

Martha's Vineyard Coastal Observatory: 2. Guest Port Electrical Interface

At each node there are a number of identical guest ports. The seafloor nodes are designed to support 20 ports, and 10 ports are provided at the met mast. The connectors on the seafloor node are easily accessible by the diver and may be mated and unmated underwater. Each port is assigned an 8-pin connector (Subconn IL8M-LB wet-matable at the seafloor node, and Impulse VSK-8-BCL at the ASIT and met mast nodes). Contact hopenoe@whoi.edu or jfredericks@whoi.edu for wiring info.

While both supplies are capable of peak power at up to 100 watts each, the heat sinking may not be sufficient for 200 continuous watts. Although the maximum continuous power that can be handled will vary depending on the ambient temperature, we recommend that the continuous power not exceed 100 watts total for the two supplies (e.g., 75 watts on the 12 VDC supply plus 25 watts on the 24 VDC supply).

The power supplies are electrically isolated from each other and from all other ports. The two power supplies have separate on/off controls, and may be used as isolated power sources or they may be connected together (in the users wiring), either with a common ground or in series to create a 36-volt supply. The data lines are remotely programmable for one of three interfaces: 10/100BaseT Ethernet, RS-232, or RS-422 (RS-232 and RS-422 baud rates are supported up to 115 kbps). The data common (RS-232 and RS-422 only) is connected to the 12V common pin.

The Ethernet interface is connected to the Ethernet switch, which in turn routes all data traffic over the fiber optic cable to the shore lab, where it is then routed to WHOI and the World Wide Web. If the user elects to use RS-232 or RS-422, these serial ports are accessible via the Ethernet using TELNET, custom software (direct IP), or commercial COM-Port redirection software, the latter of which WHOI will provide to the users. The COM-Port redirection software allows users to run existing Windows-based applications that normally connect to a local COM-Port. The software automatically redirects the transmitted and received messages to and from the remote port over the Ethernet. For low-speed serial ports this will also work across the Internet.

All ports are automatically monitored for fault conditions, including over-current, ground faults, and data type violations (such as: RS-232 levels detected while RS-422 interface was selected). If a fault is detected, the port will automatically shut down with no effect on any other ports. The user may elect to override the fault condition by selecting the corresponding "fault override" control on that port's web interface.

Mating Connectors

The following table specifies the part numbers of the connector and locking sleeve required on the user's cable end in order to plug into the observatory.

Location	User Plug Type	User Locking Sleeve
Met Mast & ASIT	Impulse VMK-8-FS	K-FLS-P
Seafloor Node	Subconn IL8M-LB	Radii Precision Machining Part #102757*

User Cables

The user's cable should be long enough to reach from the instrument to the connector on the node. In the case of the seafloor node, the guest-port connectors are accessed by the diver. If the user's instrument is remotely mounted, the cable must be sufficient in length to allow for hand-jet burial from the instrument to the node, with an additional 4 meters to route from the seabed up into the node assembly and to the connector panel. Users must supply a yale grip to protect the connector panel from being pulled should the instrument or cable get snagged by an anchor or fisherman. On the met mast a 15-meter cable length is sufficient for instruments mounted on the cross-tree.

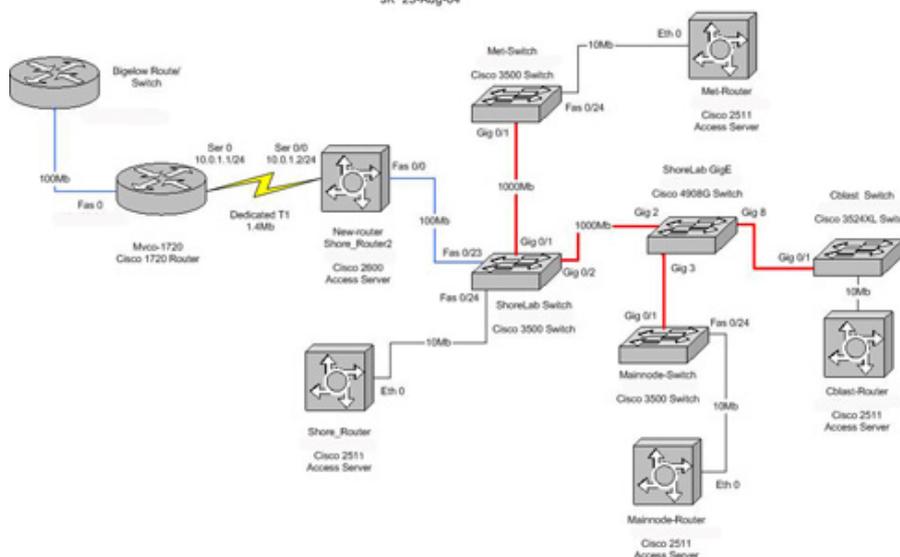
Important Cable Note

If Ethernet communication is to be used, a special category-5 communication cable is recommended. WHOI may be able to supply short lengths of custom underwater cable for this purpose. WHOI's cable contains four AWG-12 power conductors with a category-5 communication component, enclosed in an outer, polyurethane jacket. Contact the MVCO manager for more details.

Ground Fault Sensing

Martha's Vineyard Coastal Observatory

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Ground fault sensing is normally enabled. Any electrical connection to seawater on any circuit which is common to either the 12-Volt or 24-Volt power supply connections will be detected by the ground fault sensor. Leakage resistances as high as 50K ohms may be detected and considered as a fault. Therefore, to avoid masking a real fault, it is necessary to ensure that there is no DC connection to the case of any circuit in the user's instrument. This is most easily checked by using an ohmmeter from each pin in the connector to the case of the instrument or by calling the manufacturer. Ground fault sensing is a useful feature that can detect a system problem before it causes significant damage. The observatory reports the relative magnitude of the ground fault sensor output as an analog measurement, allowing the user to monitor the magnitude of the fault over time. Normally, a ground fault will automatically cause the guest port to shut down, and remain off until the user attempts another power up. However, the user may elect to override the automatic shutdown, at his/her own risk. No harm can come to the observatory as a whole (except that the guest port cable used may become damaged), or to another user if the override option is selected. This allows the user to "go for broke" if stopping the experiment is an undesirable alternative.

** Please note change in part numbers.*

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Mail: Woods Hole Oceanographic Institution, 266 Woods Hole Road, Woods Hole, MA 02543, USA.

E-Contact: info@whoi.edu; press relations: media@whoi.edu, tel. (508) 457-2000

Problems or questions about the site, please contact webdev@whoi.edu