



## Long Reach PoE Extenders

*VX-701-CO & VX-700-RT*

User Manual



**Updated:** 2/12/2018

Copyright by Versa Technology Inc.

# Contents Overview

|  |           |
|--|-----------|
| <b>1. Product Introduction .....</b>                 | <b>4</b>  |
| 1.1 Product Overview .....                           | 4         |
| 1.2 Features .....                                   | 5         |
| 1.3 Specifications .....                             | 6         |
| 1.4 Applications .....                               | 7         |
| <b>2. HW Description .....</b>                       | <b>8</b>  |
| 2.1 LED Definition .....                             | 8         |
| 2.2 Product Outlook.....                             | 9         |
| 2.3 Power .....                                      | 10        |
| 2.4 Dip Switch .....                                 | 11        |
| <b>3. Regulatory Compliance .....</b>                | <b>11</b> |
| <b>4. Installation/Operation [Precautions] .....</b> | <b>11</b> |

# 1. Product Introduction

## 1.1 Overview

Versa Technology's VX-700-RT is a Long Reach POE Extender with single POE port (CPE). It is designed to extend the reach of Ethernet Data and IEEE 802.3at Power over Ethernet beyond its natural limitations of 100m for the network infrastructure. The VX-700LRP-KIT works in pairs for point to point connectivity. The VX-700-RT can be connected to a VX-701-CO Long Reach POE Extender (CO). The master unit at the central site (VX-701-CO) can transmit data and power over a single pair of telephone grade UTP wire up to 1,200m. Without the need for local power supply, each VX-700-RT is equipped with a 10/100/1000 Base-T IEEE 802.3at PoE port for a total power budget of 30W that can support any remote IEEE 802.3at powered device (PD). It is an ideal PoE extension solution for service providers to deploy networking applications in public areas that requires IP TV, Wireless AP, IP Phones and IP Cameras.

## 1.2 Features

- Complies to IEEE 802.3at PoE
- Support wide temperature range for applications in harsh environment
- Simultaneous transmission of Ethernet data and POE Power over UTP wire
- Centralized management of power supply
- Eliminated the need for local power supply at remote sites
- Easy cabling for quick installation
- Long transmission distance up to 1200m for UTP wire
- Quick deployment and easy maintenance.
- Flexible and efficient power management
- Automatically switch between VDSL2 Profile 30a and 17a to utilize bandwidth performance
- Auto detection for remote and local power supply

## 1.3 Specifications (VX-700-RT)

### Hardware Interfaces:

- RJ-11 for Copper Port
- 1 x RJ-45 10/100/1000Base-T IEEE 802.3at POE Port

### LED Indicators:

- POE: POE Port Status ON/OFF
- 1000: ON/OFF
- 10/100: ON/OFF
- Power: ON/OFF
- Remote: Remote Power ON/OFF
- Copper Port Link: ON/OFF/Blinking

### Power Supply:

- Remotely powered by 708MP 8-Port Long Reach POE Managed Switch or 701MP Long Reach POE Extender (CO)
- Terminal Block for external AC to DC adaptor (For local power scenario)
- Power Consumption: 40 Watts maximum (Estimated when PoE is ON)
- Over current protection
- Automatic short protection

### Standards Support:

- VDSL2 ITU-T G.993.2
- VDSL2 Profiles: 17a and 30a

### Protocol Support

- Transparent bridging to higher layer protocols

### Operating Environment

- Operating Temperature: -20°C to 65°C
- Storage Temperature: -40°C to 85°C
- Humidity: 10% - 95% (non-condensing)

### Physical

- Hardened aluminum case
- Dimensions: 90.5 mm x 40 mm x 117mm (Estimated)
- Installation: Wall Mounting or Magnet Kit (Optional)

### Regulatory Compliance

- CE
- FCC Part 15 Class A
- EN60950

### Performance

| Power over Copper, 24AWG copper wire |           |                  |
|--------------------------------------|-----------|------------------|
| Distance                             | Line Rate | POE power (Watt) |
| 300m                                 | 100Mbps   | 30W              |
| 400m                                 | 90Mbps    | 20W              |
| 600m                                 | 65Mbps    | 15W              |
| 800m                                 | 45Mbps    | 7W               |
| 1000m                                | 35Mbps    | 5W               |
| 1200m                                | 20Mbps    | 4W               |

## Specifications (VX-701-CO)

### Hardware Interfaces:

- Terminal Block for Copper Port
- BNC Female for Coaxial Port
- 4 x RJ-45 10/100Base-TX IEEE 802.3at PoE Port

### 3 Position Dip Switch

- Selectable target band plan (Asymmetric or Symmetric)
- Selectable target SNR margin (6dB or 9dB)
- Selectable Remote Power (ON) or Local Power (OFF)

### LED Indicators:

- Active: System Status
- LPWR/RPWR: Local Power/Remote Power
- PoE: PoE Port Status
- Available PoE Output (Watts): 5/15/30
- Line Speed (Mbps): Link/20/40/60/80/100

### Power Supply:

- Terminal blocks for redundant DC power inputs
- Din connector for external AC to DC adaptor
- Input Voltage: 48 to 57 VDC
- Power Consumption: 65 Watts maximum
- Over current protection
- Automatic short protection

### Standards Support:

- VDSL2 ITU-T G.993.2
- VDSL2 Profiles: 17a and 30a

### Protocol Support

- Transparent bridging to higher layer protocols

### Operating Environment

- Operating Temperature: -40°C to 75°C
- Storage Temperature: -40°C to 85°C
- Humidity: 10% - 95% (non-condensing)

### Physical

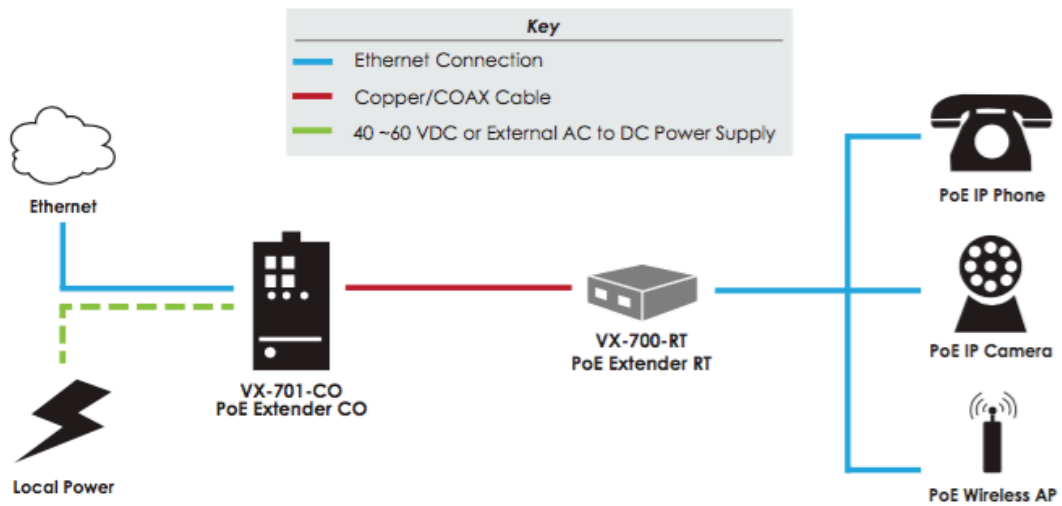
- Hardened aluminum case, IP30
- Dimensions: 62 x 135 x 106.5 mm
- Installation: DIN-Rail, Panel Rack Mounting

### Regulatory Compliance

- CE
- FCC Part 15 Class B
- EN60950

## 1.4 Applications

The solution works in pairs for point-to-point connectivity. It features the VX-701-CO Long Reach PoE Extender (CO), the master unit at the central site that can transmit data and power over a single pair of telephone grade UTP wire up to 1,200m or coaxial cable up to 1,800m. On the receiving end is the VX-700-RT Long Reach PoE Extender with 1 PoE (PSE) port (CPE). Without the need for local power supply, each VX-700-RT is equipped with a 10/100Base-TX IEEE 802.3at PoE Port for a total power budget of 30W that can support any remote IEEE 802.3at/af powered device (PD) like Wi-Fi Access Point, IP Phone, and IP Camera.



## 1.5 Reference Performance Data

### UTP – 24AWG Copper Wire

| SNR      | 6dB                       |                             | 6dB                       |                             | PoE output power |
|----------|---------------------------|-----------------------------|---------------------------|-----------------------------|------------------|
| Profile  | Asymmetrical              |                             | Symmetrical               |                             |                  |
| Distance | Upstream Line Rate (Mbps) | Downstream Line Rate (Mbps) | Upstream Line Rate (Mbps) | Downstream Line Rate (Mbps) |                  |
| 300 m    | 65                        | 100                         | 100                       | 100                         | 30 W             |
| 400 m    | 45                        | 95                          | 70                        | 70                          | 20 W             |
| 600 m    | 30                        | 65                          | 45                        | 45                          | 15 W             |
| 800 m    | 10                        | 45                          | 27                        | 27                          | 7 W              |
| 1,000 m  | 6                         | 35                          | 18                        | 18                          | 5 W              |
| 1,200 m  | 1                         | 20                          | 8                         | 16                          | 4 W              |

### Coaxial Cable

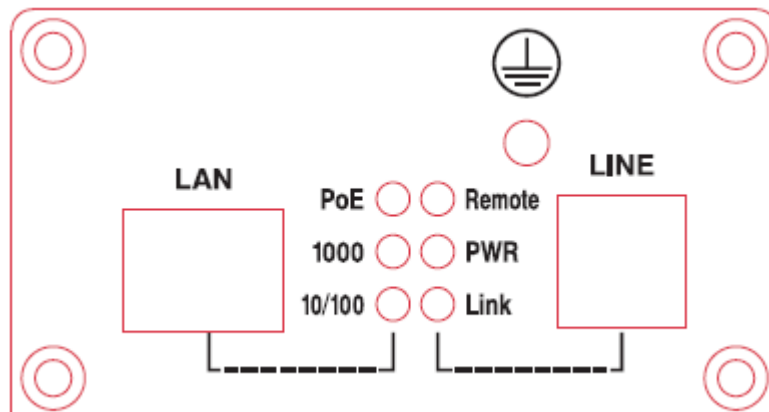
| SNR      | 6dB                       |                             | 6dB                       |                             | PoE output power |
|----------|---------------------------|-----------------------------|---------------------------|-----------------------------|------------------|
| Profile  | Asymmetrical              |                             | Symmetrical               |                             |                  |
| Distance | Upstream Line Rate (Mbps) | Downstream Line Rate (Mbps) | Upstream Line Rate (Mbps) | Downstream Line Rate (Mbps) |                  |
| 400 m    | 100                       | 100                         | 100                       | 100                         | 30 W             |
| 600 m    | 50                        | 100                         | 50                        | 80                          | 20 W             |
| 800 m    | 50                        | 100                         | 50                        | 80                          | 15 W             |
| 1000 m   | 45                        | 90                          | 50                        | 60                          | 10 W             |
| 1,200 m  | 40                        | 70                          | 50                        | 50                          | 8 W              |
| 1,400 m  | 35                        | 55                          | 40                        | 35                          | 6 W              |
| 1,600 m  | 30                        | 40                          | 35                        | 30                          | 5 W              |
| 1,800 m  | 10                        | 35                          | 20                        | 20                          | 4 W              |
| 2,000 m  | 5                         | 30                          | 15                        | 15                          |                  |

## 2. HW Description

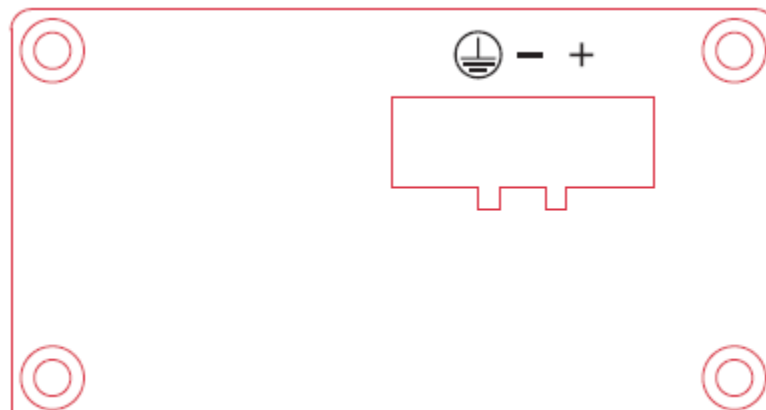
### 2.1 Overview

The VX-700-RT is a Long Reach PoE Extender with one 10/100/1000Base-TX IEEE 802.3at PoE Ports.

### 2.2 Product outlook



Picture 2.1 Front Panel



Picture 2.2 Rear Panel



## 2.3 LED Definition

The LED indicators provide instant feedback to users; the behaviors of the LED are given in below table:

| Interface  | LED Name    | Indicator/Color | Condition  |
|------------|-------------|-----------------|--|
| <b>LAN</b> | PoE         | Green-off       | PoE Port is off  |
|            |             | Green-on        | PoE Port is on   |
|            | 1000        | Green-off       | There is no gigabit connection                           |
|            |             | Flashing        |  |
|            |             | Green-on        | When there is a gigabit connection made through LAN Port |
|            | 10/100      | Green-off       | When LAN port operating speed is not 10/100 Mb/s         |
|            |             | Flashing        |  |
|            |             | Green-on        | When LAN port operating speed is 10/100 Mbps             |
|            | <b>LINE</b> | Remote          | Green-off  |
| Green-on   |             |                 | Power is transmitted over copper interface               |
| PWR        |             | Green-off       | When the device is powered off                           |
|            |             | Green-on        | When the device is powered on                            |
|            |             | Slow flashing   | Cooper port is under handshaking                         |
|            |             | Fast flashing   | Cooper port has data transmission or reviving            |
|            |             | Green-on        | Cooper port link up                                      |

Table 2-1 100MP LED indications

## 2.4 Power

- **Input:**
  - VX-700-RT (CPE): Provide local input power via terminal block; power voltage is 48VDC to 57VDC.
- **Output:**
  - VX-700-RT (CPE): Ethernet port provides PoE PSE function to 802.3at (30W).
- **Power Consumption:**
  - VX-700-RT (CPE): Max. 40W with Remote Power function enable, provide CPE PoE PSE 30W
- **Protection:**
  - Provide Over-Current protection and resettable smart Short-Circuit protection on both Copper interface and PoE PSE interface.
- **Two power level output:**
  - The function is set to detect CPE function.
  - When CO cannot detect CPE, output is 48VDC to Copper line.
  - When CO detected that the CPE is successfully connected, Power over Copper output is 96VDC to Copper line.

## 3. Regulatory Compliance

The VX-700-RT is designed to comply with the following standards:

- CE
- FCC Part 15 Class B
- EN60950

#### 4. Installation/Operation [**Precautions**]

##### **IMPORTANT!**

- Disconnect all power from devices before attempting installation
- Disconnect power to the devices before any I/O and DIP configuration
- **DO NOT** connect VX-700-RT and the VX-701-CO to the same power source. Possible damages may be caused to devices due to power loop back through the PoE connections via copper wire.

#### **Connecting the VX-700-RT to the VX-701-CO (Point-to-Point)**

1. Make sure all power sources are disconnected from the VX-701-CO and the VX-700-RT.
2. Set the dip switch on VX-701-CO.
3. Connect one end of copper pair to RJ-11 jack of the VX-701-CO and the other end to RJ-11 jack of the VX-700-RT.
4. Connect VX-701-CO to the power source.
5. Data and power will be transmitted from the VX-701-CO to the VX-700-RT.