

# 1431 SHDSL CPE



> THE 1431 SHDSL CPE USES THE STATE-OF-THE-ART SHDSL MODULATION TO DELIVER LEASED LINE AND FRAME RELAY SERVICES OVER AN ATM BASED DSLAM ACCESS NETWORK. FOR THIS PURPOSE THE UNIT CAN ACCEPT EXCHANGEABLE SERIAL AND G.703 INTERFACES.

The unit features also a fixed Ethernet auto-sense 10/100 Base-T connection for the delivery of professional IP services, including VPN (Virtual Private Networks), VLAN (Virtual Local Area Networks) and COS (Class Of Service).

The 1431 SHDSL uses symmetric full-duplex transmission up to 4.6 Mbps over a single or dual two-wire unconditioned unshielded twisted-pair cable. The line speed can be adapted to optimise the throughput as a function of the characteristics of the local loop. The equipment is based on the ITU-T G.991.2 SHDSL recommendation, which guarantees spectral compatibility with legacy and ADSL transmission systems in the same cable bundle.

## FEATURES & BENEFITS

- > PROFESSIONAL CPE EQUIPMENT TO DELIVER LEASED LINE, FRAME RELAY AND IP SERVICES OVER AN ATM BASED DSLAM ACCESS NETWORK
- > BASED ON THE ITU-T G.991.2 SHDSL STANDARD FOR HIGHER SPEEDS (UP TO 4.6MBIT/S) AND LONGER LOOP RANGES
- > AVAILABLE IN 1 AND 2 LINE PAIR VERSIONS
- > EXCHANGEABLE SERIAL AND G703 INTERFACES
- > FIXED 10/100 AUTO-SENSE ETHERNET INTERFACE
- > ATM CES ENCAPSULATION FOR LEASED LINE SERVICE
- > ATM FRF.5 AND FRF.8 ENCAPSULATION FOR FRAME RELAY SERVICE
- > IP ROUTING AND BRIDGING WITH VPN AND COS SUPPORT
- > FULLY MANAGEABLE WITH A VARIETY OF TOOLS

### LINE INTERFACE

- > Single pair or two pair line access
- > Connector: RJ12 and RJ45
- > Impedance: 135 ohm
- > Coding: TC PAM, compliant to ITU-T G.991.2 (G.SHDSL)
- > Line speeds: Single pair: N x 64 kbps (N = 1 ... 36)  
Two pair: N x 128 kbps (N = 1 ... 36)
- > Handshaking: compliant G.994.1 (automatic speed negotiation) or fixed speed
- > Performance monitoring: compliant G.826 (errored seconds, severely errored seconds, unavailability seconds)
- > Analogue Loop, Analogue Loop + Error pattern

### IDEAL MAXIMUM DISTANCE (NOISE-FREE)

1 pair	2 pair	0.4mm	0.5mm	0.6mm	0.8mm	1.0mm	1.2mm
Speed (kbps)	Speed (kbps)	26AWG (km)	24AWG (km)	20AWG (km)	18AWG (km)	16AWG (km)	14AWG (km)
64	128	10.2	13.5	16.8	23.5	30.6	37.7
128	256	8.5	11.2	14	19.6	25.5	31.5
256	512	7.1	9.4	11.7	16.3	21.3	26.3
512	1024	6.4	8.4	10.6	14.7	19.2	23.7
1024	2048	5.4	7.1	8.9	12.4	16.2	20.0
1536	3072	4.4	5.8	7.3	10.1	13.2	16.3
2048	4096	3.9	5.1	6.4	9.0	11.7	14.4
2304	4608	3.8	5.0	6.3	8.7	11.4	14.1

### AVAILABLE DIGITAL INTERFACES

- > The unit accepts any of the following transparent interfaces. Details can be found in the section on the modular data interfaces.
- > V.35, V.36/RS-449, X.21, RS-530/RS-530A, G.703/G.704

### LAN INTERFACE

- > Applicable standards: IEEE 802.3 (10Mbps Ethernet), IEEE 802.3u (100Mbps Ethernet)
- > 10/100Mbps auto-sense
- > Connector: RJ45 Unshielded Twisted Pair (UTP)

### FRONT PANEL INDICATORS

- > PWR: Power
- > LINE / LNK1: first line pair status
- > LINE / LNK2: second line pair status (on 2 pair versions only)
- > LINE / ACT: WAN encapsulation protocol status
- > SERIAL / LNK: G703 interface: G703/G704 status OK  
Serial interface: DTE connected (RTS)
- > SERIAL / ACT: layer 2 status (in case of PPP, Frame Relay)
- > LAN / ACT: LAN status

### ATM LINE ENCAPSULATION

- > ATM cell format ITU-T I.361
- > ATM forum UNI 3.1/4.0 PVCs
- > ATM forum ILMI 3.1/4.0
- > OAM F5 loop-back support (ITU-T I.610)
- > Supports up to 8 ATM PVCs (10 PVCs if Ethernet interface not in use)
- > Supports ATM Forum Traffic Management 4.0 service types CBR, UBR and VBR

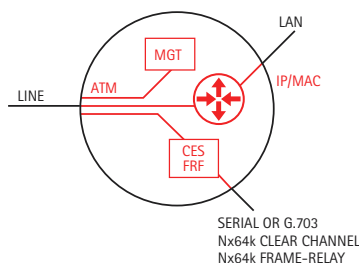
### CLEAR CHANNEL SERVICE

- > ATM Forum af-vtoa-0078.000 Circuit Emulation Service (CES) version 2.0
- > Clocking synchronised to network clock
- > Asynchronous 2 Mbps clocking with SRTS or adaptive clock recovery as separate model
- > User speeds: Nx64 kbps up to 1984 kbps/4032 kbps (1 pair/2-pair system)
- > User interface: V.35, V.36/RS-449, X.21, RS-530/RS-530A, G.703 (framed/unframed)

The Frame Relay service is encapsulated in ATM using the Frame Relay forum recommendations FRF.5 or FRF.8. The leased line service is emulated using the ATM Circuit Emulation Service (CES). The standard version supports clocking synchronised with the network clock. Asynchronous 2Mbit/s clocking with SRTS or adaptive clock recovery is supported in a separate model.

The unit incorporates a full-featured IP router for delivering the IP based services. The 1431 SHDSL CPE supports ATM encapsulations RFC2684 (formerly RFC 1483), PPP over ATM and PPP over Ethernet. Features include static IP routing, RIP, filtering of IP packets (basic firewall functionality), priority tagging and queuing (DiffServ based Classes Of Service), Network Address Translation (NAT), Port Address Translation (PAT) and L2TP.

**V** BLOCK DIAGRAM OF 1431 CPE



The unit is designed for integration into demanding network environments and can be directly controlled by the complete set of network maintenance and management tools as they are described in the section on network management.

**SALES CODES > 1 PAIR UNIT**

> **178722** Telindus 1431 SHDSL CPE 230Vac

**SALES CODES > 2 PAIR UNITS**

> **178717** Telindus 1431 SHDSL 2P CPE 230Vac  
 > **178719** Telindus 1431 SHDSL 2P CPE ASYNC CES 230Vac (includes asynchronous clocking option)

**MODULAR INTERFACES**

Sales codes for all data interface modules are found in the sales codes quick reference section

Units without power module and separate power adapters can be found in the sales codes quick reference section

**FRAME RELAY SERVICE**

- > Frame Relay / ATM PVC Network Interworking Implementation Agreement (FRF.5)
- > Frame Relay / ATM PVC Service Interworking Implementation Agreement (FRF.8.1)
- > User speeds: Nx64 kbps up to 2304 kbps/4608 kbps (1 pair/2-pair system)
- > User interface: V.35, V.36/RS-449, X.21, RS-530/RS-530A, G.703 (framed/unframed)

**PPP SERVICE\***

- > The unit can be configured as multi-port IP router with PPP encapsulation on the exchangeable interface
- > Encapsulation compliant with RFCs 1661, 1662
- > IPCP (RFC 1332)
- > BCP (RFC 2878)
- > Support of CHAP authentication with MD5 hashing (RFC 1994)
- > User speeds: Nx64 kbps up to 2304 kbps/4608 kbps (1 pair/2-pair system)
- > User interface: V.35, V.36/RS-449, X.21, RS-530/RS-530A, G.703 (framed/unframed)

**IP ROUTING SERVICE**

- > IP (RFC 791)
- > ARP (RFC 826)
- > Static routing, RIP1 (RFC 1058), RIP2 with MD5 hashing and authentication (RFC 2453)
- > Router requirements (RFC 1812)
- > Standard and extended access filtering on LAN and WAN interfaces

- > NAT (Network Address Translation) with dynamic or static IP address conversion and PAT (Port Address Translation) (RFC 3022)
- > BOOTP/DHCP server, relay agent (RFC 2131, RFC 2132)
- > BOOTP and DHCP client (RFC 951)
- > Numbered/unnumbered WAN Interface
- > DiffServ priority tagging and queuing (RFC 2474, RFC 2475)
- > L2TP tunnelling (RFC 2661) on WAN and LAN interfaces
- > Basic IPsec security (RFCs 2401-2411) (limited routing performance)
- > Supported ATM AAL5 line encapsulations: RFC 1483, 2684, RBE (Routed Bridge Encapsulation)\*, PPPoA (RFC 2364), PPPoE (RFC 2516)

**BRIDGING SERVICE**

- > Bridging with spanning tree protocol (IEEE 802.1D)
- > VLAN interconnect (IEEE 802.1Q)
- > VLAN priority queuing (IEEE 802.1P)
- > Integrated Routing and Bridging (IRB)
- > Supported ATM AAL5 line encapsulations: RFC 1483, 2684, PPPoA (RFC 2364), PPPoE (RFC 2516)

**ROUTING AND BRIDGING PERFORMANCE**

- > Full forwarding performance of 64byte packets at maximum line speed (2.3 or 4.6 Mbps)
- > Buffering: up to 4800 packets (64 bytes/packet)

**MAINTENANCE AND MANAGEMENT SUPPORT**

- > Local console (command line interface or interactive interface)
- > TELNET (command line interface or interactive interface) (RFC 854)
- > TMA (Telindus Maintenance Application)
- > HTTP web interface (RFC 2616)
- > TFTP configuration download (RFC1350)
- > PING (RFC 792)
- > SNMP MIB2 (RFC 1213), private MIB
- > Software flash download
- > TMA CLI stand-alone command line console software\*\*
- > TMA for HP OV management integration in HP Openview\*\*

\* Not available in the first release  
 \*\* Optional

**MECHANICAL DATA (H X W X D)**

> 45 x 220 x 235 mm Weight: 800 g

**POWER REQUIREMENTS**

> 9 Vdc / 700mA with external power adapter or -48Vdc / 130mA

**MORE INFO:**

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