

DATACOM



DM984

GPON ONU – OPTICAL NETWORK UNIT

PRODUCT DATASHEET

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DM984

GPON ONU – OPTICAL NETWORK UNIT

FLEXIBLE AND HIGH CAPACITY SOLUTION FOR GPON FTTX ACCESS NETWORKS.

GPON (Gigabit Passive Optical Network) is a technology for optical access, offering high speed and cost-effective solution for broadband and Triple Play services (voice, video and data). This technology allows the sharing of the fiber optic among customers, reducing cost and maximizing the use of bandwidth.

The DM984 GPON ONU (optical network unit) family offers access solution for high speed fiber optic. They deliver triple-play services (data, voice and video over IP) for business and residential users.

The Ethernet data is transported transparently by the GPON link and delivered to a unit line termination (OLT, Optical Line Termination), as the DM461x OLTs.

It is fully compatible with ITU-T G.984 and ITU-T.988. Each GPON links supports downstream rates of 2.488 Gbit/s, upstream rates of 1,244 Gbit/s and offers dynamic bandwidth allocation (DBA).

It offers L2 bridge or L3 router modes, up to four Gigabit Ethernet interfaces, up to two FXS voice ports (VoIP), wireless 802.11b/g/n with two internal antennas and integrated DIO (optional).

It has the ability to add, remove and modify VLANs, supports multicast traffic for video transport and has QoS functionality

HIGHLIGHTS

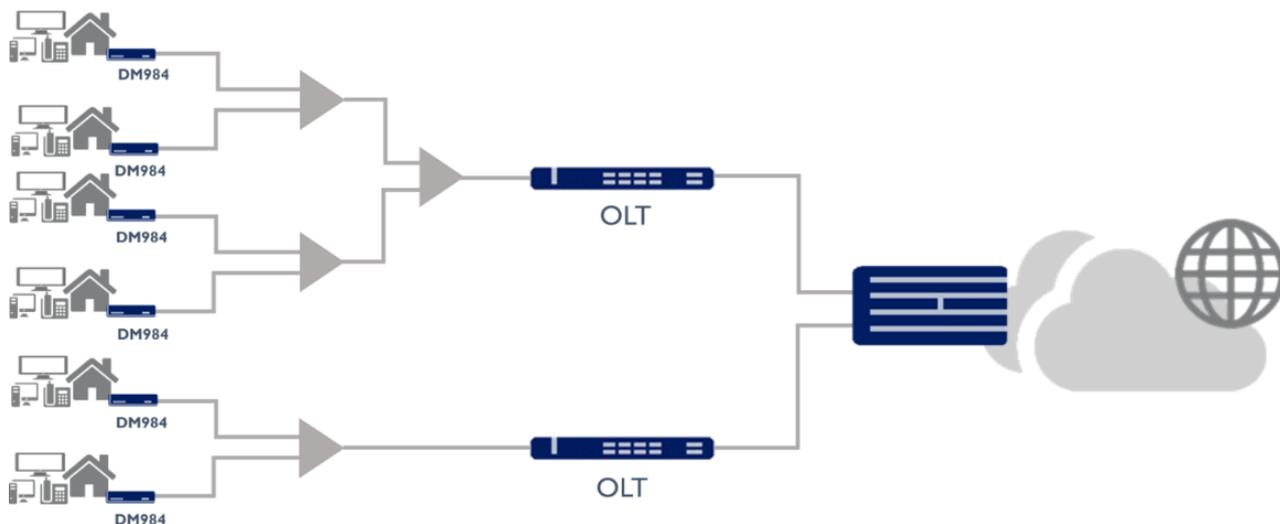
- GPON class B+ or C+ Transceiver
- Low power consume
- L3 router / L2 bridge modes
- Fully tested for high availability
- Modern and Elegant Design
- Detachable Integrated Fiber Optic Terminal Box (OFE)
- Gigabit Ethernet Interface
- Voice ports
- Wireless 802.11b/g/n
- Bridge / router

APPLICATIONS

TRIPLE PLAY BROADBAND SERVICES

Through optical access, the GPON technology provides users rates higher than copper and cable-based technologies, enabling data, voice (VoIP) and video (IPTV) convergence in a single access.

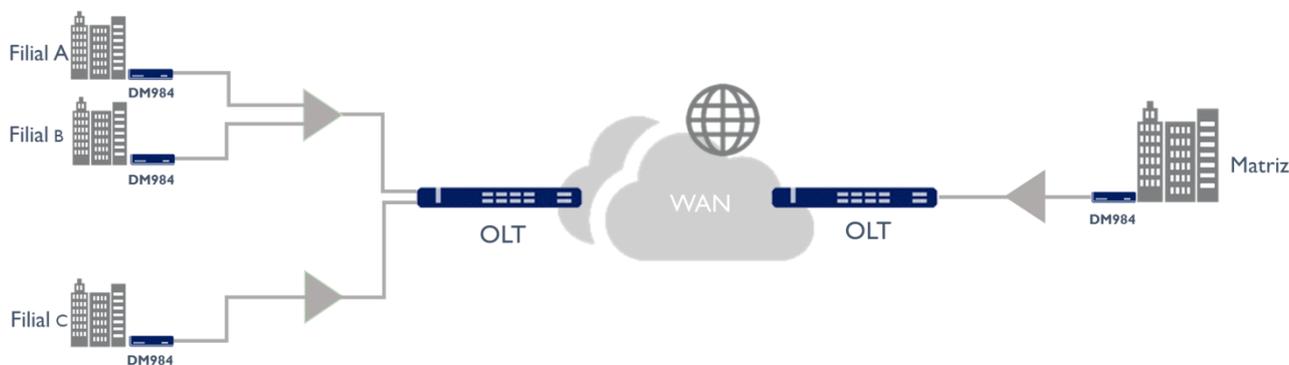
Moreover, the point-to-multipoint network and use of only passive elements between the central and users reduce the CAPEX and OPEX for these services.



BUSINESS SERVICES

The DM984 provides several features enabling the delivery of data, voice and video for small, medium and large businesses.

The L2 bridge feaures allow multiple applications as TLS function (Transparent LAN Service) and QoS.



SMART CITIES

Cities are the center of modern society and they are becoming more complex each day. Technology can make life better and easier, empowering the universalization of public services. However, the government should not only pay attention to a network for digital inclusion but it also should deploy a high-performance network that foments the city development.

The DM984 deployment associated to the DATACOM GPON and Ethernet Switches is a valuable cost-effective solution for smart cities. Through the numerous features available it can connect government offices, provide internet population and businesses with high rates, reliability and security.

FTTD - FIBER TO THE DESK

The traditional LAN network design consists of a structure with copper wires connecting each user equipment to an access switch, typically installed in a communication room. These access switches are connected to aggregator's switches through cables or fiber. The FTTD GPON simplifies the network by replacing the switches typically by a central OLT and ONUs on users, reducing network infrastructure by using passive elements, optical fiber and point-multipoint topology.

FEATURE LIST

GPON

- Compliant with ITU-T G.984
- Connector SC / APC
- Supports burst mode of 1.244 Gbit/s Upstream
- Supports reception of 2.488 Gbit/s Downstream
- Laser type B+ or C+, according to ITU-T G.984.2 AMD1 and ITU-T G.984.5
 - Transmit Power: +0.5 dBm to +5 dBm
 - Receive Sensitivity DM984-42x: -27 dBm
 - Receive Sensitivity DM984-100B: -30 dBm
 - Overload reception: -8 dBm
 - Wavelengths:
 - Upstream: 1310 nm
 - Downstream: 1490 nm
 - Laser according to FCC 47 CFR Part 15, Class B, FDA 21 CFR 1040.10 and 1040.11, Class I
- Simultaneous T-CONTs: 8
- 32 GEM Ports
- 8 QoS queues
- Flexible mapping between GEM Ports and T-CONTs
- Activation by automatic discovery of serial number and password as ITU-T G.984.3
- AES-128 Decryption
- Support DBA (DBRU)
- GEM Port upstream and downstream bandwidth control
- Bidirectional FEC (Forward Error Correction)
- 802.1p priority in upstream traffic
- Mapping of GEM Ports into a T-CONT with priority queues
- Support for multicast GEM port traffic and incidental broadcast GEM port

FXS (VOICE)

- RJ-11 Connectors
- 3-REN
- DTMF dialing
- Voice CODECs
 - G.711 (μ -law and A-law)
 - G.723.1
 - G.726
 - G.729 A
- Echo cancellation according to ITU-T G.168
- Packet Loss Concealment
- SIP (RFC3261)
- SDP (RFC2327)
- RTP (RFC3550/3551)
- Caller ID
- T.38 FAX
- IP assignment using DHCP or static IP
- OMCI VoIP

WIRELESS (WI-FI)

- IEEE 802.11 b/g/n
- Operating frequency of 2.4GHz
- 2 internal antennas (MIMO 2x2)

ETHERNET

- RJ45 Connectors
- 10/100/1000 Base-T interfaces
- Auto negotiation or manual configuration
- MDI / MDIX
- Bridging (802.1D)
- Virtual switch based on 802.1Q
- Adding or removing VLAN tags
- VLAN stacking (QinQ) and VLAN translation
- Classes of service based on ports, VLAN ID, 802.1p or combination
- IGMP snooping
- Jumbo frames up to 2Kb

ROUTER

- Multiple WAN connections
- Point-to-point Protocol over Ethernet (PPPoE client)
- Dynamic Host Configuration Protocol (DHCP client)
- Static IP assignment
- DHCP server for LAN interfaces
- NAT/NAPT
- DNAT (Dynamic NAT)
- IPv6 support
- Filters
- Firewall SPI (Stateful Packet Inspection)
- Application Layer Gateway (ALG)
- Demilitarized Zone (DMZ)
- Parental Control
- Domain Name Server (DNS) and Dynamic DNS
- Network Time Protocol (NTP)
- Universal Plug and Play (uPnP)
- TR-069
- Diagnostics (counters, ping, traceroute)

MANAGEMENT

- Uses OMCI protocol for management, according to ITU-T G.988
- Allows remote firmware upgrade
- Allows storage of two firmware images with software integrity check and possible rollback
- RG Profile support (Datacom) proprietary feature)

STANDARDS AND PROTOCOLS

IEEE

802.1D	MAC bridges
802.1Q	Virtual Bridged LAN (VLAN)
802.1p	VLAN Priority
802.3i	10BASE-T 10Mbit/s (1.25 MB/s) over twisted pair
802.3u	100BASE-TX, 100BASE-T4, 100BASE-FX Fast Ethernet at 100 Mbit/s (12.5 MB/s) w/auto negotiation
802.3ab	1000BASE-T Gbit/s Ethernet over twisted pair at 1 Gbit/s (125 MB/s)
802.3x	Flow Control

ITU-T

G.984.1	Gigabit-capable Passive Optical Networks (GPON): General characteristics
G.984.2	Gigabit-capable Passive Optical Networks (GPON): Physical Media Dependent (PMD) layer specification
G.984.3	Gigabit-capable Passive Optical Networks (G-PON): Transmission convergence layer specification
G.984.1	Gigabit-capable Passive Optical Networks (GPON): General characteristics

BROADBAND FORUM

TR-156	Using GPON Access in the context of TR-101
TR-247	GPON ONU Conformance Abstract Test Plan
TR-255	GPON Interoperability Test Plan

EMC

ANATEL Resolution number 442

SAFETY

ANATEL Resolution number 529

ITU-T K.21

MODELS

Models	10/100/1000 Base-T	FXS	Router	WLAN
DM984 – 100B	1	-	-	-
DM984 – 420	4	2	Yes	-
DM984 – 422	4	2	Yes	Yes

TECHNICAL SPECIFICATIONS

POWER CHARACTERISTICS

Power Supply	
Operational Voltage Range	100 to 240 Vac (automatic)
Power Supply Type and Frequency	AC 50/60 Hz
Maximum Power consumption	<ul style="list-style-type: none"> • 100B: 2,5 W • 420: 9,5W • 422: 12W

ENVIRONMENT DATA

Operating Conditions	
Temperature Range	0°C to 45°C
Relative Humidity	5% to 95%, non-condensing
Altitude	0 m to 3000 m
Storage and Transportation Conditions	
Temperature Range	-10°C to 70°C
Relative Humidity	5% to 95%, non-condensing

PHYSICAL DIMENSIONS

Height	36 mm, with rubber feet
	46 mm, with OFE and rubber feet
Width	180 mm
	190 mm, with OFE
Depth	160 mm
Weight	
Gross	0,42 kg
Net	0,19 kg

DM984-100B SCALABILITY

MAC table	1024 addresses *
VLANs	1024
Jumbo frames (Ethernet)	2000 bytes
Jumbo frames (GPON)	2000 bytes
GEM Ports per T-CONT	8
Maximum GEM Ports	8
GEM Ports ID-Range	0 - 4095
Maximum T-CONTs	8
Maximum throughput	1 Gbps up/down

* 125 out of the 1024 MAC addresses are destined for internal use.

DM984-42X SCALABILITY

MAC table	1054 addresses
VLANs	1024
Jumbo frames (Ethernet)	2000 bytes
Jumbo frames (GPON)	2000 bytes
GEM Ports per T-CONT	32
Maximum GEM Ports	32
GEM Ports ID-Range	0 - 4095
Maximum T-CONTs	8
Maximum throughput for L4 traffic (UDP/TCP) *	1 Gbps up/down
Maximum throughput for non-L4 traffic	200 Mbps **
Maximum number of WANs	8

* L4 traffic (UDP/TCP) is accelerated at hardware level, reaching up to 1 Gbps of throughput in the upstream and downstream directions simultaneously.

**Maximum unidirectional non-L4 traffic

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