

Oberon Model 1070-00 Telecommunications Enclosure

Oberon's model 1070-00 telecommunications enclosure is designed to give the telecommunications engineer or architect, or IT facilities manager, an extra degree of freedom in designing and implementing IP based unified communications infrastructure. The telecommunications enclosure, or TE, can move switching, interconnect, mid-span power injection, and associated UPS functionality, out of the crowded telecommunications room and into the work area where it is needed.

Telecommunications rooms are commonly crowded with racks, routing and switching equipment, UPS, PBXs and other networking (and non-networking) gear. These crowded facilities are commonly poor work areas, with inadequate ventilation for proper cooling of the active equipment, and inadequate lighting for moves, adds, and changes. The



The Telecommunications Industry Association's *Commercial Building Standard for Pathways and Spaces, TIA 569-B₂* specifies a dedicated 10' x 11' telecommunications room for each 10,000 sq. ft. of commercial space, per floor. The telecommunications room should have HVAC with standby operation to maintain "office area" temperatures. In many cases, especially with older construction, this space is not available.

TIA 569 B Telecommunications Enclosures

According to TIA-569B, a TE may augment a telecommunications room on each floor of the building. The TE can serve an office space area of up to 3,600 sq. ft., and should be sized to serve immediate needs and future growth. The TE should be installed as close as practicable to the center of the area served, and should be accessible for maintenance purposes. Access to the TE shall be controlled against unauthorized access. For office spaces smaller than 5,000 sq. ft., the TE may replace the dedicated telecommunications room. The TE has the advantages of reducing the congestion within the telecommunications room, reducing the heat load within the telecommunications room, and reducing the amount and length of horizontal cabling.

Oberon Model 1070-00 design

Oberon's model 1070-00 TE is a 2' x 2' ceiling tile replacement, designed to drop into the standard 2' x 2' ceiling tile grid-work. Grid wire or threaded rod is required to hold the enclosure in the ceiling. The enclosure has a solid, 3" deep, back box so as not to compromise the fire protection capability of the ceiling system. A highly perforated door allows enough air-flow for fan-less operation with most networking components.

Oberon Model 1070-00 components

The model 1070-00 is large enough for two 1U rack mountable networking components. These components may be switches, routers, UPS, mid-span power injectors, wireless controllers, etc. The 1070-00 has adjustable rack mounting brackets to mount the active components, and an opening in the back box for insertion of a 1U rack mountable patch panel. There is an opening in the side panel for a CCH fiber optic adaptor panel. Active components plug into the A.C. receptacle provided with the 1070-00 (wiring to the 1070-00 should be performed by a qualified electrician). A small strip light (included) can be attached near the front panel of the active components to facilitate cable management.

Up to 48 ports of Ethernet switch are available from major switch vendors in the 1U size, and up to 48 port high density patch panels can fit in the model 1070-00 patch panel opening, allowing for high density network expansion using this TE. The second 1U rack slot may accommodate a 1U Un-interruptible Power Supply (UPS) to provide distributed network protection from power sag and failure, or a 1U rack mountable mid span power injector to provide PoE to network attached devices. Other components can include wireless controllers and A/V switches.



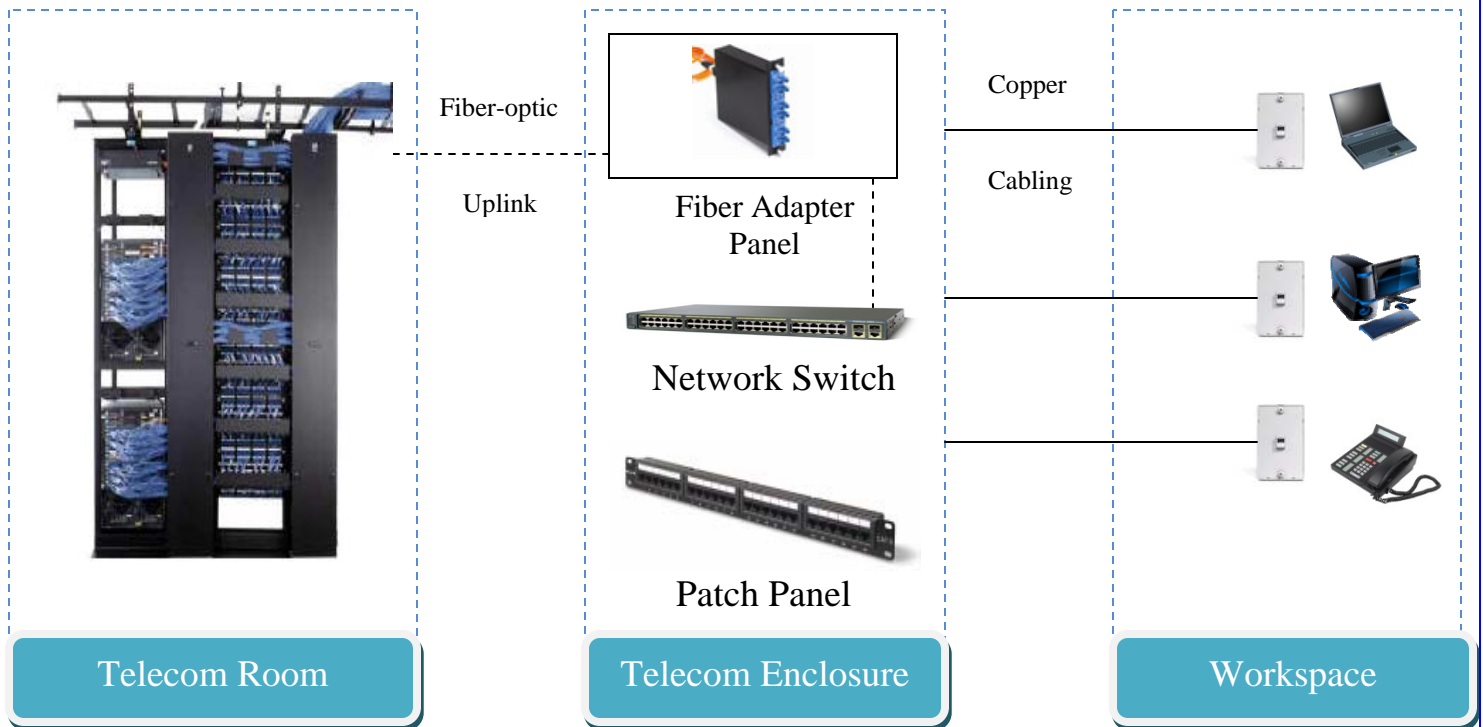
An opening in the back box accommodates a standard 1U rack mountable patch panel (not included). This permits simplified cable management.



An opening in the side wall accommodates a Closet Connector Housing (CCH) style fiber optic adaptor panel for Fiber To the Enclosure (FTTE) deployments (CCH not included).

Fiber to the Enclosure (FTTE) design

Fiber to the Enclosure_(FTTE) is a standard compliant, practical, and economical approach to providing high-speed access in classrooms and work areas. The model 1070-00 is ideal for FTTE designs. A fiber optic uplink provides the high bandwidth connectivity from the telecommunications room to the TE. Edge cabling is directed from the TE patch panel into the workspace. Since the TE is centrally located within the workspace, horizontal cable runs are kept to a minimum, minimizing installation and cabling cost, reducing PoE heat dissipation, and maximizing throughput.



Fiber To The Enclosure (FTTE) network design

Mid Span PoE

The model 1070-00 can be used to facilitate Power over Ethernet in networks where PoE is otherwise unavailable. Classrooms and workspaces can be outfitted with PoE powered devices using a rack mountable mid span power injector in the 1070-00 enclosure. This can be done without retro-fitting the switches in the telecommunications room, or adding power hungry mid span PoE injectors in the telecommunications room.

Maintenance

Moves, adds, and changes (or MACs) can be simplified using TEs in the work space. The model 1070-00 allows plenty of room for patch cable management and labeling, and provides a light to improve visibility in poor lighting conditions.

Temperature Rise in the Telecommunications Enclosure



A highly perforated door permits passive air-flow for fan-less operation.

The model 1070-00 is designed with a highly perforated door to allow passive air mixing into the enclosure to reduce heat build-up. Oberon engineers have measured the temperature rise within a model 1070-00 with high port density, PoE sourcing, enterprise edge switch to find an upper boundary on internal temperature rise. The test was conducted with a 48 port Cisco 3560G-48PS (Series PoE-48) Catalyst switch. All 48 ports were active (connected to network components) and 15 of the ports were active PoE sourcing ports. The Cisco 3560-48PS provides for up to 48 active PoE ports. Per the Cisco specification sheet, with a 5% data throughput load and 50% PoE port utilization the switch consumes 328W and dissipates 474 BTUs per hour, maximum.

To determine the temperature rise within the enclosure, a thermocouple is placed above the switch within the 1070-00 enclosure, and a second thermocouple is placed 2" above the exterior of the enclosure. The Cisco switch contains a fan that blows air from right to left (facing the front of the switch) across the hottest electronic components within the switch. The air inside and outside of the enclosure is "static", meaning no air is forced across or through the enclosure. The highly perforated door permits enough air to mix to reduce heat build up within the enclosure. A temperature difference of 12.3°F (6.9°C) between inside and outside the enclosure was measured under this test condition. This is comparable to the temperature rise inside an open rack of equipment. Thus, the operational temperature range of the enclosed equipment should be de-rated, or reduced, by 12.3°F. The operational range of the Cisco switch is specified as 32 to 113°F (0 to 45°C).

Certifications

Oberon's model 1070-00 is UL50 listed. It is designed to NEC paragraphs 300-22 and 300-23 for use in the air-handling space. The product is designed to comply with TIA 569-B requirements for TEs, and is OSHPD approved.