



# SEA RANCH CONNECT®

## CALIX 700GE-I INDOOR OPTICAL NETWORK

### TERMINALS DATA SHEET

PO Box 16  
975 Annapolis Rd  
Sea Ranch, CA 95497

## DESCRIPTION



The Calix 700GE-I optical network terminals (ONT) are indoor, 2.5 Gbps GPON and 1.0 Gbps Active Ethernet (AE) auto-detect ONTs that deliver business and residential services to the subscriber. These high-performance ONTs feature four Gigabit Ethernet (GE) interfaces that provide unmatched IPTV video and data services, and two POTS lines via an integrated VoIP or VoIP Gateway (for TDM POTS). In addition, the 726GE-I ONT also supports 1 GHz RF video services.

The 700GE-I ONTs are designed for the industry-leading Calix C-Series, E-Series and B-Series OLT platforms. The 700GE-I ONTs terminate a GPON or AE fiber link at the subscriber's location and provides industry-standard interfaces for the customer premises equipment. The ONTs enable subscribers to receive broadband data, IP or RF video, and VoIP or VoIP Gateway (for TDM POTS) on a single fiber. At the ONTs, the optical signal is converted to the appropriate electrical signals for transmission over the residence's existing twisted pair, coaxial, and CAT5 cables.

The 700GE-I 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 a 700GE-I ONT allows service providers to install the ONT 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 installation and turn-up by using a laptop or phone to configure and activate the ONT at the premises. The craftsman can install and turn up an ONT without assistance from the central office or use of special equipment.

Calix also expands the reach of GPON beyond the traditional 20 km boundary. Extended reach GPON supports links between the ONT and OLT of up to 40 km. This additional coverage allows service providers to edge-out their GPON networks and economically serve sparsely populated outlying locales without adding remote cabinets.

ONT power options include a simple 120-240 VAC, 50-60 Hz to 15 VDC converter or a 120-240 VAC, 50-60 Hz AC to 12 VDC uninterruptible power supply (UPS) that provides battery backup of lifeline POTS in the event of local AC power loss. As with all Calix ONTs, battery status, charge and battery life are monitored and reported through the Calix Management System (CMS).



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## 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
- Four Gigabit Ethernet (GE) interfaces with symmetrical GE bandwidth for IPTV and data services
- 10/100/1000 BaseT Ethernet ports are auto-negotiating and fully independent for a service separation
- VoIP or VoIP Gateway (for TDM POTS), two lines via SIP, H.248, GR-303/TR-08 mode II/ GR-57 TDM gateway, GR-08 (TR-08 Mode I)
- RF video bandwidth to 1 GHz for extended digital programming
- Indoor mounting options:
  - Wall mount
  - Structured Wiring Enclosure (SWE) mount
  - Desktop mount: horizontal or vertical
- Wide temperature range for a variety of indoor locations
- Optical lifeline service power source with in-home battery backup and alarm monitoring
- AC to 15 VDC wall transformer available
- 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
- MEF-UNI support for Ethernet demarcation applications:
  - MEF EVCs for E-Line and E-LAN
  - L2-VPNs using MEF service models

## SERVICES SUPPORTED

Calix 700GE-I ONTs deliver high-speed data, POTS, IPTV and RF video

- Supports voice, video and data services on a single fiber
- Voice: Two VOIP or TDM POTS lines, via SIP, H.248 or GR-303/TR-08/GR-57 TDM gateway, GR-08 (TR-08 Mode I), full lifeline telephony support (CLASS and E911)
- Video: IPTV—supports IGMP multicasting and proxy; RF video—supports analog and digital RF video to 1 GHz
- Data: Four 10/100/1000 BaseT Ethernet ports with service separation and GE bandwidth



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## SPECIFICATIONS

### DIMENSIONS

Height: 6.8 in (17.3 cm)  
Width: 6.8 in (17.3 cm)  
Depth: 1.5 in (3.8 cm)  
Weight: 14 oz (.4 kg)

### PON CHARACTERISTICS

Max. split: 64 GPON  
Max. reach: 58 km (36 miles) with C+/FEC  
Maximum Optical Distribution Network (ODN) Attenuation:  
GPON Class B+, 28 dB  
GPON Class C+, 32 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: -22.0 to -3.0 dBm  
1310 nm optical transmitter: -5.5 to 0.0 dBm

### INTERFACES

Telephony: RJ-11  
Data/IPTV: 10/100/1000 BaseT Ethernet ports, RJ-45 connectors  
RF Video: F-connector, 75 Ohms  
AE/PON: Single 9/125 μm (single mode) fiber, SC/APC connector, minimum 50 dB return loss  
Power: 9-pin DIN jack

### TELEPHONY

General: POTS via SIP, H.248 or TDM gateway, TR-08 Mode I & II  
Number of lines: 2  
RENs per line: 5 maximum  
RENs per unit: 10 maximum  
Subscriber premises—physical connection: RJ-11 jack (one per line)  
Drop length: Maximum 1000 feet (305 m)  
DSO Output: 25 mA  
Ring Voltage: 56–84 VAC

### DATA

Drop length: 328 feet (100 m) maximum using CAT5 cable  
Auto MDI/MDIX crossover for 1000BASE-TX, 100BASE-TX, and 10BASE-T 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

### VIDEO PON—OPTICAL INPUT

Wavelength: 1555 ± 5 nm  
Signal strength at 3.4% OMI (AGC range): -5.0 to 2.0 dBm

### VIDEO-ANALOG RF OUTPUT

Bandwidth: 54 to 550 MHz  
Return loss: 10 dB minimum  
Signal strength (with AGC range): 18 ± 2 dBmV  
Flatness: ± 1.0 dB  
Tilt: 1.0 dB ± 1.0 dB from 54 to 550 MHz

### VIDEO-DIGITAL RF OUTPUT

Bandwidth: 550 to 1003 MHz  
Return loss: 8 dB minimum  
Signal strength (within AGC range): 12 ± 2 dBmV  
Flatness: ± 1.0 dB  
Tilt: 4.0 dB ± 1.0 dB from 550 to 1003 MHz  
Modulation error ratio (MER): 35 dB

### ENVIRONMENTAL

Operating temperature: Indoor ambient temperature: -5° to 50°C  
Operating/storage relative humidity: 0 to 95 % non-condensing  
Altitude: -200 to 10,000 feet (-61 to 3,048 m) above sea level

### 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 (716GE-I only)  
Telcordia: GR-1089  
IEEE: 802.3, 802.3AB, 802.3U, 802.1p, 802.1Q  
MEF: 9 and 14



### POWER AND ALARMS

9-pin DIN connector with 7-conductor power and alarm cable

### POWERING

Input voltage: 12 VDC (nominal), 10 VDC (min.), 16 VDC (max.)  
Input current: 750 mA (nominal)  
Residential battery backup source (local): UPS mounted at subscriber's residence  
Battery backup time rated capacity: 8 hours based on Telcordia GR-909 calculation methods using recommended UPS. Contact Calix for recommended UPS



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### ORDERING INFORMATION

#### CALIX 700GE-I OPTICAL NETWORK TERMINALS

716GE-I-01 ONT (100-03820)..... Indoor ONT, 2 POTS, 4 Gigabit Ethernet  
726GE-I-01 ONT (100-03821)..... Indoor ONT, 2 POTS, 4 Gigabit Ethernet, 1 RF Video

#### CALIX 700GE-I OPTICAL NETWORK TERMINALS POWER SUPPLIES

PS 15V 9DIN-A (100-02042) ..... Power Supply 700GE-I Indoor, 9-pin DIN, AM Type A  
PS 15V 9DIN-C (100-03238) ..... Power Supply 700GE-I Indoor, 9-pin DIN, EU/BR Type C  
PS 15V 9DIN-G (100-03239) ..... Power Supply 700GE-I Indoor, 9-pin DIN, UK Type G  
PS 15V 9DIN-I (100-03240)..... Power Supply 700GE-I Indoor, 9-pin DIN, AU/NZ Type I

#### NORTH AMERICA UPS

Indoor UPS 36W B (100-04068)..... Indoor UPS, Wall Mount or Desktop, Black - AM Type A

#### INTERNATIONAL UPS

Indoor UPS 24W B-C (100-03278) ..... Indoor UPS, Wall Mount or Desktop, Black - EU Type C  
Indoor UPS 24W B-G (100-03279) ..... Indoor UPS, Wall Mount or Desktop, Black - UK Type G  
Indoor UPS 24W B-I (100-03280)..... Indoor UPS, Wall Mount or Desktop, Black - AU/NZ Type I  
Indoor UPS 24W B-BR (100-03359) ..... Indoor UPS, Wall Mount or Desktop, Black – Brazil

#### UPS CORDS

Indoor PWR Cord 4B (100-02063)..... Indoor UPS Power Cord, 4' Black  
Indoor PWR Cord 10B (100-02064)..... Indoor UPS Power Cord, 10' Black  
Indoor PWR Cord 20B (100-03296)..... Indoor UPS Power Cord, Un-terminated/9-pin DIN, 20' Black

#### CALIX 700GE-I OPTICAL NETWORK TERMINALS FIBER MANAGEMENT ASSEMBLY

Indoor ONT FMA QTY 20 (100-03448) ..... Indoor ONT Fiber Mgmt Assembly - Quantity 20