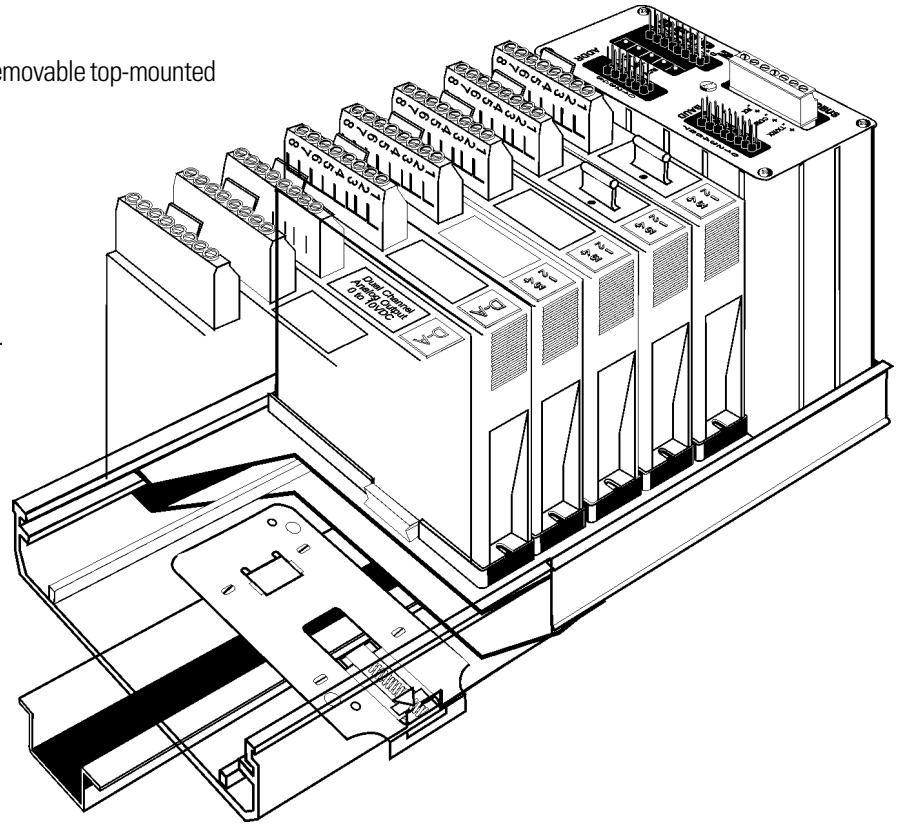
Part Number	Description
B3000	SNAP Analog/Digital Brain Mistic/Optomux Protocol

Features

- Convenient pluggable connector for removable top-mounted field wiring.
- Ready access to standard fuses.
- Versatile DIN-rail or panel mounting.
- Single distributed brain does it all - analog, digital, or mixed I/O.
- Highly visible LED status indicator for each channel.
- Digital I/O (four channels per module).
- Mix analog and digital modules on the same rack.
- Software-configurable, dual-channel, intelligent analog I/O.
- Quick and easy installation - modules "SNAP" securely on racks; no screws required.
- Factory Mutual approved



Description

The B3000 is a high-performance brain used to remotely control a mix of both analog and digital I/O modules using Opto 22's SNAP "B Series" I/O mounting racks. The B3000 can be used with either an Opto 22 controller or a host computer. On-board intelligence enables many distributed control functions.

Since SNAP analog and digital modules have the same footprint, the B3000 brain can be combined with SNAP "B Series" racks to provide a powerful I/O handling system. Please note that some newer SNAP modules are not compatible with the B3000 brain. See the module's data sheet for compatibility information.

The B3000 communicates with a host processor serially over RS-485 twisted-pair wiring and supports both the *mistic*® protocol and the industry-standard Optomux® protocol. Both protocols can support high-speed communication (115 Kbaud).

Utilizing the mistic protocol, advanced I/O processing—including PID calculations (100 millisecond update), pulse width duration measurements (100 microsecond resolution), and high-speed counting (20,000 Hz)—can all be accomplished on separate channels of the same I/O mounting rack. See page 3 for a complete list of mistic functions.

In addition to providing input and output capability, the Optomux protocol also has the ability to perform count, latch, and pulse duration on digital input channels, as well as frequency and pulse functions on digital outputs. The Optomux protocol is also capable of providing input averaging and output waveform functions on analog channels. See page 4 for a complete list of Optomux functions.

The B3000 is compatible with the classic B1 and B2 brains, with a few exceptions. The B3000 adds the ability to communicate with either a 2-wire or 4-wire configuration, at speeds of 115 Kbaud. Classic brains were restricted to 4-wire communications at up to 38.4 Kbaud. The B3000 supports only the standard 2-pass method of communication with the Optomux protocol.

By using the B3000 with the mistic protocol and a mistic controller, SNAP I/O customers can use FactoryFloor®, Opto 22's suite of Windows® software. FactoryFloor consists of four integrated components:

- 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.
- Plus OptoConnect™, a drag-and-drop database utility for building SQL Server and Access databases.

OptoControl is the programming environment for Opto 22's FactoryFloor software. OptoControl utilizes the distributed control capability of the B3000 brain.

Opto 22's OptoDriver Toolkit™ can be used for direct communications from a host PC to the B3000. The toolkit includes 32-bit and 16-bit Windows drivers and Opto 22's classic DOS drivers. The kit also provides the files, documentation, and real-world examples needed to write Microsoft® Windows and DOS software applications. Programmers can access the Opto 22 I/O hardware using languages such as Microsoft Visual C++™ or Microsoft Visual Basic®.

Please note: FactoryFloor is a legacy product. The newer PAC Project Professional software suite supports B3000 brains with SNAP PAC S-series programmable automation controllers.

Specifications

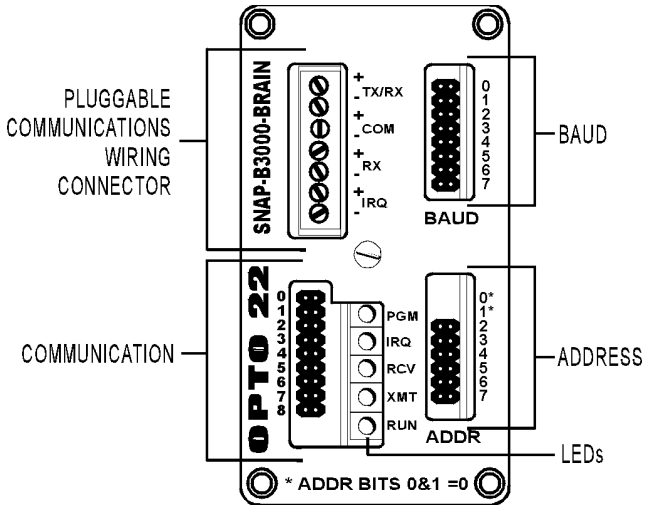
General

Operating Specifications

Power Requirements	5.0 VDC ± 0.1 VDC @ 1.0A max.
Operating Temperature	0° to 70°C, 95% humidity, non-condensing
Communications Interface	RS-485/422, 2- or 4-wire, twisted pair(s), with shield
Data Rates	300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 76800, and 115200 baud
Range: Multidrop	Unlimited. (Up to 3,000 feet or 32 stations maximum between repeaters)
LED Indicators	RUN (Power ON), RCV (Receive), XMT (Transmit), (IRQ) Interrupt, and (PGM) Program
Options: Jumper Selectable	Address Communication baud rate CRC/Checksum Binary/ASCII Mistic/Optomux Emulation

Connectors And Jumpers

Top View: B3000
(cover removed)



Specifications

Serial Communication Cables

The following cables are recommended for RS-485/422 serial communications. Although you may elect to use other cables, keep in mind that low capacitance (less than 15 pF/ft.) is important for high-speed digital communication links. The cables listed below are all 24-gauge, 7x32 stranded, with 100-ohm nominal impedance and a capacitance of 12.5 pF/ft.

Select from the following two-, three-, and four-pair cables, depending on your application needs. All will yield satisfactory results. It is recommended that you choose a cable with one more pair than your application requires. Use one of the extra wires, rather than the shield, for the common.

Two-Pair:

- Belden P/N 8102 (with overall shield)
- Belden P/N 9729 (individually shielded)
- Belden P/N 8162 (individually shielded with overall shield)
- Manhattan P/N M3475 (individually shielded with overall shield)
- Manhattan P/N M39249 (individually shielded with overall shield)

Three-Pair:

- Belden P/N 8103 (with overall shield)
- Belden P/N 9730 (individually shielded)
- Belden P/N 8163 (individually shielded with overall shield)
- Manhattan P/N M3476 (individually shielded with overall shield)
- Manhattan P/N M39250 (individually shielded with overall shield)

Four-Pair:

- Belden P/N 8104 (with overall shield)
- Belden P/N 9728 (individually shielded)
- Belden P/N 8164 (individually shielded with overall shield)
- Manhattan P/N M3477 (individually shielded with overall shield)
- Manhattan P/N M39251 (individually shielded with overall shield)

Dimensional Drawings

B3000 I/O Processor