



Indoor GPON ONT with CATV

Overview

iPhotonix GPON Optical Network Terminal (ONT) with CATV incorporates a highly scalable integrated networking approach leveraging GPON's inherent reach and passive nature to deliver advanced network access solutions using the most simplified architecture. iPhotonix ONTs are Optical Line Terminal (OLT) agnostic and interoperable with OLT systems from several vendors making them the ONTs of choice when operators design their networks to deploy cost-effective FTTx solutions. iPhotonix ONTs are built using the latest 4th generation SoCs leveraging the latest advances technology, along with unrivaled hardware acceleration, QoS and efficient power management that meets the bandwidth demands of businesses and backhaul needs of wireless operators.

Highlights

Optical Interface

The iPhotonix iVolve ONTs terminate GPON fiber via a single SC/APC type optical connector and complies with GPON Standard ITU-T Rec. G984.2 Amendments. The ONT receives data at 2.488 Gbps and sends upstream data at 1.244 Gbps over 1490 nm, 1310 nm wavelengths respectively. The following physical layer features are supported:

- Class B+ and optionally Class C optics.
- Class I laser Transceiver complies with FDA21 CFR
- 1040.10 and 1040.11.
- Received Optical Power monitoring

POTS (Plain Old Telephone System) Service

The iPhotonix Indoor GPON ONT with CATV supports plain old telephone voice services over two RJ-11 or IDC equipped connectors:

- VoIP Softswitch or CLASS 5 based high quality voice service through two POTS lines or VoIP access through four Ethernet interfaces
- Support for all protocols in one software load (SIP, MGCP, H.248)

Wi-Fi Access Point interface (WLAN)

The iVolve series supports simultaneous operation of both IEEE 802.11n and IEEE 802.11ac. Support WPA, WPA2 authentication hardware accelerated AES-128 encryption with support for TKIP & IEEE 802.1x and PBC or PIN WPS authentication. iVolve supports up to 4 SSIDs

2x2 MIMO for 2.4GHz 11b/g/n WIFI

- Compliant with IEEE 802.11n, 2.4GHz, 20/40MHz
- 2.4GHz WIFI link speed is up to 300Mbps
- 2.4GHz throughput > 140Mbps at 40MHz bandwidth
- Transmit Power 20dBm (100mW)

3x3 MIMO for 5GHz 11a/n/ac WIFI

- Compliant with IEEE 802.11ac, 5GHz, 20/40/80MHz
- 5GHz WIFI link speed is up to 1.3Gbps
- 5GHz throughput > 600Mbps at 80MHz bandwidth
- Transmit Power 23dBm (200mW)

CATV with RF Return

The iVolve Series ONTs supports CATV applications via a coaxial F-connector. The CATV interface contains a forward path video receiver (54 MHz to 1 GHz) with sensitivity up to -9 dB, supports multiple gain stages, AGC and status indications, video power on/off control and AGC gain control and is capable of handling a 1000 Amp fault current in the shield. The CATV interface also supports the upstream data channel from set-top boxes

- Packet based interactive IPTV services including multicast video and video-on-demand
- RF Video with integrated RF Return supporting the 8 to 40 MHz return path frequency band
- An iPhotonix head-end RF modulator is available for upstream data return channels

Local Area Network (LAN) Interface

- Multiple high-speed LAN interface
- Provider configurable bandwidth and Class of service
- IGMP v2 and v3 proxy
- IEEE 802.1d transparent bridge (RFC-2684)
- PPPoE Client and DNS/DHCP Server functionality
- LAN functions including Bridging, Routing, Filtering, NATP translation
- MAC level ITU 802.1p QoS standards for Streaming IP video and IPTV content delivery

Data over Coax Services

The iVolve series support both HomePNA and MoCA for transporting data over existing coaxial cable enabling service providers to cost effectively deliver high-speed data, IPTV, VoD and Voice over IP (VoIP)

- HomePNA ONTs are based on HPNA 3.1 specifications
- The CATV downstream channel, upstream RF Return, and the MoCA/HPNA channel are multiplexed onto the coaxial network via an RF triplexer.

Technical Specifications:

Services and Features:

Optical

- 2.5 Gbps downstream, 1.244 Gbps upstream
- Optical wavelengths: 1490 +/-10nm Rx, 1310 +/-20nm Tx
- Launch power: 0.5 to +5 dBm
- Receiver Sensitivity: -27 dBm
- Input power overload: -8 dBm
- Received optical power monitoring
- Configurable GPON/Active Ethernet
- CATV RF-Video Interface: 1550 to 1560nm

GPON

- Serial number discovery and Registration ID provisioning
- ITU-T G.984/G.988 compliance
- DBA support via mode-0 DBRu (piggy-back) reporting
- Dying Gasp
- Downstream Advanced Encryption Standard (AES) support
- Forward Error Correction (FEC)
- Upstream Traffic Management using Priority-based or Rate-controlled scheduling
- Support for up to 8 T-CONTs with multiple priority queues per T-CONT
- Multiple GEM ports with flexible mapping between TCONTs and Priority queues
- pBit based GEM port and upstream Priority queue selection
- IPTV traffic filtering (Multicast GEM port)

OAM and Management

- ITU-T G.984.4/G.988 management
- Remote firmware upgrade and automatic rollback
- Webserver for local management
- SIP configuration from remote server
- ACS - CWMP (TR-069) configuration, performance monitoring, diagnostics and software download
- TR-101, TR-111, TR-124, TR-143

Enterprise LAN

- RJ-45 IEEE 802.1 10/100/1000 Base-T interfaces
- MDI/MDIX auto-sensing and auto-negotiation
- 802.1d Ethernet bridging and switching
- 802.1p marking/remarking, DSCP mapping
- 802.1Q including VLAN translation, filtering, tagging, stacking (QinQ)
- Up to 25 VLAN groups per port
- Automatic MAC address learning, aging and filtering
- Up to 1024 MAC address entries
- Up to 256 multicast groups
- IGMP v2/v3 Snooping with immediate leave
- Downstream pBit and flow based LAN port queue selection
- Downstream Flow and port based Rate Limiting
- WAN DHCP Client and LAN DHCP Server
- Network Address and Port Translation
- Firewall and WAN, LAN Security

CATV RF-Video Interface

- Single F-Type CATV connector
- Operating wavelength: 1550 to 1560nm
- Average optical power: -8 to +2 dBm
- RF Output level: 18dB
- RF Output Impedance: 75 Ohms
- Total RF Output Power: 36 dBmV

RF Return

- Fully integrated into the ONT
- Three wavelength only solution
- SCTE 55-1 and 55-2 standards
- 24 to 60 dBmV received power input level

MoCA 2.0

- 800 Mbps sustained data throughput over coax
- Uses the internal Gigabit media independent interfaces (GMII) for full-duplex communication with the on board MAC interface.
- Support up to 15 MoCA nodes
- Operating frequency Band D from 1125-1525 MHz Backward compatible with MoCA 1.x
- Compatible with existing devices on the coax with no interference
- Compatible with existing services on the coax with no interference

HPNA based Home Networking

- Operates over coax
- HPNA 3.1 (ITU G.9954)
- Bridging between HPNA and LAN interface with file transfer rates of up to 140 Mbps

Voice

- RJ-11 connectors
- 5 REN per line, Loop start, Balanced and unbalanced ringing
- Country specific coefficients and tones
- Metallic loop testing (GR-909)
- SIP (RFC 3261), MGCP (RFC 3435), H.248 (RFC 3525)
- DTMF dialing and encoding by RELAY or IN-BAND method
- CLASS service support (Caller ID, Call Waiting, Call Forwarding, Call Transfer etc.)G.711 (μ & a law), G.726-32, G.722, G.729
- Echo Cancellation
- T.38 and IN-BAND Fax
- Voice Activity Detection and Comfort Noise Generation
- Proven interoperability with major soft switch and voice gateway vendors
- DHCP Client or static IP configuration
- Official Metaswitch and BroadSoft Certifications

	POTS	GbE	RF Video	RF Return	Wi-Fi	Basic RG	HPNA	MoCA
7253	2	4	✓					
7257	2	4	✓	✓				
7258	2	4	✓		N, AC	✓		
7259	2	4	✓	✓	N, AC	✓		
7273	2	2	✓					✓
7277	2	2	✓	✓				✓
7278	2	2	✓		N, AC	✓		✓
7279	2	2	✓	✓	N, AC	✓		✓

LED Indicators

o Power o Battery o Fail o LAN o Data o Management
o Network o POTS

Dimensions (H x W x D) and Weight

- Size: 8.66 x 6.30 x 1.18 inches (220 x 160 x 30 mm)
- Weight: 2 lbs (.9 kg)

Environmental

-5 °C to +50 °C (23 °F to 122 °F) ambient
Humidity: 5% to 90%

Regulatory Compliance

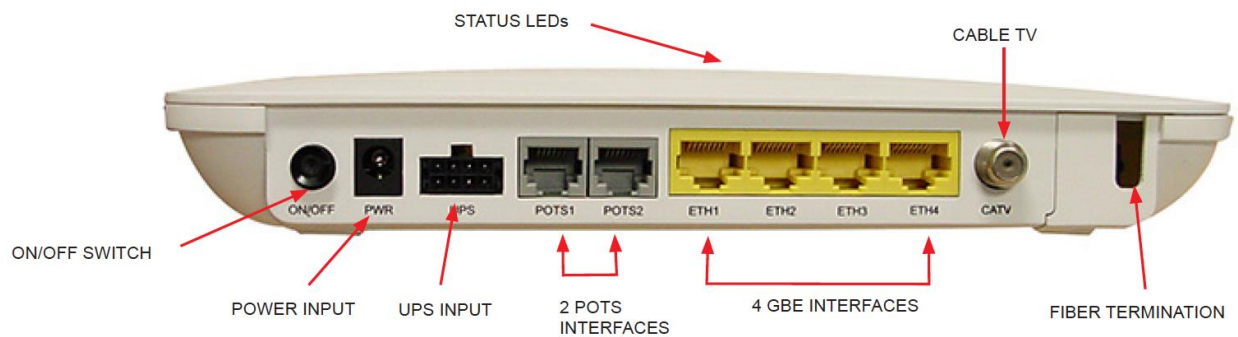
- Safety: UL/CSA 60950, IEC 60950, ETSI
- FDA – FCC 47 CFR Part 15, Class B and FDR 21 CFR
- 1040.10 and 1040.11 Class 1
- EMC: FCC PART 15, SUBPART B, CLASS B
- EN 55022, EN 55024, EN 300 386, CLASS B
- CE: Compliant
- RoHS6: Compliant
- WEEE: Compliant

Wi-Fi AP (WLAN)

- WPA-PSK/WPA2-PSK and TKIP/AES
- 64/128/256-bit data encryption keys
- 20MHz and 40MHz channel bonding
- Supports IEEE 802.11e QoS Enhancement (WMM)
- Supports IEEE 802.11i (WPA, WPA2) Open, shared, pair-wise key authentication
- Frame aggregation for increased MAC efficiency (A-MPDU, A-MSDU)
- Transmit Opportunity (TXOP) Short Inter- Frame Space (SIFS) bursting for higher multimedia bandwidth
- 20MHz and 40MHz (channel bonding) band width transmission capability
- DSSS with DBPSK and DQPSK, CCK modulation
- OFDM with BPSK, QPSK, 16QAM, and 64QAM modulation ; coding rates : 1/2, 2/3, 3/4, 5/6

iPHOTONIX

Complete Optical Access Solutions



iVolve Series Indoor ONTs

iVolveCATV version B04, Jun 2019