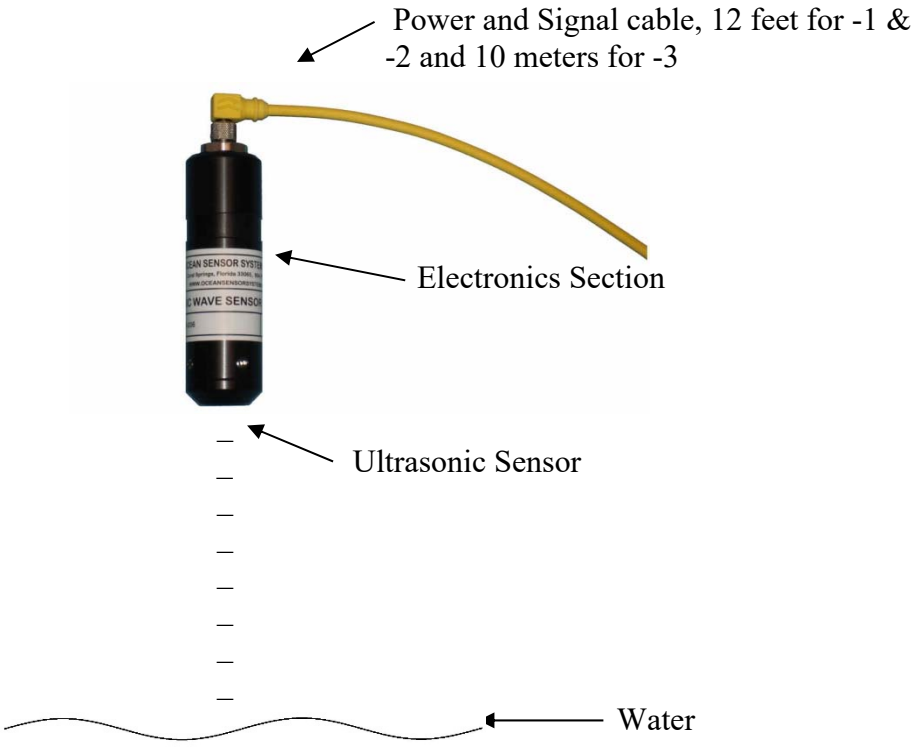
OSSI-010-036 Sonic Wave Sensor RV
User Manual

Introduction: The Ocean Sensor Systems Sonic Wave Sensor RV has been designed to provide a high-resolution measurement of Intracoastal and wave tank waves. Waves can be measured from submillimeter to several hundred centimeters at a data rate up to 32 Hz. Other applications include the measurement of tides, ponds, tanks and pool levels. The instrument can be powered by any voltage from 4 volts to 45 volts. Sonic Wave Sensor RV can be purchased with either a RS232 or a RS485 serial port. Up to eight RS485 units can be connected to the same cable for control and data collection. The -1 and -2 units also have a 0 to 5V analog output that can be used with an ADC card. The Sonic Wave Sensor RV is a very robust unit with solid-state electronics sealed in a waterproof housing.

Laptops and PCs can easily receive data with the USB Adaptors. With the RS485 serial port, time stamped data can be used to synchronize up to 8 units for wave directional measurements.

Please see the data sheet available on our web site at www.oceansensorsystems.com for detailed information.

Sonic Wave Sensor



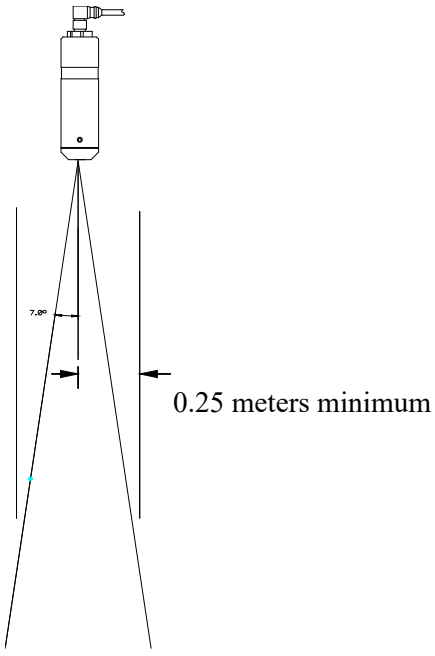
This manual is designed to help the user with the installation and maintenance of the Sonic Wave Sensor RV. We at Ocean Sensor Systems are dedicated to making your use of our equipment as easy and rewarding as possible.

Operating principle: The basic operating principle is to measure the ultra sound travel time. The result is then scaled with the Micro Processer, in the unit, then it updates the analog output and is transmitted out the serial port. A Windows USB to Serial Converter (driver) connects the USB Adapter port to the User Interface Software (GUI).

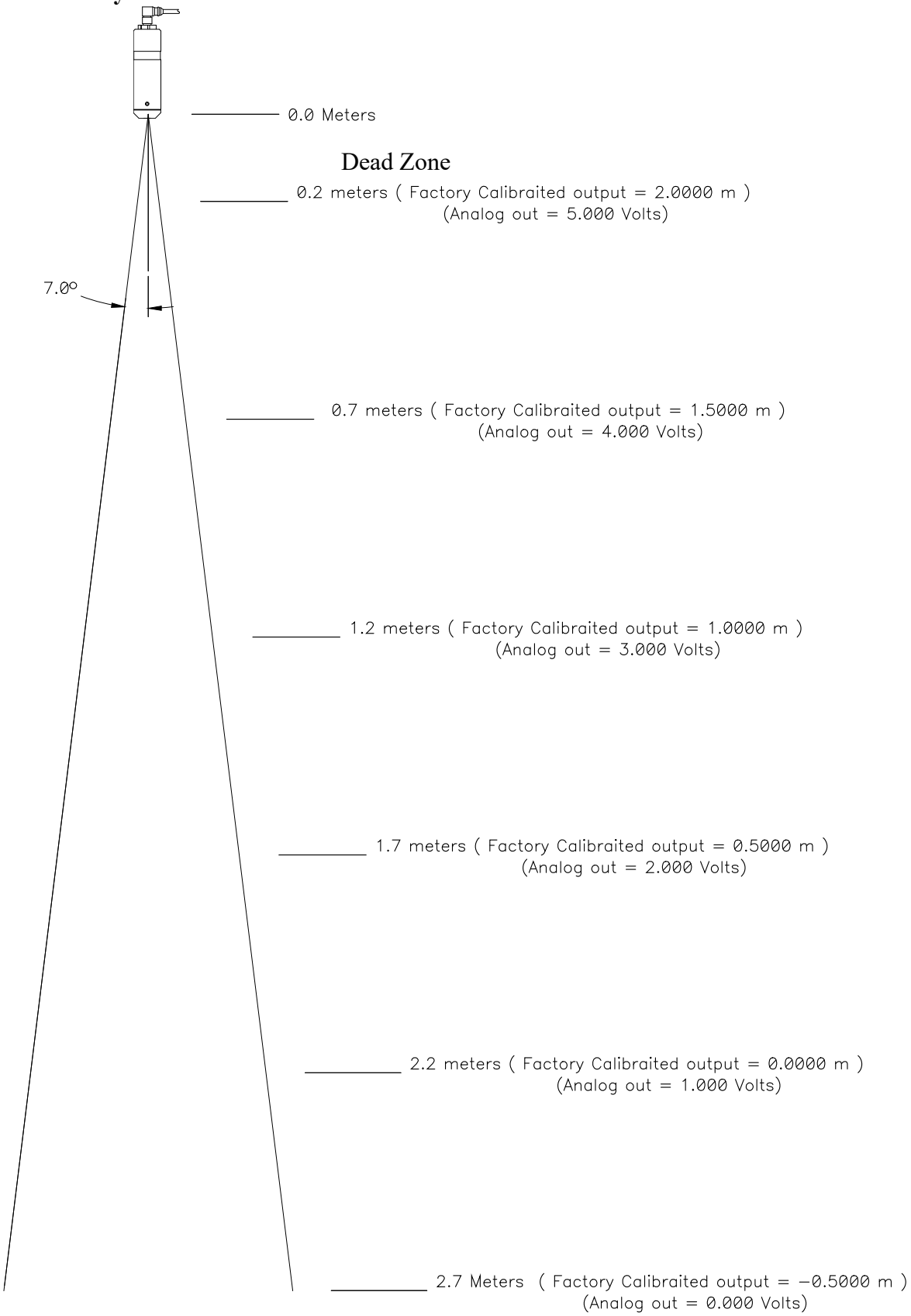
Mounting: The physical mounting of the Main Unit at the measurement site requires no special protection from spray, rain or sun. The unit should be mounted with the Sensor projecting down to the water. The water surface for the highest and lowest tide plus waves should be considered when mounting the unit. The output is a measurement of the distance from the unit to the water.

The unit may be mounted with clamps around the body of the black electronics housing. Specially designed Mounting Hardware is available from OSSI for this purpose (see OSSI 015-018-B Mounting Bracket).

When mounting the Sonic Wave Sensor RV, a level should be used to assure it is vertical. The unit should be mounted such that the ultrasonic air space is at least 0.25 meters away from any objects. However a flat vertical surface may be closer in some cases. The unit should stay at least 0.2 meters above the water.

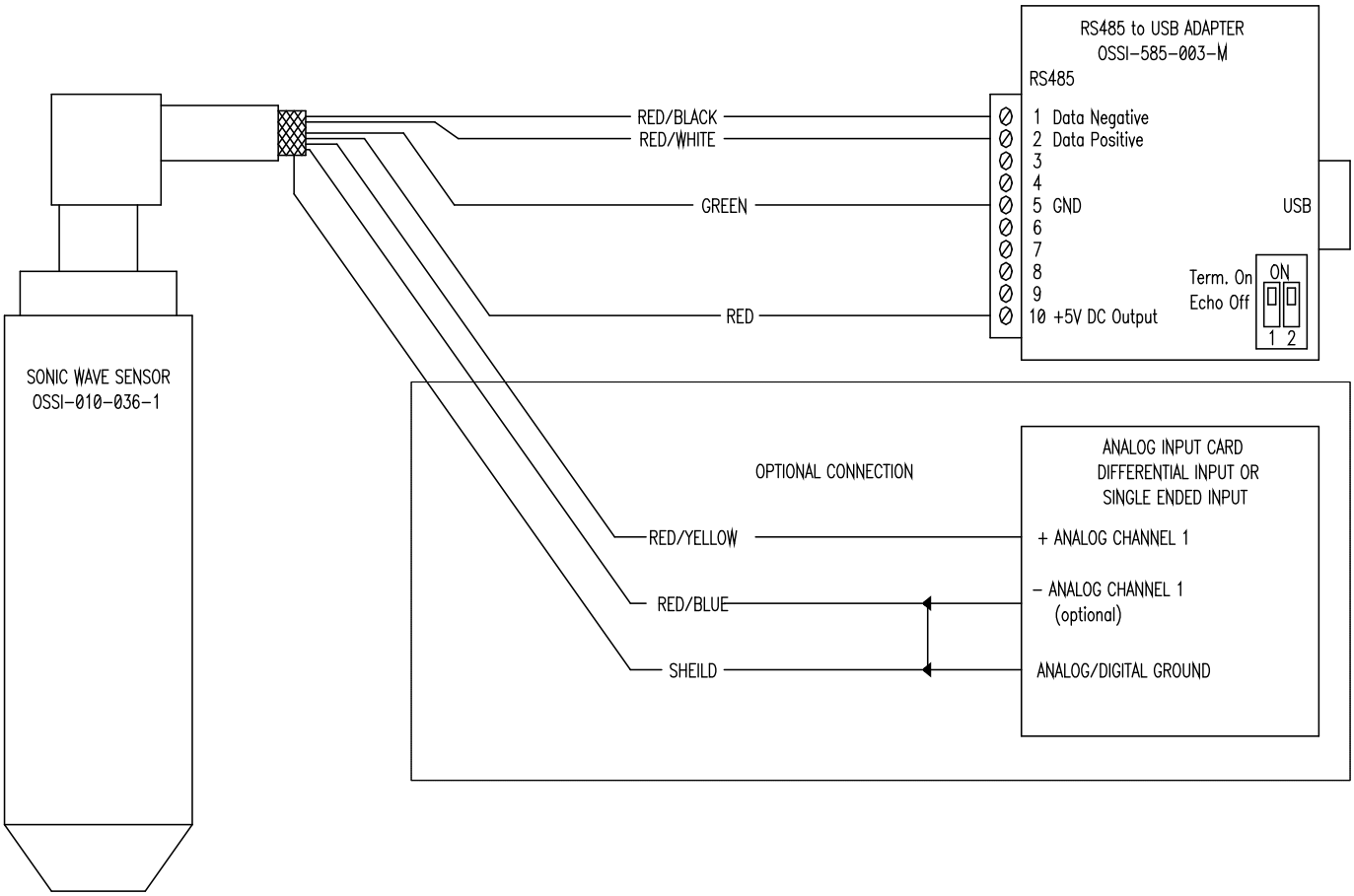


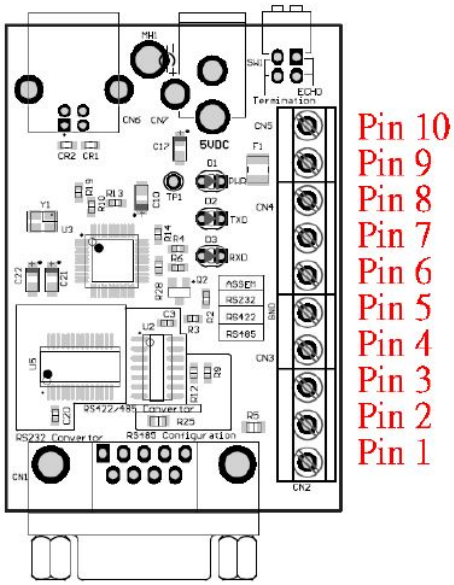
Factory Calibration:



Wiring the OSSI-010-036-1, RS485 and 0-5V Analog:

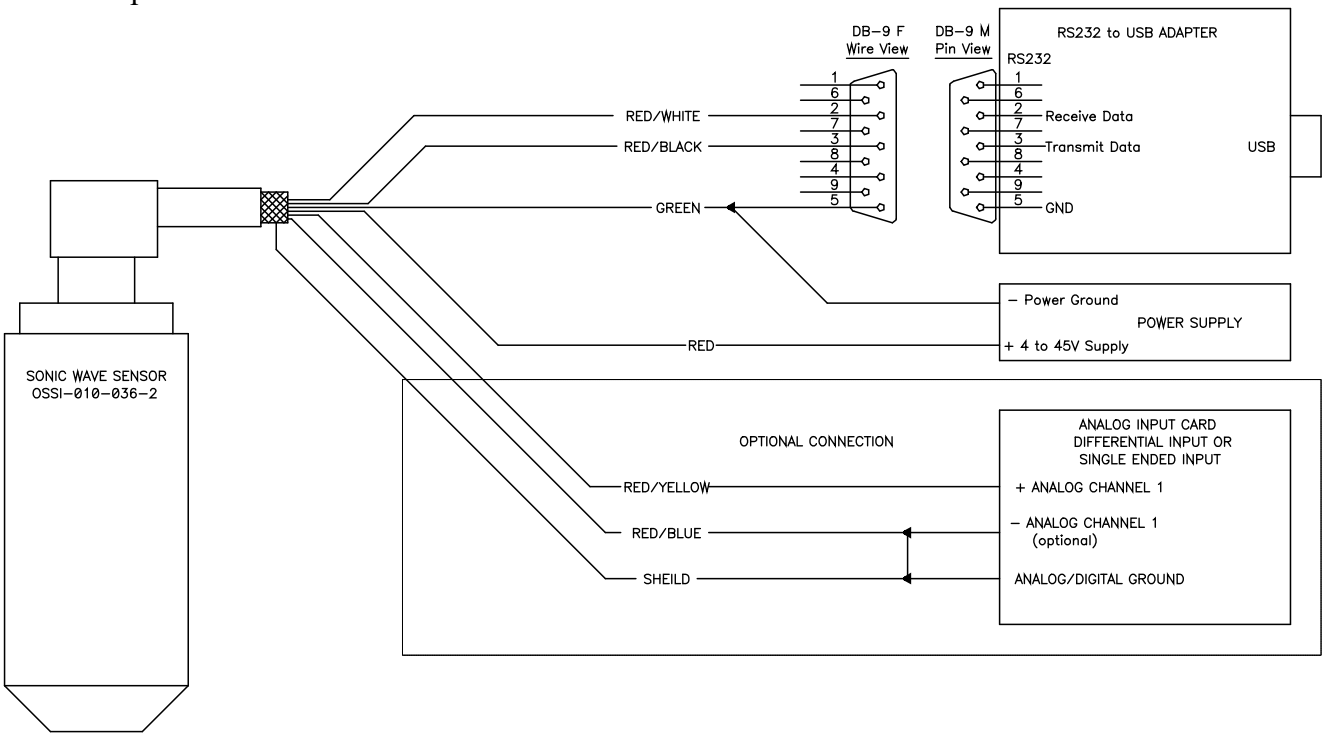
Below is the typical wiring for the Sonic Wave Sensor with RS485 and 5 volt analog outputs.





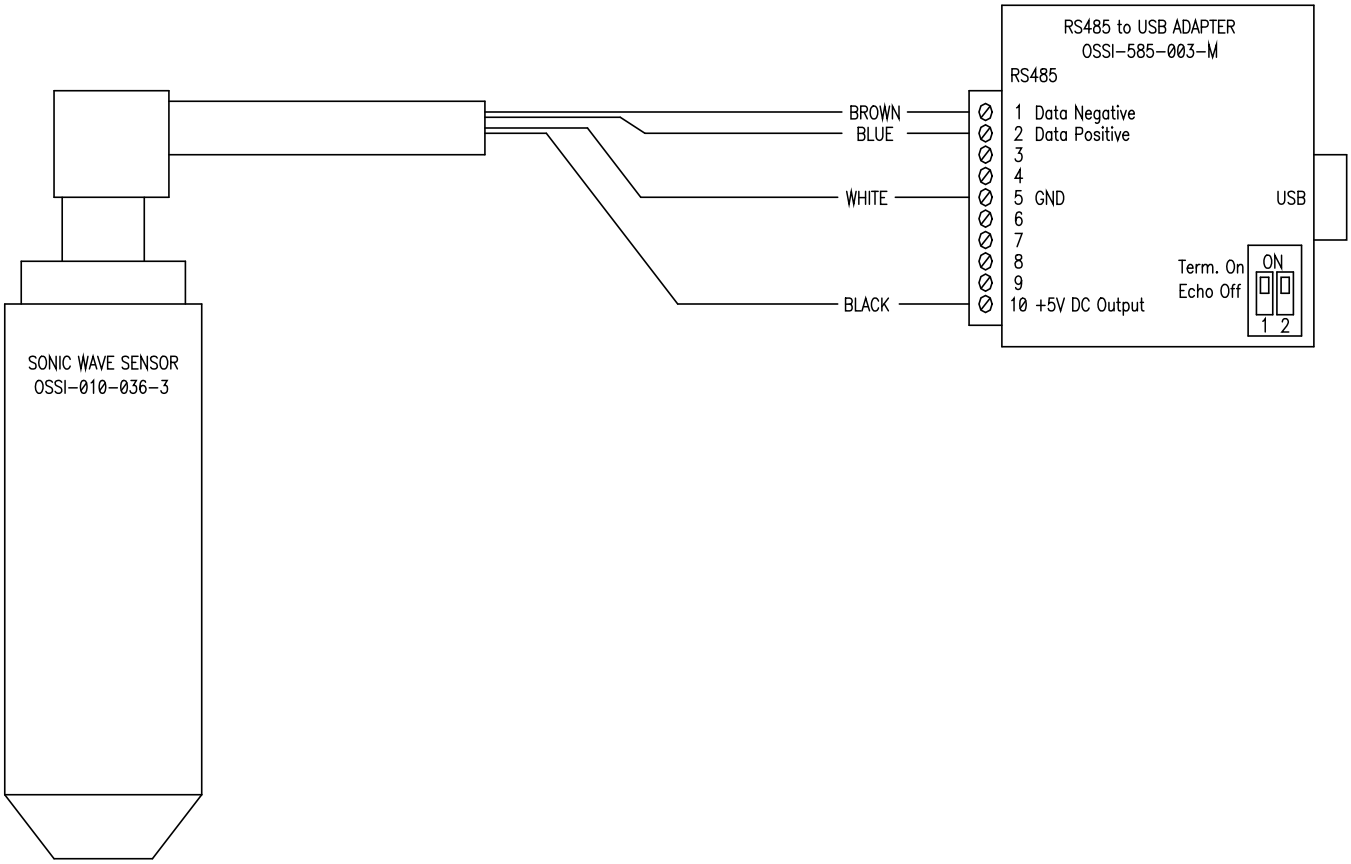
Wiring the OSSI-010-036-2, RS232 and 0-5V Analog:

Below are typical wirings for the Sonic Wave Sensor with RS232 and 5 volt analog outputs.



Wiring OSSI-010-036-3, RS485 One Unit:

Below is the typical wiring for the Sonic Wave Sensor with RS485 outputs only.



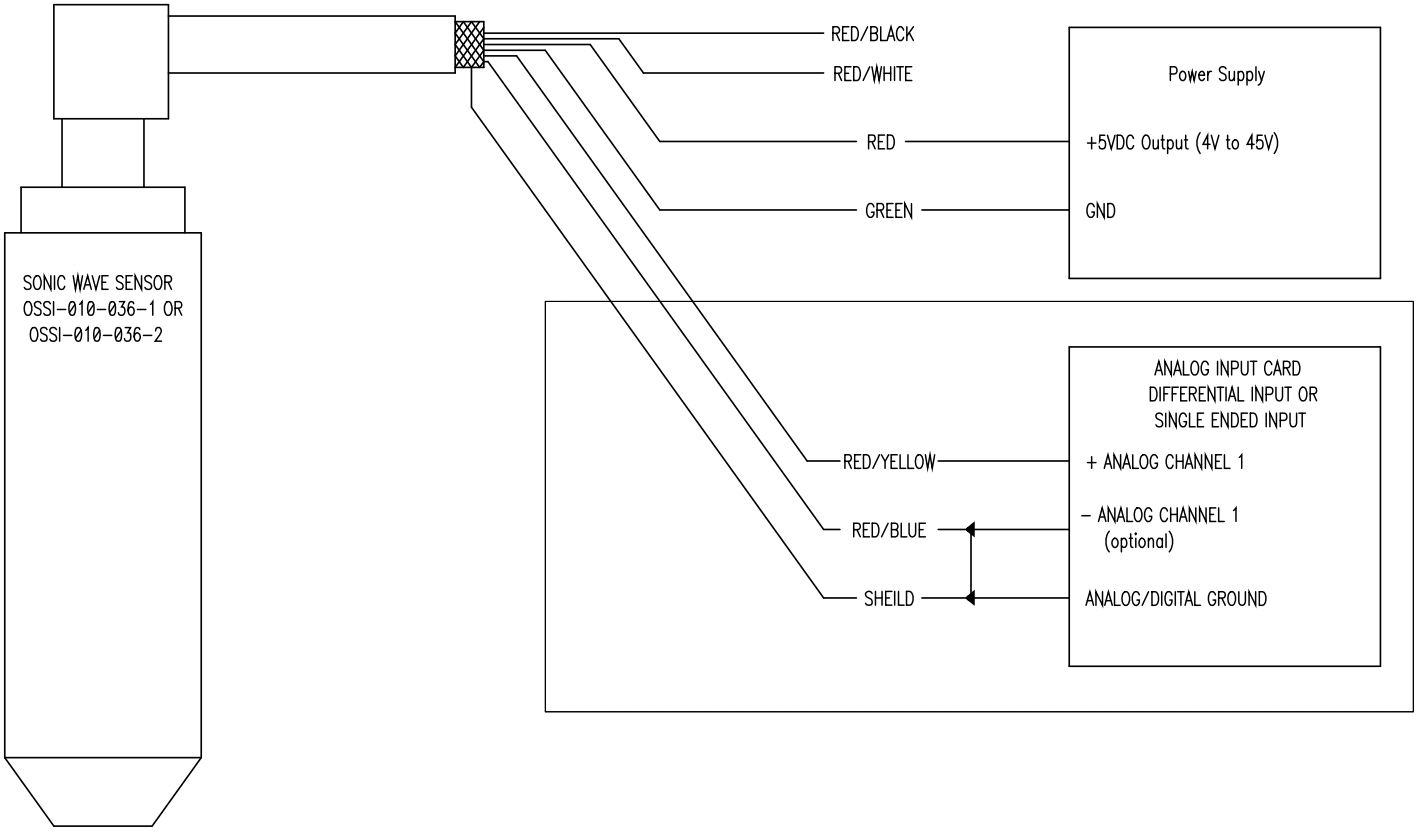
Wiring OSSI-010-036-3, RS484 Daisy Chain (1 to 8 units):

Terminator – Splitter – Cable Female to Male – Splitter – Cable Female to DB9 – RS485/USB

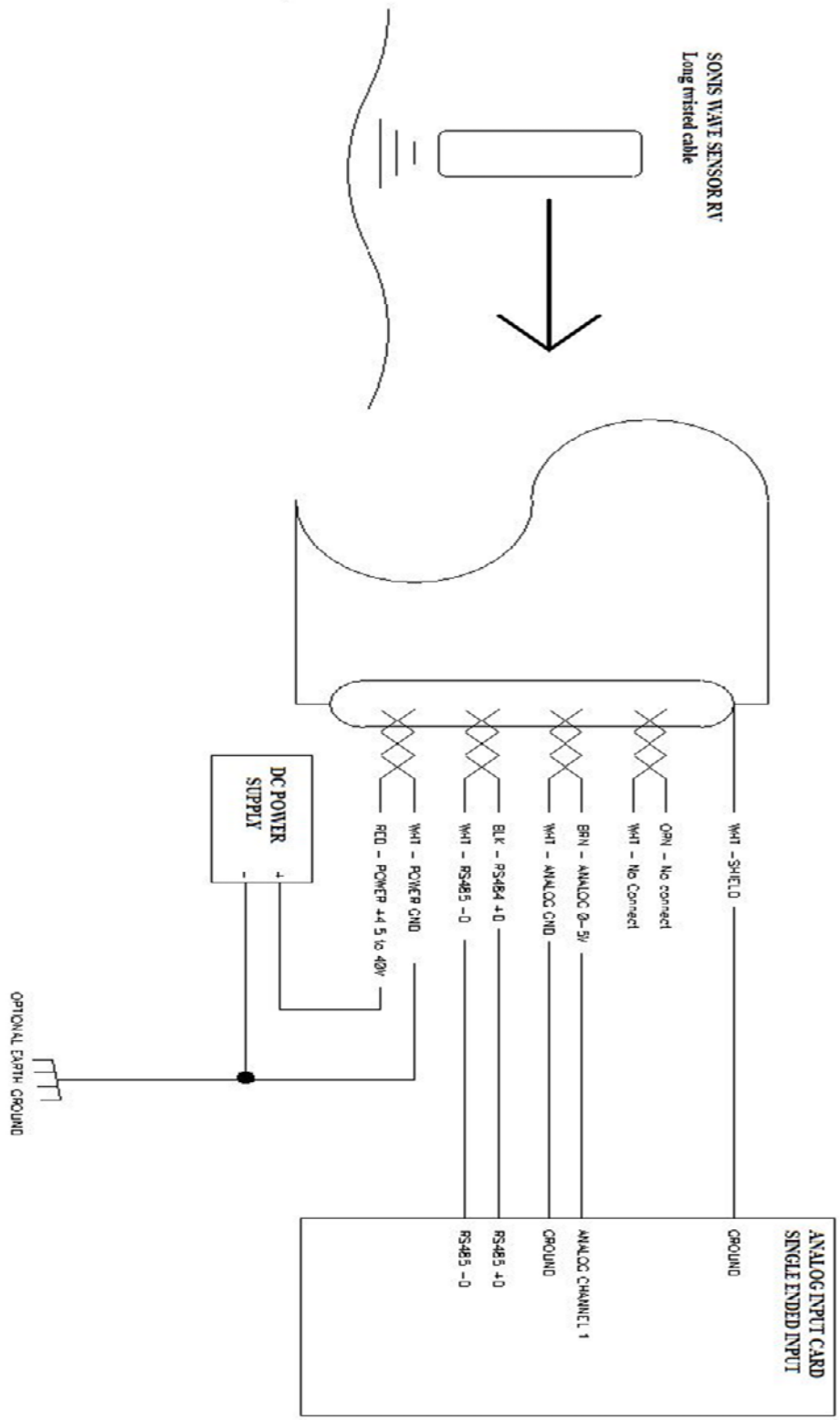
Terminator: OSSI P/N OSSI-009 RS485 Terminator 164 ohms and 2200pF in series.
Splitter: OSSI P/N OSSI-515-008, Phoenix Contact 1559783, T adapter 4Pole, 2 Female 1 male.
Cable Female to Male: OSSI P/N OSSI-515-007, Phoenix Contact 1509571, Female/Male, 10 Meter, PUR cable.
Cable Female to DB9: OSSI P/N OSSI-515-006, Phoenix Contact 1683002, Female, 10 Meter, PUR cable.
RS485/USB: OSSI P/N OSSI-585-002 USB to RS232 serial Adapter with 5V @ 250mA power out.

Wiring the OSSI-010-036-1 and OSSI-010-036-2, 0-5V Analog only:

Below is the typical wiring for the Sonic Wave Sensor for 5 volt analog outputs only. Note, use the RS232 or RS485 serial port to configure the Sonic Wave Sensor RV.



Sonic Wave Sensor OSSI-010-036-1* with shielded power/Signal cable.



Maintenance: The Ocean Sensor Systems Sonic Wave Sensor RV requires minimal maintenance. Prolonged exposure to the environment may require cleaning the outside of the unit. Use only soap, water and a soft cloth.