2178HSEE-G

High Speed ITU-T G.993.5
G.Vectoring and G.INP Ethernet Extender

The Data Connect 2178HSEE-G, a new-generation and high-performance Gigabit Ethernet-over-VDSL2 Converter, works well with a pervasive telephone line network with a symmetric data rate of up to 200/160Mbps (G.INP, Sym, 8dB) over a distance of 300m and 20/12Mbps over a long distance of 1.4km. It is based on the two-core networking technology, Gigabit Ethernet and VDSL2 (Very-high-data-rate Digital Subscriber Line 2). The VDSL2 technology offers absolutely the fastest data transmission speed over the existing copper telephone lines without the need of rewiring.

The Ethernet-over-VDSL2 converter comes with a plug-and-play design and is fully compatible with all kinds of network protocols. Moreover, the operating status of each individual port and the whole system can be watched via the rich diagnostic LEDs on the front panel. The 2178HSEE-G offers two modes, CPE and CO, for application -- CPE mode is used at client side and CO mode is at central side. The CPE or CO mode can be adjusted by using a built-in DIP switch. For point-to-point connection, a CPE mode 2178HSEE-G and a CO mode 2178HSEE-G must be set up as one pair of converters to perform the connection.

Via the latest VDSL2 technology, 2178HSEE-G offers high-speed access to Internet, up to 190Mbps for both upstream and downstream data transmissions. With integrated support for the ITU-T's new G.993.5 vectoring technology, the 2178HSEE-G works in conjunction with vectoring-enabled DSLAMs to remove crosstalk interference and improve maximum line bandwidth across the existing copper infrastructure.

Key Features

- ITU-T G.993.5 G.vectoring and G.INP
- DMT-based coding technology
- Built-in POST splitter to share voice and date
- CO/CPE mode selectable via DIP switch
- Selectable target band plan and SNR margin
- Up to 200/160Mbps bandwidth
- 1 10/100/1000BASE-TX LAN ports
- Complies with IEEE 802.3, 10BASE-T, IEEE 802.3u, 100BASE-TX and IEEE 802.3x, flow control Ethernet standards
- Half duplex back pressure and IEEE 802.3x full duplex pause frame flow control
- One RJ11 connector for VDSL port with VDSL connection
- Voice and data communication can be shared simultaneously based on the existing telephone wire
- Supports a packet size of up to 9K bytes, IEEE 802.1Q VLAN tag transparency
- VDSL2 standalone transceiver for simple bridge modem application
- Advantage of minimum installation time (Simply by Plug-and-Play)
- Supports extensive LED indicators for network diagnosis
- Co-work with media converter chassis
- Compact in size and easy to install

Specifications

Hardware Specifications

- **LAN Ports**: 1 10/100/1000BASE-T RJ45 auto-MDI/MDI-X ports
- **VDSL Port**
    - 1 VDSL2 RJ11 female phone jack
    - Twisted-pair telephone wires (AWG-24 or better) up to 1.4km
- **Phone Port**: Additional splitter for POTS connection
- **Dimensions**: (W x D x H): 97 x 70 x 26 mm
- **Weight:** 184g
- **Power Requirements**: DC 5V, 2A external power
- **LED Indicators**
    - 1 power: Green
    - 1 1000BASE-T LNK/ACT: Green
    - 1 100BASE-TX LNK/ACK: Green
    - 1 VDSL:Green
    - 1 CO: Green
    - 1 CPE: Green

- **Housing**: Metal
- **DIP Switch & Functionality**
    - 4-position DIP switch
    - CO or CPE mode selectable
    - Selectable G.INP and interleaved mode
    - Selectable target Band plan
    - Selectable target SNR mode

Switch Specifications

- Switch Processing Scheme: Store-and-Forward

- Address Table: 2K entries
- Flow Control:
  - Back pressure for half duplex
  - IEEE 802.3x pause frame for full duplex
- Jumbo Packet Size: 9K bytes

System Specifications

- **VDSL Compliance**
  - **VDSL-DMT**:
    - ITU-T G.993.1 VDSL
    - ITU-T G.997.1
    - ITU-T G.993.2 VDSL2 (Profile 17a/30a support)
    - ITU-T G.993.5 G.vectoring
    - ITU-T G.998
    - G.INP

- **ADSL Compliance**
  - **Capable of ADSL2/2+ standard**:
    - ITU G.992.3 G.dmt.bis
    - ITU G.992.5 G.dmt.bisplus
    - Data Rate: Up to 24Mbp

- **Performance***
  (Downstream/Upstream)
  - CO, Interleave, Aym, 8dB
    - 200M -> 221.35Mb/114.76Mb
    - 400M -> 145.04Mb/76.27Mb
    - 600M -> 88.60Mb/48.63Mb
    - 800M -> 56.24Mb/29.50Mb
    - 1000M -> 40.60Mb/7.28Mb
    - 1400M -> 31.21Mb/5.59Mb

  - **CO, Interleave, Sym, 8dB**
    - 200M -> 182.35Mb/154.28Mb
    - 400M -> 141.85Mb/94.21Mb
    - 600M -> 74.99Mb/45.90Mb
    - 800M -> 59.79Mb/29.71Mb
    - 1000M -> 34.27Mb/22.27Mb
    - 1400M -> 25.17Mb/11.49Mb

  - **G.INP, Sym, 8dB**
    - 200M -> 191.96Mb/161.02Mb
    - 400M -> 145.53Mb/94.37Mb
    - 600M -> 84.53Mb/50.62Mb
    - 800M -> 67.10Mb/32.92Mb
    - 1000M -> 38.01Mb/24.73Mb
    - 1400M -> 28.03Mb/12.53Mb

  - **G.INP, Asym, 8dB**
    - CO, Interleave, Asym, 12dB
    - 200M -> 194.07Mb/104.48Mb
    - 400M -> 123.64Mb/64.98Mb
    - 600M ->71.92Mb/42.28Mb
    - 800M ->47.85Mb/25.07Mb
    - 1000M -> 34.73Mb/7.01Mb
    - 1400M -> 27.15Mb/3.76M

  - **CO, Interleave, Sym, 12dB**
    - 200M -> 221.59Mb/114.66Mb
    - 400M -> 123.19Mb/78.50Mb
    - 600M -> 67.46Mb/36.28Mb
    - 800M -> 52.17Mb/25.42Mb
    - 1000M -> 26.96Mb/19.16Mb
    - 1400M -> 21.03Mb/9.37Mb

  - **G.INP, Sym, 12dB**
    - 200M -> 176.45Mb/136.97Mb
    - 400M -> 149.03Mb/127.35Mb
    - 600M -> 75.80Mb/40.27Mb
    - 800M -> 59.09Mb/28.29Mb
    - 1000M -> 28.58Mb/21.21Mb
    - 1400M -> 23.31Mb/10.29Mb

  - **G.INP, Asym, 12dB**
    - 200M -> 194.29Mb/110.17Mb
    - 400M -> 125.71Mb/66.30Mb
    - 600M -> 73.04Mb/43.33Mb
    - 800M ->48.92Mb/24.57Mb
    - 1000M -> 37.19Mb/7.61Mb
    - 1400M -> 30.66Mb/3.54Mb

Standards Conformance
  - **Standards Compliance**
    - IEEE 802.3 Ethernet
    - IEEE 802.3u Fast Ethernet
    - IEEE 802.3ab Gigabit Ethernet
    - IEEE 802.3x Full-duplex flow control
    - IEEE 802.1p Class of Service
    - ITU-T G.993.1 VDSL
    - ITU-T G.997.1
    - ITU-T G.993.2 VDSL2 (Profile 17a/30a support)
    - ITU-T G.993.5 G.Vectoring & G.INP
    - ITU-T G.998

Ordering Information

Model Name	Description
2178HSEE-G	1-Port 10/100/1000T Ethernet to VDSL2 Bridge (30a profile w/G.vectoring)
2178HSEE-G-2PK	1-Port 10/100/1000T Ethernet to VDSL2 Bridge (30a profile w/ G.vectoring), 2 Pack

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