# 74xx Outdoor ONT Series

## Overview

iPhotonix GPON/Active Ethernet (AE) optical network termination (ONT) 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 generation SoCs leveraging the latest advances in 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*

iPhotonix 74xx ONTs terminate GPON or Active Ethernet fiber via a single SC/APC type optical connector and complies with GPON Standard ITU-T Rec. G984.2 Amendments. The ONT autodetects the GPON or AE signal. 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

### *CATV with RF Return*

The 74xx Series ONTs support 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. 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 74xx series ONTs support MoCA 2.0 for transporting data over existing coaxial cable enabling service providers to cost effectively deliver high-speed data, IPTV, VoD and Voice over IP (VoIP.) The CATV downstream channel, upstream RF Return, and the MoCA channel are multiplexed onto the coaxial network via an RF triplexer.

### *POTS (Plain Old Telephone System) Services*

The iPhotonix Outdoor 74xx ONTs support 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

# Services and Features

## Optical

- 2.5 Gbps downstream, 1.244 Gbps upstream
- 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
- Autodetect 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
- 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

## 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

## 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
- RoHS6 Compliant
- WEEE: Compliant

## *74xx ONT Models*

| | POTS | GbE | RF Video | RF Return | MoCA |
|---|---|---|---|---|---|
| **7451** | 2 | 4 | | | |
| **7453** | 2 | 4 | ✔ | | |
| **7454** | 2 | 2 | ✔ | ✔ | |
| **7457** | 2 | 4 | ✔ | ✔ | |
| **7461** | 2 | 2 | | | |
| **7463** | 2 | 2 | ✔ | | |
| **7471** | 2 | 2 | | | ✔ |
| **7473** | 2 | 2 | ✔ | | ✔ |
| **7477** | 2 | 2 | ✔ | ✔ | ✔ |

## *Environmental*

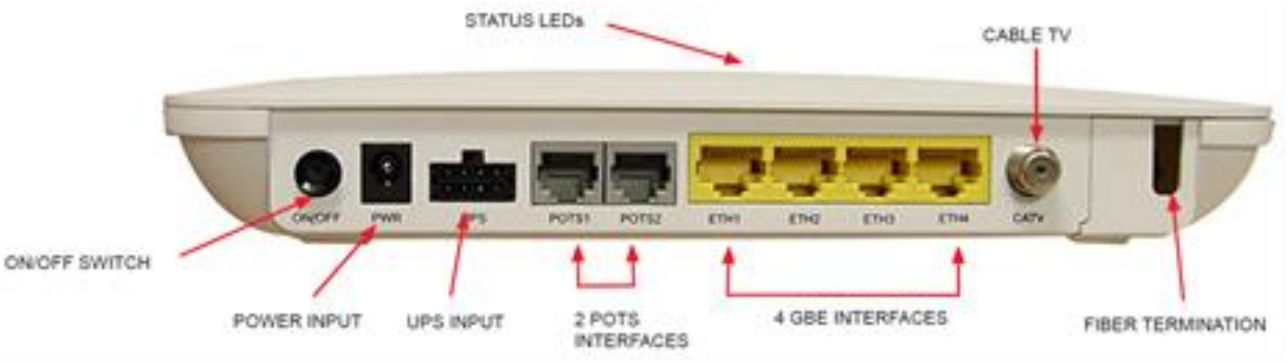
- -40°C to 65°C (-40°F to 122°F) ambient
    - Includes 15°C of solar loading
- Humidity: 5% to 90%

## *Dimensions*

- 8.66”x6.3”x1.18” (260x160x30 mm)
- 2 lbs. (0.9 kg)

## *LED Indicators*

- Power
- Battery
- Fail
- ETH
- POTS
- Management
- MoCA



# Outdoor Mounting Details

The iPhotonix 74xx Outdoor ONT series offers a variety of available mounting options depending on your specific needs and service offerings. The ONTs can be mounted in iPhotonix Outdoor Enclosures (part number: 635-7001-001) or small Corning enclosures using various bracket adaptor kits.

*iPhotonix 74xx Mounting Bracket Kit (part number: 645-1064-001)*

The entire 74xx Mounting Kit can be ordered using part number 635-7400-001, or each piece can be ordered separately.

*Corning enclosure with iPhotonix bracket kit*

*74xx ONT mounted in iPhotonix enclosure*

## *Important Mounting Details*

- A minimum 1.25" space between the vented top of an ONT and the bottom of the next DIN rail bracket must be kept for proper cooling. Any gap less than 1.25" can result in thermal damage to the ONT and void warranty.
- When installed within an external enclosure or OSP cabinet, the DIN rail must be mounted at least 3" below the enclosure ceiling. This provides approximately 1" of headroom between the enclosure ceiling and the ONTs for installation ease and to prevent thermal pooling between ONTs.
- Cabling should not be allowed to rest directly on any part of the ONT. Cabling should not be placed on the top of the DIN rail bracket when DIN rail mounting is used.
- Extensive cabling above the ONT should be avoided. Cables should be routed below the ONT using the provided guides.
- Temperature hardened ONTs should be used where applicable. Additional cooling may be necessary for non-temperature hardened ONTs when densely stacked.