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DM2295 SHDSL EFM SERIES

DM2295 SHDSL EFM

The DM2295 modem offers Ethernet solution over copper pairs using the EFM (Ethernet in the First Mile) technology. It is a fast, simple and highly cost-effective solution for the development of modern services such as VoIP, video conferencing and broadband for small and medium companies. It uses the last-mile metal pair network, transparently transporting traffic, simplifying network operations, reducing implementation costs and improving service levels.

General Characteristics

The DM2295 features two designs. Both models have four G.SHDSL EFM interfaces, which is compliant to ITU G.991.2 and IEEE 802.3ah standard and operates with up to 4 pairs at up to 22.8Mbit/s rates. The DM2295 models have four Fast Ethernet ports. The DM2295 is also available in a version with one E1 port.

The DM2295 model can operate as CO (Central Office) or CPE (Customer Premises Equipment).

Models

MODELS	G.SHDSL – EFM PAIRS	FAST ETHERNET 10BASE-T/100BASE-TX	E1 120 OHMS
DM2295 SHDSL EFM 4FT	4	4	0
DM2295 SHDSL EFM 4FT+E1	4	4	1

Power Supply

The equipment uses an external power source with the following characteristics:

- AC input voltage: 100Vac to 240Vac Full Range
- AC input frequency: 50Hz to 60Hz
- Maximum power consumption: 12W
- Power source output: 12Vdc with minimum capacity of current 1A

Operating and environmental conditions

- Operating Temperature: 0 to 45°C
- Relative humidity: up to 95% (non-condensing)
- It is recommended free a spacing of 10cm on the top and sides (right and left)
- Do not expose the equipment to liquid and direct sunlight incidence

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Dimensions

- The DM2295 desktop chassis measures 231.5mm (9.11 inch) in width, 41mm (1.61 inch) in height and 129mm (5.08 inch) in depth including its rubber feet.

Management

- DM2295 management is made through a command-line interface (CLI). The CLI can be accessed by the following means:
    - Locally: RS-232 port with an RJ45 connector
    - Remotely: via Fast Ethernet or G.SHDSL, the equipment can be managed by SSH and Telnet
- Allows Management VLAN configuration
- Allows local and remote equipment firmware download
- SNMPv1 and SNMPv2

VLAN

- Supports IEEE 802.1Q-compliant VLANs
- Supports IEEE 802.1Q-compliant VLAN trunking
- Supports IEEE 802.1p-compliant VLAN priority
- Supports VLAN-aware and VLAN-unaware
- VLAN Translate – functionality which allows the exchange of a VLAN tag of a packet before it is forwarded to the output port
- QinQ - When an interface is QinQ enabled, the native VLAN interface is always added to incoming frames before forwarding learn

Network Protocols

- DHCP Server

Security

- Local and Remote Syslog
- AAA Protocols - Authentication Authorization and Accounting:
    - TACACS

Quality of Service (QoS)

- The equipment allows application of QoS in three ways: by DSCP , by PCP (COS) and by port
- Storm Control – prevents an interface for receiving a flood/storm of unicast, multicast and/or broadcast packets
- Remark – Allows the re-marking of packets that have been classified by PCP or through port

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- Scheduling – Supports Strict Priority and Weighted Fair Queuing
- Supports the configuration of up to 4 queues on Ethernet Ports and 8 queues on G.SHDSL port.
- Supports traffic shaping and packet filtering.

Pseudo Wire (PWE3)

- The DM2295 4FT+E1 model allows the encapsulation of TDM data over ethernet packets. It emploies the use of PWE3 technologies
- SAToP (Structure Agnostic TDM over Packet) is used to the transmission of unframed TDM data
- CESoP (Circuit Emulation Service over Packet Switched Networks) is used to the transmission of framed TDM data

Interface G.SHDSL EFM

- Up to 4 pairs bonding at up to 22.8Mbit/s
- Line coding: TC-PAM16 and TC-PAM32
- Data range of 196 to 5696kbit/s per pair, configured in increments of 64kbit/s, in accordance to ITU-T G.991.2:
    - Up to 3.8Mbit/s (TC-PAM16)
    - Up to 5.7Mbit/s (TC-PAM32)
- Impedance: 135 Ohms
- Connector: RJ45

Bonding

The equipment supports up to 4 pairs bonding under configuration modes of 1, 2, 3 or 4 pair, being ITU-T G.991.2- and ITU-T G.994.1-compliant.

CODING	PAIRS	MAX. RATE
16-TCPAM	1	3,8Mbit/s
32-TCPAM	1	5,7Mbit/s
16-TCPAM	2	7,6Mbit/s
32-TCPAM	2	11,4Mbit/s
16-TCPAM	3	11,4Mbit/s
32-TCPAM	3	17,1Mbit/s
16-TCPAM	4	15,2Mbit/s
32-TCPAM	4	22,8Mbit/s

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CHANNELS	PAIRS	SPEED RATE [KBITS/S]	LENGTH [M]
3	1	192	6500
4	1	256	6150
8	1	512	5350
12	1	768	5150
16	1	1024	4750
24	1	1536	4350
32	1	2048	4000
36	1	2304	3900
60	1	3840	3250
64	1	4096	3200
89	1	5696	2700
89	2	11392	2700
89	3	17088	2700
89	4	22784	2700

Interface Fast Ethernet

- 4x 10Base-T/100Base-TX interfaces
- Half- and Full-Duplex capable
- Flow Control, Pause Frames (full-duplex), Back Pressure (half-duplex)
- MDI/MDIX
- Line impedance: 120 Ohms
- Connector: RJ45

Interface E1

- 1x E1 interface
- Operates as framed and unframed
- Allows the use of pseudowire(PW) technology
- 120 Ohms – twisted pair with RJ48C connector

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Most Important Applicable Standards

For a complete list, please contact Customer Support.

ITU-T

G.991.2	Single-Pair High-Speed Digital Subscriber Line (SHDSL) Transceivers
G.994.1	Handshake Procedures for Digital Subscriber Line (DSL) Transceivers
G.997.1	SHDSL Modem Management
G.998.2	Ethernet-based multi-pair bonding

IETF

RFC 854	Telnet Protocol Specification
RFC 1157	Simple Network Management Protocol (SNMP)
RFC 1213	MIB for Network Management of TCP/IP-based internets:MIB-II
RFC 1215	A Convention for Defining Traps for use with the SNMP
RFC 1305	Network Time Protocol (V3) Specification, Implementation and Analysis
RFC 1441	SNMPv2 Protocol Framework
RFC 1492	An Access Control Protocol, Sometimes Called TACACS
RFC 1812	Requirements for IP Version 4 Routers (IPv4)
RFC 1901	Introduction to Community-based SNMPv2
RFC 1902	Structure of Management Information for Version 2 of SNMPv2
RFC 1903	Textual Conventions for Version 2 of SNMPv2
RFC 1904	Conformance Statements for Version 2 of SNMPv2
RFC 1905	Protocol Operations for Version 2 of SNMPv2
RFC 1908	Coexistence between V1 and V2 of the Internet-standard NMF
RFC 2131	DHCP/BOOTP Relay
RFC 2309	Queue Management and Congestion Avoidance in the Internet

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RFC 2474	Definition of the Differentiated Services field (DS) in IPv4
RFC 2475	An architecture for Differentiated Services
RFC 2570	Introduction to V3 of the Internet-standard NMF
RFC 2576	Coexistence between SNMP v1, v2, v3
RFC 2597	Assured Forwarding PHB Group
RFC 2598	An Expedited Forwarding PHB
RFC 2697	A single rate three color marker
RFC 3164	The BSD Syslog Protocol
RFC 3246	An Expedited Forwarding PHB
RFC 4250	The Secure Shell (SSH) Protocol Assigned Numbers
RFC 4251	The Secure Shell (SSH) Protocol Architecture
RFC 4252	The Secure Shell (SSH) Authentication Protocol
RFC 4253	The Secure Shell (SSH) Transport Layer Protocol
RFC 4254	The Secure Shell (SSH) Connection Protocol
RFC 4553	Structure-Agnostic TDM over Packet (SAToP)
RFC 5086	Structure-Aware TDM Circuit Emulation Service over Packet Switched Network

IEEE

802.1ad	Provider Bridges / VLAN QinQ
802.1d	Media Access Control (MAC) Bridge
802.1Q	Virtual LAN
802.1p	Priority Support
802.3	Ethernet Parameters
802.3-2000	UNI Service
802.3-2002.d	MAC

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802.3ah	Ethernet First Mile
802.3u	100 Base-TX
802.3x	Flow Control

ELECTROMAGNETIC COMPATIBILITY

ANATEL Resolution nº 442

89/336/CEE

93/68/CEE

ETS 300 127

EN55022 – Class A

ELETRICAL PROTECTION

ANATEL Resolution nº 529

73/23/CEE

93/68/CEE

ITU-T K.21

ETSI TS 101 524-1

ABNT NBR 5410

IEC 60950

ENVIRONMENT CONDITIONS

SDT 240-600-703

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OTHER

UNE 20-501 - Resistance