

Connectivity and Power Solutions For Demarcation Applications

From Circuit Management to Power Distribution in Remote Sites, Premises, and Elsewhere, Demarcation Products Emphasize Versatility and Functionality

The Telecommunications Industry Association (TIA) defines demarcation as, "That point at which operational control or ownership of communications facilities changes from one organizational entity to another. The demarcation point is usually the interface point between customer-premises equipment and external network service provider equipment."

In communications networks of the past, this meant a box on the outside of a home/business. While that still holds true, the practical definition of a demarcation point is much broader. In addition, the functions that take place in a demarcation application are much more extensive. Connectivity of circuits, testing and monitoring capabilities, power distribution and more are all part of demarcation applications.

Whether demarcation is occurring in a remote site, a co-locate, a closet or backboard application or elsewhere, key to every demarcation application is the ability to clearly delineate between the two sides of the network – service provider and customer, for example. This enables trouble isolation on copper or fiber optic circuits to the specific owner of the circuit, or the detection of power problems within the larger power plant or in customer site equipment.

In today's communications networks, demarcation is more commonplace than ever. Telect

Figure 2: Close-up of Telect's 1 RU multifunction panel. Note the fiber optic cables patched into the fiber module, and the Ethernet cables patched into the DS1 module. Additional module options include Ethernet patch and DSX-3, as well as a wall-mount chassis for backboards, closets, and other applications.

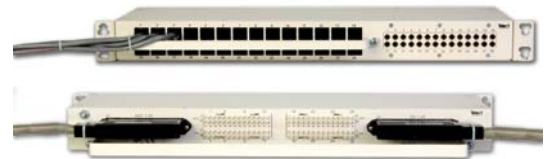
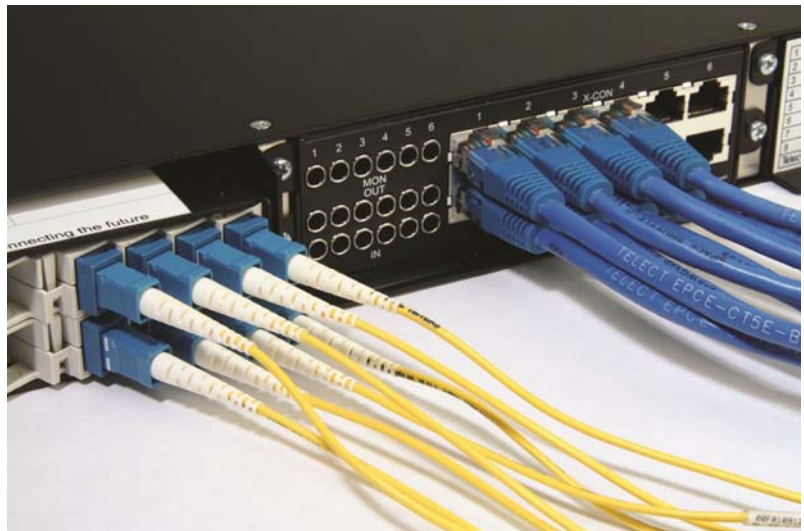


Figure 1: Front and rear views of Telect's T1 demarcation panel. RJ Cables patch into the front; wire-wrap pins and connectors are available on the rear.

provides several products optimized for these types of applications. The following is a brief look at a handful of core solutions.

T1 Demarcation Panels

This 28-port T1 panel features a wire-wrap or 64-pin interface on the rear for service provider T1 connections, and RJ48X jacks on the front for customer equipment (see figure 1). The RJ48X jacks feature shorting bars, which make the jack passively loop the signal back toward the network when the customer disconnects equipment.

This simple feature facilitates the testing of individual circuits from the NOC or head end to the panel and back. Using the loopback feature, the provider can perform pre-service testing before turning up the circuit.

Connectivity and Power Distribution in Demarcation Applications

The panel also features 28 DS1 ports on the front for non-intrusive circuit monitoring. All of these features combine to create a versatile, highly functional demarcation point for T1 circuits.

1 RU Multifunction Panels



Figure 3: Telect 1 RU multifunction panel with DSX-3, fiber optic patch/splice and DSX-1 modules.

Typically, demarcation applications present a limited quantity of circuits. A multifunctional panel such as Telect's 1 RU ELF enables the demarcation of multiple signal types in a single system.

The ELF features a configurable design, with a standard 1 RU chassis that accommodates three modules. Module options include DSX-1, DSX-3, Ethernet patch and fiber optic patch and splice. (See figure 2 on page 1 and figure 3 above.) Chassis can be wall-mounted, in addition to fitting in standard equipment racks.

As a sample application, the ELF can be deployed with a 12-port fiber splice/patch module for the termination of incoming multifiber cable and connection to a node device. The other two module slots can be utilized for distribution of Ethernet or DS1/DS3 signals to other gear.

Wall-Mount Fiber Optic Panels

Perfect for limited-space applications, Telect LANLINXS wall-mount fiber panels house patch, splice and storage capabilities in a single compact enclosure (see figure 3).

The provider side of the panel includes splice capacity of up to 48 fibers for incoming trunk cables, as well as slack storage spools. The customer side is a bulkhead-style patch field,



Figure 4: Fully configured Telect LANLINXS 24-port panel. Splice and storage is on the left-hand side of the panel, while patching takes place on the right. In this configuration, an incoming feeder cable enters at the bottom-left of the panel.

with capacity up to 48 ports. Each side of the panel features independently keyed locks for isolation and security.

High-Current Power Demarcation Panels

Fundamentally, in many network applications there is a need to drive high-current feeds from the battery distribution frame (BDFB) to equipment supplies that require more current. At the same time, a separation between provider and customer power must occur (see figure 5).

Most networks require a disconnect at the rack; in other words, users don't want the protection fuse back at the BDFB. This is where a demarcation distribution panel fits perfectly.

With the highest level of power density available in a 1 RU panel, Telect's high-current demarc panel is an ideal demarcation point for large power feeds between primary distribution and network equipment. Four independent 100A inputs pass through the panel, with the choice of circuit breakers or TPC, TLS or TPS fuses as interrupt devices. Because of the power capacity, the user can deliver power from the BDFB straight to the rack without the use of an interim distribution panel.



Figure 5: Typical high-current demarcation power panel application.

Connectivity and Power Distribution in Demarcation Applications

What's more, because the panel is deployed in a rack, space savings is key. In addition to serving as a power demarcation point, the demarc panel also functions well as a high-current power distribution panel, with up to four 100A output in just 1 RU.

Ethernet Coupler Panels



Figure 6: Telect's 48-port Ethernet coupler panel, a high-density solution that occupies just 2 RU and mounts in all standard equipment racks.

As more communications networks migrate to Ethernet as a basic signal platform, demarcation of Ethernet circuits is becoming a significant function. Telect Ethernet coupler panels are an ideal solution for this application, along with providing a platform for circuit testing.

Featuring a one-to-one coupler design (front-to-rear of the panel), the panels provide a simple, high-density platform for interconnection and demarcation. Cat 5e and Cat 6 panels are available, in 24-port or 48-port circuit counts.

Carrier-grade design ensures long-term, reliable connectivity, with industry-standard RJ45 jacks. Like all Telect Ethernet panels, the couplers can be configured in high-density bays for high-capacity applications.

DS1 and DS3 Interconnect Panels



Figure 7: Telect's 112-termination DS1 interconnect panel, which features internal cross-connects..

In large-capacity handoff applications (such as an interexchange), cross-connects between provider and customer equipment can, in some cases, be set as permanent. For these situations, Telect DS1 and DS3 interconnect panels are a good fit.

With factory-terminated internal cross-connects hard-wired in the panel, interconnect panels provide a static environment for monitoring, testing and demarcation of circuits.

For additional details, specifications and ordering information for all of the products listed above, see the following pages.

T1/DS1 Demarcation/Backhaul Panels



28-Termination RJ48X panel, part number 097-0128-0006

Features

- High-density demarcation/testing solution
- RJ48X jacks provide automatic loopback capabilities
- RJ Ports meet all key standards
- DS1/Bantam jacks provide a non-intrusive platform for circuit monitoring
- 64-pin female connectors enable rapid deployment and simple usage
- Completely enclosed chassis provides robust protection for connections

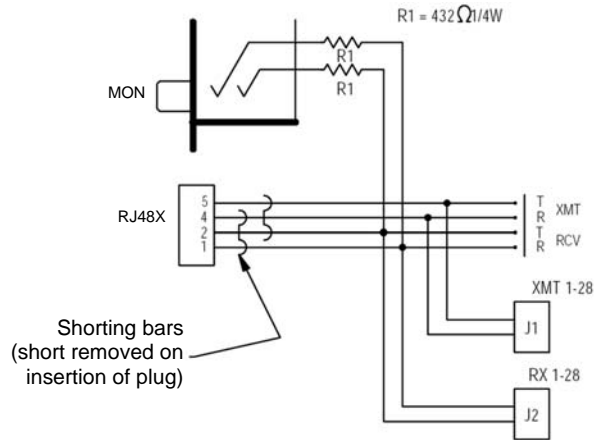
Ordering Information

28-term., RJ48X jacks, with loopback functionality	097-0128-0006
28-term., RJ48C jacks, no loopback functionality	097-0128-0007

Specifications

Dimensions	19" W x 1.7" H x 5.9" D 483 mm x 43 mm x 150 mm
Weight	10 lbs. (4.5 kg)
Material	Steel
Total terminations	28 RJ48, 28 DS1

RJ48X Schematic



RJ48X jacks feature a shunting bar between transmit and receive pins to enable automatic loopback when no patch cord is inserted. RJ48C jacks do not incorporate shunting bars.

1 RU Modular Multifunction Panel



1 RU Multifunction panel with DSX-3, fiber optic and DSX-1 modules

Features

- Deploy with fiber optic patch/splice module for termination of incoming cable and connection to node device
- DSX-1, DSX-3 and Ethernet modules fit in the same chassis to maximize space and enable versatile connectivity
- 1 RU chassis accommodates 3 modules
- Choose modules as required to fit the specific requirements of the application

Ordering Information

Chassis, 3 module capacity	ELF-0000-2400
12-port fiber patch/splice	ELF-SP12-SCPT
8-term. DSX-1 module	ELF-1008-1200
1-term. DSX-3 module	ELF-3206-1200
16-term. RJ-RJ patch module	ELF-9716-1900

Additional module options are available. See Telect.com.

Specifications

Chassis

Dimensions	19" W x 1.75" H x 5" D 483 mm x 44 mm x 127 mm
Weight	5 lbs. (2.3 kg)
Material	Steel
Agency compliance (system)	NEBS, ITU-T

Fiber Optic Patch/Splice Module

Dimensions	5.9" W x 1.7" H x 8" D 150 mm x 42 mm x 202 mm
Weight	2 lbs. (0.9 kg)
Total terminations	12 patch, 12 splice
Patch adapters	SC/UPC

DSX-1 Module

Dimensions	6" W x 1.6" H x 5.5" D 152 mm x 42 mm x 140 mm
Weight	2.5 lbs. (1.1 kg)
Total terminations	8
Circuit access	Front cross-connect
Cross-connect field	Wire-wrap
Network element field	BNC

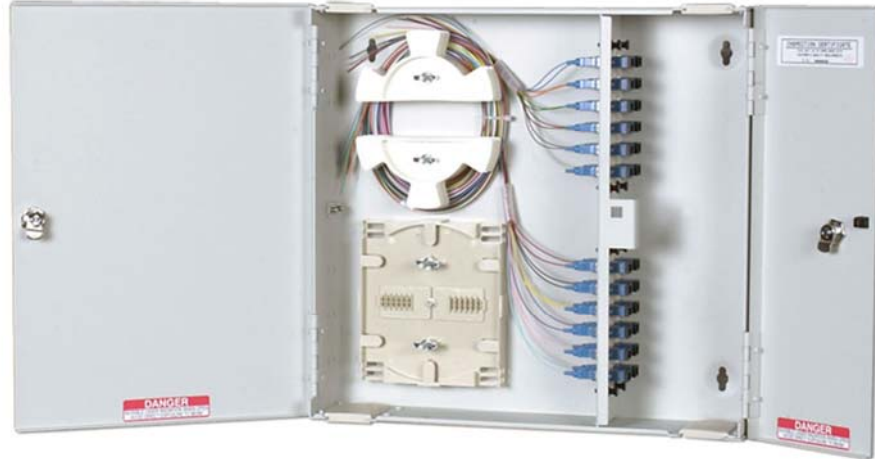
DSX-3 Module

Dimensions	6" W x 1.6" H x 5" D 152 mm x 42 mm x 140 mm
Weight	2 lbs. (0.9 kg)
Total terminations	2
Circuit access	Rear cross-connect
Cross-connect field	BNC connectorized
Network element field	BNC

Ethernet Module

Dimensions	5.8" W x 1.6" H x 5" D 149 mm x 41 mm x 127 mm
Weight	2 lbs. (0.91 kg)
Total terminations	16
Circuit access	Front cross-connect
Cross-connect field	RJ45C
Network element field	RJ45C

Wall-Mount Fiber Optic Panels



24-Port wall-mount panel, part number 055-8632-5000, with SC patch plates

Features

- Cable storage and bend radius control engineered into panels
- Separate lockable doors for service and customer access control
- Easy installation
- Large designation and labeling area for each circuit
- Configure with patch plates, splice trays and storage spools to fit the specific requirements of your application

Ordering Information

24-Port panel	055-8632-5000
48-Port panel	055-8832-5000
6-Port SC/UPC patch plate	055-0000-6010
6-Port SC/APC patch plate	055-0000-6070
6-Port FC/UPC patch plate	055-0000-2010
6-Port FC/APC patch plate	055-0000-2070
6-Port ST/UPC patch plate	055-0000-3010
12-Port LC/UPC	055-0000-5010

8-Port patch plates are also available. See Telect.com.

Specifications

24-Port panel	14.5" W x 14" H x 3.25" D (368 mm x 356 mm x 83 mm) 6 lbs. (2.7 kg)
48-Port panel	14.5" W x 14" H x 5.25" D (368 mm x 356 mm x 133 mm) 7 lbs. (3.2 kg)
Material	Aluminum
Total terminations	24 or 48

High-Current Power Demarcation Panels



Circuit breaker panel, part number 009-7000-0104

Features

- Highest level of power density available in a one rack unit panel
- Choose circuit breakers or fuses:
 - Easy-to-install bullet-style breakers (up to 100A) simplify installation and reconfiguration
 - TPC fuses (up to 100A) are rated as disconnect devices to simplify maintenance
 - Also accommodates TFD fuse holders for TPS or TLS fuses (up to 100A)
- Input and output connections accept two-hole compression lugs
- Removable alarm card features alarm cut-off switches for each protection device to silence alarms for maintenance purposes

Ordering Information

Demarcation circuit breaker panel	009-7000-0104
Demarcation fuse panel	009-7001-0104

Order fuses and circuit breakers separately. See Telect.com.



Fuse panel, part number 009-7001-0104

Specifications

Electrical

Nominal voltage	±24, -48 VDC
Input rating	100A per bus
Maximum input interrupt device	125A
Maximum output protection device	100A
Power dissipation (full load)	17W per bus

Mechanical

Dimensions	17.25" W x 1.75" H x 9" D 438 mm x 44 mm x 229 mm
Weight	11 lbs. (5 kg)
Material	Cold-rolled steel
Finish	Powder coat
Mounting	19" or 23"

Environmental

Temperature	-5° to 55° C
Humidity	0 to 90%, non-condensing

Connections

Input terminals	Two-hole compression lug, M5 studs on 5/8" centers
Output terminals	Two-hole compression lug, M5 studs on 5/8" centers
Chassis ground	Two-hole compression lug, M5 studs on 5/8" centers

Alarms

Alarm indicators	Breaker/fuse alarms
Alarm type	Form C
Alarm connector	0.045" square pin
Relay contact ratings	0.6A at 48 VDC; 1A at 120 VAC

Compliance

Agency	NEBS 3, UL, CUL, CE
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Connectivity and Power Distribution in Demarcation Applications

Cat 5e and Cat 6 Ethernet Coupler Patch Panels



24-port Cat 5e panel, part number 099-8524-1601



48-port Cat 6 panel, part number 099-8648-1601

Features

- Simple and efficient demarcation, extension, and cross-aisle interconnection in 10/100/1000 Base-T Ethernet applications
- Quick UTP connections to switches, routers, and other active equipment
- High-density connectivity that meets all Cat 5e or Cat 6 standards
- 24-port or 48-port panels available
- Simple, cost-effective interconnection of Ethernet circuits
- Designation located above each silk-screened port (front and rear)

Ordering Information

24-Port Cat 5e coupler panel	099-8524-1601
48-Port Cat 5e coupler panel	099-8548-1601
24-Port Cat 6 coupler panel	099-8648-1601
48-Port Cat 6 coupler panel	099-8648-1601

Patch cords also available. See Telect.com.

Specifications

Dimensions, 24-port	17.4" W x 1.7" H x 1.4" D 442 mm x 43 mm x 35 mm 2 lbs. (0.9 kg)
Dimensions, 48-port	17.4" W x 3.4" H x 1.4" D 442 mm x 86 mm x 35 mm 3.6 lbs. 1.69 kg)
Material	16-gauge steel
Couplers	ABS molding compound UL94V-0 rated
Wiring	UTP (solid or stranded) 8-conductor T568A or T568B
Agency compliance	Part 68, FCC Rules Cat 5e or Cat 6 TIA/EIA-568B.2 specs for component performance

DS1 and DS3 Interconnect Panels

Features

- Monitor, test and patch in high-density, static environments
- Engineered for demarcation points, premise locations, or anywhere active cross-connect capabilities are not crucial
- Simple circuit migration, catastrophic failure recovery and centralized termination
- High-density designs with quality jack construction for reliability



Ordering Information

28-Term. DS1 panel, wire-wrap I/O	010-0728-0001
112-Term. DS1 panel, wire-wrap I/O	010-7112-5001
128-Term. DS1 panel, wire-wrap I/O	010-7128-5001
168-Term. DS1 panel, wire-wrap I/O	010-7168-5001
64-Term. DS3 panel with BNC connectors	010-7064-0001
24-Term. modular DS3 panel	010-8424-0002

DS1 and DS3 patch cords also available. See Telect.com for ordering information and panel specifications.

Left: 64-Termination DS3 interconnect panel, part number 010-7064-0001.