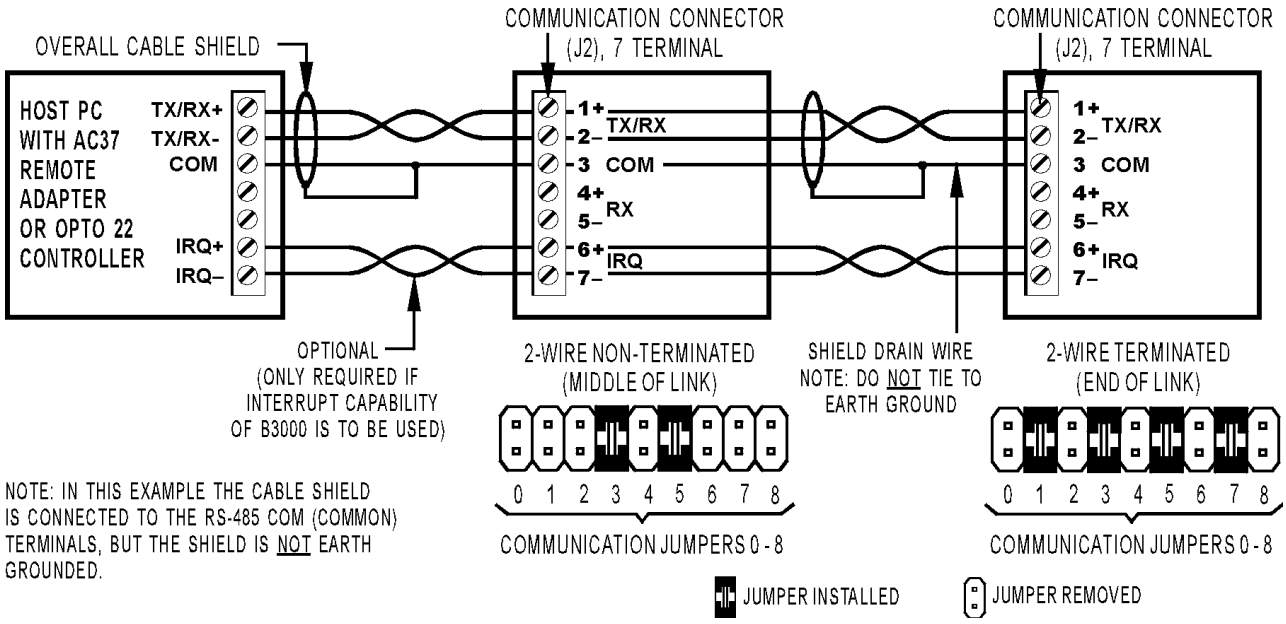
STANDARD 2-WIRE CONFIGURATION



NOTE: IN THIS EXAMPLE THE CABLE SHIELD IS NOT ELECTRICALLY CONNECTED TO THE RS-485 COM (COMMON) TERMINALS

In order to meet published specifications, the RS-485 serial link requires two terminations, one at each physical end of the serial link. **Star configuration is not allowed.** In order to use a star configuration, use Opto 22 Part No. AC38A/B.

ALTERNATE 2-WIRE CONFIGURATION
(ACCEPTABLE FOR MOST CONDITIONS)

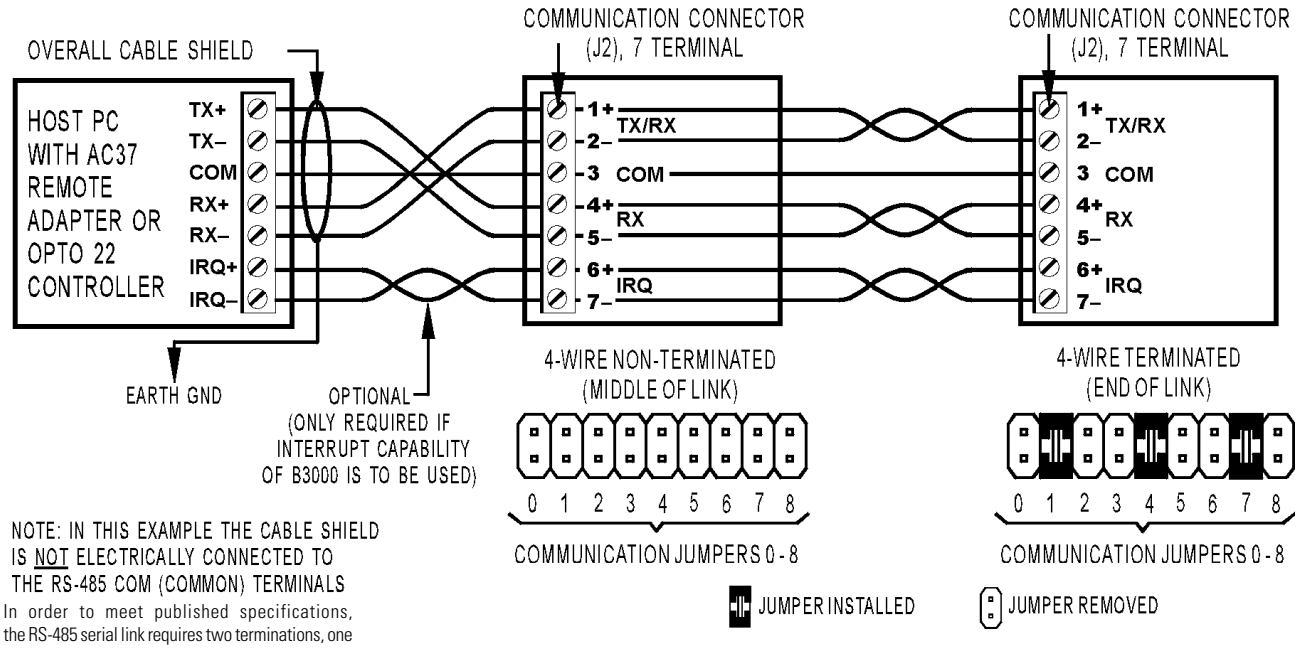


NOTE: IN THIS EXAMPLE THE CABLE SHIELD IS CONNECTED TO THE RS-485 COM (COMMON) TERMINALS, BUT THE SHIELD IS NOT EARTH GROUNDED.

Specifications

Communication Jumpers/Wiring (Continued)

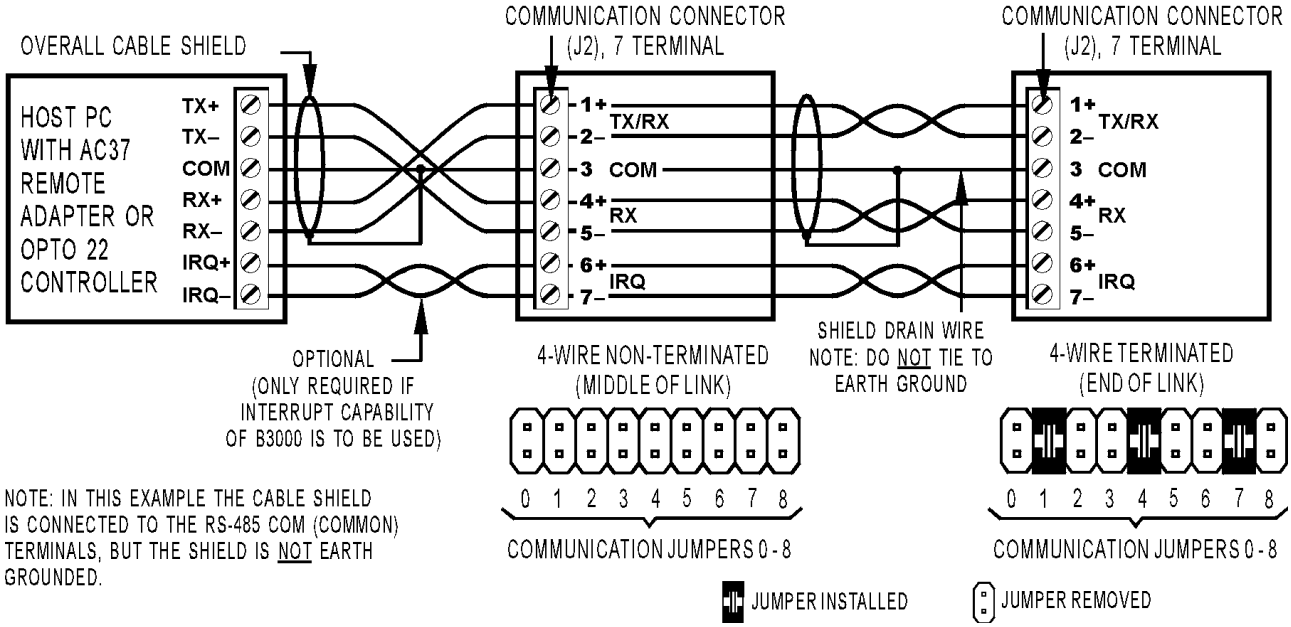
STANDARD 4-WIRE CONFIGURATION



NOTE: IN THIS EXAMPLE THE CABLE SHIELD IS NOT ELECTRICALLY CONNECTED TO THE RS-485 COM (COMMON) TERMINALS

In order to meet published specifications, the RS-485 serial link requires two terminations, one at each physical end of the serial link. **Star configuration is not allowed.** In order to use a star configuration, use Opto 22 Part No. AC38A/B.

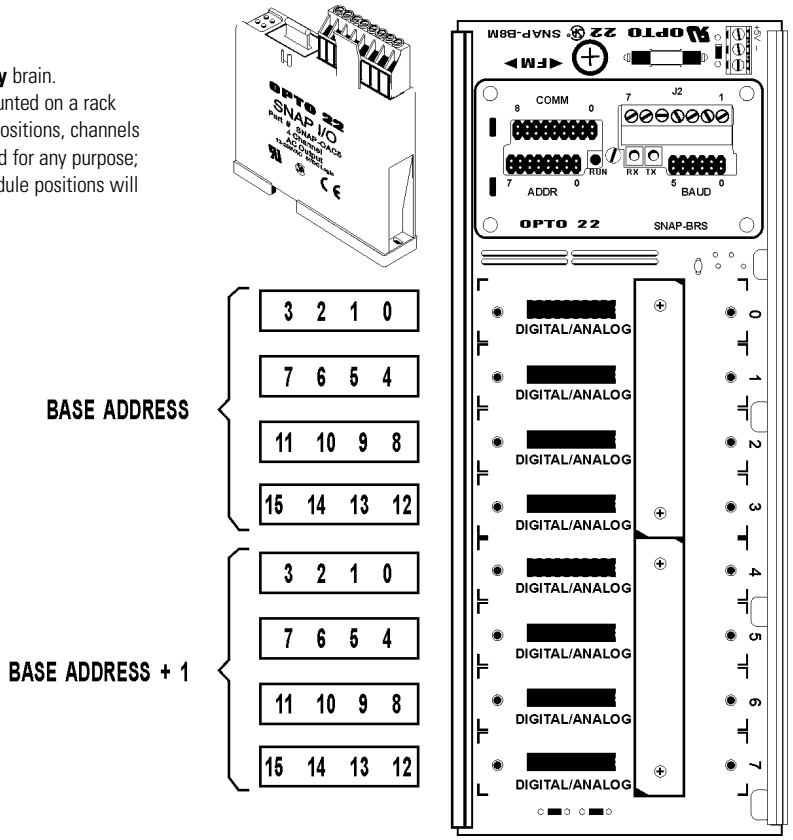
ALTERNATE 4-WIRE CONFIGURATION
(ACCEPTABLE FOR MOST CONDITIONS)



NOTE: IN THIS EXAMPLE THE CABLE SHIELD IS CONNECTED TO THE RS-485 COM (COMMON) TERMINALS, BUT THE SHIELD IS NOT EARTH GROUNDED.

Specifications
SNAP Digital I/O Mapping

Notes:
1. SNAP-BRS is a **digital-only** brain.
2. If SNAP-BRS brains are mounted on a rack with more than 8 module positions, channels 8 and above cannot be used for any purpose; however the first eight module positions will function normally.



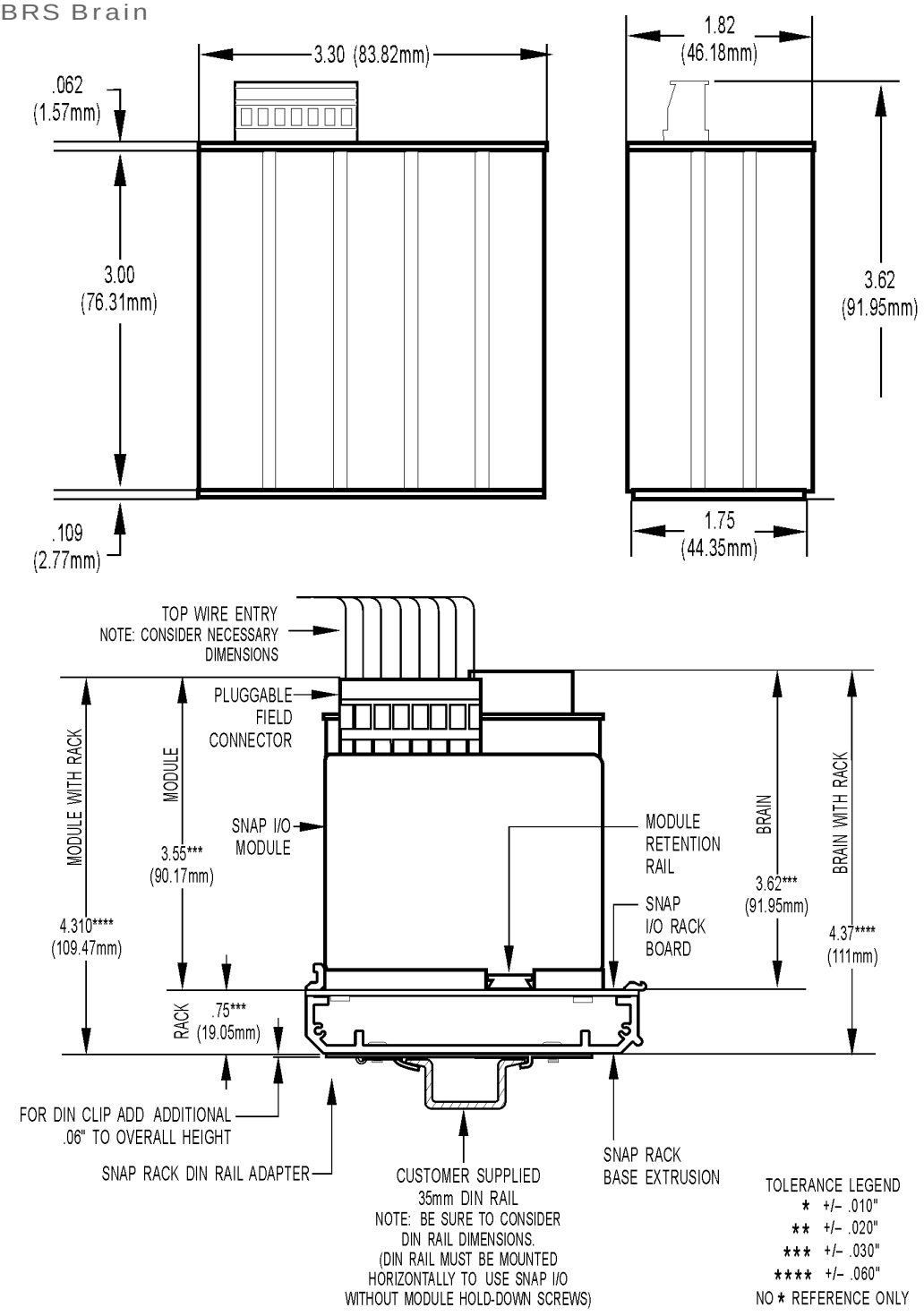
Specifications
SNAP I/O Addressing

A SNAP-BRS is capable of addressing a maximum of 32 channels of digital I/O and has no analog capability. I/O on the SNAP-BRS is divided into two addresses, each with 16 channels of I/O. The digital addresses are base +0 and base +1. Therefore, if a SNAP-BRS brain is configured at address 12, the digital addresses would be 12 and 13. Address 12 would talk to the modules in positions 0 - 3; channels would be numbered 0 - 15 in the software. Address 13 would talk to module positions 4 - 7; again the channels would be numbered from zero through 15. When configuring the brain in OptoControl, select two consecutive addresses. In the Add I/O Unit dialog 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 that module. For example, if a SNAP digital point is added at channel 5, then identical points are created at channels 4, 6, and 7. Unique names are created for these new points, based on the name entered for the original point. You can then modify the name and description for each channel independently. If the module type of one digital point is changed, then the module type of all other points in that module is automatically changed.

Dimensions

SNAP-BRS Brain



Assembly

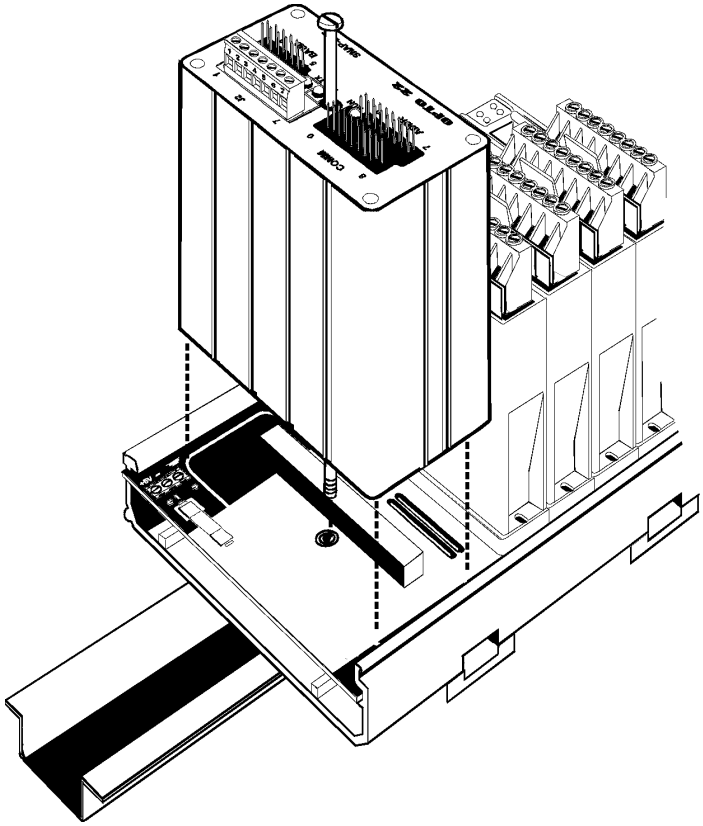
Brain And Mounting Rack

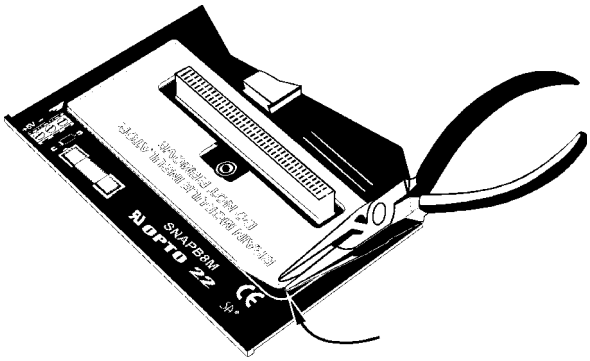
To install the brain onto a B Series rack:

1. Turn off power to rack assembly.
2. If a plastic brain insulator is present on your mounting rack, remove it as shown below.
3. Align brain connector with mating connector on rack.
4 Seat brain onto connector.
5. Use integral hold-down screw to secure in position. Do not overtighten.

To remove brain from B Series rack:

1. Turn off power to rack assembly.
2. Loosen integral hold-down screw on processor.
3 Pull up on processor.





Remove Plastic Insulator

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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 even write an IEC 61131-3 compliant control program to run on *groov* RIO, using CODESYS. 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.

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