

MODELS OS5HRT and OS9HRT INSTALLATION PROCEDURE

1. The Optical Star may be mounted either horizontally or vertically. Mounting angles are provided for installation on the ends of the unit. For panel mounting, the angles should be installed at the back of the unit. For 19 inch rack mounting, the angles should be installed to the front of the unit.
2. Before connecting power, secure an earth ground wire to the ground lug on the face of the unit. The ground stud has three nuts attached. **NEVER LOOSEN OR REMOVE THE BOTTOM NUT CLOSEST TO THE UNIT.** The two other nuts are used for attaching the ground wire. Place the ground wire between these two nuts and securely tighten the nuts together.

WARNING

WHEN INSTALLING A MODEL OS5HRT or OS9HRT, AN EARTH GROUND MUST BE ATTACHED TO THE GROUND STUD ON THE FACE OF THE CASE BEFORE CONNECTING POWER. FAILURE TO FOLLOW THIS PROCEDURE MAY RESULT IN ELECTRICAL SHOCK TO PERSONNEL.

3. Connect Fiber Optic Cable between the Master port of the Optical Star to the Dymec Link/Repeater which is connected to the system's Master IED. Connect the Optical Star's Master "T" port to the Master IED Link/Repeater's "R" port. Connect the Optical Star's "R" port to the Master IED Link/Repeater's "T" port.
4. Connect Fiber Optic Cables from each Optical Star Slave port to the Dymec Link/Repeater or embedded 850 nano-meter port on the corresponding Slave IED. Connect the Optical Star Slave 1 "T" Port to the "R" optical port of IED Slave 1. Connect the Optical Star's Slave 1 "R" Port to the "T" optical port of IED Slave 1. Continue this connection procedure for all of the remaining IED Slaves.

➔**Note:** The FOC must always connect a "T" optical port of one device to the "R" optical port of the other device and vice versa. The use of duplex fiber is recommended.

➔**Note:** If an Optical Star's Slave Port is not used or connected with fiber, the protective cap must remain covering the unused optical port to avoid physical contamination and stray light sources entering the system.

5. Connect the power source to the Optical Star.

- Check the voltage rating stamped next to the power connector - verify that it matches the power source
- Strip back 1/4" off the insulation of the wires that will connect the unit to the power source
- Release each wire port retaining clamp with a small flat blade screwdriver and insert a conductor into each wire port of the plug (note: this connection is not polarity sensitive)
- Visually inspect that no strands of wire are straying out of the hole, potentially shorting to ground or to the other conductor

6. Connect the power leads to the source. The unit is now powered and the "Power On" LED should illuminate. The Optical Star is now operational.

7. When the Master IED polls a Slave IED through the Optical Star, observe the LED on the Optical Star. The Optical Star's Master's LED, labeled "R", and ALL Slave LEDs, labeled "T", should flash. When the polled Slave IED responds, ONLY one Slave "R" LED, the responding Slave, and the Master's LED should flash.

➔**Note:** The Optical star can be used in a Master/Slave or Peer-to-Peer operation. All connected slaves or peers must be addressable devices in the communication protocol and controlled by the communication software. If more than one slave or peer communicates at the same time, data collisions will occur.

➔**Note:** The "T" and "R" LEDs only illuminate when data is passing through the Optical Star and remain off at all other times.

OPERATION

1. In Master/Slave mode, an Optical Star simply receives an optical signal on the Master's receive port and rebroadcasts that signal at a full 18dB optical budget out of each slave transmit port. The data is not buffered nor reformatted. When the addressed Slave IED responds, the optical signal is received at the corresponding Optical Star Slave Port and rebroadcasts out of the Master's transmit port to the System's Master. All Slaves hear the Master's poll, but only the Master can hear a Slave - Slaves cannot hear each other.
2. The Optical Star is optically compatible with Dymec Models CH43, CH45, 5843, 5844, 5845, or 5846. Any of these Models or any combination of these models may be used at the IEDs to convert the electrical signals to light for transmission. If mixing formats, i.e. RS232 with EIA 422 or EIA 485, be sure to use the inverted logic protocol switch on the Model CH45, Model 5845 and Model 5846.
3. The Optical Star may be connected to other manufacturers' optical ports. Some OEM devices have an embedded optical port in their control. If the wavelength of the optical signal is a multimode 850 nanometers or single mode 1310 nanometers, digital and non-encoded, it will be compatible for use with the Optical Star.
4. The voltage ranges listed for the Optical Stars are nominal ratings. The actual minimum / maximum voltage ranges are as follows:

Rating	Min	Max
90 - 250V AC/DC	88 Vac	288 Vac
	85 Vdc	315 Vdc
24- 48 Vdc	18 Vdc	60 Vdc
5. Optical stars may be cascaded by connecting a slave port of the first Optical Star to the Master Port of the next down stream Optical Star. The ports are connected T to R optically.

TROUBLESHOOTING

If the Optical Star does not appear to be operating properly, use the following checklist:

1. Is the unit powered properly? - Is the "POWER ON" LED illuminated?
2. Is the Master's receive LED flashing when the Master IED is polling?
 - No
 - Check the FOC connections between the Master port and the Master IED. - Are both fibers connected "T" to "R" - not "T" to "T" nor "R" to "R"?
 - Are the TE & TO LEDs on the Master IED Link/Repeater flashing?
 - YES - check the FOC and terminations --- NO - check the Master IED
 - Consult factory
3. Are all Slave green transmit LEDs flashing at the same time that the Master's receive LED is flashing?
 - YES
 - Check the FOC connections between each Slave port and the Slave IEDs.
 - Are both fibers connected "T" to "R" - not "T" to "T" nor "R" to "R"?
 - Are the RO / RE LEDs on the Slave IED Link/Repeater flashing?
 - YES - check the Slave IED --- NO check the FOC and terminations
 - NO - Consult factory
4. Are all the IEDs set at the same baud rate? Is more than one Slave responding to the Master's poll? (More than one amber slave LED flashing at the same time) - Check Slave addressing, there may be duplicates.
5. Consult Factory - Please have the IED instruction book(s) available along with your system diagram.

**DO NOT DISASSEMBLE OPTICAL STARS AS THERE ARE NO SERVICEABLE PARTS WITHIN.
THIS ACTION WILL VOID THE WARRANTY.**



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