

Tellabs® Optical Network Terminals (ONT)

A broad portfolio of choices to best result in lowest costs, optimize energy and space savings

Overview

With explosive demand for high bandwidth in the access network and the local area network (LAN), and the trend of fiber migrating from outside homes and buildings, to inside data centers, telecom closet and down to the desks, Tellabs stand ready to lead this all-fiber and Passive Optical Network (PON) revolution.

Tellabs' Optical Network Terminals (ONT) design and development are built from nearly 10 years of high volume PON commercial deployments. Tellabs' fourth generation ONTs deliver narrowband and broadband subscriber services cost effectively over a GPON platform to the IP/Ethernet end-points. This means that all services are supported natively over a single fiber, including analog voice, VoIP, high-speed data, IP video and/or RF video.

Tellabs ONTs support network configurations where each Virtual Local Area Network (VLAN) group can be bridged or force-forwarded. In bridged mode, all end users in VLAN group are bridged per IEEE 802.1d for peer-to-peer communication. In force-forward mode, all end user traffic must traverse network uplink to the Layer-3 edge or core network router.

All the Tellabs ONTs provide software and hardware features similar to look and feel of legacy active Ethernet LANs, but leverage the inherent benefits of PON (e.g. less CapEx, less OpEx, less energy, less space).

Service Delivery – Tellabs ONTs optimize service delivery, works in conjunction with service differentiation and service QoS for cost effective and performance efficient deployments.

- Data, voice (e.g. POTS, VoIP), unified communications and video (e.g. RF video, IP video)
- Facility wireless access points, surveillance, security, automation, monitoring and other corporate resources
- Link Layer Discovery Protocol (LLDP) for automated provisioning and enhanced 911 location service

Quality of Service – Tellabs ONTs are supported from 5-9s Optical Line Terminals (OLTs) and allows service-level VLANs to extend into end user environment that segregates and secures data flows to each client device.

- VLAN trunking, termination and translation, with user interface rate shaping per service type
- Traffic classification per IEEE 802.1p, IEEE 802.1q and even DSCP for voice
- Dynamic Bandwidth Allocation for bursty upstream traffic
- Type B PON protection

Advanced Security – Tellabs has implemented unique security features optimized for enterprise networks necessary to enable Ethernet bridging.

- Access Control Lists (ACL) at Layer-2 Ethernet, Layer-3 IP and Layer-4 TCP/UDP levels
- Ingress Broadcast Rate Limiting
- Advanced Encryption Standard AES-128

Strong Authentication – Tellabs' advanced authentication mechanisms provide intrusion detection and protection from unauthorized device activity.

- Network Access Control (NAC) with Dynamic VLAN, Guest VLAN and Quarantine support
- IEEE 802.1x
- RADIUS
- Dynamic Host Control Protocol, including Option 82

	Services	Size	Mounting	Interfaces	Features
Indoor					
Tellabs 120 Mini Optical Network Terminal	<ul style="list-style-type: none"> • VoIP • IP video • data 	<ul style="list-style-type: none"> • 2.8 in / 71 mm H • 1.6 in / 41 mm W • 2.9 in / 73 mm D 	<ul style="list-style-type: none"> • indoor • in-wall • in-cubicle • flush wall plate • secure/lockable 	<ul style="list-style-type: none"> • (2) 10/100/1000 	<ul style="list-style-type: none"> • remote or local <ul style="list-style-type: none"> - power - battery • PoE • expandable
Tellabs 704 Optical Network Terminal	<ul style="list-style-type: none"> • VoIP / POTS • IP video • data 	<ul style="list-style-type: none"> • 5.0 in / 127 mm H • 6.7 in / 170 mm W • 1.5 in / 38 mm D 	<ul style="list-style-type: none"> • indoor • desk or wall • free standing • vertical/horizontal • secure/lockable 	<ul style="list-style-type: none"> • (4) 10/100/1000 • (2) POTS 	<ul style="list-style-type: none"> • remote or local <ul style="list-style-type: none"> - power - battery • PoE (future)
Tellabs 705 Optical Network Terminals	<ul style="list-style-type: none"> • VoIP / POTS • IP video / RF video • data 	<ul style="list-style-type: none"> • 9.0 in / 228 mm H • 6.1 in / 155 mm W • 1.7 in / 43 mm D 	<ul style="list-style-type: none"> • indoor • desk or wall • free standing • vertical/horizontal • secure/lockable 	<ul style="list-style-type: none"> • (4) 10/100/1000 • (2) POTS • (1) RF video 	<ul style="list-style-type: none"> • remote or local <ul style="list-style-type: none"> - power - battery
Tellabs 709 Optical Network Terminal	<ul style="list-style-type: none"> • VoIP • IP video • data 	<ul style="list-style-type: none"> • 5.8 in / 147 mm H • 10.0 in / 54 mm W • 1.8 in / 46 mm D 	<ul style="list-style-type: none"> • indoor • desk or wall • free standing • vertical/horizontal • secure/lockable 	<ul style="list-style-type: none"> • (4) 10/100/1000 	<ul style="list-style-type: none"> • remote or local <ul style="list-style-type: none"> - power - battery • PoE
Tellabs 728 Optical Network Terminals	<ul style="list-style-type: none"> • VoIP • IP video • data 	<ul style="list-style-type: none"> • 1.7 in / 43 mm H • 17.3 in / 439 mm W • 11.0 in / 279 mm D 	<ul style="list-style-type: none"> • indoor • rack mount • comm. closet • IDF or zone box 	<ul style="list-style-type: none"> • (24) 10/100/1000 	<ul style="list-style-type: none"> • A/C power • PoE
Tellabs 729 Optical Network Terminals	<ul style="list-style-type: none"> • VoIP / POTS • IP video • data 	<ul style="list-style-type: none"> • 1.7 in / 43 mm H • 17.3 in / 439 mm W • 11.0 in / 279 mm D 	<ul style="list-style-type: none"> • indoor • rack mount • comm. closet • IDF or zone box 	<ul style="list-style-type: none"> • (24) 10/100/1000 • (24) POTS 	<ul style="list-style-type: none"> • A/C power • PoE
Outdoor					
Tellabs 702 Optical Network Terminals	<ul style="list-style-type: none"> • VoIP / POTS • IP video / RF video • data 	ONT <ul style="list-style-type: none"> • 11.2 in / 284 mm H • 10.0 in / 254 mm W • 2.0 in / 51 mm D Enclosure <ul style="list-style-type: none"> • 13.0 in / 330 mm H • 13.0 in / 330 mm W • 3.5 in / 89 mm D 	<ul style="list-style-type: none"> • outdoor • wall • in-wall 	<ul style="list-style-type: none"> • (1) 10/100/1000 • (2) POTS • (1) RF video 	<ul style="list-style-type: none"> • Hardened • local power • local battery
Tellabs 703 Optical Network Terminals	<ul style="list-style-type: none"> • VoIP / POTS • IP video / RF video • data 	ONT <ul style="list-style-type: none"> • 11.2 in / 284 mm H • 10.0 in / 254 mm W • 2.0 in / 51 mm D Enclosure <ul style="list-style-type: none"> • 13.0 in / 330 mm H • 13.0 in / 330 mm W • 3.5 in / 89 mm D 	<ul style="list-style-type: none"> • outdoor • wall • in-wall 	<ul style="list-style-type: none"> • (1) 10/100/1000 • (2) POTS • (1) RF video 	<ul style="list-style-type: none"> • Hardened • RF video return • RFoG • local power • local battery
Tellabs 714 Optical Network Terminals	<ul style="list-style-type: none"> • VoIP / POTS • IP video • data 	ONT <ul style="list-style-type: none"> • 11.2 in / 284 mm H • 10.0 in / 254 mm W • 2.0 in / 51 mm D Enclosure <ul style="list-style-type: none"> • 13.0 in / 330 mm H • 13.0 in / 330 mm W • 3.5 in / 89 mm D 	<ul style="list-style-type: none"> • outdoor • wall • in-wall 	<ul style="list-style-type: none"> • (4) 10/100/1000 • (2) POTS 	<ul style="list-style-type: none"> • Hardened • local power • local battery

Table 1: Tellabs broad portfolio of ONTs that are cost and function optimized for enterprise networks

Indoor Optical Network Terminals (ONTs)

Tellabs® Optical LAN Solution provides broadband fiber connections directly to the local area network end users. It is the next generation technology that replaces legacy, active Ethernet equipment, and associated copper-based CATx wiring, with passive GPON equipment, near future-proof single mode fiber, additional security, and faster speeds. CAT3, CAT5, CAT5e, cable has historically outdated themselves every 3 to 5 years and there is no confidence that CAT6 nor CAT7 will break that trend. As this CATx copper-based cabling solution has evolved to satisfy today's explosive bandwidth demands, it has grown larger, stiffer, heavier, and more expensive. Single mode fiber now represents the bandwidth future-proof, technology transparent, low cost and long-term solution for in-building LAN wiring. Tellabs Optical LAN uses 70% less capital, 80% less power and 90% less space in comparison with legacy copper-based active Ethernet LAN.

Indoor serving 4-ports gigabit Ethernet with free-standing, or vertical or horizontal mounting options – In the Fiber to the Desktop architecture, single mode fiber is installed to the end IP/Ethernet device (Picture 1). Optical Distribution Network (ODN) splitters can be positioned in the data center, telecom closet or remote fiber distribution housing depending on the building fiber design strategy (e.g. home-run or distributed). The small form-factor ONT handles the optical to electrical conversion providing the GPON to Ethernet transition.



Picture 1: Tellabs 709GP Optical Network Terminal

Fiber to the Desktop architecture is preferred where PON's inherent benefits and value proposition is fully exploited. This can be achieved when new facilities are able to push fiber all-the-way to the IP/Ethernet devices served. This architecture can also be taken advantage with building owners and IT managers upgrade the existing copper-based CATx cable infrastructure for near future-proof single mode fiber.

Whether serving 200 IP/Ethernet end-points or serving 8,192 end-points, Tellabs can match ONTs size, interfaces, mounting and network architecture for the lowest first cost CapEx, on-going OpEx, energy use and space required.

Service Delivery – These ONTs support voice (both analog and VoIP), data and video (both RF and IP). Either voice is supported with SIP agents at the POTS ports (i.e. RJ-11) or unified communications systems can be supported over data ports (i.e. RJ-45). IP video is supported either through deterministic multicast IGMP or through broadcast bridged configurations. RF video over PON is supported using the 1550nm overlay wavelength ultimately terminating on the F-Connector port of the ONT. In addition to voice and video, all enterprise LAN service can be delivered over a PON such as wireless access points, building surveillance camera and other building resources.

Mounting – ONT mounting can be located above the desk, below the desk or ONTs can be wall mounted. Where security is a priority then lockable enclosures can be used for any of the above listed locations.

Powering – ONT powering options include both local AC and remote DC. For local AC power, power adaptors are used to transform 120 AC power from wall plug to 48 DC power delivered to ONT. For remote DC power option, a centrally located bulk rectifier can be used and 48Vdc power delivered over CATx cables or new hybrid fiber/copper cables.

Battery Backup – If local power option is deployed, then the battery backup as a separate device at the ONT. If remote power options is utilized, then centrally located bulk battery backup can be used. Typically, the chosen battery backup solution provides easy-to-read LEDs, audible alarm, self-diagnostic tests and support hot-swappable battery exchange.

Power over Ethernet – Certain version of the Fiber to the Desktop ONTs support IEEE 802.3at Power over Ethernet ultimately powering VoIP phones, wireless access points, building surveillance camera and other building resources. 25.6 watts of PoE+ is provided on a per port basis with a total maximum of 65 watts per ONT.

Indoor mini ONT serving 2-ports gigabit Ethernet with in-wall or cubicle flush mount options – The Tellabs 100 series mini ONTs are revolutionary form-factor that allow for installation in standard 1-gang or 2-gang electrical boxes within walls (Picture 2) or within the raceways of modular cubicle work environments.



Picture 2: Standard mud ring drywall bracket and Tellabs 120W Mini Optical Network Terminal

In-wall and cubicle raceway mounted mini ONTs are best used in deployments where aesthetics are a priority or where security initiatives require concealed mini ONTs. Their purpose is to replicate the same work area outlet, and present flush connector input (RJ-45) as in legacy active Ethernet LAN deployment. However, once again the inherent benefits of PON are exploited, such as breaking the traditional 100 meter reach constraint (i.e. PON can reach 30km).

Service Delivery – The initial release of Tellabs 120W Mini ONT is focused on data only networks such as VoIP unified communications, LAN traffic, wireless access points, building surveillance camera, building automation and other building resources. There will be future expansion modules such as Assured Service SIP voice, addition two more 10/100/1000 module and dual PON uplink options. IP video is supported either through deterministic multicast IGMP or through broadcast bridged configurations.

Mounting – These ONTs are designed, engineered and tested for mounting inside standard in-wall drywall rings or within cubicle raceways. In both installation a flush wall plate conceals the ONTs inside the wall.

Powering - ONT powering options include both local AC and remote DC. For local AC power, power adaptors are used to transform 120 AC power from wall plug to 48 DC power delivered to ONT. For remote DC power option, a centrally located bulk rectifier can be used and 48Vdc power delivered over CATx cables or new hybrid fiber/copper cables.

Battery Backup – If local power option is deployed, then the battery backup as a separate device at the ONT. If remote power options is utilized, then centrally located bulk battery backup can be used. Typically, the chosen battery backup solution provides easy-to-read LEDs, audible alarm, self-diagnostic tests and support hot-swappable battery exchange.

Power over Ethernet – The Tellabs 120W mini ONT supports IEEE 802.3af Power over Ethernet ultimately powering VoIP phones, wireless access points, building surveillance camera and other building resources with 15.4 watts of PoE+ is provided on a per port basis.

Indoor serving 24-ports gigabit Ethernet with rack mounting options – In the Fiber to the Multi-Desk architecture (also known as Fiber to the Communications Closet), single mode fiber is installed to the telecom closet where the 24-port 1RU MDU ONT is rack mounted in a standard telecom rack (Picture 3). Optical distribution network splitters can be positioned anywhere between the data center and the ONTs in the telecom closet. Typically, five 24-port ONTs are served from an ODN splitter. The MDU ONT can be equipped with either 24-ports of POTS and 24-ports of data or 24-ports of data only service where only unified communications and IP video services are required.



Picture 3: Tellabs 728GP ONT and Tellabs 729GP ONT

Fiber to the Multi-Desk architecture is ideal when clients choose to leverage existing CATx cabling which may occur when building owners want to best match their existing copper based active Ethernet infrastructure. A building owner or IT manager may make the decision to deploy optical LAN in a phased approach with the first phase being Fiber to the Multi-Desk and the second phase being Fiber to the Desktop.

Service Delivery – These ONTs support voice (both analog and VoIP), data and video (both RF and IP). Either voice is supported with SIP agents at the standard 50-pin connector (e.g. RJ-21) or unified communications systems can be supported over data ports (i.e. RJ-45). IP video is supported either through deterministic multicast IGMP.

Mounting – These 24-port ONTs are 1RU in height and can be mounted in standard 19" telecom rack or 23" rack with appropriate mounting brackets.

Powering – For local AC power, input power takes 120/240 AC from a 3-Pin AC power connector with on-board switch and fuse accessible from the back of the ONT.

Battery Backup – For backup power options, existing building backup power generation systems can be utilized.

Power over Ethernet – Both the 728GP and 729GP MDU ONT support IEEE 802.3at Power over Ethernet ultimately powering VoIP phones, wireless access points, building surveillance camera and other building resources. 25.6 watts of PoE+ is provided on a per port basis with a total maximum of 450 watts per ONT.

Outdoor Optical Network Terminals (ONTs)

In classical service provider FTTP architecture, triple play services are delivered to homes and business. In this architecture, PON's 30km reach can be exploited to serve remotely located ONTs at residential housing, businesses, extended campus buildings and surrounding wide area network convergence such as wireless backhaul. ODN splitters can be positioned in the central office (e.g. home-run), remote cabinet (e.g. distributed) or even at the customer premises (e.g. business, apartments) depending on the fiber design strategy.

Outdoor serving 1-port to 4-ports gigabit Ethernet with hardened enclosure mounting options – Tellabs manufactures outdoor environmentally hardened group of ONTs that can be mounted externally at residential housing (e.g. campus housing, military housing) remote building and remote warehouses (Picture 4).



Picture 4: Tellabs 714G ONT and enclosure

In this architecture there is typically an one-to-one relationship between ONTs and premises served. Thus, a typical outdoor ONT deployment will serve between 200 and 2,048 dwellings.

Service Delivery – These outdoor ONTs support voice (both analog and VoIP), data and video (both RF and IP). Either voice is supported with SIP agents at the POTS ports (i.e. RJ-11) or unified communications systems can be supported over data ports (i.e. RJ-45). IP video is supported either through deterministic multicast IGMP or through broadcast bridged configurations. RF video over PON is supported using the 1550nm overlay wavelength ultimately terminating on the F-Connector port of the ONT.

Mounting – Low profile hardened outdoor enclosure with slack storage, tension relief and fiber management can be provided. If indoor installation is preferred, then indoor tray, rack or wall mounting can be used.

Powering – For local power, an AC to DC power adaptors is used to transform 120 AC power from wall plug to 48 DC power delivered to ONT. This powering solution can be specified for outdoor, just inside and indoor locations. It can also be designed to pull power at the power meter ring ultimately pulling power from either the utility side or the consumer side depending on who is paying the bill.

Battery Backup – Local battery backup can be provided as a separate device at the ONT for both indoor and outdoor deployments. The local battery backup solution provides easy-to-read LEDs, audible alarm, self-diagnostic tests and support hot-swappable battery exchange.

Ordering Information

Indoor ONTs:

- Tellabs 704G ONT, order part number 81.16G-704G00PA-R6
- Tellabs 705GR ONT, order part number 81.16G-705G01PA-R5
- Tellabs 709G ONT, order part number 0915-0124
- Tellabs 709GP ONT, order part number 81.16G-709GP00X-R6
- Tellabs 120W Mini ONT, order part number 81.11G-ONT120W-R6
- Tellabs 728GP ONT, order part number 81.16G-728GP00B-R6
- Tellabs 729GP ONT, order part number 81.16G-729GP0PB-R6

Outdoor ONTs:

- Tellabs 702 ONT, order part number 0915-0099
- Tellabs 703 ONT, order part number 0915-0111
- Tellabs 714G ONT, order part number 81.16G-714G00PX-R6

For more information, please contact your local Tellabs sales representative, local Tellabs sales office, at the phone numbers provided below or visit www.tellabs.com.

Next Step:

Visit www.tellabs.com/solutions/opticallan to learn more about how Tellabs Optical LAN Solutions are solving enterprise network challenges while significantly reducing CapEx and OpEx, power consumption, and space requirements. If you have a question about Tellabs Optical LAN Solutions, please email ask@tellabs.com.



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