

Connecting the Positron Access Solutions BRX-VDSL2 Bandwidth Amplifier

The following procedure will take you through the basic steps to qualify a copper loop BEFORE and AFTER the installation of the BRX-VDSL2 in order to assess the performance gain resulting from the insertion of the BRX-VDSL2 on the subscriber pair.

Step 1: BRX-VDSL2 Placement Determination

To start you must have the actual cable makeup (cable gauges and lengths) for the loop to the customer. Drop distance and gauge should also be included.

Find a likely location along the route that is near the midpoint of the loop and where it will be relatively easy to install the BRX-VDSL2. For example, load points, splices, and gauge-change locations where pairs are relatively available (so to speak) are likely spots to install the BRX-VDSL2.

Step 2: Ensure that the DSLAM has the following configurations:

- Profile: 17a or 8d
- Path Setting Mode: Interleave
- INP Recommended Settings: 2 symbols for DS and 1 symbol for US

Step 3: Before inserting the BRX-VDSL2 on the copper pair, you should access the DSLAM / MSAN Performance Statistics page and record the following performance information between the DSLAM / MSAN and the subscriber CPE:

Downstream Training Rate	
Upstream Training Rate	
Downstream Maximum Attainable Bit Rate	
Upstream Maximum Attainable Bit Rate	
Downstream Maximum Transmit Rate	
Downstream Minimum Transmit Rate	
Upstream Maximum Transmit Rate	
Upstream Minimum Transmit Rate	
Downstream SNR Margin	
Upstream SNR Margin	

Step 4: Insert the BRX-VDSL2 at the desired location, making sure to connect the grounding lug of the unit to a proper ground (less than 25 ohms). You will usually find a proper ground point at the location where the BRX-VDSL2 is to be installed.

Important Note: The BRX-VDSL2 unit is powered from the sealing current found on a standard POTS pair. The BRX-VDSL2 will not work on a dry pair (line with no sealing current). Each pair of the BRX-VDSL2 is powered independently with each pair requiring the presence of the sealing DC Voltage for proper operation.

Step 5: Connect one of the BRX-VDSL2 DSLAM-side pairs to the corresponding pair from the DSLAM / MSAN. If you are using the BRX-VDSL2 to serve two (2) different subscribers or if you use two (2) bonded pairs to serve a single customer, you will have to connect each pair. The DSLAM-side pairs are color-coded as follows:

- DSLAM Line 1 Blue / White
- DSLAM Line 2 Orange / White

Once connected, the corresponding LEDs should turn GREEN to signify the presence of -48 VDC sealing current.

Step 6: Connect the corresponding BRX-VDSL2 CPE-side pair(s) to the pair(s) going to the subscriber home.

- CPE Line 1 Blue / White
- CPE Line 2 Orange / White

Important Note: Please make sure to match the corresponding DSLAM-side pair number to the corresponding CPE-side pair number.

Once this step is completed, the DSLAM and the CPE will retrain the circuit and bring up the VDSL2 link with the higher bandwidth. During this process, LEDs will blink for a very short period of time until the optimal amplification gain is determined, at which point they will both turn solid GREEN. At this point, the DSLAM and CPE are synchronized and are in the training process which may take another minute or two.

Step 7: Access the DSLAM/ MSAN Performance Statistics and record the improved results:

Downstream Training Rate	
Upstream Training Rate	
Downstream Maximum Attainable Bit Rate	
Upstream Maximum Attainable Bit Rate	
Downstream Maximum Transmit Rate	
Downstream Minimum Transmit Rate	
Upstream Maximum Transmit Rate	
Upstream Minimum Transmit Rate	
Downstream SNR Margin	
Upstream SNR Margin	

If the DSLAM / MSAN is set to a specific **Maximum Transmit** rate for the Downstream and Upstream direction that is lower than the **Maximum Attainable** Downstream and Upstream rate, you should increase the DSLAM / MSAN settings to the **Maximum Attainable** Downstream and Upstream rates in order to fully benefit from the additional bandwidth resulting from the insertion of the BRX-VDSL2 on the subscriber pair.

End of BRX-VDSL2 installation procedure

Additional Deployment Considerations

Bonded Pairs

Bonded pairs are often not the same length. In that case, it is recommended to identify a location that is near the midpoint of the **longest** loop.

Minimum and Maximum Loop Length Values for the BRX-VDSL2

The BRX-VDSL2 is designed to operate on copper loops of 4,000 to 8,000 feet (24 AWG equivalent) / 1.2 to 2.4 km (0.51 mm equivalent).