TRIMM, INC.

Total Front Access Combo Fuse Panel Installation Guide

Document INS-847xxxxxxx

This manual covers the following part numbers-
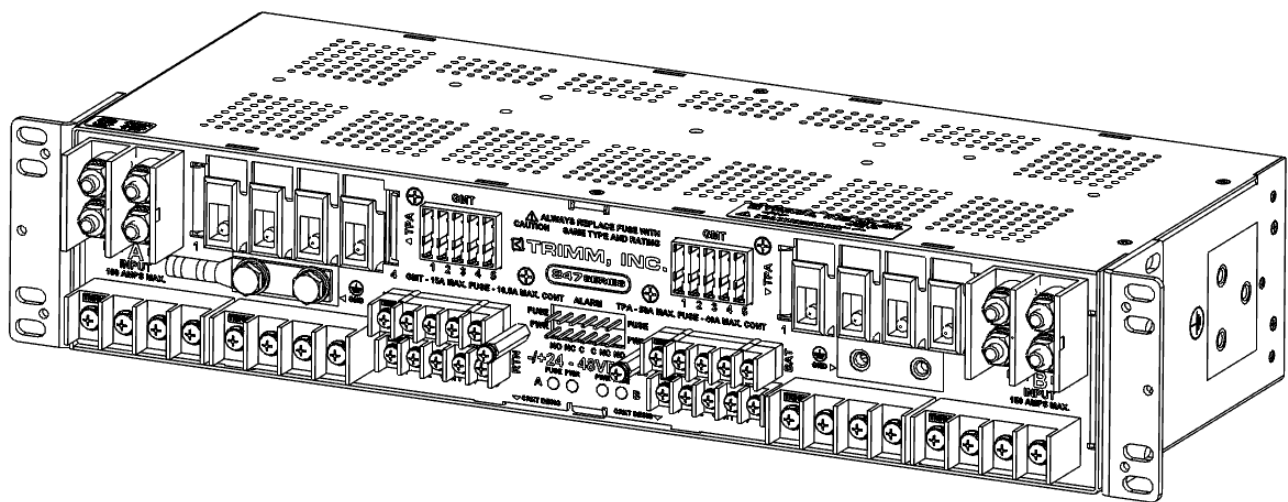Trimm *847xxxxxxx* Family

Table of Contents

INS-847xxxxxxx Rev B. 05/20/19 Total Front Access Combo Fuse Panel Installation Instructions

Section 1- General Information

1.1 - Product Description
Trimm, Inc.'s Total Front Access Combo series of power distribution fuse panels are available with four different fuse types to cover a wide range of applications that require total front access. Total front access design places all input/output connections and fuses on the front of the panel. All panels include multiple GMT fuse positions per bus with KLM, TPM or TPA fuses for higher power loads. Power and alarm status are displayed locally with relay contacts for remote power fail and fuse fail indication. This product is suitable for central office locations, network telecommunication facilities, data centers and outside plant enclosures. These panels may be installed in GR-3108 Class 3 environments with the exception of salt fog exposure.

1.2 - Inspection
Inspect the panel for any noticeable defects, missing parts (See "What's Included" below), or shipping damage. Please retain the original packaging in case you need to return the product to Trimm. Please notify Trimm, Inc. if any problems are found at 1-800-298-7466. No products may be returned to Trimm, Inc. without the proper Return Material Authorization (RMA) number.

1.3 - What's Included
This unit should be packaged with the following items. Please notify Trimm, Inc. if any of these items are not included so a replacement can be sent out right away.

- Front Access fuse panel (verify part number from sticker on top of the unit.)
- #12-24 x ½" self-tapping mounting screws
- Compression lugs (For Earthing/grounding connection only.)
- Input connector fasteners
- Installation instruction packet

Section 2 – Before You Begin

⚠ WARNING

This panel should be installed in a restricted access location by qualified service personnel only.

All connections/methods should meet all national/local electrical codes as well as company specific methods or procedures. Failure to do so may result in damage to the equipment, and or personal injury.

No field service is required on these units.

A readily accessible disconnect device must be incorporated into the supply wiring for this product. This disconnect device must be capable of interrupting the maximum available fault current determined by analysis for your system.

2.1 - Tools Required For Installation
Depending on the part number ordered the following tools may be needed to install this product.

- Multi-meter
- Wire cutter/stripper
- No. 2 Phillips head torque screw driver
- Torque wrench with 7/16" socket
- Suitable listed crimp tooling for the field wiring terminals
- Cable ties or lacing cord
- Writing utensil or label maker for circuit designation
- Wire-Wrap tool for alarming connections (.045" square pins)

2.2 - Input Bus Amperage Rating
See the table below for recommended over-current device and input wire sizing.

847 Family Input Amperage Rating Table		
Input Bus Rating	Max. Over-current Device Size	Wire Size
150 Amp	187.5 Amp	2/0 AWG

2.3 - Fuse Sizing Information
The fuse manufacturer recommends that GMT fuses rated 8 to 15 Amps be continuously operated at no more than 70% of their nominal current rating. All fuse types/amperages may be continuously operated at 80% of their nominal current rating.

2.4 - Fuse Replacement Information
The correct fuses may be ordered from the table at the end of this document. See section 7

2.5 - Wiring Temperature Information
The wiring for this product should be rated 90° C or better. Wiring protected by GMT fuses shall be at least one size larger than the minimum required wire based on the National Electric Code, NFPA 70 ampacity tables.

2.6 - General Notes on Terminal Connections
- Bare conductors should be coated with appropriate antioxidant compound before crimp connections are made.
- Use appropriate shrink tubing over un-insulated terminal barrels.
- Ensure that the mating surface of both the terminals and their connection point are clean and free of paint.
- Appropriate antioxidant should be applied to the mating surfaces of all connections.
- Use only listed terminals and crimp tooling when making connections.

2.7 - Operating Voltage Ranges
The following table lists the minimum and maximum voltage that this product has been designed to operate in.

Operating Voltage Information		
Nominal Voltage	Minimum Voltage	Maximum Voltage
5 VDC	4 VDC	7.5 VDC
12 VDC	10 VDC	15.0 VDC
24 VDC	19 VDC	28.3 VDC
48 VDC	40 VDC	60 VDC

2.8 - Battery Return Treatment
This product has been designed with the battery return connection isolated from the chassis ground (Earthing) connection. This product is suitable for use with either DC-I or DC-C (Isolated or Common) battery return connection applications.

INS-847xxxxxxx Rev B. 05/20/19 Total Front Access Combo Fuse Panel Installation Instructions

2.9 - Terminal Information

The following terminals or suitable equivalents may be used for connection to this product. Only listed terminals and their recommended crimping tooling should be used. This recommendation is based on the panel's bus amperage rating.

	847xxxxxxx Family Suggested Field Wiring Terminals					
Connection	Trimm Part Number [1]		Wire Gauge	Stud Size	Hole Spacing	Max. Width
	Standard Conductor	Flex Conductor				
Input (150 Amp bus)	6502021221	6502021242	2/0 AWG	1/4"	5/8"	.625"
Output Barrier Strip (GMT, KLM, or TPM fuse)	Up to 10 AWG fork or ring terminal with a #6 stud (.325" max. tongue width)					
Output Barrier Strip (TPA fuse type)	Up to 8 AWG fork or ring terminal with a #8 stud (.500" max. tongue width)					
Chassis Ground	Compression lugs included (1 per bus)					
Remote Alarm	Set Screw or Wire-Wrap (Non required)					
1-The above list is only a suggestion. Equivalent terminals may be used provided they are listed and crimped with the appropriately listed crimp tooling.						

Section 3 – Rack Mounting

3.1 - Rack Mounting

Secure the panel to the rack using the self tapping screws provided. For additional rack width or offset mounting, remove the screws holding the brackets to the chassis, adjust the brackets to allow for optional mounting and torque the screws to 10 in-lbs. max.

3.2 - Additional Rack Mounting Instructions

If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the unit's maximum operating temperature. Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

Section 4 – Input and Grounding Cabling

⚠ WARNING

Before installation, verify that the input power disconnect device is turned "OFF"

4.1 - Chassis Grounding (Earthing)

This product is suitable for use in either a Common or Isolated (CBN or IBN) Bonding Network. This panel includes a compression lug for grounding. Crimp the ground wire to the terminals provided. Attach the wires to the panel using the supplied bolts and washers. Torque fasteners to 24 in-lbs. Attach other end of ground pigtail to the rack or other suitable grounding location. Reliable Earthing of rack-mounted equipment should be maintained.

4.2 - Input Wiring

Remove the input covers and locate the flat washers and #1/4-20 locking nuts supplied with this panel. Crimp the battery and return wires to the proper terminals. Attach the wires to the panel using the supplied flat washers and locking nuts. Torque the fasteners to 40 in-lbs.

4.3 - Power Verification Test

This test is to verify proper function of the panel prior to the connection of loads. Turn on the over current protection/disconnect device supplying power to the A side bus. Use a multi meter to verify that voltage and polarity are correct at the input connection. Verify that the PWR LED is illuminated "green" and FUSE ALARM LED is not illuminated. Verify that continuity is present between C and NC alarm contacts. Install a failed fuse if possible and verify that the FUSE ALARM LED changes to "red". With the failed fuse in place verify that continuity is present between C and NO fuse alarm contacts. Repeat these steps for the B side bus if applicable.

Section 5 – Output and Alarm Cabling

⚠ **WARNING**

Before continuing installation, verify that the over current protection/disconnect device is turned "OFF"

ⓘ **ALERT**

Please note these fuse connections or terminals have been designed with a floating contact as a design feature on the output connections. This floating feature should not be deemed as a loose connection during installation and maintenance so long as the connections were initially tightened to the recommended torque as noted in this installation guide provided with the product.

Note about Voltage at the KLM Outputs with No Fuses Installed

By design the KLM fuse type does not include any blown fuse indication method to determine the fuses status. Thus, this type of fuse requires a current limited sensing voltage to detect the presence of a load attached to the panel and to determine if the fuse has blown or is simply not installed in the holder. This voltage is present at the output connections even without a fuse installed in the holder when the panel is energized.

Note about Dual Input Equipment Fed from KLM Fuses

Proper alarm function requires that KLM fuse outputs are loaded. If your equipment receives power from 2 isolated feeds like the A and B buses of this fuse panel you may need to install a 1/4W 100k ohm or greater resistor across the KLM outputs (between the battery and return output connection of each filled position) for proper alarm function. Actual resistance value may differ depending on the device being powered. This practice is not always necessary depending on the circuitry of your equipment.

Note About KLM Remote Alarm Reset Functionality (Only for panel part number 8471101001 with ACO button on front of panel)

This panel is equipped with individual bus alarm cutoff switches that allow for the reset of local and remote alarm status of the panel. To reset alarms on the A or B bus simply press the ACO button on the front of the panel corresponding to the bus you'd like to reset. Individual position alarms may also be reset simply by replacing blown fuses in the positions indicating alarm.

5.1 - Output Wiring (Barrier Strip Connections)

This panel accepts #10 to #22 AWG (#8 to #22 AWG for TPA panels) wire to feed into the battery and return connections. Strip the wires to the appropriate length and crimp to the terminals. Remove or loosen (for fork terminals) the screws for each fused position. Attach the terminal onto the corresponding position for both battery and return connections. Torque the #6 screw to 10 in-lbs. (1.1 Nm) for any GMT, KLM or TPM fuse positions or 16 in-lbs. (1.8Nm) for the #8 screws (TPA Fuse panel).

5.2 - Alarm Wiring

The alarm connections use standard wire wrap pins or set screw connectors depending on the part number ordered. To connect the panel to an alarm system, attach the alarm wires to the appropriate pins (C-NC or C-NO) as outlined below.

Continuity at the fuse fail alarm connector is established at positions C and NC when all the fuses are good (not failed). Continuity is established at positions C and NO when any fuse has blown (failed).

If equipped with a power fail alarm, continuity is established at positions C and NC when the panel is energized or at C and NO when the panel is not energized or a loss of power for that bus has occurred.

If equipped with Major/Minor alarming for external monitoring, the C,NC,NO contacts function as above when you provide a battery (B pin) and return (R pin) signal to the alarm circuitry. This voltage will enable the panels appropriate LED indicator and switches continuity on the alarm pins. The pin labeled X is not used. The voltage supplied to the B and R connections shall be the same as the input voltage to the panel. (I.e. if your input voltage is -48VDC then you shall supply -48VDC signal to the B and R Major pins to enable a Major alarm). When voltage is not present at the B and R pins the associated LED is not illuminated and the remote alarm contacts show continuity between C and NC.

Section 6 – Final Installation

6.1 - Fuse Installation
Orientate and install the correct fuse into its position. Record the protected equipment identification and location on the supplied designation card.

6.2 - Energizing the Panel
Once all steps have been completed above, and a final inspection of the installation has been completed, you may energize the fuse panel by switching the corresponding interrupt device to its "ON" position.

Section 7 – Fuse Ordering Information

GMT FUSES			
PART NUMBER	FUSE AMPERAGE	PART NUMBER	FUSE AMPERAGE
0300097000	18/100 AMP	0300097013	3-1/2 AMP
0300097001	1/4 AMP	0300097012	4 AMP
0300097016	3/8 AMP	0300097009	5 AMP
0300097002	1/2 AMP	0300097011	7-1/2 AMP
0600097065	65/100 AMP	0300097010	10 AMP
0300097003	3/4 AMP	0300097014	12 AMP
0300097004	1 AMP	0300097015	15 AMP
0300097005	1-1/3 AMP	0300097320	20 AMP [1]
0300097006	1-1/2 AMP	0300097100	DUMMY FUSE
0300097007	2 AMP	0300097209	GMT/X FUSE COVER
0300097008	3 AMP		
1- 20 Amp GMT type fuses may only be installed in panels designed/rated for its use. See product specifications.			

INS-847xxxxxxx Rev B. 05/20/19 Total Front Access Combo Fuse Panel Installation Instructions

TPM FUSES	
PART NUMBER	FUSE AMPERAGE
7500192703	3 AMP
7500192704	4 AMP
7500192705	5 AMP
7500192706	6 AMP
7500192707	7 AMP
7500192708	8 AMP
7500192710	10 AMP
7500192712	12 AMP
7500192715	15 AMP
7500192720	20 AMP
7500192725	25 AMP
7500192730	30 AMP

TPA FUSES	
PART NUMBER	FUSE AMPERAGE
7500192003	3 AMP
7500192005	5 AMP
7500192010	10 AMP
7500192015	15 AMP
7500192020	20 AMP
7500192025	25 AMP
7500192030	30 AMP
7500192040	40 AMP
7500192050	50 AMP

KLM FUSES	
PART NUMBER	DESCRIPTION
0300268431	1/10 AMP
0300268432	1/8 AMP
0300268433	2/10 AMP
0300268434	1/4 AMP
0300268435	3/10 AMP
0300268436	1/2 AMP
0300268437	3/4 AMP
0300268401	1 AMP
0300268438	1-1/2 AMP
0300268402	2 AMP
0300268403	3 AMP
0300268404	4 AMP
0300268405	5 AMP
0300268406	6 AMP
0300268408	8 AMP
0300268410	10 AMP
0300268415	15 AMP
0300268420	20 AMP
0300268425	25 AMP
0300268430	30 AMP

INS-847xxxxxxx Rev B. 05/20/19 Total Front Access Combo Fuse Panel Installation Instructions

Section 8 - Revision Record

Legend: Type   R=Revision   A=Addition   D=Deletion
                   T=Typo   N=New   V=Review

Revision	Date	Type	Section/Comments
A	02/11/11	N	New Document
B	05/20/19	A	Updated to include details about new KLM alarm board function

INS-847xxxxxxx Rev B. 05/20/19 Total Front Access Combo Fuse Panel Installation Instructions