

The Realgain 4 modems offer extended distances and variable data rates from 128 kbps to 4608 kbps using G.shdsl technology. The modem using a single pair offers capabilities equivalent to normal HDSL modems on two pairs, offering 50 % saving in copper cost. The modem supports X.21, V.35 and G.703 E1 interfaces. It also supports Ethernet interface with a built-in bridge allowing LAN-to-LAN connectivity.

G.shdsl technology extends transmissions farther than any other DSL technology, opening the door for service providers to deliver low cost, multiservice, broadband access to a wider subscriber base. The technology also offers interoperability flexibility to the users to use different makes of compatible G.shdsl modems at two ends

Features

- Provides High-speed data connectivity on Two/Single unconditioned twisted copper pairs/pair.
- Tolerates bridge taps and cable gauge changes.
- Operates at multiple data rates between 128 kbps and 4608 kbps enabling single-platform system upgrades.
- Supports X.21, V.35, G.703 E1 and Ethernet interfaces, allowing connection to different DTE types.
- The modem supports an Embedded Operation Channel (EOC) for controlling and supervising the remote unit. The channel uses G.shdsl overhead bits, operating without interfering with the data transmission in compliance with the ITU-T G.991.2 requirements.
- LCD display is provided (16x2) for system status.
- Provides extensive diagnostics, including loopbacks, G.shdsl and E1 performance monitoring, using front panel/SMC card in 19" rack configuration.
- Structured and unstructured modes, locally settable, provided.
- Complies with EMI/EMC specifications CISPR 22 {1993}for Class B equipment.
- OAM operations through VT 100 dumb terminal/DIP Switch
- SNMP V2 / V3 Management available for 19" Rack & shelf mounted systems.
- 160 V to 270 VAC and 40 V to 60 VDC operations possible. Battery back-up with battery charging (optional).
- Remote Powering (Optional).
- LCD display (16x2) for system status (Optional).

System applications

- 2.048 Mb/s structured and unstructured. P2P & P2MP applications.
- Public switch to ISDN/PABX switch.
- Client-to-Client @ 4.608 Mb/sec and N x 64 Kb/s (where N= 2 to 72).
- Network to Client @ 2.048Mb/sec and N x 64 Kb/s (where N= 2 to 32).
- ISDN-PRA



Line Interface

- Type. : 2/4-wire unconditioned dedicated line (twisted pair)
- Line Coding : Trellis Coded Pulse Amplitude Modulation(TC-PAM)
- Typical Range : See Table 1&2

Table (1) Typical distance over Single pair.

Data Rate Kbps	24 Gauge (0.5 mm) Km
64	12.0
128	11.0
256	8.0
512	7.0
1024	6.2
2048	5.0
2304	4.2

Table (2) Typical distance over two pairs.

Data Rate Kbps	24 Gauge (0.5 mm) Km
384	8.7
512	8.0
1024	7.0
2048	6.2
4096	5.0
4608	4.2

- Standards : ITU-T 991.2
- Protection : As per ITU K.21 and UL1950
- Connectors : RJ-45 and Terminal block

Network & client Interfaces

- G.703 E1, RJ-45 or Terminal Block
- G.703 E1 Line Impedance: 120Ω balanced
- E1 Coding : HDB3
- CRC-4 Mode : User selectable Detection and Regeneration
- V.35, V.36, X.21/V.11, RJ45 client interfaces.
- DTE, DCE soft configurable (Optional).

Clock Options

- Internal Clock
- External Clock
- Recovered Clock

Fault Diagnostics

- Loop-Backs
 - Exchange-to-Exchange loop back at LTU.
 - Exchange-to-Exchange loop back at NTU.
 - Customer-to-Customer loop back at NTU.
 - Customer-to-Customer loop back at LTU
- Line Quality Test.
- Front panel LED & Display/ LCD (optional).
- Built in PRBS generator, BER tester.

Front Panel LED Indications

- SYNC 1 Indicates Sync of Pair-1
- SYNC 2 Indicates Sync of Pair-2
- MARG (1,2) Indicates status of link as marginal on Pair-1 & Pair-2.
- TD Transmit Data
- RD Receive Data
- TEST Indicates system under test.
- FAULT Indicates presence of fault conditions (like AIS and LOS at Remote end).
- LOS Indicates loss of signal at user interface
- +5V Indicates presence of 5V D.C. or power supply.

Switches & Display

- Single digit seven-segment/LCD display (16x2) for system status.
- DB 9 for RS 232 port for configuring the card through PC.
- E1 Jack for isolation, if required.
- Front panel switch for various diagnostics.

LCD features (Optional)

- 16 character x 2-line LCD provided on the front panel.
- System Information, Configuration, Alarm Status & Fault Diagnostics can be performed through LCD control switches.

Mechanical

- Single Slot Enclosure (WxDxH) : 245x 306 x 62 mm
- Rack with single 19" shelf (WxDxH) : 586 x 355 x 435 mm

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