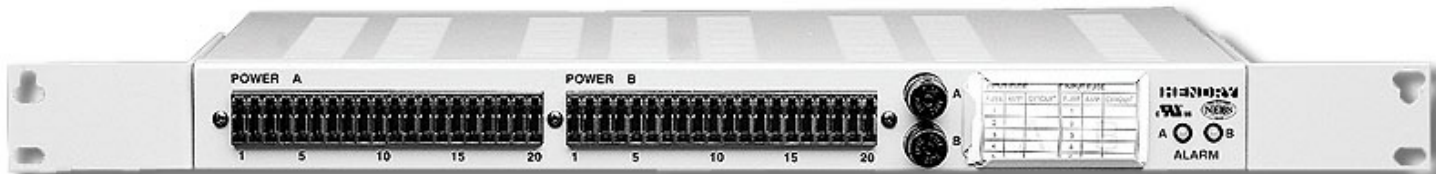


Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide



Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

Installation Guide, Part Number 130358-2

Copyright 2017, Telect Inc., All Rights Reserved

Telect and Connecting the Future are registered trademarks of Telect, Inc.
22425 East Appleway Ave. #11, Liberty Lake, WA 99019

Telect assumes no liability from the application or use of these products. Neither does Telect convey any license under its patent rights nor the patent rights of others. This document and the products described herein are subject to change without notice.

Connecting the future for over 30 years

Telect challenges the status quo and looks beyond what is possible in network connectivity and power management.

Founded in 1982, Telect is driven by the principles of innovation and customer service. Headquartered in Liberty Lake, WA, the privately held company supports a global network of customers with a comprehensive product portfolio and a values-driven corporate culture.

Our products and solutions are found across communications service-provider networks, data centers and utility networks around the globe.

At Telect, we pride ourselves on our ability to respond to customer challenges, building a reputation among communications service providers for delivering solutions uniquely tailored to their needs.

We simplify networks.™

- Exceptional lead-times
- Custom integrated solutions
- Rapid collaborative development and prototyping
- UL and NEBs expertise

Technical Support

Email: getinfo@telect.com
Phone: 509-926-6000

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

Table of Contents

1.1 Overview.....	1
1.2 Specifications	3
1.3 Inspection	4
1.4 Installation	5
1.5 Alarm Wiring	10
1.5.1 Standard Alarms.....	10
1.5.2 Auxiliary Alarms	10
1.6 GMT Fuses.....	12
1.7 Schematics	12

List of Figures

Figure 1 - Model 06004	1
Figure 2 - Front View	1
Figure 3 - Model 06004-01 (Rear View)	2
Figure 4 - Model 06004-11 (Rear View)	2
Figure 5 - Panel with Mounting Brackets in Stowed Position for Shipping	5
Figure 6 - Bracket Installation (Examples).....	6
Figure 7 - Mounting the Panel	6
Figure 8 - Connecting the Lug to the Rear Panel.....	7
Figure 9 - Inserting Conductors	7
Figure 10 - Fail Relay Alarm Pins	8
Figure 11 - Designation Card.....	9
Figure 12 - Inserting the Designation Card.....	10
Figure 13 - Standard Alarm Wiring	10
Figure 14 - Auxiliary Alarm Wiring	11
Figure 15 - Block Diagram.....	12
Figure 16 - Rear, Top and Front Views.....	13

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

1.1 Overview

The Telect 1RU Traditional Low-Current GMT Series Fuse Panels provide protected secondary -24 VDC to -48 VDC power distribution to telecommunications equipment at the bay level. Fuse panels are available for GMT outputs up to 10A per position in dual-circuit panel configurations having 20 GMT fuse positions per circuit.

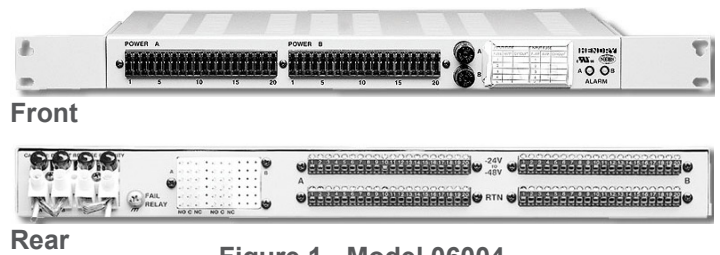


Figure 1 - Model 06004

- Model 06004-01 is the standard panel containing separate Side A and Side B GMT fuse failure alarms and corresponding LEDs. Standard features for Model 06004-01 include:
 - Dual-circuit, separately fused input buses for Sides A and B
 - Minimal rack space: one, 1.75" EIA or 2" WECO rack unit (1RU) for rear access connections
 - 20 GMT outputs per side with each side protected by a Type ABC 20A ceramic input fuse
 - Dummy GMT fuses provided for all fuse holders
 - Two sets of Form C relay contacts per side for reliable fail alarm connections
 - Side A and B alarms can be wired for separate or common alarming. (All basic and auxiliary alarms can be wired for separate or common alarming.)
 - 19" or 23" rack mounting, with mounting brackets provided
- Model 06004-11 adds separate power failure auxiliary alarms for Sides A and B along with a load-sharing fail-safe circuit. (All basic and auxiliary alarms can be wired for separate or common alarming.) If power fails on one bus, the other picks up the loads on the failed bus.

Both Models are UL Recognized for US and Canada, E199668 and NEBS3 Compliant

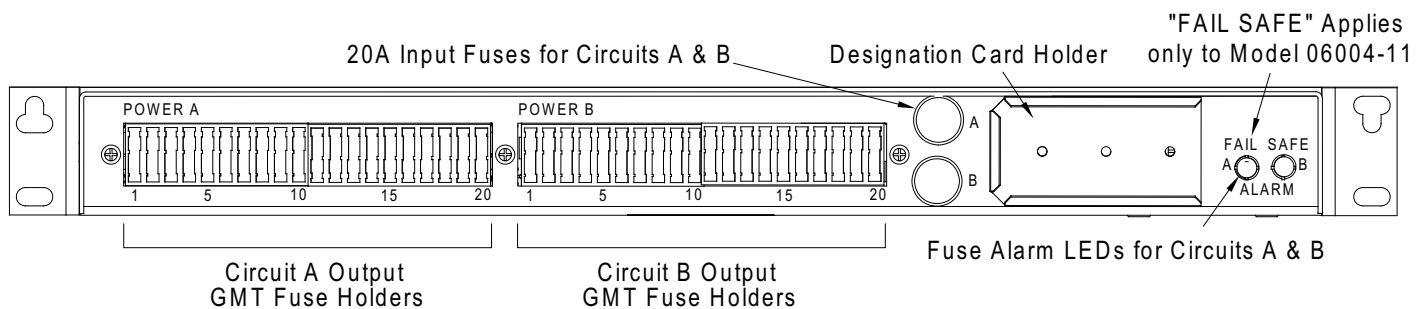


Figure 2 - Front View

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

GMT output fuses are available in capacities ranging from 0.18A to 10A. GMT splash covers are optional for maximum safety when fuses blow. (Visit our website at www.telect.com or see Section “1.6 GMT Fuses” on page 12 for ordering GMT fuses.) The panel is delivered with “dummy” fuses in all positions.

The standard front panel includes a tri-color fuse alarm LED for each circuit (ALARM A and ALARM B):

- The ALARM LEDs are green when all installed input and output fuses are operational
- The ALARM LED is red when any output fuse blows
- The ALARM LED is orange when either of the input fuses blows

The back contains input and output terminal connections (NEG connections at top; POS RTN connections below), chassis ground connections and wire-wrap pins for external alarm hookups.

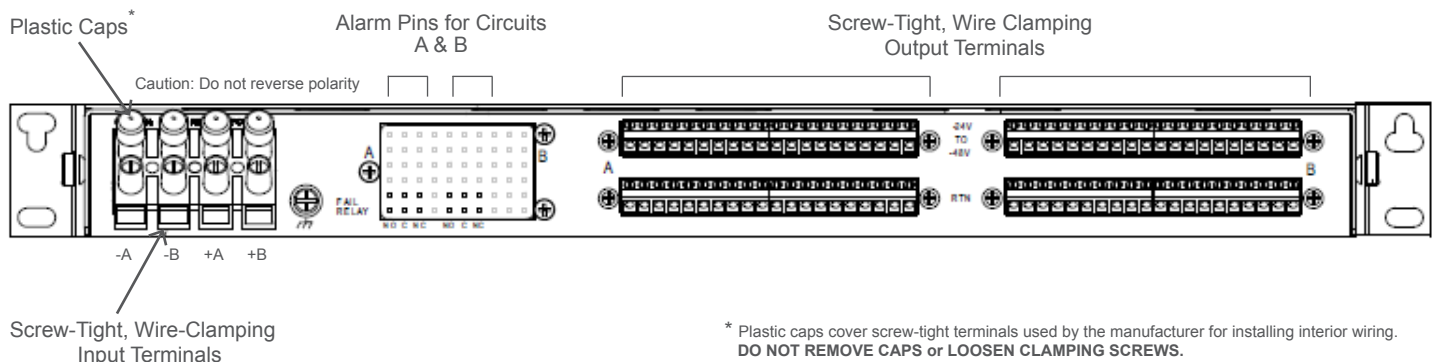


Figure 3 - Model 06004-01 (Rear View)

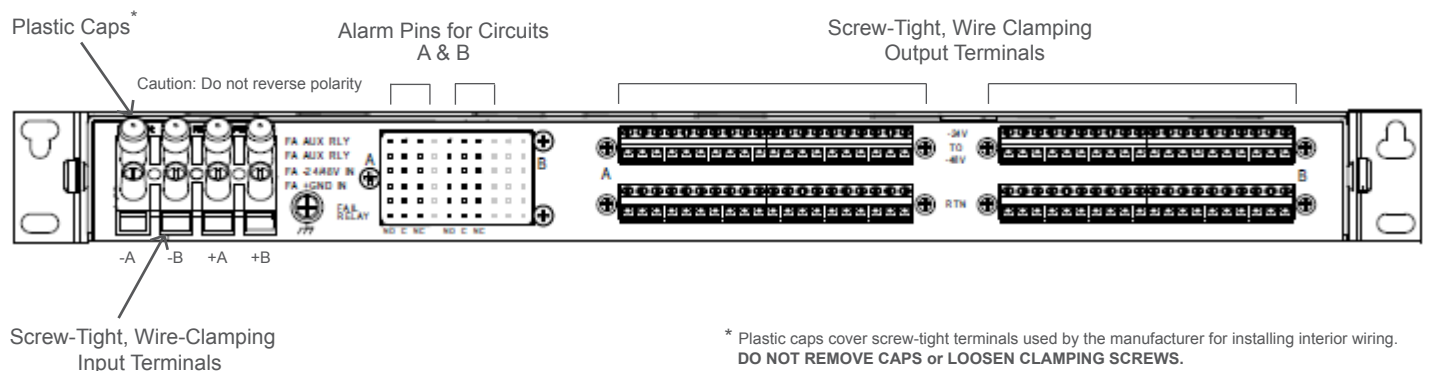


Figure 4 - Model 06004-11 (Rear View)

Model 06004-11 includes a fail-safe circuit. Schottky diodes are cross-connected at the input to the power distribution circuits. When both power supplies are energized, power is balanced between the two supplies by the diodes. If one of the power supplies loses its power or is shut down, the other supply shares its power with both outputs (A and B) through the Schottky diodes. The positive battery return circuits for A and B are common since both circuits must operate from either the A or B power source. The fail-safe feature limits the A and B inputs to 15A maximum for each bus (total 30A per panel).

NOTE: For the Fail Safe load sharing to function properly, the capacity of each of the user-supplied external feeder fuses or breakers must be greater than the total load of the panels A and B outputs combined. For example, if the panel's total Load A = 10A and Load B = 10A, then the feeder fuse for Side A and Side B must each be at least 20A.

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

1.2 Specifications

Physical:		Specifications:	
Dimensions (nominal without bracket)*	Width:	17 in. (432 mm)	
	Height:	1.75 in. (44.4 mm)	
	Depth:	9.25 in. (235 mm)	
Weight		8.5 lb (~3.8 kg)	
Ground terminals	Screws:	#10-32 Phillips** panhead	
	Torque:	20 in.-lb (~2.26 N•m), max.	
	Wire:	Same size as input terminals	
	Ring Lug:	Burdny T1010, 12 AWG, no insulation; AMP 35771, 12-10 AWG, no insulation	
Material††	Cold-rolled steel, powder-coat telcom grey		
* See "1.7 Schematics" on page 12 for complete dimensions			
** Screws with cross-recessed heads			
†† Custom color/finish available			
Mechanical:		Specifications:	
Input terminals	Type:	Screw-tight, wire-clamping	
	Wire:	14 to 6 AWG, copper wire	
	Torque:	16 in.-lb (1.80 N•m), max.	
Output terminal	Type:	Screw-tight, wire clamping	
	Wire:	22 to 14, copper wire	
	Torque:	4.5 in.-lb (0.51 N•m), max.	
Alarm terminals–Wire wrap	.045 in. square wire-wrap pins on .200 in. centers. Use 18 to 22 AWG copper		
Environment:		Specifications:	
Temperature range, ambient	-17°C to 49°C (0°F to 120°F)		
Humidity	0% to 90%, non-condensing		

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

Electrical Interface:		Specifications:
Operating voltages, nominal		-24 VDC to -48 VDC
Current capacity	06004-01	20A per bus (40A total for both buses), max. with 20A ceramic input fuse (Type ABC)
	06004-11	15A per bus (30A total for both buses), max. with 20A ceramic input fuse (Type ABC)
Fuse capacity		20 (each side)
Maximum output interruption device rating		10A GMT fuse
Maximum continuous output load rating		7A for a 10A fuse
Alarm contact relay		2A @ 30 VDC
Panel heat dissipation per 20A bus		3.9W (13.3 Btu/hr) @ 0% load
Percentage of full load heat dissipation at nominal voltage		Less than 1% of total load wattage
Reliability:		
MTBF		200,000 hr

1.3 Inspection

Please read these instructions carefully before beginning installation. If you need assistance, call Telect at 509-926-6000 or email Telect at getinfo@telect.com.

Inspect equipment after unpacking and compare it to the packing list.

Immediately report any shipping damage, defects or missing parts to Telect at 509-926-6000. Keep all documentation that comes with your shipment.

Telect is not liable for shipping damage. If the product is damaged, notify the carrier and call Telect at 509-926-6000 or email Telect at getinfo@telect.com

NOTE: For service or warranty information, please visit the Telect website at www.telect.com, email inquiries to getinfo@telect.com and click on the "Support" tab, or phone Telect at 509-926-6000.

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

1.4 Installation

! ALERT

ALERT! Install this product within a restricted access location where access is through the use of a tool, lock and key, or other means of security and is controlled by the authority responsible for the location. Only qualified personnel may install and maintain this product.

! ALERT

ALERT! Verify all connections meet requirements specified in local electric codes or operating company guidelines before supplying power. Protect this equipment with a fuse or breaker sufficient to interrupt power levels specified under “Electrical Specifications.”

! ALERT

ALERT! Each panel is tested at the factory. Telect recommends that you perform the testing outlined in the following procedure to ensure that no damage has occurred during shipping and handling. Both sides A and B input circuits, as applicable, need to be tested.

Brackets are provided for either flush or extended (increments of 0.5 in. [12.7 mm]) mounting in a 19-in. or 23-in. rack with either EIA or WECO spacing. For shipping, both pairs of brackets are affixed to the sides of the panel.

1. Remove the brackets, shown in the following illustration, from the sides of the panel.

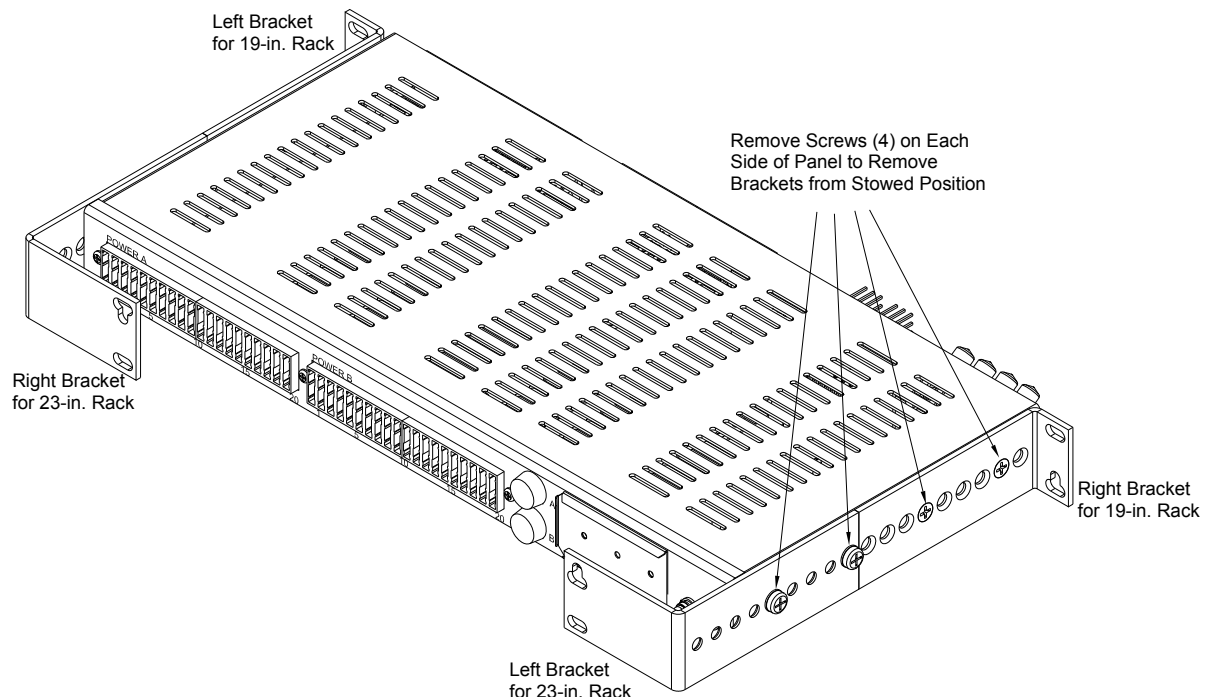


Figure 5 - Panel with Mounting Brackets in Stowed Position for Shipping

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

2. Select the proper pair of brackets and discard the other two.
3. Mount the brackets to sides of the panel, as shown in the following examples. Tighten screws to about 29 in.-lb (~3.3 N•m).

The panel can be mounted so that the panel's face is flush or extended in 0.5-in. (12.7 mm) increments from the rack. (The clover-leaf pattern on the face of the bracket points downward on the right side of the panel and upward on the left.)

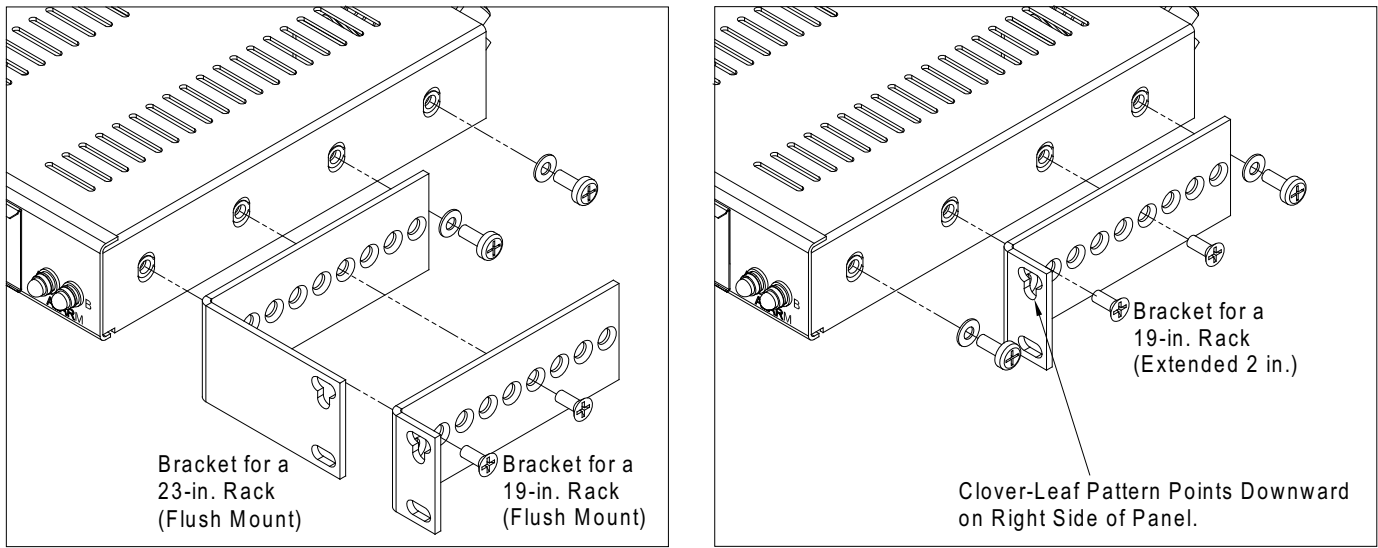


Figure 6 - Bracket Installation (Examples)

4. Locate an unused rack position and mount the panel using the four, 12-24 thread-cutting screws and lock washers provided, as shown on the right.
5. Tighten the screws to 35 in.-lb (4.29 N•m).
6. Before connecting any conductor, use a multimeter to measure the resistance between the input terminal of each side (+A and -A for Side A; +B and -B for Side B) at the rear corner of the panel. Expect 500Ω or more for both Side A and Side B.

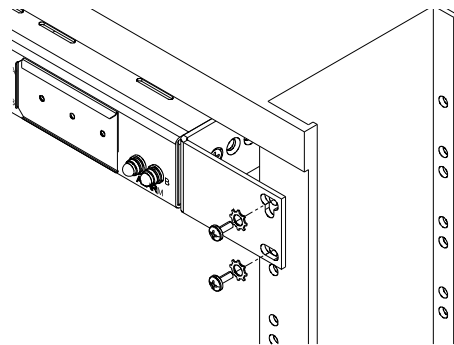


Figure 7 - Mounting the Panel



WARNING

WARNING! Failure to properly ground this equipment can create hazardous conditions to installation personnel and to the equipment.



ALERT

ALERT! Only use components and crimping tools approved by agencies or certifying bodies recognized in your country or region such as Underwriter's Laboratories (UL), TUV, etc.

7. For ground wiring, use a listed (approved) crimping tool to attach a listed (approved), single-hole compression lug suitable for a #10 (~5 mm) screw onto a suitable ground wire.
Ground wire should be same gauge as the input wiring. Input wiring size depends solely on input interruption device at the primary power distribution unit.

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

- If necessary, use a coarse, non-metallic cleaning pad to clean the lug and stud.
- Telect recommends that you lightly coat antioxidant on the lug, grounding screw and surrounding contacting surface.
- Connect the lug to the rear panel using the ground screw provided. See Figure 1.
- Tighten the screws to 20 in.-lb (~2.26 N•m).

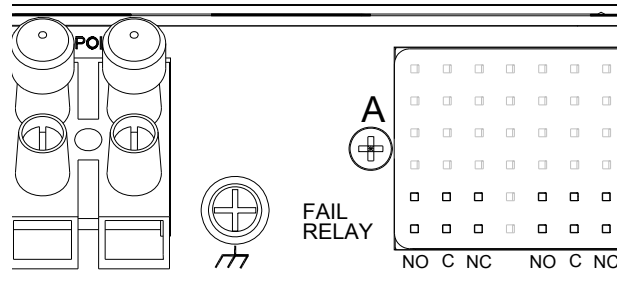


Figure 8 - Connecting the Lug to the Rear Panel



WARNING

WARNING! Before connecting input power cables, make sure input power to panel is turned off.

- For input wiring — wiring used as inputs to this distribution panel — strip approximately $\frac{3}{8}$ in. (~10 mm) of insulation from the end of suitable input conductors.

Input conductor (14 to 6 AWG) must match or exceed the rating of the fuse or breaker at the PDU. (Stranded wires should be tinned.)

- Lightly coat antioxidant on the bare conductors.
- Insert the conductors at the bottom of the screw-tight terminals, as shown on the right.
- Tighten screws to 16 in.-lb (1.80 N•m).

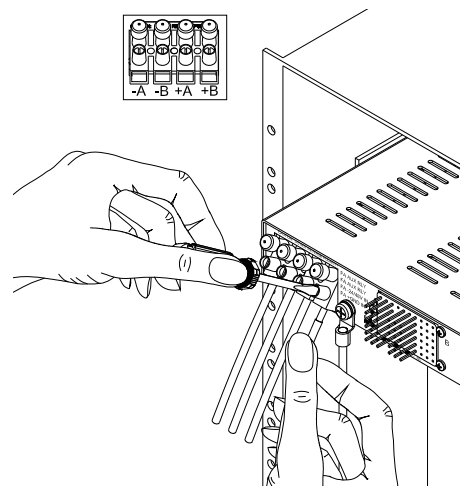


Figure 9 - Inserting Conductors



ALERT

ALERT! -24 VDC to -48 VDC always goes to -A and -B. RTN always goes to +A and +B. RTN always goes to the other terminal. For Model 06004-11 with fail-safe circuitry, make sure that RTN is common to both Side A and B.

- Make sure power is off (open breaker, dummy fuse or vacant fuse holder at the power distribution unit or PDU), before connecting this panel's cables to the PDU.
- Make sure that only dummy GMT fuses are installed in this panel or that the GMT fuse holders are vacant.
- Enable the fuse or breaker at the PDU (25A max. for Model 06004-01; 35A max. for Model 06004-11 which contains a fail-safe circuit) to turn on Feed A to Side A of the panel.

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

19. Check voltage and polarity *at the input connectors of the panel*. Also, check that:

- The **A** LED on front of the panel turns on (green)
- The **B** LED must remain red

If the **A** LED doesn't turn green, recheck polarity at input connectors. (Reversing input connections will not harm the panel.) However, if the input power leads were reversed, the fuse fail relay will fail to energize, causing the normally open contacts to remain closed and normally closed contacts to remain open. If necessary, check across the FAIL RELAY alarm pins located on the rear of the panel as shown in Figure 9.

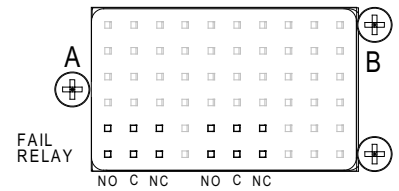


Figure 10 - Fail Relay Alarm Pins

20. On the rear of the panel, with **A** LED lit (normal operation), but with **B** LED off (failure operation), test the Side-A FAIL RELAY pins:

- Expect continuity (0Ω) between Terminals **C** and **NC**
- Expect an open circuit ($\infty\Omega$) between Terminals **C** and **NO**

21. Conversely, when testing the Side-B pins:

- Expect an open circuit ($\infty\Omega$) between Terminals **C** and **NC**
- Expect continuity (0Ω) between Terminals **C** and **NO**

22. Repeat Steps 18 to 21 for Feed B and observe that the **B** LED turns green. Across all FAIL RELAY alarm pins:

- Expect continuity (0Ω) between Terminals **C** and **NC**
- Expect an open circuit ($\infty\Omega$) between Terminals **C** and **NO**

23. For output wiring, strip off $\frac{1}{4}$ in. (~7 mm) of insulation.

Like the input terminals, the output terminals are screw-tight, wire-clamping. The output terminals will accommodate 14-AWG to 6-AWG conductors. Like the output terminals, stranded wires for outputs should be tinned.

Remember: output conductors must be rated at or above the amperage rating of the GMT fuse. For example, use no smaller than #16-AWG output wiring for 10A output fuses. Do not exceed 8A continuous load for a 10A fuse.

! ALERT

ALERT! GMT fuses have a smaller inherent electrical resistance resulting in a small inherent power loss. For this reason, the GMT fuse manufacturer recommends that the load for GMT fuses up to and including 7.5A not exceed 80% of the fuse rating and that the load for 10A GMT fuses not exceed 70% of the fuse rating. (For example, 10A fuse x .70 = 7A max. load). Total load of all GMT outputs on each side must not exceed 20A for a panel *without* a fail-safe circuit or 15A for a panel *with* a fail-safe circuit.

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

24. Telect recommends that you lightly coat antioxidant on bare wires before connecting to output terminals. (NEC specifies only one conductor and load for each output terminal.)
25. Tighten the screws to 4.5 in.-lb (0.51 N•m).
26. Connect the other end of output wires to *load*.
27. Record the circuits on the designation card provided, as specified by the operating company procedure. (The front side of the card is shown in Figure 10.)

The designation card has entries for Outputs 1-10 on the front and 11-20 on the rear. Use the left half of each side for Side A outputs and the right half for Side B outputs.

28. Make sure the inputs at *the loads are disabled* by removing all power cards or all input fuses at the load equipment. (Always follow recommended operating company guidelines when disabling load equipment.)

INPUT FUSE			INPUT FUSE		
FUSE	AMP	CIRCUIT	FUSE	AMP	CIRCUIT
1			1		
2			2		
3			3		
4			4		
5			5		

INPUT FUSE			INPUT FUSE		
FUSE	AMP	CIRCUIT	FUSE	AMP	CIRCUIT
6			6		
7			7		
8			8		
9			9		
10			10		

Figure 11 - Designation Card



WARNING

WARNING! Use only UL-listed or UL-recognized component secondary protection devices.

29. Insert the proper sizes of GMT fuses in designated fuse holders using the designation card to identify circuits. Check voltage and polarity *at input of loads*.
30. After all designated GMT fuses have been installed, check that the **A** and **B** LEDs are still green. If an output fuse blows, the corresponding **A** or **B** LED will turn red; if an *input* fuse blows, the corresponding **A** or **B** LED will be orange or amber.

Again, test FAIL RELAY alarm pins on rear of the panel. As before:

- Expect continuity (0Ω) between Terminals **C** and **NC**
- Expect an open circuit ($\infty\Omega$) between Terminals **C** and **NO**

31. If available, replace one of the output fuses with a blown fuse and check that the **A** and **B** LED changes to red. Check the FAIL ALARM pins again:

- Expect an open circuit ($\infty\Omega$) between Terminals **C** and **NC**
- Expect continuity (0Ω) between Terminals **C** and **NO**

32. When finished, re-install the operable fuse.
33. Do the same with one of the input fuses. Notice that the **A** or **B** LED changes to amber. The FAIL RELAY alarm pins will indicate a failure condition.

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

34. If desired, wire-wrap the remote external audio/visual alarm indicator wires (solid copper wires, #22 to #18 AWG) to the alarm terminals. See “Alarm Wiring”, following this section.
35. One by one, re-enable the load equipment and verify proper operation.
36. Fold the designation card on the score line and slip into the holder on the front of the panel, as shown in Figure 11.

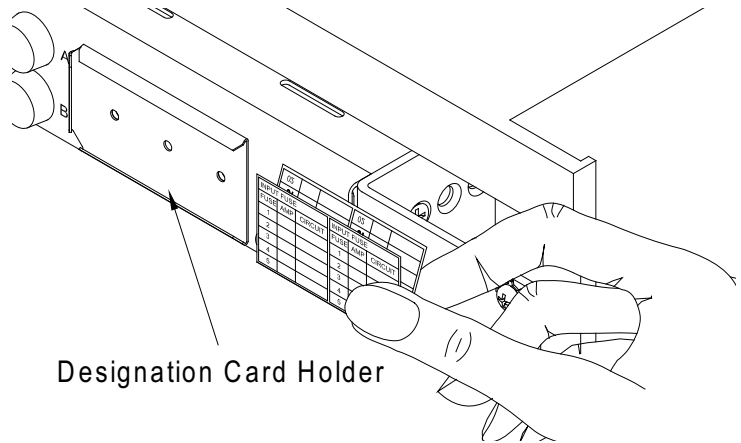


Figure 12 - Inserting the Designation Card

1.5 Wiring

Model 06004-01 has a standard alarm relay (FAIL RELAY) for each feed — one for Side A and one for Side B. Model 06004-11 contains the standard alarm relay plus an auxiliary relay (AUX RELAY) that can be triggered externally. All relays have two sets of Form C dry contacts for wiring to audible and visual alarm indicators.

Audible and/or visual failure indicators can be wired to the alarm pins in several ways.

1.5.1 Standard Alarms

When an input or output fuse blows the relay is de-energized and the normally open contacts close and the normally closed contacts open to indicate the failure.

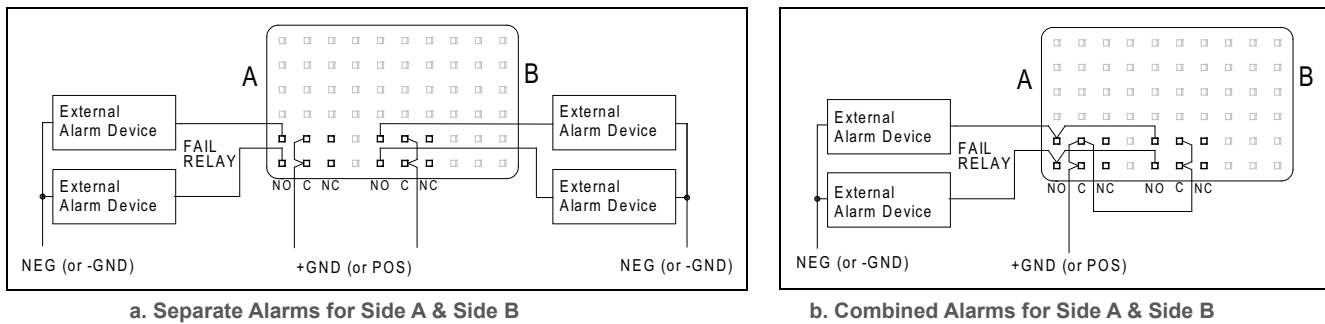


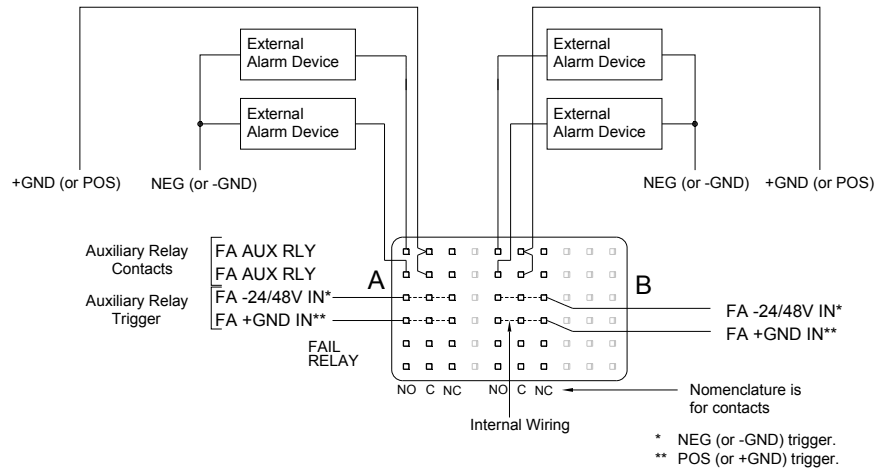
Figure 13 - Standard Alarm Wiring

1.5.2 Auxiliary Alarms

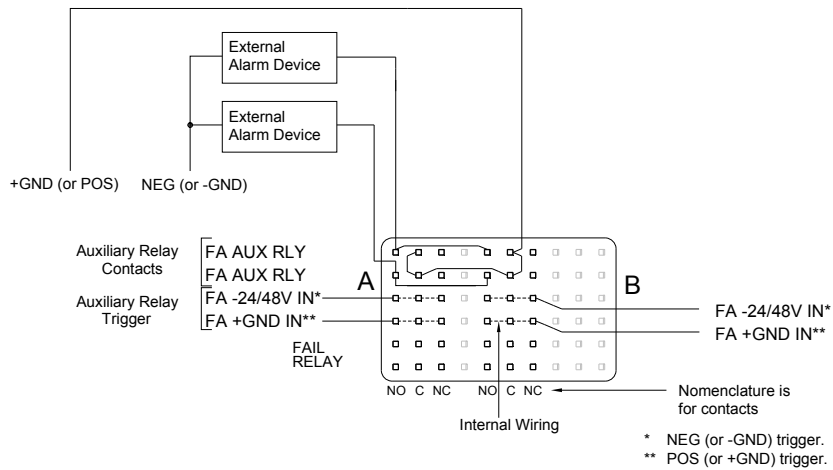
Auxiliary alarms are triggered from either an external CO or site source or by the standard alarm relay. Like the standard relay, when triggered, the auxiliary relay is de-energized, causing the normally open contacts to close and the normally closed contacts to open.

Low-Current 20/20 GMT Series Fuse Panels

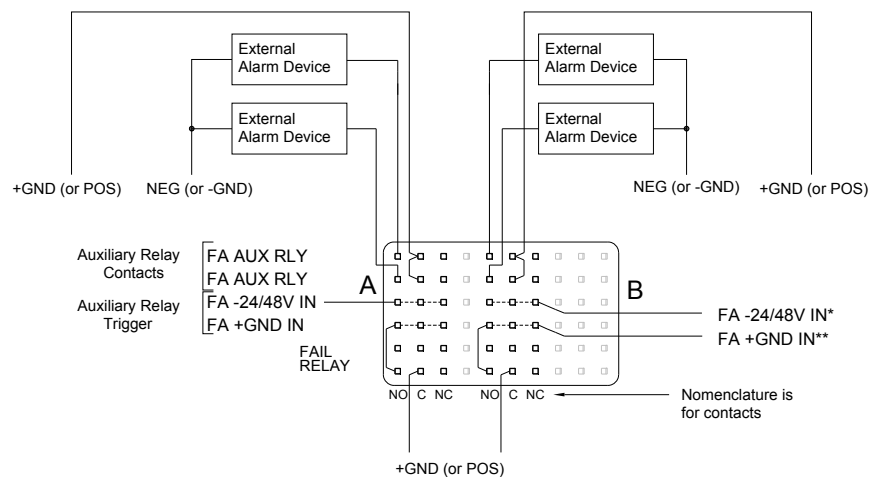
Power :: Models 06004-01 & 06004-11 Installation Guide



a. Separate Alarms for Side A & Side B



b. Combined Alarms for Side A & Side B



c. Using the Standard Alarm to Trigger Auxiliary Alarms When a Fuse Blows

Figure 14 - Auxiliary Alarm Wiring

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

1.6 GMT Fuses

GMT Fuse	Part Numbers GMT Fuse
.18A Yellow (YEL)	130781
¼A Violet (VIO)	100151
½A Red (RED)	004001
¾A Brown (BRN)	004008
1A Gray (GRY)	100991
1-½A White (WHT)	004006
1-½A White/Yellow (WHT/YEL)	004011
2A Orange (ORN)	004002
2.5A White/Orange (WHT/ORN)	130783
3A Blue (BLU)	004012
3.5A White/Blue (WHT/BLU)	130782
4A White/Brown (WHT/BRN)	004013
5A Green (GRN)	004014
7-½A Black/White (BLK/WHT)	004010
10A Red/White (RED/WHT)	004015

Order E70319-001RC for each ¼ X ¼, 20A 250V input fuse.

For dummy fuses order 101557. For GMT safety (splash/splatter) covers order 116915.

1.7 Schematics

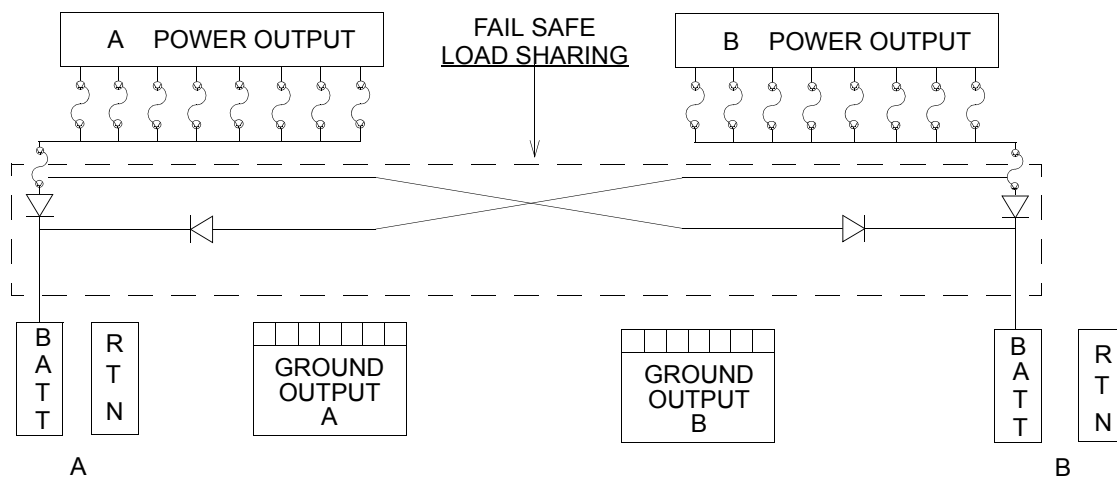
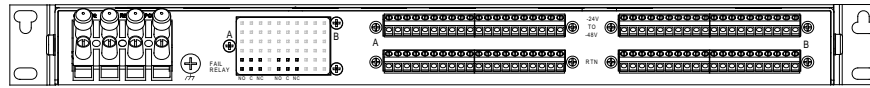


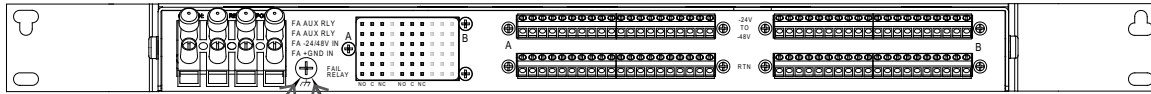
Figure 15 - Block Diagram

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide



Model 06004-01

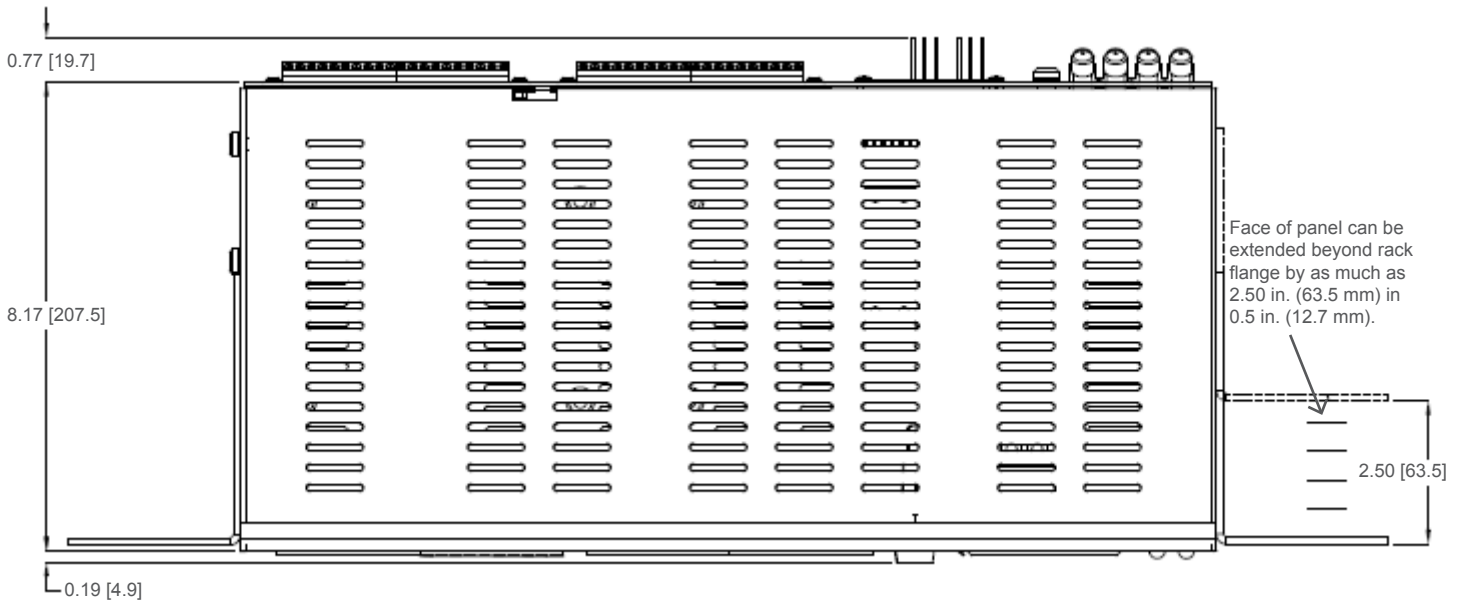


Model 06004-11

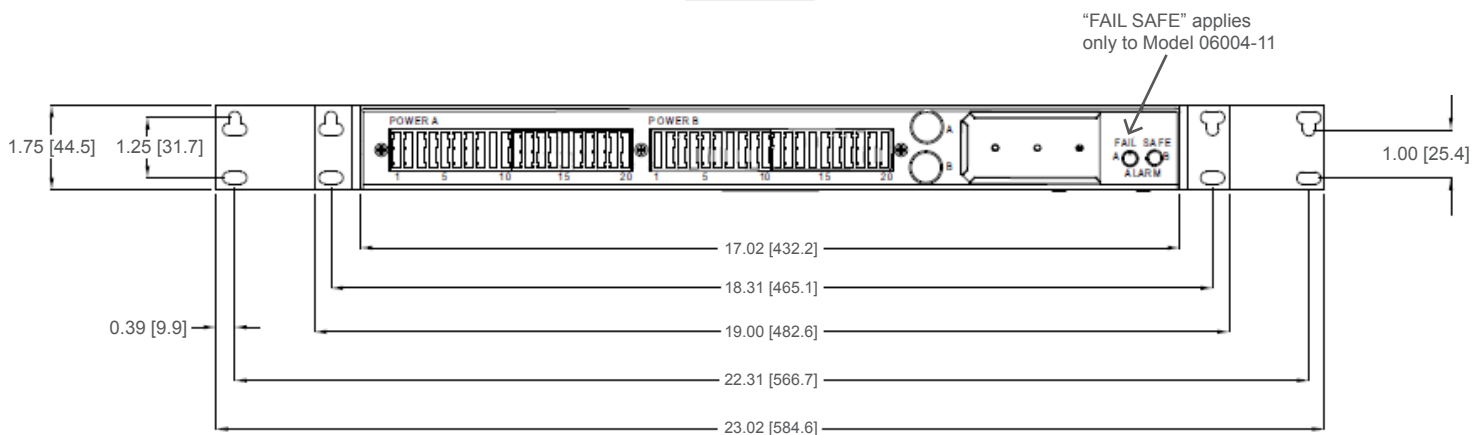
#10-32 Panhead Screw R 0.21 [R5.4]

Min. Length of lug tongue is 0.43 in. (10.8 mm)

REAR VIEWS (Rotated)



TOP VIEW



FRONT VIEW

Figure 16 - Rear, Top and Front Views

Telect assumes no liability for the application or use of these products. Neither does Telect convey any license under its patent rights or the patent rights of others. This document and the products described herein are subject to change without notice.

Low-Current 20/20 GMT Series Fuse Panels

Power :: Models 06004-01 & 06004-11 Installation Guide

U.S. Conformity Assessment Body Certificate of Conformity

No. 174-0923-1-0



Upon assessment of Technical Construction File 174-0923-1-0-TCF
it has been determined that the

Hendry Telephone Products Power Distribution and Fan Panels

conform to the protection requirements set out in article 4 of
EMC Directive 89/336/EEC

as per EN 55022 :94 with A1 :95 & A2 :97 (class A),
EN 61000-3-2 :95, EN 61000-3-3 :95, EN 300 386 V1.2.1 :00-03,
and ETS 300 132-2;

and in accordance with the Agreement on Mutual Recognition between the United States of America and the European Community, Sectoral Annex for EMC, this U.S. Conformity Assessment Body hereby certifies attestations of compliance to the EMC requirements so demonstrated.

Steven C. Halme
Sr. Program Manager/EMC Engineer
(714)879-6110

Fullerton, CA, USA 10/30/01
(date signed)

Betty Matteson
Quality Assurance Manager
(714)879-6110

Fullerton, CA, USA 10/30/01
(date signed)

National Technical Systems

1536 E. Valencia Drive; Fullerton, CA, USA 92831-4797; Tel (714) 879-6110; Fax (714) 879-6117