

DATA SHEET

Form 1109-200306

Part Number	Description
SNAP-PDPRS64	Profibus-DP Digital Slave Brain

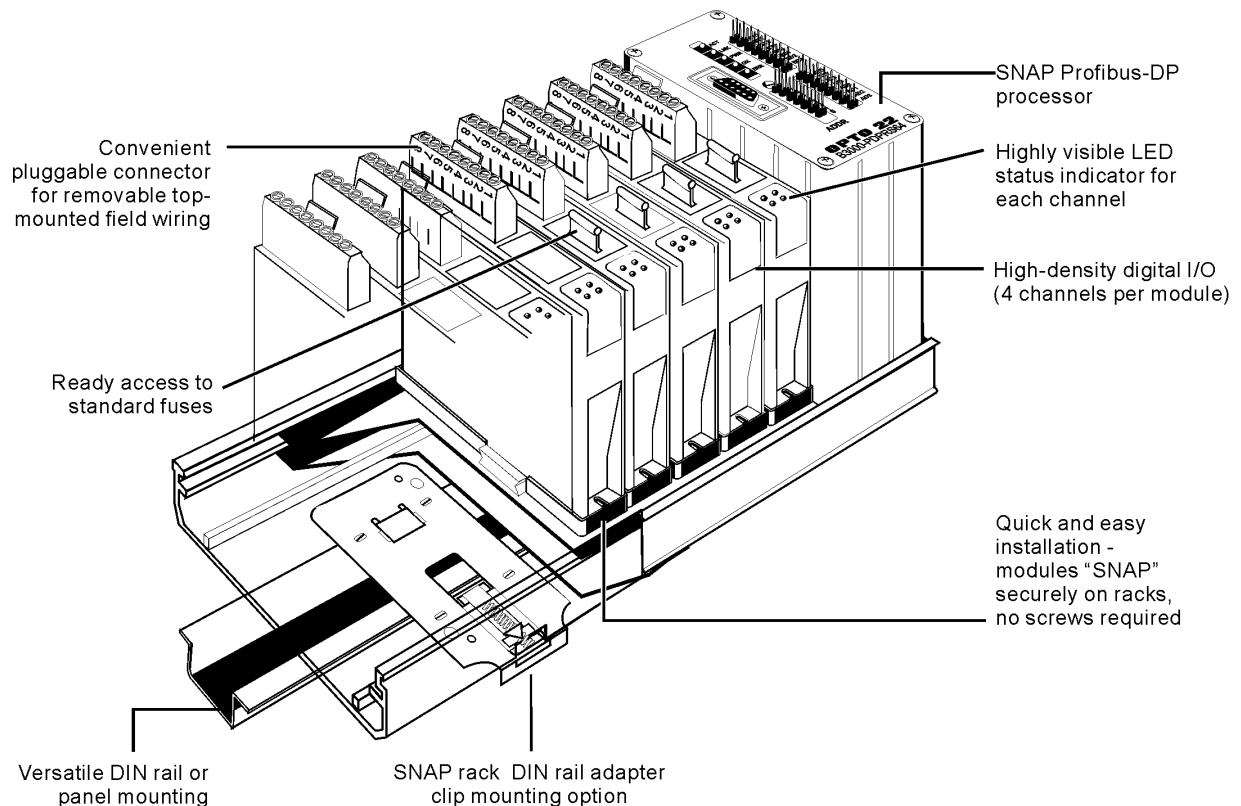
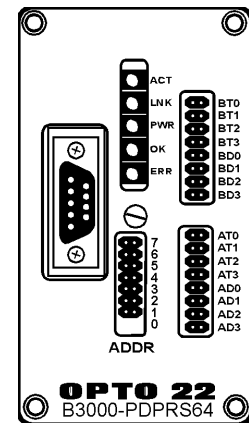
Description

With the SNAP Profibus-DP brain, you can use state-of-the-art Opto 22 digital I/O hardware with your existing Profibus DP-compatible controller. The SNAP Profibus-DP brain is one of Opto 22's high-performance, intelligent processors designed to meet your distributed control needs. It is capable of controlling up to 64 channels of digital I/O, configured as inputs or outputs in banks of eight channels.

The SNAP Profibus-DP brain and its I/O mounting rack, the SNAP-D64RS, work with any Profibus-DP master device. The brain communicates to a Profibus-DP master via a 9-pin D-shell connector according to the Profibus DP network standard. Auto-negotiated baud rates of up to 12 Mbaud are supported. Functions include digital input and output read and write.

The .GSD file for the SNAP-PDPRS64, required by Profibus, can be downloaded from our Web site at www.opto22.com.

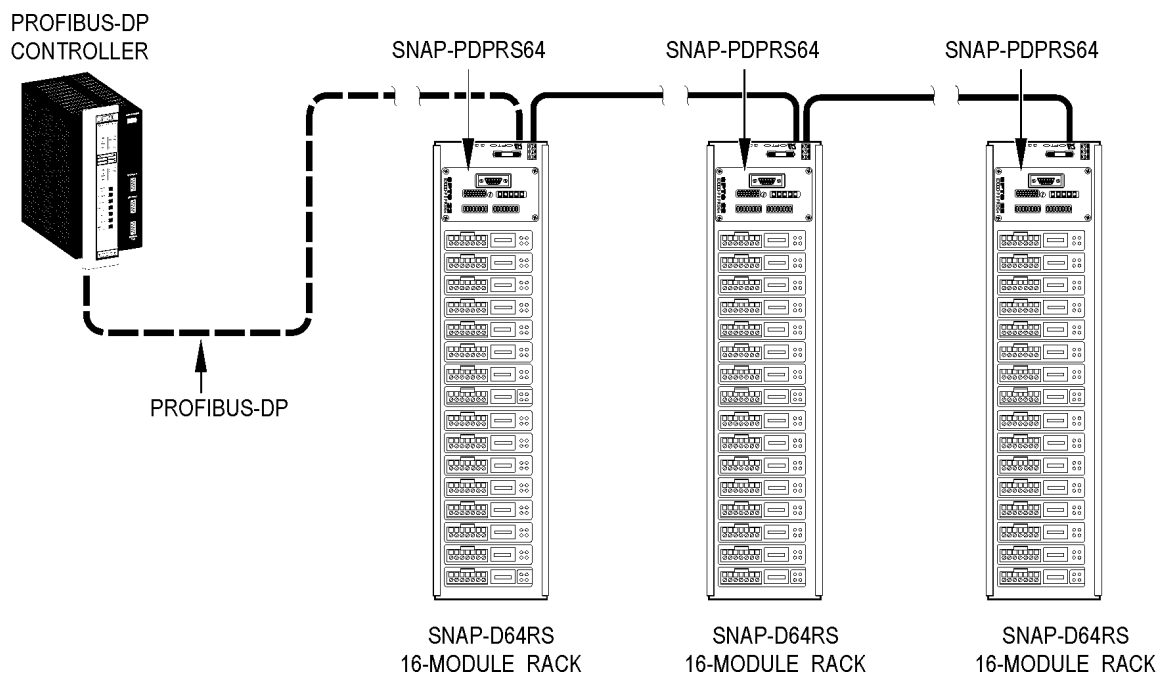
SNAP-PDPRS64 Top Cover



Description (Continued)

SNAP-PDPRS64 System Architecture

The SNAP Profibus-DP brain connects to the SNAP-D64RS I/O mounting rack, which can hold up to 16 SNAP digital modules, providing 64 channels of I/O. The I/O on the SNAP Profibus-DP brain is divided into eight groups, each with eight channels of I/O. All the channels in one group must be either inputs or outputs.



Specifications

Power Requirements	5.0 VDC \pm 0.1 VDC at 1.3 A max. (includes fully-populated rack with brain)
Operating Temperature	0° to 70° C, 95% humidity, non-condensing
Communications Interface	9-pin D-shell connector, Profibus-DP standard pinout
Data Rates	Automatically detected baud rates up to 12 Mbaud
Range	Per Profibus-DP network standard (speed-dependent)
LED Indicators	Activity, Link status, Power, Normal operation, Error
Options: Jumper Selectable	Direction information (input or output), Profibus-DP address

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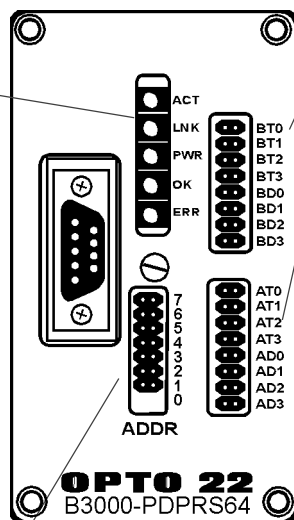
Specifications

Address and I/O Selection Jumpers, LED Descriptions

LED Descriptions

LED	Description
ACT	Processor currently transmitting or receiving data
LNK	Traffic on network
PWR	Power on processor (at least 4.75 VDC)
OK	Brain configuration matches software configuration
ERR	Error

Top View



I/O Selection Jumpers

The B3000-PDPRS64 brain is capable of addressing a maximum of 64 channels of digital I/O and has no analog capability.

I/O on this brain is divided into eight groups, each with eight channels of I/O. All the channels in one group must be either inputs or outputs. See the following page for a diagram of the I/O rack.

Jumpers AT0 through AD3 control input and output selection for the first four groups on the rack (I/O modules in positions 0–7). Jumpers BT0 through BD3 control input and output selection for the last four groups on the rack (I/O modules in positions 8–15).

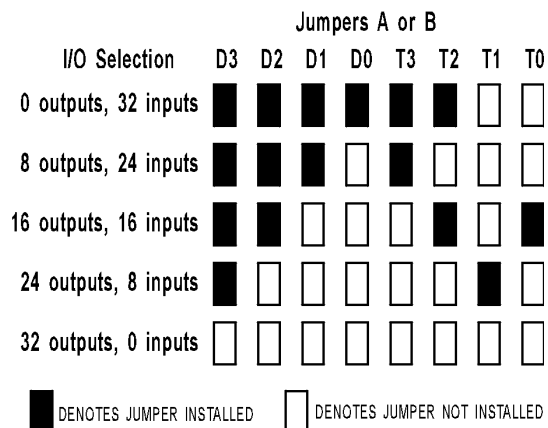
Both sets of I/O selection jumpers work in the same way. AT and BT jumpers set port type bits; AD and BD jumpers set port directional bits.

The combination of type and directional jumpers determines the number of inputs and outputs on the A half or the B half of the rack. On either half, output modules are placed in the lower-numbered positions and input modules in the higher-numbered positions.

The following diagram shows jumper positions for the possible combinations of inputs and outputs. See the following page for an example.

Address Jumpers

For address jumper settings, see the chart on page 5.



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Specifications

SNAP Digital I/O Mapping

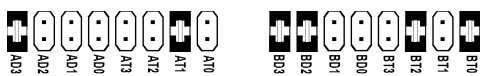
I/O Selection Example

Suppose you need a total of 40 output points and 24 input points on the rack. You decide to place 24 outputs and 8 inputs in positions 0–7 (the A half of the rack). That leaves 16 outputs and 16 inputs to go in positions 8–15 (the B half of the rack).

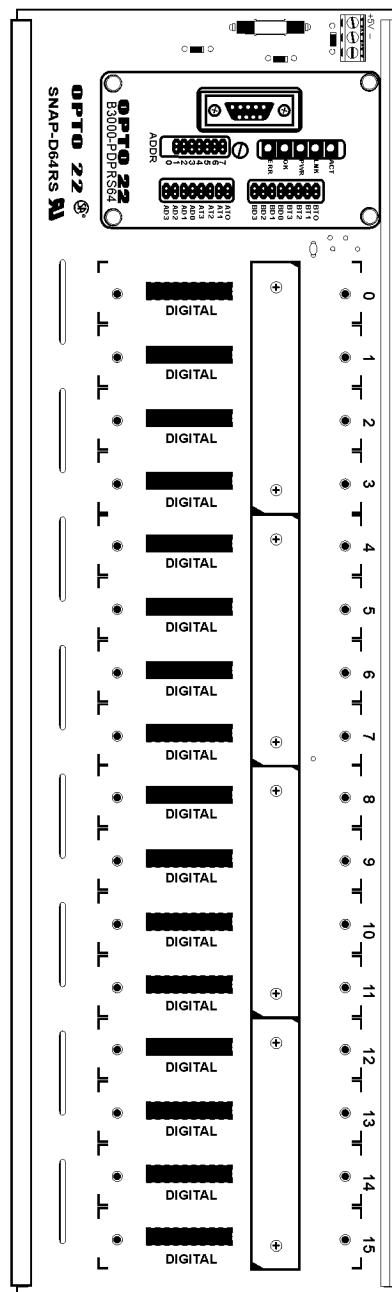
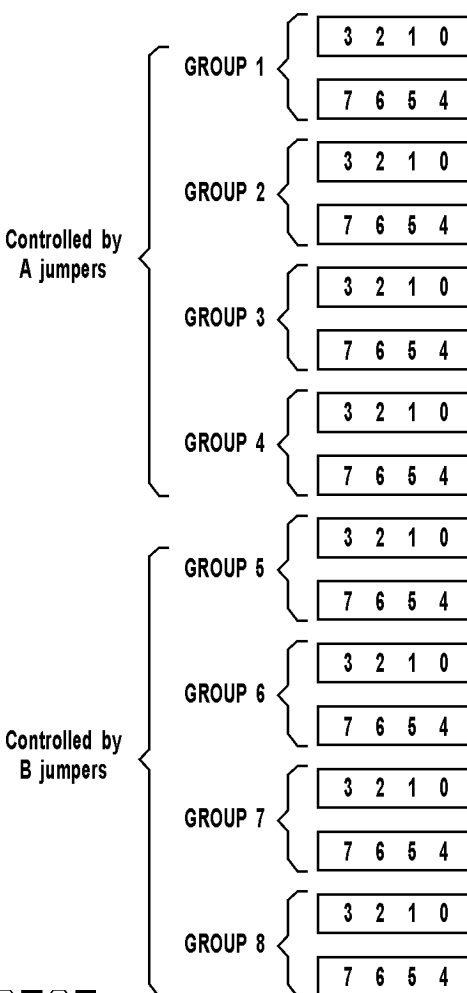
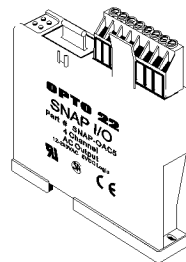
Since outputs must go in the lower-numbered positions on each half, you place the modules as follows:

Position	Module	I/O Points
0	output	A half: 24 outputs and 8 inputs
1	output	
2	output	
3	output	
4	output	
5	output	
6	input	
7	input	
8	output	B half: 16 outputs and 16 inputs
9	output	
10	output	
11	output	
12	input	
13	input	
14	input	
15	input	

For this example, you would set the I/O selection jumpers like this:



DENOTES JUMPER INSTALLED DENOTES JUMPER NOT INSTALLED



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Specifications

Address Jumpers

As shown in the SNAP rack diagram on the previous page, the 64 digital channels are divided into two 32-channel subunits, A and B. Each subunit has a unique address. The A subunit always has an even-numbered address, and the B subunit automatically takes the next odd-numbered address. Use the following chart to assign addresses to the subunits.

NOTES: Jumper position 0 is set by default and therefore not visible on the brain. Address 0 (all jumpers IN) is not a valid Profibus slave address, so the first two available addresses are 2 and 3.

All addresses are shown in hex format.

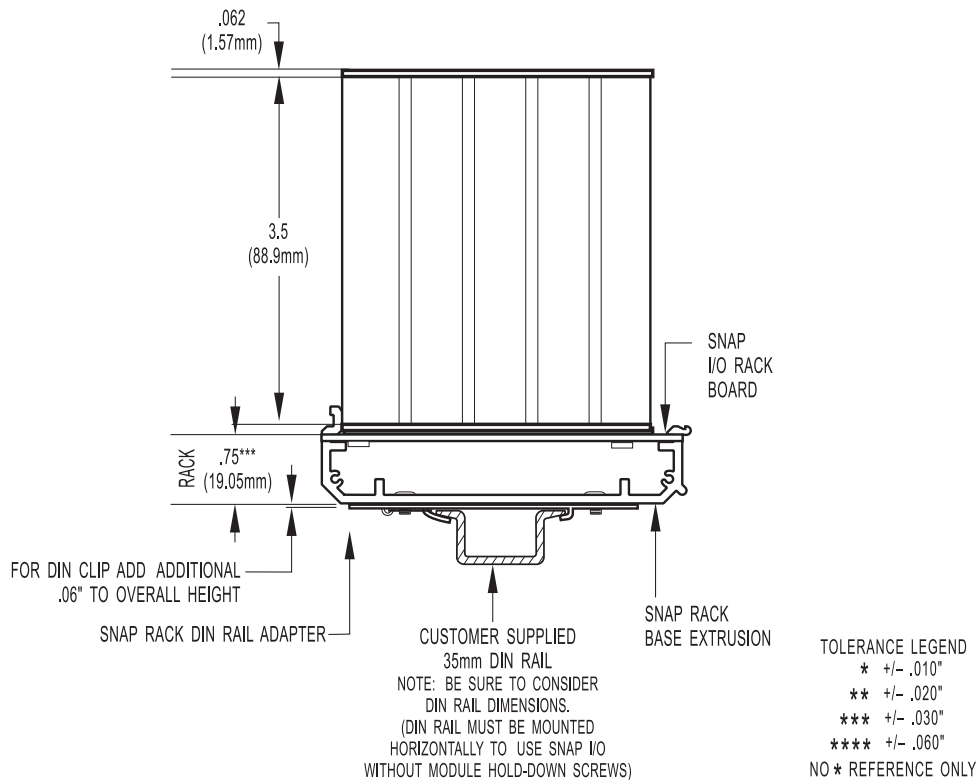
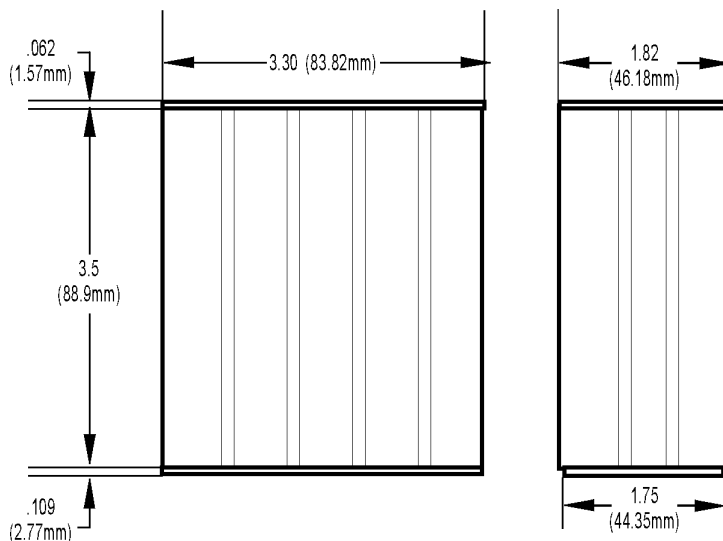
Addresses in Hex						Addresses in Hex											
A	B	7	6	5	4	3	2	1	A	B	7	6	5	4	3	2	1
78	79	■	□	□	□	□	□	□	38	39	■	■	□	□	□	□	□
76	77	■	□	□	□	□	□	□	36	37	■	■	□	□	□	□	□
74	75	■	□	□	□	□	□	□	34	35	■	■	□	□	□	□	□
72	73	■	□	□	□	□	□	□	32	33	■	■	□	□	□	□	□
70	71	■	□	□	□	□	□	□	30	31	■	■	□	□	□	□	□
68	69	■	□	□	□	□	□	□	28	29	■	■	□	□	□	□	□
66	67	■	□	□	□	□	□	□	26	27	■	■	□	□	□	□	□
64	65	■	□	□	□	□	□	□	24	25	■	■	□	□	□	□	□
62	63	■	□	□	□	□	□	□	22	23	■	■	□	□	□	□	□
60	61	■	□	□	□	□	□	□	20	21	■	■	□	□	□	□	□
58	59	■	□	□	□	□	□	□	18	19	■	■	□	□	□	□	□
56	57	■	□	□	□	□	□	□	16	17	■	■	□	□	□	□	□
54	55	■	□	□	□	□	□	□	14	15	■	■	□	□	□	□	□
52	53	■	□	□	□	□	□	□	12	13	■	■	□	□	□	□	□
50	51	■	□	□	□	□	□	□	10	11	■	■	□	□	□	□	□
48	49	■	□	□	□	□	□	□	8	9	■	■	□	□	□	□	□
46	47	■	□	□	□	□	□	□	6	7	■	■	□	□	□	□	□
44	45	■	□	□	□	□	□	□	4	5	■	■	□	□	□	□	□
42	43	■	□	□	□	□	□	□	2	3	■	■	□	□	□	□	□
40	41	■	□	□	□	□	□	□	(Not allowed)		■	■	□	□	□	□	□

■ = JUMPER INSTALLED □ = NO JUMPER

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Dimensions

SNAP-PDPRS64 Profibus-DP Brain



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Assembly

BRAIN

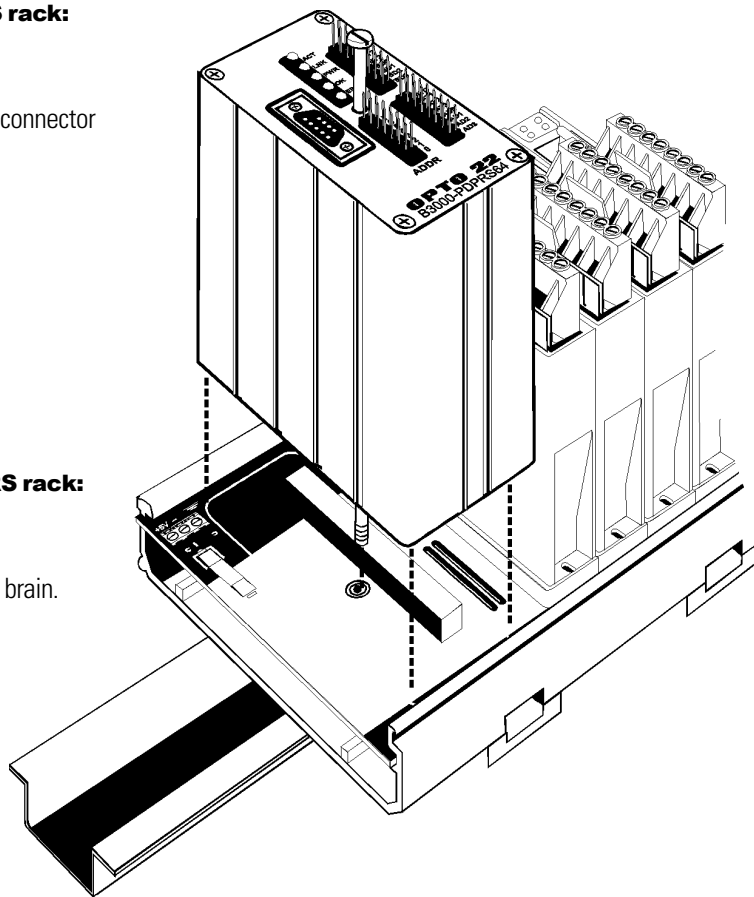
To install the brain onto the SNAP-D64RS rack:

1. Turn off power to the rack assembly.
2. Align the brain connector with the mating connector on the mounting rack.
3. Seat the brain onto the connector.
4. Use the integral hold-down screw to secure the brain in position.

DO NOT OVERTIGHTEN!

To remove the brain from the SNAP-D64RS 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.



PRODUCTS

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

groov EPIC® System

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

groov EPIC I/O

groov I/O connects locally to sensors and equipment with up to 24 channels on each I/O module. 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 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.

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 or on a monitor connected via the HDMI or USB ports.

groov EPIC Software

Software included in the *groov EPIC* processor:

- PAC Control engine to run PAC Control and PAC Display
- CODESYS Runtime engine to run IEC61131-3 compliant programs built with CODESYS Development System
- Optional access to the Linux operating system through a secure shell (SSH) to download and run custom applications
- *groov View* for building your own device-independent HMI, viewable on the touchscreen, PCs, and mobile devices
- Node-RED for creating simple logic flows from pre-built nodes
- Ignition Edge® from Inductive Automation®, with OPC-UA drivers to Allen-Bradley®, Siemens®, and other control systems, and MQTT communications with Sparkplug for efficient IIoT data transfer

groov RIO

groov RIO revolutionizes remote I/O by offering a single, compact, PoE-powered industrial package with web-based configuration, commissioning, and flow logic software built in, plus support for multiple OT and IT protocols.

Standing alone, it meets the needs of small, variable I/O count applications, especially those that require data logging or data communications, commonly found in IIoT applications. *groov RIO* can also be used with a Modbus/TCP master or as remote I/O for a *groov EPIC* system.

Older products

From solid state relays (our first products) to world-famous G4 and SNAP I/O, to SNAP PAC controllers, older Opto 22 products are still supported and still

doing the job at thousands of installations worldwide. You can count on us to give you 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, comprehensive 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, troubleshooting tips, and [OptoForums](#). In addition, instructor-led, hands-on [Premium Factory Training](#) is available at our Temecula, California headquarters, and you can [register online](#).

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.

