

Best Solutions for Managing High-Current Power Distribution

High-Current Demarcation Panels Provide a Platform for Distribution & Protection

Many of today's network applications include equipment that requires high-current power feeds from a high-current panel, including a battery distribution frame (BDFB). Routers, servers and other active equipment simply require more power than traditional fuse panels or circuit breaker panels can handle.

Additionally, best practices often require a disconnect or power protection point at the deployed equipment; in other words, most network designers cannot rely on a protection fuse or circuit breaker back at the BDFB. Instead, this functionality must be located closer to the critical equipment.

Architecture Options

Network engineers faced with the challenge of delivering high-current feeds to equipment have two basic options for power management:

1) Power Demarcation Application

In this example, multiple high-current feeds (typically 60A-70A) are delivered from the BDFB to the equipment rack, where demarcation occurs in a high-current panel (see below). The feeds pass through the demarcation panel to

the equipment, with protection via a fuse or circuit breaker.

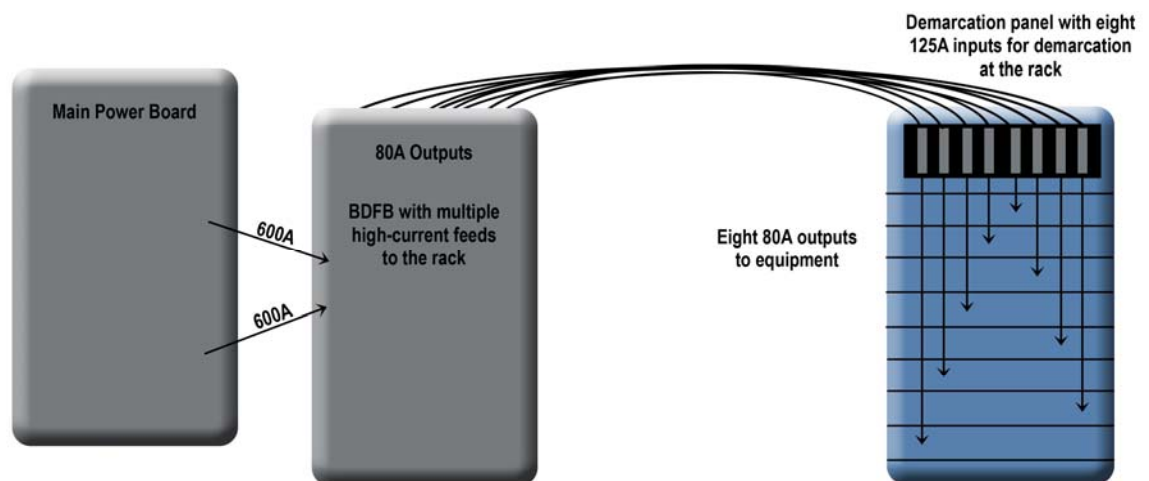
Power demarcation distribution provides for driving equipment supplies directly from a BDFB. Since most networks won't allow the protection or disconnect fuse or breaker to be located back at the BDFB, demarcation provides for this capability at the equipment rack.

Telect's 125A demarcation panel is a good choice for this application. The 2 RU panel features eight independent 125A feeds, each of which can be protected with a high-current circuit breaker or a TFD fuse holder (for TPS or TLS fuses). For smaller applications, a 1 RU panel with four 100A feeds is available.

2) Load Center Distribution Application

In a load center distribution application, the network designer runs a high-current feed from the main power board to a high-current distribution panel (or load center panel) located closer to deployed equipment, then distributes power from there (see page 2).

Panels used in this application can vary significantly in terms of input amperage ratings; however, the nature of the application can vary as



Demarcation distribution power application.

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well, so a broad range of panels can fit the bill. Power delivered to the distribution panel can range from 200A to 600A, based on the application. In all cases, high-current distribution is a key requirement, but the cost and space requirements of a BDF make that an inefficient option.

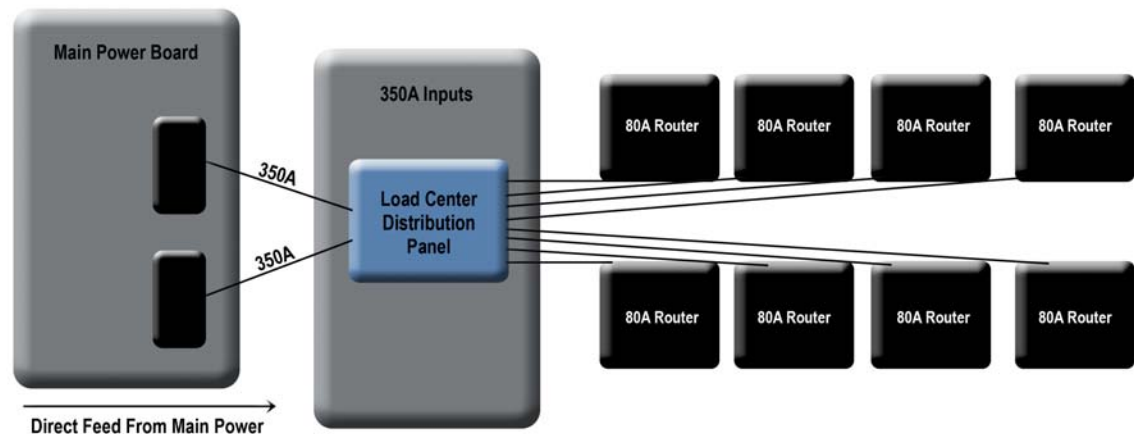
A Telect panel that fits this application is the high-current 350CB06 panel. In this solution, flexibility is the key. It features a dual-feed 350A input rating, with six high-current outputs per bus. Circuit breakers or TFD fuse holders can be used in these positions. For additional versatility, the panel also features five GMT fuse positions per input, enabling low-current distribution in the same compact 3 RU panel.

Conclusion

Either of the above examples is a viable option for effectively distributing, protecting and managing power to high-current equipment deployed in the field. Decisions likely will be based on power availability in the field, as well as standards and practices currently employed by the service provider.

In the past, a demarcation panel provided a clear platform for delineation of power between service providers and customers in co-locates. This enabled the detection of power problems within the larger power plant or in customer site equipment. Today, however, the demarcation panel has become a platform for distribution and protection.

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



Load center power distribution application.

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125A Eight-Position High-Current Demarcation Panel



125A 2 RU Demarcation panel , front and rear views

Features

- High-current capabilities – eight independent 125A “pass-through” inputs
- Field configurable – bullet-style connectivity:
 - Airpax LEL or Carling CA1 breakers
 - CSI TFD fuse holders
- High output capacity — up to 100A circuit breakers, 70A TPS or 125A TLS fuses
- Universal voltage applications – ± 24 VDC and -48 VDC operation supported
- Industry compliance planned – UL, cUL, and NEBS level 3 (pending)
- Rack mountable – fits standard 19" and 23" equipment racks
- Rear cover included – covers all input and output power connections

Ordering Information

125A 8-Position demarcation panel 125DM08

Order fuses and circuit breakers separately.



125DM08 Panel, with fuse holder (left) and circuit breaker (below)



Specifications

Electrical

Voltage	Nominal: ± 24 V/-48 VDC; Range: ± 20 to ± 28 VDC; -40 to -60 VDC
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Input rating	125A per position
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Max. input interrupt device	155A
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Max. cont. output load rating	100A
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Power dissipation (full load)	17W per I/O
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Short-circuit withstand rating	5000A
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Mechanical

Dimensions	17.25" W x 3.5" H x 9" D (438 mm x 89 mm x 229 mm)
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Weight	18 lbs. (8.2 kg)
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Material	Cold-rolled steel
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Finish	White, powder coat
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Mounting	19"/23", EIA/WECO
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Environmental

Temperature	-5° to 53° C
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Humidity	0 to 90%, non-condensing
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Connections

Terminal stud sizes	1/4"-20 dual studs on 5/8" centers 1/4"-20 dual PEMs on 5/8" centers (side ground)
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Battery and return wire sizes	#8 to #1 AWG
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Ground wire size	#10 to #2 AWG (based on input fuse)
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Alarms

Alarm indicators	Power, breaker/fuse alarms
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Alarm card power rating	1W
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Alarm wire size	Solid: #26 to #22 AWG
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Relay contact ratings	0.6A at 60 VDC
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Compliance

Agency compliance	UL, cUL, NEBS 3 pending
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Best Solutions for Managing High-Current Power Distribution

100A Four-Position High-Current Demarcation Panels



Demarcation 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.



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
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Best Solutions for Managing High-Current Power Distribution

350A High-Current Distribution Panel



High-current 350CB06 panel, front and rear views

Features

- High-current capabilities – two 350A inputs
- High-power distribution – six 125A single-pole positions per input
- Field configurable – bullet-style connectivity:
 - Airpax LEL or Carling CA1 breakers
 - CSI TFD fuse holders
- Fuse panel convenience – five 15A GMT fuses per input
- Universal voltage applications – ± 24 VDC and -48 VDC operation supported
- Robust input connections – accept secure two-hole compression lugs up to 750 MCM
- Large output connections – two-hole compression lug terminals accept up to #2 AWG
- Individual breaker faceplate design – each breaker individually accessible and provides physical protection of the toggle from inadvertent tripping
- Industry compliance – UL, cUL and NEBS level 3
- Rack mountable – fits both 19" and 23" racks
- Rear cover included – covers all input and output power connections

Ordering Information

350A High-current panel 350CB06

Order fuses and circuit breakers separately.

Specifications

Electrical

Voltage	Nominal: ± 24 V/-48 VDC Operating: -20 to -30 VDC; -40 to -60 VDC; +20 to +30 VDC
Input rating	350A per bus, sides A & B isolated
Max. input interrupt device	437A per feed
Max. continuous output load rating	100A per position
Power dissipation (full load)	35W per bus at 16.8kW per side (350A x 48V)

Mechanical

Dimensions	17.25" W x 5" H x 8" D (438 mm x 127 mm x 203 mm)
Weight, without breakers	20 lbs. (44 kg) 23 lbs. (51 kg) shipping
Material	Cold-rolled steel
Finish	White, powder coat
Mounting	19"/23", EIA/WECO

Environmental

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

Connections

Input terminals	2-hole compression lug; 0.375" stud size on 1" hole spacing; size up to 750 MCM
Output terminals	2-hole compression lug; #10 stud size on 0.625" hole spacing; size up to 2 AWG
Chassis ground	2-hole compression lug; 0.25" stud size on 0.625" hole spacing; size up to 1 AWG

Alarms

Alarm indicators	Power, breaker/fuse alarms
Alarm type	Form C
Alarm connector	Screw terminal, #3-48
Relay contact ratings	1A at 60 VDC; 2A at 30 VDC

Compliance

Agency compliance	NEBS 3, UL, cUL
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Fuses and Circuit Breakers

Single-Pole Circuit Breakers

Amperage	Part Number	Amperage	Part Number
1A	009-0052-0001	40A	009-0052-0040
2A	009-0052-0002	50A	009-0052-0050
3A	009-0052-0003	60A	009-0052-0060
5A	009-0052-0005	70A	009-0052-0070
10A	009-0052-0010	80A	009-0052-0080
20A	009-0052-0020	90A	009-0052-0090
25A	009-0052-0025	100A	009-0052-0100
30A	009-0052-0030		
10A, mid-trip	130434	60A, mid-trip	127881
20A, mid-trip	130054	70A, mid-trip	138671
30A, mid-trip	128264	80A, mid-trip	138670
40A, mid-trip	127186	90A, mid-trip	138669
50A, mid-trip	127185	100A, mid-trip	138692



Single-pole circuit breaker

Multi-Pole Circuit Breakers

Double-Pole	Part Number	Triple-Pole	Part Number
125A	134634	200A	134636
150A	134635	225A	134637
175A	135921	250A	134638
200A	135922		
2-pole adapter, 5/8" C-C lugs	600CB08-2PK	3-pole adapter, load connection	600CB08-3PK
2-pole adapter, 1" C-C lugs	600CB08-RPK	Rear cover for multi-pole	600CB08-MPK



Double-pole circuit breaker

Fuses

	Amperage	Part Number	Amperage	Part Number
TPS Fuses	3A	130479	25A	130476
	5A	130481	30A	130478
	6A	130483	40A	130482
	10A	130485	50A	130484
	15A	130487	60A	130486
	20A	130489	70A	130488
TLS Fuses	80A	140640	100A	140642
	90A	140641		
TFD Fuse holder for TPS/TLS fuses				129816



TFD Fuse holder

GMT Fuses also available for 350CB06 panel. See Telect.com.