

HFC Enhance® 6940 RETURN SEGMENTATION KIT

D3.1/CCAP™
Compliant

1. Overview

There are two different segmentation kits. The “x2” kit (HESA4xxxxSK2) supports 2 separate reverse links. The “x4” kit (HESA4xxxxSK4) supports 4 separate reverse links. Parts for each of the kits are listed below and illustrated in Figure #1. Please ensure that all the parts for the kit you received are in the kit.

Part	Description	x2 KIT	x4 KIT
HESA4xxxx	Dual Return Path DFB Transmitter	1	2
HE6940RC2	6940 X2 Return Configuration Module, 4 selector boards, low pass filter on each SMB port	1	
HE6940RC4	6940 X4 Return Configuration Module, low pass filter on each SMB port		1
HE6940RJ1	Rt. Angle SMB- Rt. Angle SMB RG179 15.5" Jumpers with Ferrites, (orange)	1	1
HE6940RJ2	Rt. Angle SMB- Rt. Angle SMB RG179 15.5" Jumpers with Ferrites, (green)	1	1
HE6940RJ3	Rt. Angle SMB- Rt. Angle SMB RG179 15.5" Jumpers with Ferrites, (black)		1
HE6940RJ4	Rt. Angle SMB- Rt. Angle SMB RG179 15.5" Jumpers with Ferrites, (white)		1
HEADSA/SA	Fiber Adapter SC/APC to SC/APC	1	3

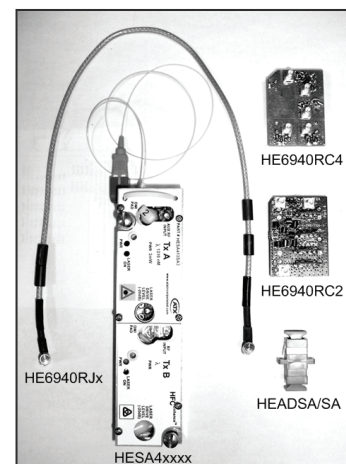


Figure #1

2. Return Config Board Overview and Set-up

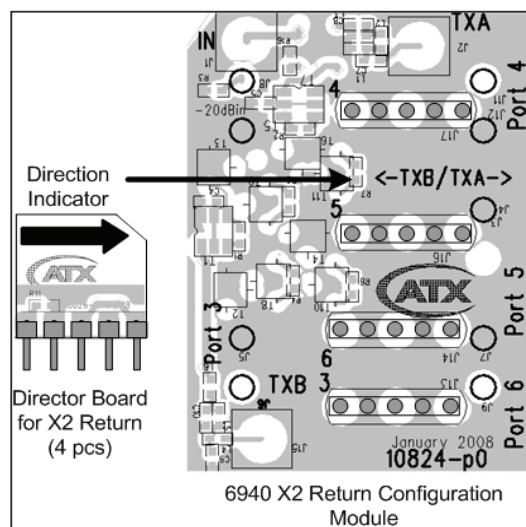


Figure #2

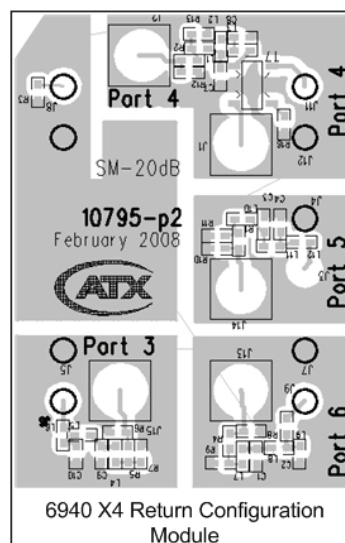


Figure #3

Both configuration boards have 4 pin style inputs that connect to the board sockets in the node's RF Motherboard, and correspond to their respective ports of the 6940 Node (Port 3 to Port 6). Port connections are identified on the top of the configuration module as well as the SMB connectors for connecting to the reverse transmitters.

As can be seen in Figure #2, the x2 Return Configuration Module has an integrated splitter system that along with 4 director boards (shown above) allows the routing of any combination of the ports to either of two SMB connectors (TXA and TXB) located on the top of the module. The orientation of the director boards determines which of the ports is connected to TXA or TXB. If the arrow on the director is pointed towards the right as shown above, then that port will be connected to TXA.

If the arrow is pointed towards the left, then that port will be connected to TXB. An SMB status monitor injection connector located at the top left corner is also provided. If connected, the status monitor signal will flow through the TXA SMB output.

Before the x2 Return Configuration Board is installed into the main RF Board in the node, set the selector boards to direct the signals from each node port to the desired SMB output (TXA or TXB). Note designations.

As can be seen in Figure #3, the x4 Return Configuration Module has 4 SMB connectors on the top of the board that connect to the 4 reverse transmitters. Each port is dedicated to its own transmitter. An SMB status monitor injection connector located to the right of the label "SM -20dB" is provided. If connected, the status monitor signal will flow through the TXA SMB output⁽¹⁾.

(1) HESA4SMK, Status Monitor Injection Kit is required in order to adapt to existing transponder output interface.

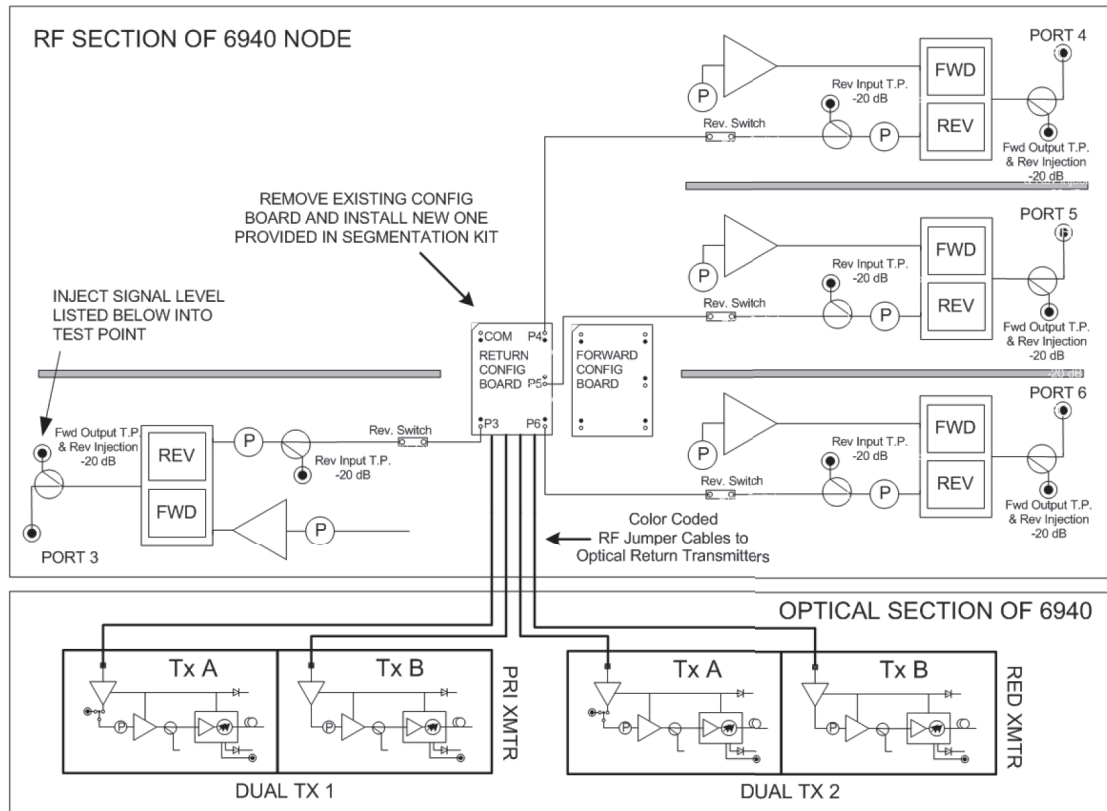


Figure #4

3. Installation of Return Segmentation Kit

1. Power off the 6940 Node.
2. Open the 6940 Node, remove the RF Tray Cover Plate, locate the existing Return Configuration Module, remove it and replace it with the new pre-configured (see Section #2) module provided. Figure #4 shows the location of the Return Configuration Board in the 6940 Node.
3. Fasten the color-coded RF Jumper Cables provided in the Return Segmentation Kit to the SMB ports of the Return Configuration Module, noting which color corresponds to which port on the configuration module. If the status monitor signal is required, connect the transponder's output to the status monitor input SMB port of the configuration module (see Section #2).
4. Replace the RF Tray Cover Plate with cables exiting an appropriate hole in the tray (suggest the SM connection hole in the bottom of the cover plate).
5. Install the Dual Return Path DFB Transmitter Module(s) into the optical section of the 6940 Node. These units can be installed in the module slots identified as PRI XMTR and RED XMTR on the 6940's Tx/Rx module header PCB. (**Note:** a plug-in board in RED XMTR slot may have to be removed.)

6. Route the pigtails from each of the transmitters into the node's fiber management tray and make connections with the node's fiber pigtails as appropriate in order to deliver the return signals back to the headend/hubsite. An extra SC/APC to AC/APC adapter has been included in the kit and can be installed into the fiber management's bulkhead adapter panel if necessary.
7. Connect RF Jumper Cables to the appropriate SMB inputs on the transmitter module(s). Appropriate connections need to be determined by appropriate system personnel.
8. Power the 6940 Node back on.
9. When everything is installed and the unit is powered, adjust the levels of the transmitters for optimum RF drive level (see Section #4).

4. Setting Laser Drive Levels

The HFC Enhance Dual Return Path DFB Transmitters for the 6940, 42 and 44 Nodes have been optimized based on the assumption that they will be driven with 37 MHz of loading. Based on this assumption, the optimum drive level⁽¹⁾ for a CW carrier injected into the transmitter is recorded on the transmitter module underneath the label "LASER DRIVE LEVEL". The return path can be optimized by inserting a CW carrier at a level equivalent to 20 dB+ EXPECTED RETURN CARRIER LEVEL⁽²⁾ into the Fwd Output Test Point & Rev. Injection Port on each port of the node. Adjust the Return Path Attenuator Pads in the node until the Laser Drive Level as indicated on the transmitter is achieved for each port.

⁽¹⁾ The optimum operating point for the transmitter is selected as the point that is 5 dB above the location where the noise side of the NPR curve crosses 41 dB. The NPR curve is generated using 37 MHz of noise loading and the per carrier power level is calculated assuming that the total power is divided equally into 6 carriers.

⁽²⁾ This is a system specific level and should be provided by appropriate technical staff within the MSOs operation.

Service & Support

Contact ATX Networks

Please contact ATX Technical Support for assistance with any ATX products. Please contact ATX Customer Service to obtain a valid RMA number for any ATX products that require service and are in or out-of-warranty before returning a failed module to the factory.

RF Products

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TECHNICAL SUPPORT

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Warranty Information

All of ATX Networks' products have a 1-year warranty that covers manufacturer's defects or failures.



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