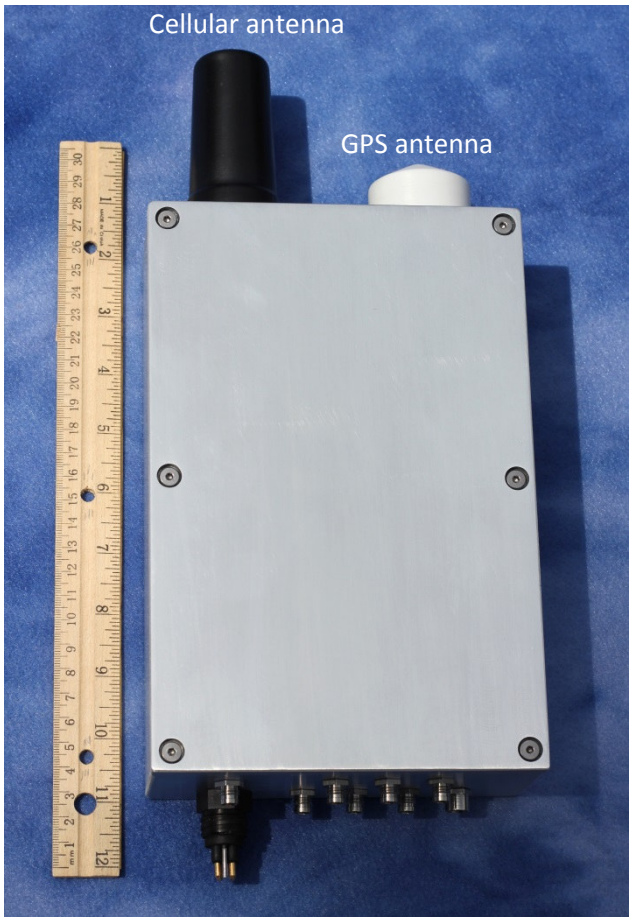
DANTE Buoy Controller

Data Acquisition, Navigation & Telemetry Ensemble



Single box immersion-proof electronics package, easy sensor integration, and software for configuration and data management, provides a fast, complete "off the shelf" data-to-desktop monitoring solution that lowers your system development and operating costs.

The **S9 DANTE Buoy Controller** is an integrated system that:

- Configures & manages sensor data acquisition & storage
- Supervises battery & solar charging system
- Monitors buoy position & motion and system health
- Manages buoy communication and data telemetry

Control of these tasks is distributed between a very low power controller (S9C), slave modules that manage serial and analog data acquisition, and an independent, battery-backed communication and navigation module (S9COM). This module contains a GPS receiver, 3-axis magnetometer, 3-axis accelerometer and one (or optionally two) telemetry modems, and provides "phone home" system watchdog and position alert message services via the telemetry modem, even if the controller or main battery fails. These modules are mounted on a common backplane which routes both power and a shared serial bus.

The DANTE design simplifies many of the installation and integration challenges entailed in building a robust, reliable and easy to operate oceanographic monitoring buoy or other remote data collection platform.

The fully integrated electronics system including the buoy controller, telemetry modem(s), are housed in an extremely rugged enclosure machined from solid aluminum to withstand extreme environmental conditions. Mount the DANTE Buoy Controller on a mast, tower, or anywhere that the antennas will be unobstructed.

All sensor and power connections are made through waterproof bulkhead connectors (MCBH wet-pluggable and IP68 rated M8 series). S9 can provide mating connector pigtail cables, or made-to-length molded cable assemblies for your sensors. Whether building a new buoy, refurbishing an existing one, or instrumenting a conventional marker buoy or pylon, DANTE is practically plug & play. When S9 pre-configures DANTE to your specific application and provides the sensor interface cables, you can simply connect your sensors, battery and solar panels, and data will start arriving at your computer automatically. The buoy controller includes DANTE Control Panel, a buoy configuration & management program, and DANTE-Viz Data Visualization Application that enables users to create customized plots of archived data.

When you need reliable, trustworthy data delivery with minimum effort, we provide a full-service solution. We handle cellular or Iridium accounts, monitor buoy health, protect, archive, and deliver your data. **Every GSM-equipped DANTE Buoy Controller includes 6 months of free S9 Data Hosting Service.** Telemetered "raw" .XML data files (GSM, Iridium or ISM band RF) are received by S9's data server, parsed into several user friendly file formats, and distributed via internet, e-mail or both. DANTE Network Server also provides secure login user access to a remote serial terminal connection to your buoy controller(s), and to individual sensors through the buoy controller.

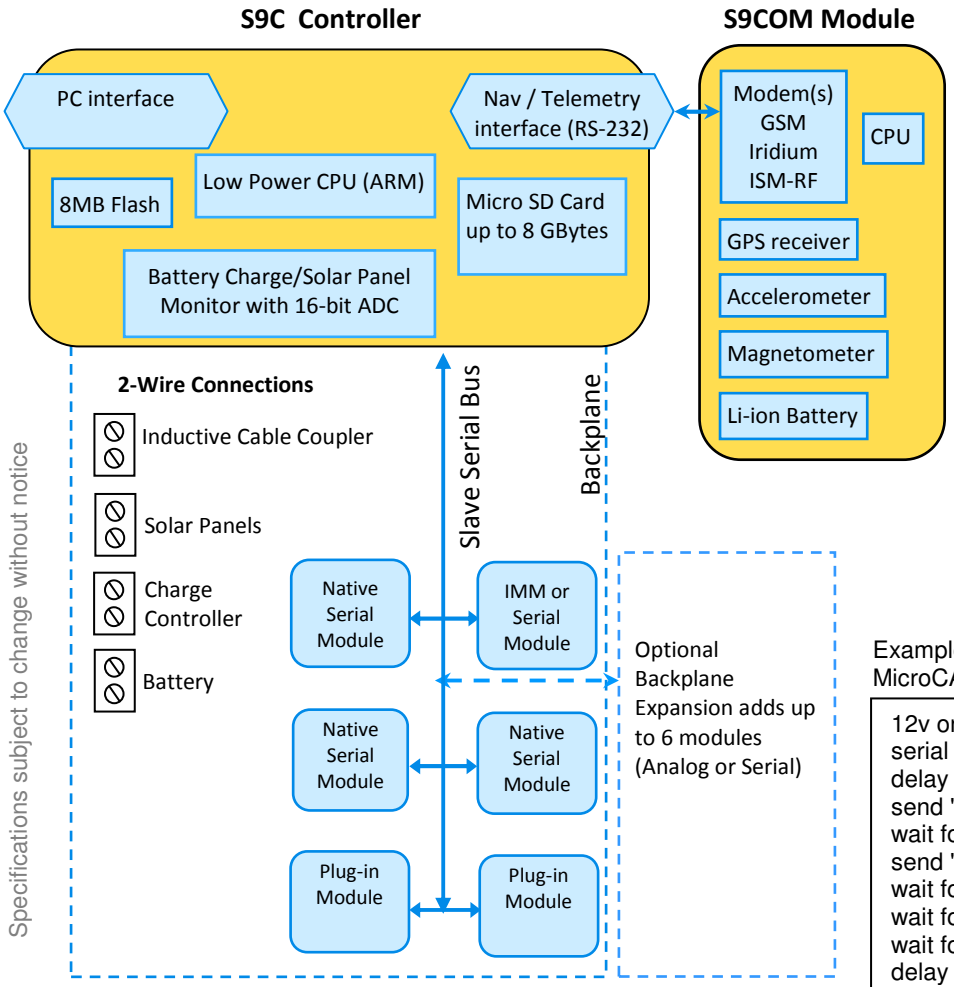
S9 offers low-cost monthly subscription data service for DANTE-GSM or ISM-RF systems. Users are also able to buy a license to run Dante Network Server Software on their own network server. DANTE Network Server supports dozens of buoy controller.

Soundnine Inc.
11335 NE 122nd Way, Suite 105
Kirkland, WA 98034 USA

www.soundnine.com
Tel: 425-941-2517
info@soundnine.com

S9 *DANTE* Buoy Controller

*Data **A**cquisition, **N**avigation & **T**elemetry **E**nsemble*



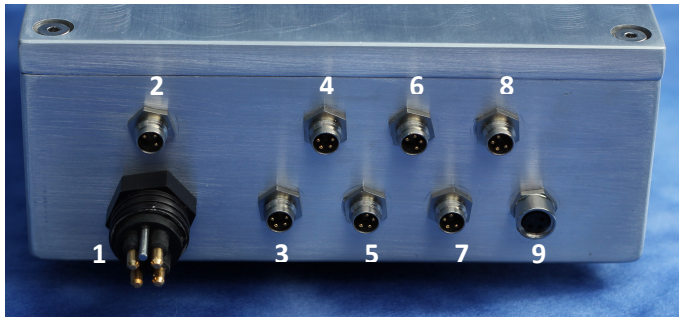
Sensor interfaces are handled by serial or analog slave modules providing standardized and flexible interfacing between the S9C controller and the sensors. Each buoy controller can be customized by selecting modules to match the data acquisition requirements. Every module includes two switched power outputs; one connects to the main power source (typically a battery), the other to a switching power supply shared by all modules.

Module programs (instrument drivers) are simple text scripts, loaded to the modules through the controller's PC serial port, or remotely through the S9COM. Module scripts include commands to switch power on and off, enable & disable the RS232 port, send text to the instrument, wait for a time interval, or for specific responses from the instrument.

Example module script, reads data from an SBE 37 MicroCAT through an IMM.

```
12v on
serial on 9600
delay 200
send "\r\n"
wait for "IMM>",500 clearbuffer
send "FCL\r\n"
wait for "IMM>",2000 send "SWT\r\n"
wait for "IMM>",10000 send "#06ts\r\n"
wait for "IMM>",10000 send "pwroff\r\n" serial off
delay 100
12v off
```

DANTE Base Configuration - Standard Connector Layout



1. DC Power In & Solar Charge Output (MCBH)
2. Solar Panel Input (M8)
3. Logger I/O (RS-232 to PC) (M8)
4. Serial sensor input (native module) (M8)
5. Serial sensor input (native module) (M8)
6. Serial sensor input (native module) (M8)
7. Serial sensor input (native module) (M8)
8. Analog or Serial input (plug-in module) (M8)
9. Inductive Cable Coupler input (M8)

Specifications:

Controller Power:

9-22 VDC Input
<25 microamps quiescent
<10 milliamps operating (excluding telemetry)
Sw. output 1= V Batt. @ 2 A per module
Sw. output 2= 5 VDC (typical) @ 1A total

Serial Sensor Interfaces:
(RS-232 / 485 / SDI-12)

4 native (standard)
3 + IMM (option)
6 (4 native + 2 module option)
12 (4 + 2 modules + Expansion option)

Memory:

8 MB Flash
8 GB Micro SD card

Mechanical:

25 cm x 16 cm x 6.7 cm
3.0 kg

ADC (each module):

4 single-ended or
2 differential, 16 bit
Sample rate 100kHz

Heading Accuracy:

±1degree

GPS Accuracy:

±1 meter Lat/Lon

Environmental:

-40 to +60℃
Immersion proof to 60 meters

S9
Soundnine Inc.
11335 NE 122nd Way, Suite 105
Kirkland, WA 98034 USA
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Tel: 425-941-2517
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