Copper LAN Extender

Line Power Master/Slave

User Manual

Ver 1.02

FCC MARKING 

This Equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received; including interference that may cause undesired operation.

CE MARKING 

This equipment complies with the requirements relating to electromagnetic compatibility, EN 55022 class A for ITE, the essential protection requirement of Council Directive 2004/108/EC on the approximation of the laws of the Member States relating to electromagnetic compatibility.

Company has an on-going policy of upgrading its products and it may be possible that information in this document is not up-to-date. Please check with your local distributors for the latest information. No part of this document can be copied or reproduced in any form without written consent from the company.

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(P/N: 41NE-VC102EK0-A00)

Introductions

The line power pair of Copper LAN Extender, provides a broadband transmission up to 100/60Mbps of downstream/upstream data rate over single pair copper line for point-to-point Ethernet connectivity. With 100/60Mbps data rate, supports transmission distance up to 350 meters for line power connection. The line power is supplied from the VTU-C to VTU-R and conforms to the Safety-Extra-Low-Voltage (SELV) standards.

With plug and play features and minimum installation time, VTU-C is always configured as master mode for central side, and VTU-R as slave mode for remote side. The line power pair of Copper LAN Extender conforms to the ITU-T G.993.1 and G.993.2 to meet VDSL/VDSL2 and SG15Q4 DMT for network requirements. A pair of VTU offers a cost effective line power solution for bandwidth-hungry applications such as LAN-to-LAN connectivity, Video Streaming, FTTB, and MDU/MTU over single twisted pair telephone line.

Features

- ITU-T G.993.1, G.993.2 VDSL/VDSL2 and SG15Q4 DMT Compliance
- 100/60Mbps DownSream/UpStream for distance up to 350 meters
- Supports Line Powered VDSL2 connection
- Conforms Safety-Extra-Low-Voltage (SELV) standard
- RJ11 for DSL interfaces + RJ45 for Ethernet LAN port
- 5 LED Indicators for Master (VTU-C)
- 4 LED indicators for Slave (VTU-R)
- 4 Dip Switches for Configuration Settings
- Trellis Coding support up to 1024 Discrete Multi-Tone (DMT) bins
- Auto MDIX for 10/100 BaseT Ethernet LAN Ports
- Low-Latency for Video/Voice/Data applications
- Line Surge Protection
- Selectable Fast and Interleaved modes
  - Fast mode guarantees a minimum end to end latency less than 1 ms.
  - Interleaved mode provides impulse noises protection for any impulse noise with a duration less than 250 us. Interleaved mode has a maximum end to end latency of 10 ms. Interleaved mode is the default mode.
- Selectable fixed data rate and fixed SNR margin
  - User may select fixed SNR margin (9 dB) or fixed target data rate.

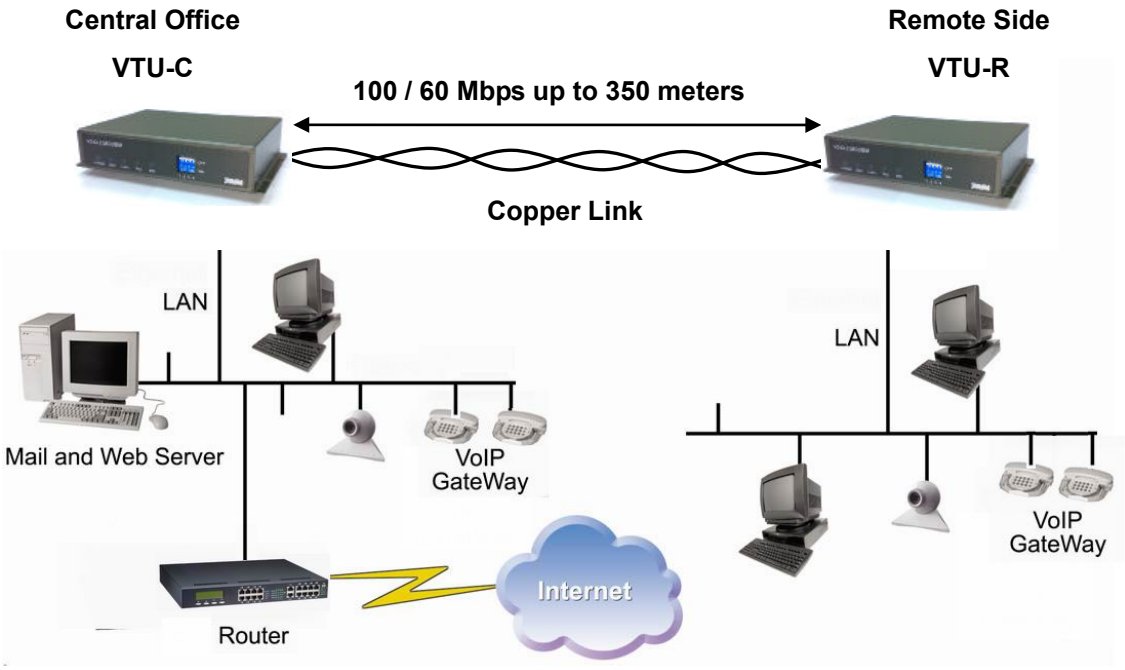
- When fixed SNR margin is selected, the systems will maintain the SNR margin at 9 dB across all available loop length.
- When fixed target data rate is selected, the system will lock the data rate at 50/20Mbps whenever the calculated SNR margin is higher than 9 dB. This will result in the best system stability and is the default mode.

Packing Contents

Inside the package you should find:
(1) One pair VDSL2 LAN Extender (Master/Slave)
(2) One AC-DC Power Adaptor (DC12V/2A) for Master (VTU-C)
(3) One User Manual
Please check if the packing is damaged or any component is missing. If so, please contact your distributor.

Application Notes

Ethernet To Ethernet Bridge Extension



LED Indicators

On the front panel of device, there are four LED indicators as the following

POWER: "**Green On**" indicates power is on and normal.

LAN: "**Green On**" indicates Ethernet LAN port is in connection.
"**Flashing**" indicates Ethernet LAN data activities.

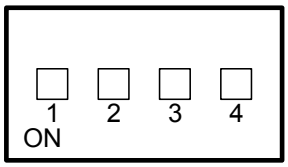
DSL: "**Green On**" indicates VDSL2 is in connection.
"**Flashing**" indicates VDSL2 is in line handshaking.

Master: "**Green On**" indicates device is always set as Master (VTU-C) mode.

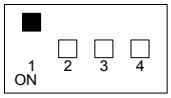
Slave: "**Green On**" indicates device is always set as Slave (VTU-R) mode.

PM: "**Green On**" indicates Master (VTU-C) is providing line power to Slave (VTU-R).
"**OFF**" indicates VTU-C line power is OFF.

Dip Switches Settings



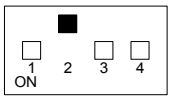
	Pin 1	Pin 2	Pin 3	Pin 4
	VTU-C/R	Mode	Rate Limit	SNR
OFF	VTU-C	Interleaved	50/20 Mbps	9dB
ON	VTU-R	Fast	Full Rate	6dB



Pin 1: **VTU-C/R Switch**

VTU-C: Master (VTU-C) will always act as the Central Office (CO) side.

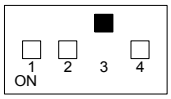
VTU-R: Slave (VTU-R) will always act as the Remote side.



Pin 2: **Mode for impulse noise protection**

Interleave mode: Protection for up to 250ms impulse noises with latency less than 6 ms.

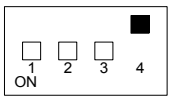
Fast mode: Direct data transmission with latency less than 1ms.



Pin 3: **Rate limit control**

50/20 Mbps: Line rate limited to 50/20 Mbps.

Full Rate: Provides up to 100Mbps/60Mbps line rate in short line.



Pin 4: **Signal to Noise Ratio (SNR)**

9dB: Higher SNR margin (9dB) will result in less error with more stable VDSL2 link.

6dB: Original and Normal channel noise protection with 6 dB SNR.

Data Rates & Distances

Performance in AWG 26 Line at 6dB with full rate

Down Stream Data Rate (Mbps)	Up Stream Data Rate (Mbps)	Distance (feet)
100	60	500
98	53	1000
90	44	1250