

# **VDSL2 LAN Extender**

## **User Manual**

Ver 1.02

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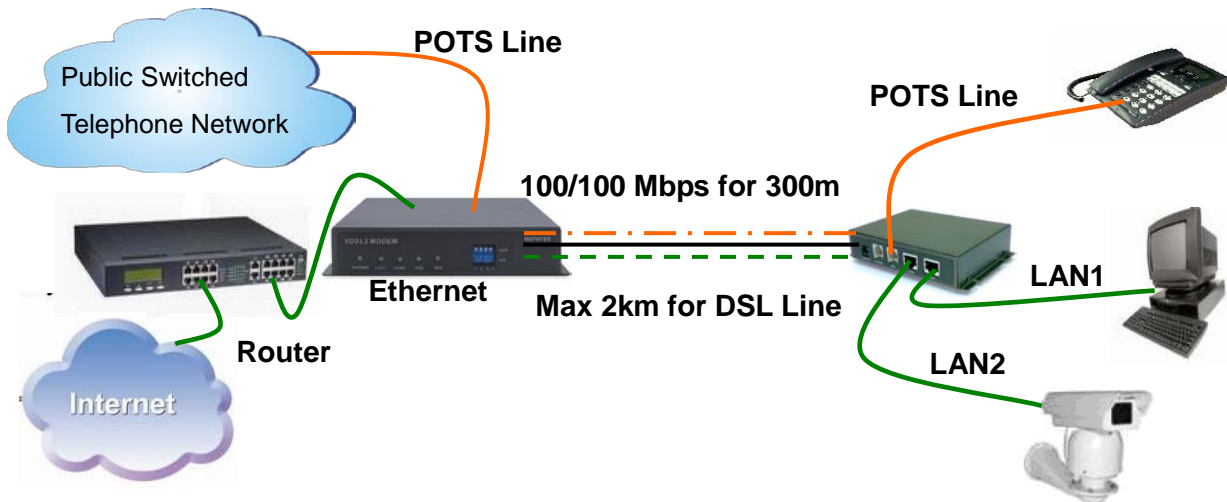
# 1. Introductions

The RP-VC102EM, a VDSL2 (Very high-bit-rate Digital Subscriber Line) LAN Extender, provides a broadband transmission up to 100/100Mbps of downstream/upstream data rate over single pair copper line for point-to-point Ethernet connectivity. With 100/100Mbps data rate, RP-VC102EM supports transmission distance up to 300 meters, and 30/10 Mbps for 1km long range connection. Users may also select a fixed data rate or a fixed SNR margin for different copper line ranging.

With plug and play features and minimum installation time, each RP-VC102EM can be configured into either CO for central side or RT for remote side by dip switch setting. The RP-VC102EM 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 RP-VC102EM offers a cost effective solution for bandwidth-hungry applications such as LAN-to-LAN connectivity, Video Streaming, FTTB, and MDU/MTU over single twisted pair telephone line.

# 2. Application Notes

## 1) Ethernet To Ethernet Bridge Extension over DSL Line



### 3. Features

- ITU-T G.993.1, G.993.2 VDSL/VDSL2 and SG15Q4 DMT Compliance
- 100/60Mbps DownStream/UpStream for distance up to 300 meters
- Supports VDSL2 connection up to 2000 meters
- Support Annex A, B, or C for internal splitter (option)
- Line Surge Protection
- RJ11 x 2 for DSL and PHONE interfaces + RJ45 x 2 for Ethernet LAN port
- Five LED Indicators
- 4 Dip Switches for Configuration Settings
- Trellis Coding support up to 2048 Discrete Multi-Tone (DMT) bins
- Auto MDIX for 10/100 BaseT Ethernet LAN Ports
- Low-Latency for Video/Voice/Data applications
- Selectable SNR margin
  - User may select fixed SNR margin 9 dB or 6dB for different DSL loops.
  - When 9dB SNR margin is selected, the systems will maintain the SNR margin at 9 dB across the loop length for the best system stability.

### 4. Packing Contents

Inside the package you should find:

- (1) One RP-VC102EM VDSL2 LAN Extender
- (2) One AC to DC Power Adaptor (12VDC/1A)
- (3) One User Manual

Please check if the packing is damaged or any component is missing. If so, please contact your distributor.

## 5. LED Indicators

On the front panel of RP-VC102EM, there are 5 LED indicators as the following

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

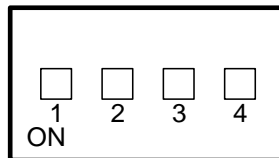
**LAN1:** “Green On” indicates Ethernet LAN1 port is in connection.  
“Flashing” indicates Ethernet LAN1 data activities.

**LAN2:** “Green On” indicates Ethernet LAN2 port is in connection.  
“Flashing” indicates Ethernet LAN2 data activities.

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

**M/S:** “Green On” indicates RP-VC102EM is set as Slave (VTU-R) mode.  
“OFF” indicates RP-VC102EM is set as Master (VTU-C) mode.

## 6. Dip Switches Settings



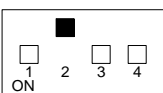
	Pin 1	Pin 2	Pin 3	Pin 4
	VTU-C/R	Profile	Profile	SNR
<b>OFF</b>	VTU-CO	30a	Annex A	9dB
<b>ON</b>	VTU-CPE	17a	Annex B (ISDN 997)	6dB



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

**VTU-C:** RP-VC102EM will act as at the Central Office (CO) side.

**VTU-R:** RP-VC102EM will act as at the Customer Premise Equipment (CPE) or Remote side.



### Pin 2: Mode for VDSL2 Connection Profile

**30a:** for VDSL2 30a profile

**17a:** for VDSL2 17a profile.



### Pin 3: Mode for VDSL2 Annex.A/B

**Annex.A:** for VDSL2 Annex.A 30a/17a.

**Annex.B:** for VDSL2 Annex.B 30a/17a.



### Pin 4: Signal to Noise Ratio (SNR) Margin

**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.

## 7. Data Rates & Distances

### Performance in AWG 24 Line at 6dB with full rate

Down Stream Data Rate (Mbps)	Up Stream Data Rate (Mbps)	Distance (feet)
100	100	1000
90	70	1250
80	60	1500
70	45	1750
60	38	2000
48	28	2500
39	18	3000
35	10	3500
28	3	4000