

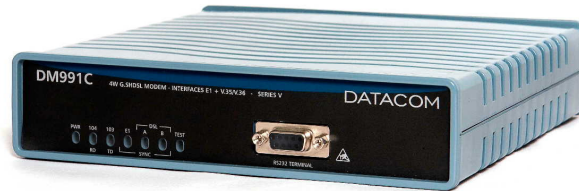
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# DM991CE SERIES VI – 2W/4W

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*G.shdsl Modem*

*E1 (G.703/G.704), Digital (V.35-V.36/V.11) and Ethernet (10/100BaseT) Interfaces*



## **1. General characteristics**

The DM991CE Series VI is a modem that allows for voice and data transport up to 5.696kbit/s (BIS version on 2 wires) or up to 11.392kbit/s (BIS version on 4 wires). It follows the ITU-T G.991.2 recommendation, which is the latest and best performance standard for HDSL modems.

It allows the 64kbit/s timeslots to be distributed between the E1 (G.703/G.704), digital (V.35-V.36/V.11) and Ethernet (10/100BaseT) interfaces, providing, for instance, simultaneous connection of a digital PBX system, a router and a LAN.

It has two equipment models: 2W (DSL interface on 1 metallic pair) and 4W (DSL interface on 1 or 2 metallic pairs).

It comes in a desktop case (195x200x44mm) with 93-250VAC or 36-72VDC automatically selected power supply.

It is entirely configurable via terminal emulation through a DB9 RS-232 control port on the front panel.

It allows for firmware download on both local and remote equipment.

Remote management via EOC, being able to manage another DM991C/CE or DM991S/SE. By means of an SNMP agent, such as the DMG20 management card (combined with the DM991S/SE) or a DM705 multiplexor, the DmView management platform is able to manage the entire equipment.

Since it operates as an NTU it needs no initial configuration by the user, as this can be done remotely through the LTU. The installation at the customer's site requires only the line and electrical supply system connection.

Operations with internal clock, external clock (digital interface CT113), regenerated from the G.703 (E1) signal or regenerated from the DSL line (modem). Automatic switching to the internal clock in the absence of regenerated or external clock.

It features backup on the DSL line in the 4W model, when configured for 2 wires.

It has a Bridge Ethernet (10/100BaseT) interface with VLAN support.

Test pattern generator with error detection, activated by the control port (BERT).

Transparent to any DTE-generated data sequence.

LED indicators for: power supply, CT103, CT104, E1, ETH, DSL (lines A and B) and test.

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## 2. Specifications

### 2.1. G.shdsl Interface

G.shdsl (Single-pair High-speed Digital Subscriber Line) Interface operating on 2 or 4 wires.

It operates at variable rates ranging from 192kbit/s to 4.608kbit/s (2.304kbit/s per line) or 11.392kbit/s (5.696kbit/s per line, BIS version) available to the user, plus 8kbit/s overhead ( $n \times 64\text{kbit/s}$ , with  $6 \leq n \leq 72$  or 178 (BIS version) for operation on 4 wires and  $3 \leq n \leq 36$  or 89 (BIS version) for operation on 2 wires).

7.1km reach at 192kbit/s, 4.1km at 2,304kbit/s; 1.8km at 5,696kbit/s; on noiseless 0.4mm lines on 2 wires.

7.1km reach at 384kbit/s, 4.1km at 4,608kbit/s; 1.8km at 11,392kbit/s; on noiseless 0.4mm lines on 4 wires.

The coding is TC-PAM type with 16 levels (16-TCPAM) or 32 levels (32-TCPAM), ensuring spectral compatibility with other kinds of service such as ADSL and ISDN. 15-20% greater reach than modems using 2B1Q coding at the same speed. It obtains 35-45% greater rates at the same distance.

Handshake according to G.994.1, which allows for interoperability with equipment from other manufacturers.

It can be configured to operate either as central (LTU or STU-C) or user (NTU or STU-R) equipment.

Modem performance information displayed on the terminal or via management, such as signal-to-noise ratio in dB, attenuation, line attenuation in dB and CRC, ES, SES, LOSWS and UAS error counter, according to the G.991.2 recommendation.

It features backup on the DSL line in the 4W model, which is automatically activated when the modem is configured for 2 wires.

BERT test with error detection and insertion. BERT performance counters indicating test seconds and error seconds. The PRBS used is 29-1 (511).

LAL (Local Analog Loop), LDL (Local Digital Loop) and RDL (Remote Digital Loop) tests may also be performed on this interface.

The connection to the DSL line is made by means of an RJ45 type connector.

### 2.2. E1 Interface

Voice and data transport on the G.703/G.704 interface in  $n \times 64\text{kbit/s}$  channels, with  $1 \leq n \leq 32$ .

It supports CRC4 and channel associated signaling (CAS) according to G.704 and features display of local and remote frame synchronism.

AIS (Alarm Indication Signal) transmission on the E1 when the line interface signal is lost.

Bit pattern programming for unused (IDLE) channels, when cascading is not used.

2.048kbit/s speed using HDB3 coding according to the ITU-T G.703 recommendation.

Selectable impedance on the G.703 interface between 75ohms (coaxial cable with BNC connector) and 120ohms (twisted pair with RJ48 connector).

LDL and LAL tests available on this interface.

### 2.3. Digital Interface

V.35 or V.36/V.11 interface selectable by straps. It features a DB25 female connector with ISO2110 Amd pinout. 1 – Compatible with RS-530.

Data transport on the digital interface at multiple speeds of 64kbit/s up to the aggregate limit.

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Possibility of using an external clock for data receipt on the digital interface (CT128).

Possibility of inverting the data transmission clock phase (CT114) of the CT103.

Possibility of using the CT113 clock to receive data from the CT103 even when the selected transmission clock is internal or regenerated.

LDL test available on this interface.

## **2.4. Ethernet Interface**

The Ethernet Interface is of the 10/100BaseT type, compatible with the IEEE 802.3 standard and implement the function of remote bridge.

The bridge operates at the MAC level of the Ethernet interface. In this way, it is totally transparent for the upper layer protocol, such as TCP/IP, UDP, etc.

The local addresses table of the bridge can store up to 1000 MAC addresses. In case that a station stays 5 minutes without activity, its address will be removed from the table.

It has features like auto-negotiation, auto-crossover, flow-control and back-pressure. The operation mode between full-duplex and half-duplex and the velocity between 100Mbit/s and 10Mbit/s are configurable.

When using the Ethernet interface in the function of remote bridge, the equipment has always to be used in pair with other compatible equipment (DM704SE series II / IV / V, DM704CE series II / IV / V, DM100C, DM991SE series IV / V /VI, DM991CE series IV / V /VI or DM705-Switch).

It can operate in any multiple rate of 64kbit/s up to the limit of the aggregate.

It accepts packets of up to 1.552 bytes, supporting packets with VLAN tagging.

Available by means of a RJ45 type connector in the front panel of the equipment.

## **3. Accessories**

Optional accessories supplied to order:

- DB25 x DB37 adaptor cable for V.36 interface with ISO 4902 connector.
- DB25 x M34 adaptor cable for V.35 interface with ISO 2593 connector.

**For further information about this product, contact DATACOM or visit our website:**

**[www.datacom.ind.br](http://www.datacom.ind.br)**