Quick Start Guide

EIDM-EXTEND-2
Long Range Ethernet Extender

The EIDM-EXTEND-2 provides G.SHDSL (Single-pair High-bit-rate Digital Subscriber Line) broadband full-duplex transmission with bandwidth aggregation up to 10.8 Mbps over two pairs of copper line for point-to-point LAN connectivity between two Ethernet networks. This is enough speed to support VoIP, Web hosting, and teleconferencing. The EIDM-EXTEND-2 conforms to the ITU-T Rec. G.991.2, to meet G.shdsl.bis network requirements.

1 Items Included

- Long Range Ethernet Extender
- This Quick Start Guide
- Power Cord
- Cat 5 Ethernet Cable
- RS232 Cable
- Rack Mount Brackets
- Manual on CD
- Rubber Feet

2 Hardware Installation

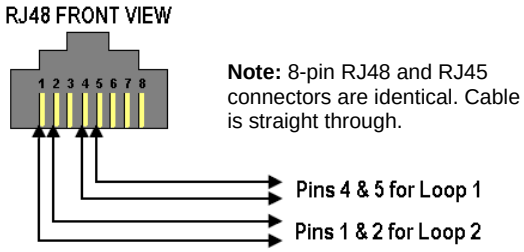
1. The extender is rack mountable and can be located in environments with temperatures ranging from 0 to 50°C. Relative humidity should be between 5% and 95%, non-condensing.

2. To mount the extender on a 19” rack, fasten the brackets on the extender by placing the shortest sides next to extender. Mounting the longer sides next to extender will result in a 12” wide mount opening. You may also choose to apply the supplied rubber feet to the bottom of the unit and place extender on a flat level surface.

3. Provide AC power to unit, between 100 and 240 volts, depending on your country’s voltage, using the supplied power cord.
Replacement fuse: 250V, 2 Amp, 5 x 20mm.

4. Connect the Ethernet cable to the RJ-45 port on the back of Ethernet Extender marked LAN1. LAN2 is available for connecting a second separate LAN over the same G.SHDSL link.

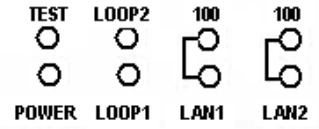
5. Connect a RJ-48 cable to the line port on the back of the Ethernet Extender. The opposite end connects with paired Ethernet Extender located elsewhere.
The cable must be terminated with an RJ-48 or RJ-45 connector and may be 1 or 2 pairs (loops). Pins 4 & 5 for loop 1 and pins 1 & 2 for loop 2. Maximum speed is achieved using both loops. Single pair operation will achieve the same distance but at half the speed.



Note: 8-pin RJ48 and RJ45 connectors are identical. Cable is straight through.

3 Front Panel & LED Chart

The 8 LED indicators on the front of the Extender display product status as described below.



Front Panel LEDs			
Port	**LEDs**	**Status**	**Description**
	POWER	Steady Green	Power on
		Off	Power off
	TEST	Yellow	Self testing after powered on
LAN1 LAN2 (RJ45)	100	Steady Green	Ethernet connection at 100 Mbps
		Off	Ethernet connection at 10 Mbps
LAN1 LAN2 (RJ45)	LAN1 LAN2	Steady	Valid Ethernet connection established
		Flashing	Ethernet data activity on port
		Off	No valid Ethernet connection or activity
Line (RJ48)	Loop 1 Loop 2	Steady Green	Loop connection established
		Flashing Green	Loop connection in progress
		Off	Not connected

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Data Rate and Distance for Extender Port (Based on 1dB line noise, adaptive mode)			
Data Rate (Kbps)		Maximum Distance	
1 Pair	2 Pair	Meters	Feet
4,608	9,216	1,828	6,000
3,072	6,144	2,895	9,500
2,304	4,608	3,505	11,500
2,048	4,096	3,657	12,000
1,544	3,088	3,962	13,000
1,152	2,304	4,419	14,500
768	1,536	4,572	15,000
512	1,024	5,029	16,500
384	768	5,334	17,500
256	512	5,791	19,000
192	384	6,248	20,500

Note: Distance and speed may vary. The above table represents the maximum performance which can be expected under ideal conditions using 26AWG twisted pair copper wire.

4 Initial Configuration

Ethernet Extender DSL mode settings are made by using the DB9 serial configuration port on the front of the extender. **At minimum, one extender must be set to STU-C and the other extend must remain in the default setting of STU-R.**
The default configuration is for 2 wire pairs.

It makes no difference which unit is designated STU-C and STU-R as long as they are **not both set the same**. (STU-C is Central Office and STU-R is Remote)

1. Connect the included serial cable to the DB9 serial port on the front of the extender and the other to the active serial COM port on your computer.
2. Power on the extender. The self test light will stay amber for a minute or two while diagnostics run.
3. Use Windows HyperTerminal or VT100 terminal with the following configuration: **9600** bits/sec, **8** data bits, parity **none**, stop bits **1**, flow control **hardware**.
4. Enter the <Escape> key on the computer keyboard and the main configuration screen should appear. If the <Escape> key is pressed and the screen does not appear, re-check the COM port settings and the COM port on your computer.
5. Select #1, **configuration** from the menu which will take you to a menu with **DSL Mode** as the #1 choice. Select DSL Mode and hit the <Space> bar which will change the default STU-R setting to STU-C, then hit the <Enter> key. The screen should continue to read STU-C.
6. The unit is now prepared to be connected to the other extender which by default should be set as STU-R. The unit can be powered down and should retain the STU-C setting.
7. Connect the SHDSL line to each unit and respective Ethernet LANs. Plug units into power outlets and power on both units.
8. Both units will execute self-test routines and will automatically connect with each other.
9. If units fail to connect, please double check DSL settings using HyperTerminal to ensure they are both set the same, except for the CO/RT setting. More detailed information can be found in the user manual.

```
          DSL Mode
                          Minimum
CO/RT     PAIR          Noise Margin
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STU-C     2 Pairs       NM=1 dB
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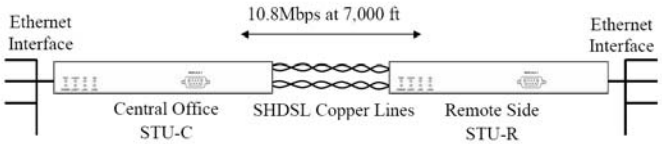
5 General Guidelines

1. The SHDSL line(s) should be 24 – 26AWG twisted pair copper wire with RJ48 terminations. Connect each extender to the SHDSL line.
2. Ethernet LAN(s) should be connected with CAT5 cable and will auto connect at 10/100Mbps.
3. Power on each unit and make sure one is set as STU-C and the other is STU-R.
4. If other DSL settings are changed, make sure both units are set the same. For example, if 1 pair of copper wire is used, both units must be set to 1 pair. Also, if speeds are changed from the default "**adaptive**" setting, both units must be set to the same speed.

Ethernet To Ethernet Bridge Extension



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