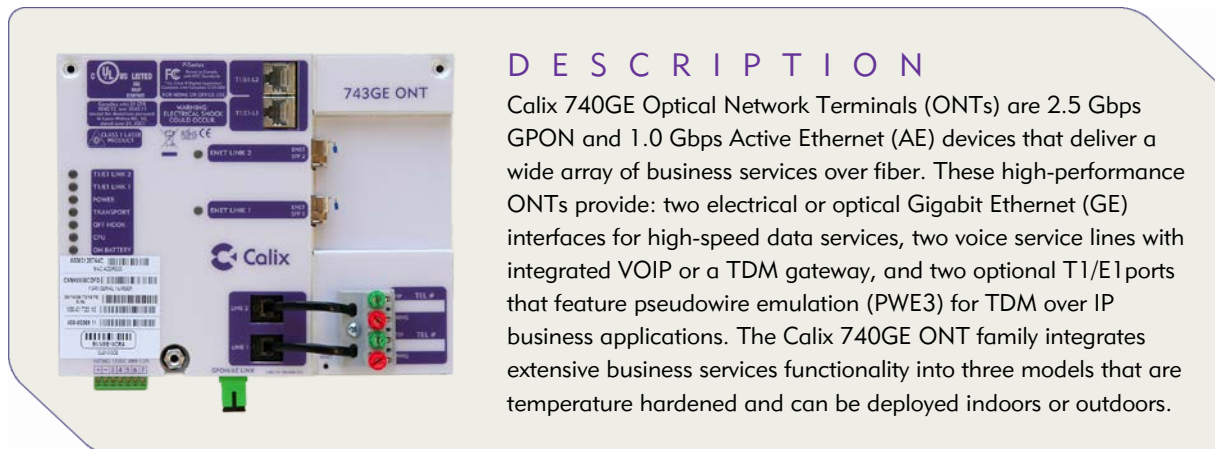


740GE Optical Network Terminals



DESCRIPTION

Calix 740GE Optical Network Terminals (ONTs) are 2.5 Gbps GPON and 1.0 Gbps Active Ethernet (AE) devices that deliver a wide array of business services over fiber. These high-performance ONTs provide: two electrical or optical Gigabit Ethernet (GE) interfaces for high-speed data services, two voice service lines with integrated VOIP or a TDM gateway, and two optional T1/E1 ports that feature pseudowire emulation (PWE3) for TDM over IP business applications. The Calix 740GE ONT family integrates extensive business services functionality into three models that are temperature hardened and can be deployed indoors or outdoors.

The 740GE ONT models are designed for the industry-leading Calix C-Series, E-Series, B-Series and AE platforms. Calix 740GE ONTs terminate GPON or AE fiber links at the subscriber's location and provide standard interfaces for business services equipment. The ONTs enable small businesses to receive optical Gigabit Ethernet, voice and T1/E1 services on a single fiber. At the ONT, the optical signal is converted to the appropriate electrical format for transmission over the existing twisted pair, CAT5, and fiber optic cables.

740GE ONTs are easy to install, activate, and maintain. Featuring innovative software management tools, the ONTs can be configured, activated and upgraded quickly from a remote location. Extensive troubleshooting capabilities, remote software downloads, and easy-to-use service profile menus ensure that services are delivered and ONTs are maintained without needless truck rolls and hardware upgrades. Employing 740GE ONTs enables service providers to install a device once and support network upgrades with a simple, remote software download.

Smart Activate is one example of an innovative software tool from Calix. Smart Activate simplifies business services installation and turn-up by using a laptop or phone to configure and activate the ONT at the business premises. The craftsman can install and turn up an ONT without assistance from the central office or use of special equipment.

Calix has also expanded the reach of GPON beyond the traditional 20 km boundary. Extended reach GPON supports business links of up to 40 km. With Active Ethernet the reach is extended further to 50 km links. This additional coverage allows service providers to edge-out their GPON or AE networks and economically serve isolated and satellite businesses without adding remote cabinets.

Calix ONTs are temperature hardened to withstand the outside elements. When mounted outdoors the devices are housed in environmentally sealed enclosures that protect them from the elements. For indoor installations that do not require an enclosure, they can be mounted on a bracket specifically designed for wall-mount and structured wiring enclosure applications.

A complete line of indoor and outdoor, 120-240 VAC, 50/60 Hz power supplies with battery backup is available for lifeline voice and T1/E1 services in the event of local AC power loss. The battery charge and battery life are monitored and reported through the Calix Management System (CMS). A 100-240 VAC, 50/60 Hz to 12 VDC power supply without battery backup is available for indoor applications not requiring battery backup.

740GE Optical Network Terminals

KEY ATTRIBUTES

- Standards-based Full Service Access Network (FSAN), ITU-T GPON and IEEE AE compliant
- 2.5 Gbps GPON and 1.0 Gbps AE, with auto-detect optics enables a seamless transition between WAN interfaces
- Two optical Small Form-factor Pluggable (SFP) or electrical Gigabit Ethernet (GE) interfaces with symmetrical GE bandwidth for and data services
- Two Voice Lines:
 - FXS ports, ANSI and ETSI
 - Carrier grade SIP, H.248, MGCP VOIP
 - TDM GR-303/TR-08 mode II/ GR-57 voice services
 - Full lifeline telephony support (CLASS and E911)
- Two Gigabit Ethernet (GE) interfaces:
 - 10/100/1000 BASE-T Ethernet electrical (auto-negotiating) or two 1000 BASE-X optical interfaces
 - Fully independent for service separation
- Two optional PWE3 T1/E1 ports:
 - TDM-based, synchronized services
 - ITU-T G.824 T1
 - ITU-T G.823 E1
 - Adaptive, differential and line timing
- Optional lifeline service power source with battery backup and alarm monitoring
- 100-240 VAC, 50/60 Hz to 12 VDC wall transformer available (indoor only)
- Indoor and outdoor applications:
 - Outdoor installation features a small, environmentally hardened enclosure that withstands the rigors of the outside plant environment; Telcordia GR-49 compliant
 - Indoor installation offers a range of mounting options including: the standard enclosure for added security and protection and a wall-mount bracket for indoor cabinets and wall-mount applications
- Complete OAM&P support via Calix Management System (CMS)
- Supports multiple data service profiles
- Traffic Management and Quality of Service (QOS):
 - 802.1Q VLANs
 - 802.1P Service Prioritization
 - Q-in-Q Tagging
 - Multiple VLANs
 - Per-Port Rate Shaping
 - Rate Limiting
 - L2 Control Protocol Filtering
 - 9 and 14 UNI
- MEF-UNI support for Ethernet demarcation applications:
 - MEF EVCs for E-Line and E-LAN
 - L2-VPNs using MEF service models
- OAM
 - Y.1731
 - MEF 17
 - 802.3 ah
 - 802.1 ag
 - RFC-2544

SPECIFICATIONS

740GE Optical Network Terminals

MECHANICAL—OUTDOOR ENCLOSURE

Height: 12.75 in (32.4 cm)
Width: 12 in (30.5 cm)
Depth: 3.75 in (9.5 cm)
Outdoor installed height: 50–60 in
(1.3 to 1.5 m) above ground
Installed weight: 4 lbs (1.76 kg)

RECOMMENDED OUTDOOR CLEARANCES

Left side: 12 in (30.48 cm)
Right side: 6 in (15.24 cm)
Front: 36 in (91.44 cm)
standing room
Rear: None

PON CHARACTERISTICS

Max. split: 64 GPON
Max. reach: 40 km (25 miles)
Maximum Attenuation:
GPON Class B+, 28 dB
1490 ± 10 nm optical receiver:
–27.0 to –8.0 dBm
1310 ± 20 nm optical transmitter:
0.5 to 5.0 dBm

POINT-TO-POINT (AE) CHARACTERISTICS

Max. reach: 50 km (31 miles)
1490 nm optical receiver:
–27.0 to –8.0 dBm
1310 nm optical transmitter:
–4.5 to 0.0 dBm

INTERFACES

Telephony: RJ-11 and binding post,
primary protectors option
Data: 10/100/1000 BASE-T Ethernet
ports, RJ-45 connectors; or two
1000 BASE-X optical SFP ports
(SFPs purchased separately)
T1/E1: RJ-45 connector
AE/PON: Single 9/125 μm (single
mode) fiber, SC/APC connector,
minimum 50 dB return loss
Power: Screw-down terminal block
plug

TELEPHONY

General: POTS via SIP, H.248,
MGCP or TDM gateway
Number of lines: 2
RENs per line: 5 maximum
RENs per unit: 10 maximum
Subscriber premises—physical
connection: 22 or 24 AWG to
twisted pair binding posts;
premises isolating RJ-11 test jack
(one per line)
Drop length: Maximum 1000 feet
(305 m) using 26 AWG wire
Input impedance: 600 or 900 Ohms
DSO Output: 25 mA
Ring Voltage: 56–84 VAC
Loss Plans: ANSI μ-law and
ETSI A-law

DATA

Drop length: Electrical: 328 feet
(100 m) maximum using CAT5
cable, Optical: SFP dependent, up
to 40 km
Auto MDI/MDIX crossover for
1000 BASE-T, 100 BASE-TX,
and 10 BASE-T electrical ports
Traffic Management and QOS:
802.1Q VLAN; 802.1P Voice,
Video, Data and Management
Priorities; Q-in-Q tagging; Per-Port
Rate Shaping; Rate Limiting
SFP:
MSA standard, up to 1.4 W
Temp range –40° C to +85° C

T1

Pulse amplitude: 3 V base to peak
Line coding: AMI, B8ZS
Frame formats: ESF, SF, Unframed
Line build-out; Short haul: 0 to 660
feet (0 to 201.2 m)

E1

Line coding: HDB3
Frame formats: Unframed, G.704
Impedance: 120 Ohms balanced /
75 Ohms unbalanced

SPECIFICATIONS

740GE Optical Network Terminals

ENVIRONMENTAL

Operating temperature: Indoor ambient temperature –40 to 149°F (–40 to 65°C), Outdoor ambient temperature with Calix enclosure –40 to 114°F (–40 to 46°C) plus solar load

Rate of change in operating temp: 15° F (8.3° C) per hour maximum

Shipping and storage temperature: –40 to 140° F (–40 to 60° C)

Operating/storage relative humidity: 0 to 95 % non-condensing

Altitude: –200 to 10,000 feet (–61 to 3,048 m) above sea level

Misc: Salt fog resistant; wind-driven rain protection; anti-dust enclosure

CERTIFICATION AND COMPLIANCE

Emissions: FCC Part 15 Class B, IC ICES-003 Class B, CISPR-22

Safety: UL 60950 and UL 1697 approved, CE Mark

Telcordia: GR-1089, GR-49

IEEE: 802.3, 802.3AB, 802.3U, 802.1P, 802.1Q

ITU-T G.823 (E1)

ITU-T G.824 (T1)

MEF: 9, 14 and 17



POWER

Screw-down terminal block plugs for 7-wire alarms and power interface

BATTERY BACKUP

Battery backup source (local): UPS mounted at business

Power termination: Maximum length of 70 feet (21.3 m) DC power and alarm cable with seven 16/24 AWG conductors connected to a UPS

Input voltage: 12 VDC (nominal)

Input current: 750 mA (nominal)

Battery backup time rated capacity: 8 hours based on Telcordia GR-909 calculation methods using recommended UPS. Contact Calix for recommended UPS

ORDERING INFORMATION

Calix 740GE ONTs

742GE ONT (100-01962)	2 POTS, 2 Optical (SFP) Gigabit Ethernet
743GE ONT (100-01963)	2 POTS, 2 Optical (SFP) Gigabit Ethernet, 2 T1/E1
744GE ONT (100-03308)	2 POTS, 2 Gigabit Ethernet, 2 T1/E1

Calix SFP Modules

(100-01661)	1 GE SFP Transceiver Module, RJ45 (Copper) 1000 BASE-T, 100m, I-Temp
(100-01660)	1 GE SFP, Multi-Mode, LC, 850nm, 500m, I-Temp
(100-01662)	1 GE SFP, Single Mode, LC, 1310nm, 10Km, I-Temp
(100-01666)	1 GE SFP, Single Mode, Single Fiber, BIDI, LC, Tx 1310nm, 10Km, I-Temp
(100-01667)	1 GE SFP, Single Mode, Single Fiber, BIDI, LC, Tx 1550nm, 10Km, I-Temp
(100-01956)	1 GE SFP, Single Mode, Single Fiber, BIDI, SC, Tx 1310nm, 10Km, I-Temp
(100-01668)	1 GE SFP, Single Mode, Single Fiber, BIDI, LC, Tx 1310nm, 20Km, I-Temp
(100-01669)	1 GE SFP, Single Mode, Single Fiber, BIDI, LC, Tx 1490nm, 20Km, I-Temp
(100-01957)	1 GE SFP, Single Mode, Single Fiber, BIDI, SC, Tx 1310nm, 20Km, I-Temp



Calix Small Business Unit (SBU) Enclosure and SBU SWEB/Wall Mount Bracket

ONTCMN-SBU ENCL (100-03395)	SBU Enclosure
ONTCMN-SBU SWEB (100-03480)	SBU ONT Wall Mount Bracket

700 Primary Protector Kit

ONTCMN-SFU PP KIT (100-02133)	700 Primary Protector Kit
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OptiTap Adapter

ONTCMN-SFU ENCL-OA (100-01097)	700 ONT OptiTap Adapter
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E1 RJ45 to BNC Adapter Cable

MX-E1 RJ45-BNC F (100-02108)	E1 RJ45 to BNC Female Cable
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700GE SFU/SBU Power Supply

PS 700GE SFU/SBU (100-01979)	100-240 VAC 50/60 Hz to 12 VDC Adapter - 2-wire, C-Temp (no battery backup)
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