

725GE RF Return GPON ONT



DESCRIPTION

The Calix 725GE Optical Network Terminal (ONT) is an integrated GPON and RF over Glass (RFOG) solution. This RF Return ONT enables two-way communication between the video head end and RF subscriber devices such as set-top boxes and cable modems. Service providers can use this innovative solution to offer advanced interactive services like video on demand (VOD), pay-per-view (PPV), and interactive programming guides over a 1-GHz RF video network. The combination of the Calix 725GE ONT and RF return technologies allows subscribers to enjoy a wide range of fresh, attractive services, while service providers gain new revenue opportunities.

Calix 725GE ONTs support industry standards, including DOCSIS Set-Top Gateway (DSG), SCTE 55-1 (used by Motorola) and SCTE 55-2 (used by Scientific-Atlanta, a Cisco company). In addition, the 725GE ONT is designed to conform to the RFOG standard developed by the SCTE for PON deployments.

Ideal for Cable System Operators

The Calix 725GE ONT is a perfect solution for cable TV system operators interested in offering RFOG-based FTTP, with a simple upgrade path to GPON. The Calix 725GE ONT is also ideally suited for independent telephone companies that own cable franchises and are interested in overbuilding these systems with FTTP.

The Calix 725GE ONT features an RF return capability that facilitates two-way communication between the video headend and the subscriber set-top box. RF return-path signaling enables many advanced features such as Video on Demand, Impulse Pay-Per-View, VOD with interactive digital video recorder (DVR) functionality (pause, forward, reverse), and digital ad insertion or VOD ad insertion. Calix RF return operates in the 5 to 42 MHz RF frequency range.

Unique Approach to RF Return

The Calix approach is unique in several ways:

- A single ONT provides transport for the forward and reverse RF paths, as well as supporting two VOIP voice ports and two 10/100/1000 BaseT Ethernet ports (up to 1Gbps line rate).
- Power management is incorporated during power outages.
- The ONT can be operated as an RF node only (without GPON) for service providers that want to leverage existing cable infrastructure and upgrade to GPON in the future.

Calix 725GE ONTs feature integrated RF Return supporting the 5 to 42 MHz return-path frequency band. Because the ONT does not sample or process the return-path signals, the solution is transparent to the signals or protocols being sent.

The Calix RF return solution uses a fourth optical wavelength (1610 nm) on the PON. The system uses the same forward and reverse-path topology and hardware currently used by cable operators.

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Calix Technology Advantages

Compared to other RF return solutions, Calix technology provides these advantages:

- Physical layer transport only, no processing of return-path signals
- Broadband transport of entire return-path spectrum – no setup or provisioning of RF return-path channels is required at the ONT
- Supports SCTE 55-1 and SCTE 55-2 with no timing changes to conditional access system
- Supports legacy set-top boxes with out-of-band messaging, and next generation set-top boxes supporting DOCSIS Set-Top Gateway (DSG)
- Supports OCAP enabled set-top boxes and consumer electronics, which enables high speed user interaction, gaming, and future applications
- High reliability
- No additional fiber required on PON
- A completely integrated system – no additional hardware or cabling is needed at subscriber location
- GPON and RF return function fully managed by the OLT and ONT
- Does not consume upstream bandwidth or impact resources dedicated to voice and data services
- Low-cost hybrid fiber-coaxial RF transport equipment; standard optical and RF combining of return-path signals
- Supports full dynamic range of set-top boxes and embedded cable modems
- Supports FSAN-compliant PON wavelengths
- Ability to operate with or without GPON being activated
- Non-proprietary solution compatible with FSAN interoperability between Calix 725GE and 2.5 GPON OLTs
- RF video bandwidth extended to 1 GHz for additional digital programming

SPECIFICATIONS

725GE Optical Network Terminal

MECHANICAL—ENCLOSURE

Height: 12 in (30.48 cm)
Width: 10 in (25.4 cm)
Depth: 4 in (10.16 cm)
Installed height: 50-60 in (1.3 to 1.5 m) above ground
Installed weight: 4 lbs (1.76 kg)

PON CHARACTERISTICS

Max. split: 64 GPON
Max. reach: 40 km (25 miles)
Maximum Attenuation: 2.5 GPON – Class B+, 28 dB

INTERFACES

Telephony: Binding post
Data: 10/100/1000 BaseT Ethernet ports, RJ-45 connectors
RF Video: F-connector, 75 Ohms
PON: Single 9/125 μm (single mode) fiber, SC/APC connector, minimum 50 dB return loss
Power: Screw-down terminal block plug

VOICE/DATA PON—OPTICAL INPUT

1490 \pm 10 nm optical receiver:
–26.5 to –7.5 dBm

VOICE/DATA PON—OPTICAL OUTPUT

1310 \pm 20 nm optical transmitter:
0.0 to 4.5 dBm

VIDEO PON—OPTICAL INPUT

Wavelength: 1555 \pm 5 nm
Signal strength at 3.4% OMI (AGC range): –4.5 to 2.5 dBm

VIDEO PON—OPTICAL OUTPUT

Wavelength: 1610 \pm 5 nm
Optical output power: –0.5 to 2.5 dBm

VIDEO—ANALOG RF OUTPUT

Bandwidth: 54 to 550 MHz
Return loss: 10 dB minimum
Signal strength (with AGC range): 18 \pm 2 dBmV
Flatness: \pm 1.0 dB
Tilt: 1.0 dB \pm 1.0 dB from 54 to 550 MHz
Channel loading: Analog RF CATV – up to 80 channels
CNR: 48 dBc minimum
CSO: –53 dBc maximum
CTB: –53 dBc maximum
Hum modulation: 1% maximum

VIDEO—DIGITAL RF OUTPUT

Bandwidth: 550 to 1003 MHz
Return loss: 8 dB minimum
Signal strength (within AGC range): 12 \pm 2 dBmV
Flatness: \pm 1.0 dB
Tilt: 4.0 dB \pm 1.0 dB from 550 to 1003 MHz
Channel loading: Digital Video – over 740 channels (SD)
Modulation error ratio (MER): 35 dB
Group delay: 20 ns (within 6 MHz span)

VIDEO—REVERSE PATH RF INPUT

Bandwidth: 5 to 42 MHz
Compatibility:
SCTE 55-1
SCTE 55-2
DOCSIS Set-Top Gateway (DSG)



ORDERING INFORMATION

Calix 725GE Optical Network Terminal

725GE ONT (100-01719)..... 2 POTS, 2 Gigabit Ethernet, 1RF Video with RF Return

Calix 700 ONT Enclosures and Wall Mount Bracket

SFU ENCL-ST (100-01578) SFU ONT Enclosure with Splice Tray
SFU ENCL-OA (100-01579) SFU ONT Enclosure with OptiTap Adaptor
SFU SLACK STRG-NG (100-01307)..... SFU ONT Slack Storage Enclosure SFU-NG
SFU SWEB (100-01409)..... SFU ONT Wall Mount Bracket



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