

HCD-4

4 Mbps HDSL-Based Data Modem



FEATURES

- HDSL-based modem, enabling symmetrical data transmission at a rate of 4 Mbps over existing copper cables
- Operates synchronously in full duplex over 4-wire cables at distances of up to 3.0 km (1.9 miles)
- Complies with ETSI HDSL standards
- Supports variety of data interfaces, as well as built-in Ethernet bridge and router
- Setup, control and monitoring using front-panel LCD or ASCII terminal
- Provides an embedded channel for control and diagnostics of both central and remote units
- Includes alarm relay port for activation of external devices upon alarm events

DESCRIPTION

- HCD-4 operates at a data rate of 4 Mbps, extending the range of digital equipment up to 3.0 km (1.9 miles) over a 4-wire link (24 AWG/0.5 mm).
 - The modem uses HDSL technology to eliminate the need for optical cable in the last mile (local loop) or in the campus network environment.
 - Using advanced equalization, adaptive filtering, echo cancellation technology and 2B1Q line coding, HCD-4 compensates for line impairments, bridge taps and mixed cabling. High immunity to background noise enables transmission of multiple HDSL lines via the same physical cable.
 - Available with the following data port interfaces: RS-530, V.35A and X.21. In addition, the modem supports Ethernet interface modules with a built-in Ethernet bridge (IR-ETH) or an IP router (IR-IP), which enable LAN-to-LAN connectivity using HDSL technology.
- Setup, control and monitoring of status and diagnostics information can be performed using one of the following:
 - Front panel LCD with three buttons, using menu-driven management
 - ASCII terminal connected to the async control port using command line interpreter.
 - The modem uses an Embedded Operation Channel (EOC) for controlling and monitoring the remote unit. The management channel operates without interfering with the data transmission.
 - Timing reference depends on the HCD-4 operation mode:
 - LTU (central location) – the HCD-4 internal clock generator provides timing for the digital interface and HDSL line.
 - NTU (remote location) – HCD-4 receives timing from the central unit via the HDSL line.
 - Comprehensive diagnostic capabilities include:
 - Loopbacks on the HDSL lines and DTE port
 - HDSL statistics collection.
 - HCD-4 performs call-out via its alarm port to report system alarms. The port can be configured to relay all alarms or only the major ones.

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SPECIFICATIONS

HDSL INTERFACE

- **Line Code**
2B1Q
- **Signal Format**
2320 kbps on each pair
- **Transmit Pulse Shape**
ETSI ETR-152
- **Equalizer**
Automatically adaptive
- **Transmit Signal Power**
+13.5 dBm \pm 0.5 dBm
- **Loop Loss**
31 dB max at 150 kHz
(584 kbaud)
- **Return Loss**
16 dB min, 485 kHz to 800 kHz
at 135 Ω (1160 kbaud)
- **Connector**
RJ-45
- **Range (without noise)**
 - Up to 2.4 km (1.6 miles) over
26 AWG (0.4 mm)
 - Up to 3.0 km (1.9 miles) over
24 AWG (0.5 mm)
- **HDSL Statistics**
As per ITU G.826

DIGITAL INTERFACE

- **Data Rate**
N \times 64 kbps (n=1, 2, ..., 31, 32),
4.096 Mbps
- **Connectors**
 - RS-530: 25-pin, D-type female
 - V.35A: 25-pin, D-type female
 - X.21: 15-pin, D-type male
(via adapter cable)
 - IR-ETH (Ethernet bridge): RJ-45
 - IR-IP (IP router): RJ-45

SUPERVISORY PORT

- **Interface**
V.24/RS-232 DCE
- **Format**
Async, 7 or 8 bits; with odd, even
or no parity
- **Baud Rate**
9.6 kbps
- **Connector**
9-pin D-type, female

GENERAL

- **Diagnostics**
Loopbacks:
 - Local HDSL loopback toward
the local DTE
 - Local and remote loopbacks on
the data channelPerformance monitoring:
 - HDSL statistics collection
- **Indicators**
HDSL LOS A (red) – Sync loss line A
HDSL LOS B (red) – Sync loss line B
TD (yellow) – Transmit data
RD (yellow) – Receive data
ALM (red) – Alarm buffer full
TST (red) – Test mode
- **Alarm Relay**
3 relay contacts (RJ-11) on the
rear panel, activated by major
alarm events
- **Power Supply**
AC: 100 to 240 VAC (\pm 10%),
47 to 63 Hz
DC: -48 VDC (-36 to -72 VDC)
- **Power Consumption**
4.5W
- **Physical**
Height: 4.4 cm / 1.7 in (1U)
Width: 21.5 cm / 8.5 in
Depth: 24.0 cm / 9.6 in
Weight: 1.4 kg / 3.5 lb
- **Environment**
Temperature: 0–50°C (32–122°F)
Humidity: Up to 90%,
non-condensing

ORDERING

HCD-4/*/&

4 Mbps HDSL-based data modem

* Specify power supply:

AC for 100 to 240 VAC

48 for for -48 VDC

& Specify DTE interface:

V35 for V.35A interface

530 for RS-530 interface

X21 for X.21 interface

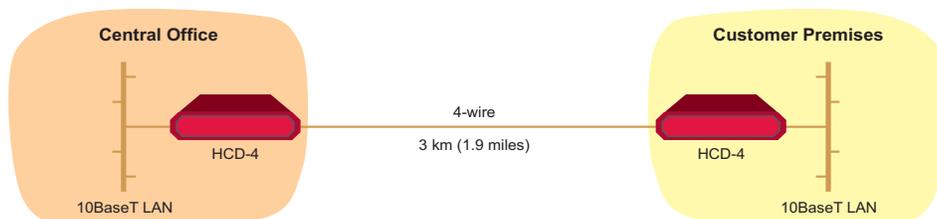
UTP for IR-ETH module

IP for IR-IP module

RM-17

Special hardware for mounting one or
two HCD-4 units in a 19-inch rack

APPLICATION



RAD

data communications

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