

Model CAMPUS Series



CAMPUS-T1

FEATURES

- **Low Cost, HDSL-Based Transmission**
- **Fiber Optic Quality Transmission (BER⁻¹⁰) Over Existing Copper**
- **Installation in Minutes**
- **Connects at Distances up to 5 miles/8 Kilometers**
- **Crosstalk Immunity Flexible Interface Option**

APPLICATIONS

- **LAN Internetworking**
- **Video Conferencing**
- **Distance Learning**
- **Channel Extensions**
- **Remote Data Center Access**
- **Distributed PBX Networking**

DESCRIPTION

Campus-T1

The Campus-T1® is a High-bit-rate Digital Subscriber Line (HDSL) transmission system designed by PairGain® to meet your campus area network digital communications requirements. With a Campus-T1 installed at each end of an unconditioned copper line, at distances up to 5 miles/8 kilometers, your end users have instant access to advanced digital services including LAN internetworking, video conferencing and PBX extensions, at speeds up to 1.544 Mbps.

The Campus-T1 can be installed in a matter of minutes and comes equipped with a unique 260 MIPS VLSI digital signal processor which performs high-speed adaptive filtering and echo cancellation, ensuring crosstalk

immunity as well as transmission quality comparable to fiber optics (BER 10⁻¹⁰), which is far superior to repeatered T1. Extensive remote management and diagnostics are provided including SNMP when PairGain's Campus-Star™ system is located at a central site. DSU functionality is built-in and a variety of network interface options, including PairGain's Campus-REX™ Ethernet bridge and Campus-Flex® for fractional T1 (FT1) connectivity, make it an ideal solution when multiple applications are required. PairGain's industry-leading CopperOptics™ HDSL solution makes available today what was previously obtainable only by installing fiber optics or repeatered T1 networks, at a fraction of the cost and in a fraction of the time.

SPECIFICATIONS

HDSL LINE

Signal Format

Full-duplex 784 kbps, 2B1Q line code (each of two pairs)

Transmit Signal Power

+13.5 dBm (±1 dBm)

Connector

RJ-48C

Return Loss

20 dB at 40 kHz to 200 kHz

Loop Provisioning Loss

35 dB at 196 kHz @ 135 ohms



SPECIFICATIONS

One-Way Transmission Delay

250 microseconds

Maintenance Features

- RS-232C on RJ-45 (DCE) console port
- 2 x 16 LCD display with push buttons for status and configuration
- Alarm and status indication LEDs

Clock Options

- Internal, data port or HDSL (depending on interface option)

Performance Monitoring

- Errored seconds and unavailable seconds in last 24 hours, 15 minute intervals
- Errored seconds and unavailable seconds in last 7 days, 24 hour intervals
- HDSL line attenuation
- Signal/noise margin on HDSL lines

PHYSICAL

Height

2.0 in/5.1 cm

Width

7.5 in/19.1 cm

Depth

10.2 in/25.9 cm

Weight

3.4 lbs/1.5 kg

Power Input

100-240 VAC, 50-60 Hz, -48 VDC; 8 watts

ENVIRONMENTAL

Temperature

0° C to 50° C (10% to 85% relative humidity)

Compliance

FCC Part 15, Class A, UL, CSA

INTERFACE OPTIONS

Campus-REX (Ethernet)

- 10BASE-T port
- Full-bandwidth forwarding and filtering
IEEE 802.1d transparent MAC-layer bridging with Spanning Tree protocol or Static IP Mapping
Learning for 2000 MAC-addresses
Embedded SNMP agent

DSX-1

Input

0 to -7.5 dB

Output Line Build Out

Selectable 0 to 655 ft/218 m in five steps

Data Rate

1.544 Mbps

Impedance

100 ohms Connector: RJ-48C and DB-15F

Alarm

1-C Dry contacts on pins 6, 7 and 8 (DB-15F)

V.35

- Transmit data, transmit timing, receive data, receive timing, external timing, eight control lines

Data Rate

1.544, 1.536 or 1.344 Mbps selectable (± 100 ppm)

Impedance

100 ohms

Connector

DB-34F, DCE or DTE (soft selectable)

RS-449/RS-422

- Transmit data, transmit timing, receive data, receive timing, external timing, eight control lines

Data Rate

1.544, 1.536 or 1.344 Mbps selectable (± 100 ppm)

Impedance

100 ohms

Connector

DB-37F, DCE or DTE (soft selectable)

CAMPUS-FLEX (FRACTIONAL MULTIPORT T1)

Two RS-530 data ports
One DSX-1 port
n x 56/64 kbps operation over 24 time slots
Full soft configuration

Single-Port Fractional T1

- One V.35, V.36, RS-449, RS-530 or RS-530A physical interface
- Full-duplex n x 56/64 kbps

Model CAMPUS-384



CAMPUS-REX



CAMPUS-FLEX

FEATURES

- *Low cost, HDSL-based transmission*
- *Connect at distances up to 8 mi/13 km*
- *Fiber optic quality transmission (BER⁻¹⁰)*
- *Installation in minutes*
- *Crosstalk immunity*

APPLICATIONS

- *Video conferencing*
- *LAN internetworking*
- *Distance learning*
- *Channel extensions*
- *Remote data center access*
- *Distributed PBX networking*

DESCRIPTION

Campus-384™ is a High-bit-rate Digital Subscriber Line (HDSL) transmission system designed by PairGain® to meet your high-speed campus area network digital communications requirements. The Campus-384 is capable of reaching distances significantly greater than PairGain's other Campus products. With a Campus-384 installed at each end of an unconditioned copper line, at distances up to 8 mi/13 km apart, your end users have instant access to advanced digital services including LAN internetworking, video conferencing, and distance learning at speeds up to 384 kbps, full-duplex.

The Campus-384 can be installed in minutes and comes equipped with a unique 260 MIPS VLSI digital signal processor which performs high-speed adaptive

filtering and echo cancellation, ensuring crosstalk immunity as well as transmission quality comparable to fiber optics (BER 10⁻¹⁰), which is far superior to repeatered fractional T1 (FT1). Extensive remote management and diagnostics are provided, including SNMP when PairGain's Campus-Star™ system is located at a central site. DSU functionality is built-in and a variety of network interface options make the Campus-384 an ideal solution when multiple applications are required.

PairGain's industry-leading CopperOptics™ HDSL solution makes available today what was previously obtainable only by installing fiber optics or repeatered T1 networks, at a fraction of the cost and in a fraction of the time.

SPECIFICATIONS

HDSL LINE

Signal Format

Dual-simplex 392 kbps, 2B1Q line code

Transmit Signal Power

+13.5 dBm (±1 dBm)

Connector

RJ-48C

Return Loss

20 dB at 40 kHz to 200 kHz

Loop Provisioning Loss

45 dB at 98 kHz @ 135 ohms

SPECIFICATIONS

One-Way Transmission Delay

250 microseconds

Maintenance Features

- RS-232C on RJ-45 (DCE) console port
- 2 x 16 LCD display with push buttons for status and configuration
- Alarm and status indication LEDs

Clock Options

- Internal, data port or HDSL (depending on interface option)

Performance Monitoring

- Errored seconds and unavailable seconds in last 24 hours (recorder in 15 minute intervals)
- Errored seconds and unavailable seconds in last 7 days (recorded in 24 hour intervals)
- Signal/noise margin on HDSL lines
- HDSL line attenuation

PHYSICAL

Height

2.0 in/5.1 cm

Width

7.5 in/19.1 cm

Depth

10.2 in/25.9 cm

Weight

3.4 lbs/1.5 kg

Power Input

100-240 Vac, 50-60 Hz or -48 Vdc; 8 watts

ENVIRONMENTAL

Temperature

0° C to 50° C (10% to 85% relative humidity)

ORDERING GUIDE

Model CAMPUS-T1

HDSL T1 (1.544 MBPS) Unit (requires interface card)

Model CAMPUS-449/422

RS-449/RS-422 HDSL Interface card for CAMPUS-T1

Model CAMPUS-DSX

DSX-1 HDSL Interface card for CAMPUS-T1

Model CAMPUS-FT1

Fractional T1 HDSL Interface card for CAMPUS-T1

Compliance

FCC Part 15, Class A, UL, CSA, EN41003, EN55022, EN60950

Campus-REX™ (Ethernet)

- 10BASE-T port
- Full-bandwidth forwarding and filtering
- IEEE 802.1d transparent MAC-layer Bridging with Spanning Tree protocol or Static IP Mapping
- Learning for 2000 MAC addresses
- Embedded SNMP Agent

V.35

Transmit data, transmit timing, receive data, receive timing, external timing, eight control lines

Data Rate

Full-duplex 384 kbps

Impedance

100 ohms

Connector

34-pin female, DCE or DTE (soft selectable)

RS-449/RS-422

Transmit data, transmit timing, receive data, receive timing, external timing, eight control lines

Data Rate

Full-duplex 384 kbps

Impedance

100 ohms

Connector

DB-37F, DCE or DTE (soft selectable)

Single-Port Fractional 384

- One V.35, V.36, RS-449, RS-530 or RS-530A physical interface
- Full-duplex 384 kbps (n x 56/64 kbps increments)
- Standard connector and control signals



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