



**ISX-SERIES RETURN TRANSMITTER  
INSTRUCTION MANUAL  
IX40RPTX-xx/xxx/xxx**

**INSTRUCTION MANUAL**

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## **SAFETY WARNINGS**

### ***LASER RADIATION***



The **IX40RPTX** laser transmitter emits invisible laser radiation that can cause permanent eye damage. ***AVOID DIRECT EXPOSURE TO BEAM.***



Operate the transmitter only with the proper optical fiber installed in the

transmitter optical connector. The power to the IX40RPTX should be turned off whenever the optical connector is opened or exposed (as when the fiber connection is being installed or removed from the transmitter connector).

***NEVER USE ANY OPTICAL INSTRUMENT TO VIEW THE OUTPUT OF THE LASER TRANSMITTER. "OPTICAL INSTRUMENT" INCLUDES MAGNIFYING GLASSES, ETC.***

***NEVER LOOK INTO THE OUTPUT OF THE LASER TRANSMITTER***

***NEVER LOOK INTO THE OUTPUT OF A FIBER CONNECTED TO A LASER TRANSMITTER.***

***NEVER LOOK INTO OR USE ANY OPTICAL INSTRUMENT TO VIEW THE DISTANT END OF A FIBER THAT MAY BE CONNECTED DIRECTLY OR VIA AN OPTICAL SPLIT, TO A TRANSMITTER THAT MAY BE OPERATING. THIS SPECIFICALLY APPLIES TO FIBERS THAT ARE TO BE CONNECTED TO RECEIVERS OR OTHER DEVICES AT ANY DISTANCE FROM THE LASER TRANSMITTER.***

### **SHOCK HAZARD**

Care should be used when installing the IX40RPTX to prevent shock and injury as there are voltages within the Node which exceed 48 VAC.

## INTRODUCTION

The Olson Technology Inc. IX40RPTX is a high quality, cost effective, Return Transmitter module designed around the latest optical transmitter technology. It is designed to operate and meet full specifications with an optical output level of 1 to 3 mW. The transmitter RF path includes a plug-in OMI pad which is preset at the factory for +7 dBmV carriers.

The IX40RPTX receives preconditioned +5 and -5 VDC from the Node and plugs directly into the preexisting locations within the Node. The primary RF connection is made through the built in connector on the bottom of the transmitter. For models equipped with a secondary laser, an SMB connector is located on the top of the transmitter. The transmitter can be ordered with an optical connection that will match the factory setup. Heat transfer for the IX40RPTX is provided via the bottom surface of the module to the Node housing for full outdoor temperature operation.

## INSTALLATION / ENVIRONMENTAL CONSIDERATIONS

The IX40RPTX operates with an exterior temperature on the Node of -40 to + 60°C. However, like any other electronic device, it will probably have a longer life span if it is not operated at the upper limit of it's temperature range continuously. Installation of the IX40RPTX should be done such that water, dirt and other contaminants do not enter either the Node or the module. Do not install equipment in locations that are accessible by either children or other unqualified personnel. This unit is meant to be field-installed into the ISX-3040 Optical Node by qualified field service technicians.

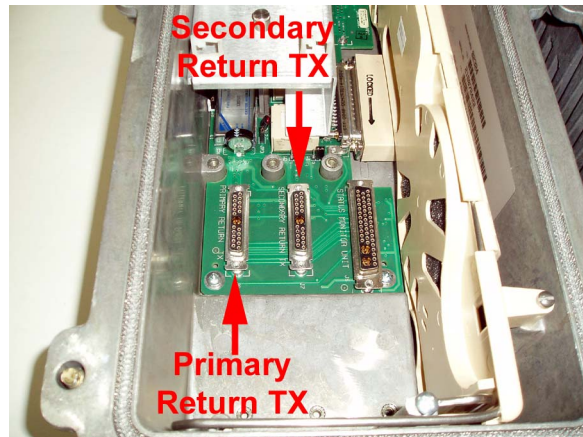
To install the IX40RPTX, loosen the 6 closure bolts on the ISX-3040 Node casting enough free them from the other half of the housing. Open the housing and locate the plug in module section of the Node. Place the IX40RPTX module into one of the 2 transmitter locations, making sure to orient the sub-D connector on the bottom of the IX40RPTX module in line with the mating connector in the Node.

NOTE: If replacing an existing transmitter (fig 1), remove it and place the IX40RPTX in place of it.

Figure 1



Figure 2



Push the IX40RPTX into position firmly, seating the connector. Tighten the 2 captive screws firmly. Connect the incoming fiber to the transmitter, then dress the fiber as to keep it clear of anything that may pinch or damage it.

**NOTE:** Be sure the fiber termination of the incoming fiber matches that of the transmitter, an easy way to tell is by the color of the termination. The transmitter will have either a round green sticker (SC/APC), or a blue sticker (SC/UPC) on the fiber bulkhead. The incoming fiber connector **MUST** match this color. If the sticker is green, but the fiber termination is blue (or vice versa), then the signal passing through the fiber will be degraded and in many cases unusable.

Figure 3

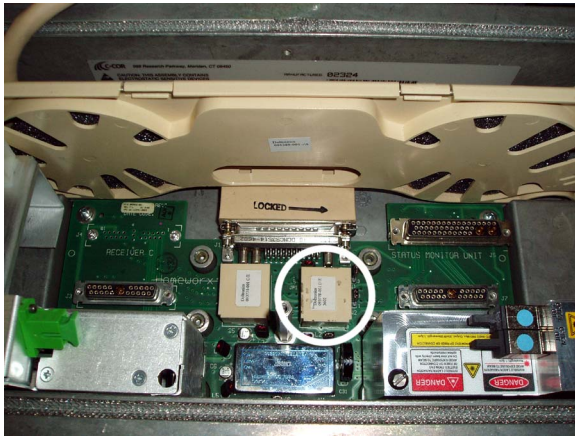
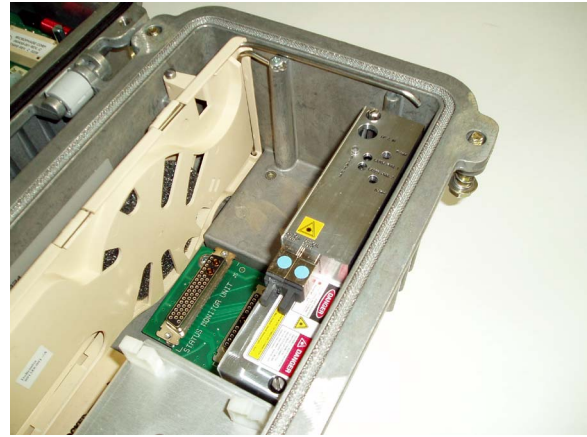


Figure 4



If the transmitter is equipped with a 2nd laser to be used in a redundancy configuration, then the supplied splitter board must be installed, and the coax cable from the splitter board should be plugged into the 'RF 2 In' SMB connector on the top of the IX40RPTX. The splitter board is installed into the 'TX Option' port in place of the factory 'Transmitter Configuration Module' (Fig 3).

### OPTICAL CONNECTORS AND CLEANING

The standard optical connector provided with the IX40RPTX is an SC/APC with an 8° angle. No tools are required for connection to/from this type of optical connector.

The fiber ends can be damaged by the insertion of contaminated connectors into a bulkhead or receptacle, or by the insertion of a clean connector into a dirty bulkhead. Fiber connectors should never be left uncovered. Optical connectors should be cleaned before usage. Prepackaged alcohol wipes are the most convenient way to insure clean optical connectors. Fresh, clean alcohol and lint free wipes or swabs may also be used.

### EXTERNAL TEST POINTS

The IX40RPTX has one external test point for optical power output calibrated at 1V/mW. It should be monitored with a high impedance voltmeter. This test point is for long term monitoring purposes. The optical output power should be measured using an optical power meter at the time of installation.

### ALIGNMENT PROCEDURE

The IX40RPTX optical transmitter's OMI has been optimized with an RF input level of +7.0dBmV per carrier (Six analog carriers) maximum loading at the transmitters input. The ISX 3040 node has 8dB of loss between the ports and the optical transmitter input when equipped with a 0dB reverse pad.

**EXAMPLE:** A reverse level of +18.0dBmV per carrier at the nodes ports will require a reverse pad of 3dB to get a +7.0dBmV level at the transmitter.

**+18.0dBmV** node input minus the **3dB** pad equals **+15dBmV**  
**+15dBmV** minus **8dB** node loss equals **+7dBmV** input level at the transmitter

## CHANNEL LOADING

The optimum RF drive level for the IX40RPTX is 7.0dBmV per channel with a standard loading of six analog video channels. The chart below shows the change in RF input level according to the amount and type of channel loading. The chart shows on the right what the RF drive level should be to the transmitter. If loading with data channels only (QPSK, QAM) refer to the amount of total bandwidth the data channels are consuming. 7.0dBmV per analog video channel is equivalent to -41.18dBmV/Hz. With a standard 4/1 combiner installed in the node, there is 8dBmV of loss through the node (not counting the PAD loss for each port) before the return test point at J6. To achieve +7dBmV at the transmitter with a zero PAD in each port, an input level of +15dBmV will be required.

**NOTE:** Other configurations exist which may add additional loss to the system, including those equipped with GLC.

### IX40RPTX DFB Input Loading

