

## SNAP OEM I/O Brain

### Features

- Atmel 91RM9200 processor with 180 MHz ARM920 CPU core and MMU
- 64 MB RAM, 8 MB flash; 512 KB battery-maintained SRAM
- 10/100 Mbps Ethernet, USB 2.0, and RS-232 (serial) connectivity
- Battery-maintained realtime clock and calendar
- Compact form factor
- Compatibility with SNAP I/O modules and accessories.

### Description

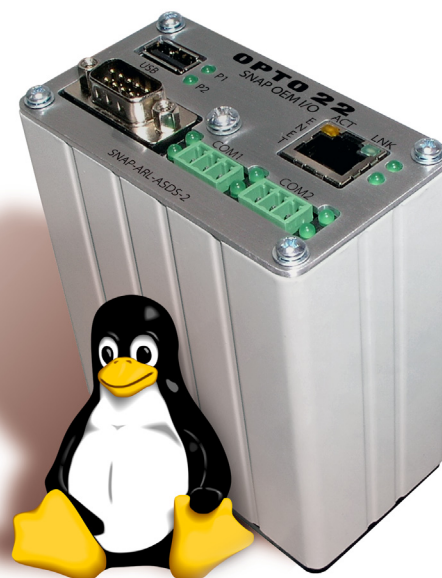
A SNAP OEM I/O™ system from Opto 22 provides a highly configurable, programmable processor for original equipment manufacturers (OEMs), information technology (IT) professionals, advanced automation users, and others who want to use custom software applications to interface with Opto 22 SNAP input/output (I/O) modules.

SNAP OEM I/O systems are ideal for high-performance I/O solutions that require:

- Extensive programmability and PC functionality at the I/O level
- Support for multiple processes, high-speed compiled code, and diverse programming languages
- Rapid boot-up
- Compact and rugged units suitable for deployment in harsh environments
- Low power, small size, and low cost compared to an industrial PC.

### SNAP-ARL-ASDS-2

Opto 22's **SNAP-ARL-ASDS-2** is a compact ARM-based processor (or "brain") that mounts on standard Opto 22 SNAP mounting racks and interfaces with a mix of Opto 22 analog and digital SNAP I/O modules. (High-speed hardware counters and latches are not supported for digital I/O.) The SNAP-ARL-ASDS-2 includes ports for 10/100 Mbps Ethernet, USB 2.0, and RS-232 serial links. This Linux®-based unit ships with an installed Linux kernel, and full source code and a development tool chain are available for download on the Opto 22 Web site.



**SNAP-ARL-ASDS-2**  
(shown with Linux mascot "Tux")

### Programming

A SNAP-ARL-ASDS-2 can accommodate a variety of embedded or real-time operating systems, such as Linux, QNX®, or your custom operating system, allowing developers to use the best combination of OS and programming language for a particular I/O application.

I/O applications running on the SNAP-ARL-ASDS-2 brain can read and write I/O points on SNAP I/O modules using easily implemented file-based operations. Drivers and driver source code are provided.

### SNAP I/O Modules

The SNAP-ARL-ASDS-2 brain works with Opto 22's family of digital and analog SNAP I/O modules, which are available for a wide range of current and voltage signals. Each SNAP digital module contains four input or four output points. SNAP analog modules contain either two points or four points, depending on the module.

SNAP-ARL-ASDS-2 also supports Opto 22's serial communication and high-density digital modules; for these modules, contact Opto 22 Product Support for additional compatibility information. Visit the Opto 22 Web site for complete information and data sheets on all SNAP I/O modules.

### Part Numbers

| Part            | Description                     |
|-----------------|---------------------------------|
| SNAP-ARL-ASDS-2 | SNAP OEM I/O programmable brain |

# SNAP OEM I/O Brain

## Description (continued)

### I/O Mounting Racks

The SNAP-ARL-ASDS-2 brain connects to standard SNAP B- and M-series I/O mounting racks, which are available with 4, 8, 12, or 16 positions for Opto 22 SNAP I/O modules. On these racks, analog

modules can be placed in any position, while digital modules can be placed in any of the first eight positions. Because of the rack's flexibility in handling digital and analog modules, you can install the modules that fit your needs.

## Specifications

|                                                                             |                                                                                                                 |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Processor                                                                   | Atmel AT91RM9200<br>• 180 MHz ARM920 CPU core with MMU                                                          |
| Memory                                                                      | 64 MB RAM; 8 MB flash memory; 512 KB battery-backed SRAM                                                        |
| Clock/Calendar                                                              | Battery-maintained realtime clock; year, month, day, hour, minute, second                                       |
| Network Interface                                                           | IEEE 802.3 network; 100Base-T with RJ-45 connector                                                              |
| Serial Ports                                                                | 1 RS-232 port with RTS/CTS and DB-9 connector<br>2 RS-232 ports with no handshaking and Phoenix 3-pin connector |
| USB Port                                                                    | USB 2.0 with Type A connector                                                                                   |
| Power Requirements<br>(does not include SNAP I/O module power requirements) | 5.0 to 5.2 VDC<br>Typical current loads:<br>• 350 mA operational (nominal)<br>• 220 mA startup                  |
| Environmental<br>Operating temperature<br>Storage temperature<br>Humidity   | 0 °C to 60 °C<br>-40 °C to 85 °C<br>0% to 95% relative humidity, non-condensing                                 |

## Pinouts and Indicators

### Serial Connector Pinouts

| DB-9 Pin | Signal | Phoenix Pin | Signal |
|----------|--------|-------------|--------|
| 1        | DCD    | 1           | Tx     |
| 2        | Rx     | 2           | Rx     |
| 3        | Tx     | 3           | COM    |
| 4        | DTR    |             |        |
| 5        | COM    |             |        |
| 6        | DSR    |             |        |
| 7        | RTS    |             |        |
| 8        | CTS    |             |        |
| 9        | RI     |             |        |

### LED Descriptions

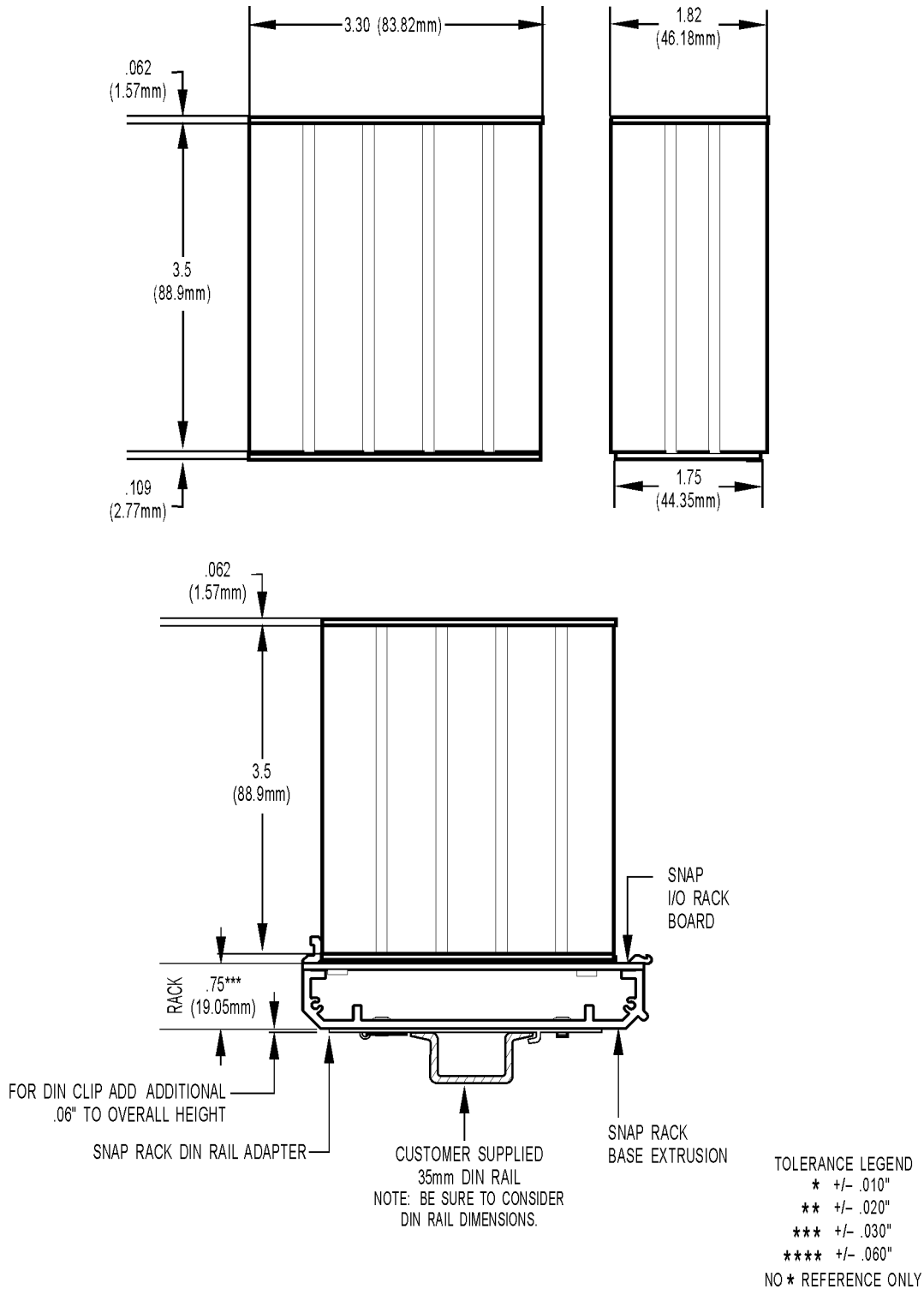
| LED | Description            |
|-----|------------------------|
| ACT | Network Activity       |
| LNK | Network Link Detection |
| P1  | (User programmable)    |
| P2  | (User programmable)    |
| TX  | Serial—Transmit Data   |
| RX  | Serial—Receive Data    |

PRELIMINARY

# SNAP OEM I/O Brain

## Dimensional Drawings

The dimensions of the SNAP-ARL-ASDS-2 are identical to Opto 22 SNAP Ultimate and SNAP Ethernet brains.



## More About Opto 22

### Products

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

### SNAP PACs (Programmable Automation Controllers)

Programmable automation controllers (PACs) are multifunctional, multidomain, modular controllers based on open standards and providing an integrated development environment. Models include the standalone SNAP PAC S-series and the rack-mounted SNAP PAC R-series. Both handle a wide range of digital, analog, and serial functions and are equally suited to data collection, remote monitoring, process control, and discrete and hybrid manufacturing.

SNAP PACs are based on open Ethernet and Internet Protocol (IP) standards, so you can build or extend a system without the expense and limitations of proprietary networks and protocols.

### ioProject Software Suite

Opto 22's ioProject Software Suite provides full-featured and cost effective control, HMI (human machine interface), and OPC software to power your Opto 22 hardware.

These fully integrated software applications share a single tagname database, so the data points you configure in ioControl™ are immediately available for use in ioDisplay™ and OptoOPCServer™. Commands are in plain English; variables and I/O point names are fully descriptive.

ioProject Basic offers control and HMI tools and is included in your purchase of a SNAP PAC controller. ioProject Professional, available for separate purchase, adds OptoOPCServer, options for Ethernet link redundancy or segmented networking, and support for legacy Opto 22 mistic™ I/O units.

### SNAP Ethernet I/O

Based on worldwide standards Ethernet and Internet Protocol (IP), SNAP Ethernet I/O systems offer flexibility in their network

connectivity and in the software applications they work with, including:

- Opto 22's own ioProject suite of control, HMI, and OPC software
- Modbus®/TCP software and hardware
- Third-party HMIs and other OPC client software
- Database, email, network management, and other enterprise systems
- Custom applications developed with the free OptoMMP Driver Toolkit

SNAP Ethernet I/O also works with SNAP PACs to build a complete automation system: PACs provide central control and data distribution; SNAP Ethernet I/O provides local connection to sensors and equipment and includes distributed intelligence for local control, counting, latching, thermocouple linearization, PID loop control, and more.

### Quality

Founded in 1974 and with over 85 million devices sold, 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 do no statistical testing, and each part is tested twice before leaving our factory, we can guarantee most solid-state relays and optically isolated I/O modules for life.

### Free Product Support

Opto 22's Product Support Group offers free, comprehensive technical support for Opto 22 products. Our staff of support engineers represents decades of training and experience. Product support is available in English and Spanish, by phone or email, Monday through Friday, 7 a.m. to 5 p.m. PST.

### Free Customer Training

Hands-on training classes for SNAP PACs, ioProject software, and SNAP Ethernet I/O are offered at our headquarters in Temecula, California. Each student has his or her own learning station; classes are limited to nine students. Registration for the free training class is on a first-come, first-served basis. See [training.opto22.com](http://training.opto22.com) for more information.

### 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 or visit the website at [www.opto22.com](http://www.opto22.com).

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