100A/60A Universal Voltage GMT Fuse Panels With Enhanced Power/Fuse & Bay Alarms

Power :: HPGMTXX & GMTXX

Installation Guide

Applies to : GMT10 :: GMT10FA :: GMT20 :: GMT20S :: HPGMT10-BLK :: HPGMT20 :: HPGMT20RC :: HPGMT20S

1.509.926.6000 :: telect.com

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1.1 Overview

Telect's 60A and 100A GMT Panels are compact 1RU EIA power panels enabling ± 24 and -48 Vdc power protection for a variety of wireline and wireless telecommunications and data equipment. Most GMT-Series panels fit either 19-in. or 23-in. racks. (See the comparison chart on page 2.) All panels are white except HPGMT10-BLK, which is black.

Figure 1 - GMT Fuse Panel

The panel provides total front access to fuses and LED status. Below the bezel holding the status LEDs is a pull-out designation card holder.

All terminals for inputs, outputs, ground, and alarms are on the same side — either all on the rear or all on the front. All terminals are covered by a single full-width transparent terminal cover:

- Inputs are either dual-hole lugs for studs (100A panels) or bare conductors for barrel connectors (60A panels).
- Ground terminals accept either single- or dual-hole lugs.
- Output screw-post terminals accept either ring or forked lugs, as well as bare wire.
- Power/fuse and bay alarms terminals, along with external bay alarm trigger terminals, are wirewrap pins.

GMT-Series panels differ in load rating (60A or 100A), capacity (10, 15, or 20 GMTs per side), single or dual feed, and total front access (GMT10FA) panels vs. panels with rear-side terminals. All panels are 1RU.

The GMT fuse holders are mounted upside-down so that the GMT indicator flag flips downward when activated, making identification and detection easier, especially on tall racks. In addition, the GMT fuse holders are mounted separately — not as a fuse block — thereby making fuse- position management unnecessary when dealing with 10A, 15A, and 20A GMT fuses. Holes for color-coded fuse designation pins are located below each fuse position.

The panel also features separate power and fuse failure status LEDs and power alarm relay connections for each feed. Major and minor bay alarm LEDs and wirewrap terminals are controlled via an on-board relay triggered by an external switch closure. All on-board relay contacts are dry Form-C. All LEDs and alarm relays and contacts are located on an easily removable alarm card.

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Telect ships phoney fuses for each GMT fuse position. Visit our website (telect.com) to order GMT fuses, fuse designation pins, and other accessories. The following table shows a comparison of the GMT-series fuses.

All Telect's GMT-Series panels are UL listed (US and Canada, File E139903) and NEBS Level 3 certified, and RoHS 5/6 compliant. The HPGMT20RC is RoHS 6/6 compliant. All specifications for the HPGMT20RC are the same as the HPGMT20.

Features	GMT10	GMT10FA	GMT20	GMT20S	HPGMT10-BLK	HPGMT20	HPGMT20S
60A Max. Input	x	x	x	x			
100A Max. Iput					x	x	x
20A Max. Fuse Position	x	x		x	x	x	x
15A Max. Fuse Position			x				
Universal VDC	x	x	x	x	x	x	x
Dual Bus	x	x	x		x	x	
Single Bus				x			x
Fuse Positions per Feed	10	10	20	20	10	20	20
Rack Units	1	1	1	1	1	1	1
Width	19"	23"	19"	19"	19"	23"	19"
Front Access		x					
Stud Input					x	x	
Screw Clamp Input	x	x	x	x			
BayAlarm	x	x	x	x	x	x	x

Legend:
HP=High Power, FA=Front Access, S=Single Bus

Figure 2 - GMT-Series Comparison Chart

1.2 Specifications

Inputs:		
Voltage & Range		±20 Vdc to ±60 Vdc @ 20°C ±22 Vdc to ±58 Vdc @ 55°C
Max. Input Load Rating		60A/100A depends on model
Max. Power Dissipation at Full Load		• < 50W per side (max.) for panels rated for 60A • < 75W per side (max.) for panels rated at 100A
% of Full Load Power Dissipation		less then 1% for all models
Max. Input Interruption Device		• 75A for 60A panels • 125A for 100A panels
Input Terminals	100A Panels	Dual 1/4-20 studs on 5/8 in. centers. Torque KEPS nut (using 7/16 in. or 12 mm socket) to ~50 in.-lb (~5.6 N•m), max.
	60A Panels	Barrel-style screw-down terminals for #14 AWG to #6 AWG bare conductor. Torque to 16 in.-lb (1.8 N•m), max.

Outputs:	
Max. GMT Output Fuse (ea.)	• 20A for all but GMT20 • 15A for Model GMT20
Max. GMT Output Load (ea.)	• 14A continuous for all but Model GMT20 • 10.5A for Model GMT20
Max. Total GMT Output Per Side	• 100A for 100A panels • 60A for 60A panels
Output Terminals (Wire-Binding Screw Posts)	• #6-32 for all panels except Model GMT20 • #3-48 for Model GMT20
GMT Output Wire Size Range	• #22 to #14 AWG, depending on output fuse (.6A to 20A) for all but GMT20 • #30 to #16 AWG, depending on output fuse (.18A to 15A) for Model GMT20
Interrupt Rating	450A
Short-Circuit Withstand Current	450A

Alarms:	
Alarm Relay Contacts	Dry Form-C contacts (1A @ 30 Vdc, 0.3A @ 100 Vdc, 0.5A @ 125 Vac)
Max. Alarm Power Rating	@24V: 72 mA (1.73W) @48V: 147 mA (7.06W)
Alarm Wire Size	#22 to #18 AWG
Alarm Terminals	Wirewrap

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Grounding:	
Chassis GND Terminal Studs (With KEPS Nuts) for Dual-Hole Compres- sion Lug	#10-32 studs on 5/8-in. centers. Torque KEPS nut (using 3/8 in. or 10 mm socket) to ~20 in.-lb (~2.3 N•m), max.
GND Wire Size	• #6 (preferred) or #8 AWG for a 100A panel • #10 AWG for a 60A panel

Dimensions (Nominal):[a]	
Width x Height x Depth for all except TFA & HPGMT20[b]	17 x 1.75 x 9 in. (432x44x229mm)
Width x Height x Depth for GMT10FA & HPGMT20[c]	21 x 1.75 x 9 in. (533x44x229mm)

a. Without mounting brackets.
b. All 1RU panels and fit either a 19-in. or 23-in. rack.
c. Models GMT10FA & HPGMT20 only fit 23-in racks.

Fit & Finish	
Material	16-gauge steel
Color	White powder coat for all but HPGMT10-BLK (black)

Weights (Approximate)		
All Single & Dual Panels with 10 GMTs Per Side, Except GMT10FA		
	Installed	8 lb (3.5 kg)
	Shipping	11 lb (5 kg)
GMT20		
	Installed	11lb (5kg)
	Shipping	14 lb (6.25 kg)
Models GMT10FA & HPGMT20		
	Installed	11lb (5kg)
	Shipping	14 lb (6.25 kg)

Environment:	
Operating Temperature	-10°C (14°F) to 55°C (131°F)
Humidity	0 to 90% and noncondensing

1.3 Important Installation Guidelines

- **Elevated Operating Ambient** - If you install the rack in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, take care to install the equipment in an environment compatible with the maximum ambient temperature (TMA) specified by the manufacturer.
- **Reduced Air Flow** - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- **Mechanical Loading** - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- **Circuit Overloading** - Give consideration to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Use appropriate consideration for equipment nameplate ratings when addressing this concern.
- **Reliable Earthing** - Maintain reliable earthing of rack-mounted equipment. Pay particular attention to supply connections other than direct connections to the branch circuit (e.g., use of power strips).
- **Disconnect Device** - Incorporate a readily accessible disconnect device in the building installation wiring.

1.4 Inspection

Please read and understand all instructions before starting installation. If you have questions, contact Telect Technical Support at support@telect.com or call 1.509.926.6000.

When you receive the equipment, carefully unpack it and compare it to the packaging list. Please report any defective or missing parts to Telect Quality at quality@telect.com or call 1.509.926.6000.

Telect is not liable for trasit damaged. If the product is damaged, please report it to the carrier and contact Telect Quality.

1.5 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. This product must be installed and maintained only by qualified technicians.

Verify all connections meet requirements specified in local electric codes or operating company guidelines before supplying power. Unit shall be protected by a listed circuit breaker or branch-rated fuse rated maximum 75A (for 60A-rated feeds) and maximum 125A (for 100A-rated feeds).

All panels except Models GMT10FA and HPGMT20 can be mounted in 19-in. EIA racks. Telect also offers bracket kits for WECO and ETSI racks. (See our website at telect.com.) GMT10FA and HPGMT20 only fit 23-in. racks.

All panels can be flush-mounted or extended by 2 in. or 4 in. beyond the rack flange.

1. If necessary, remove three screws and reposition/ re-align brackets on sides of distribution the panel, as shown in the illustration on the right.
2. Locate an unused rack position, normally at the top of the rack. Mount the panel to the rack using four, #12-24 thread-cutting screws and lock washers provided, as shown in Figure 4.
3. Tighten screws to 35 in.-lb (4.29 N•m).
4. Remove the transparent terminal cover, shown in Figure 5.

⚠ WARNING

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

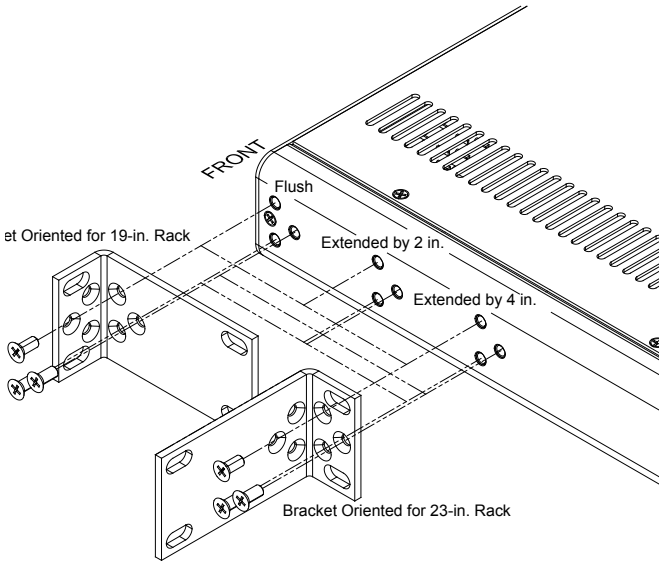

Figure 3 - Bracket Orientation

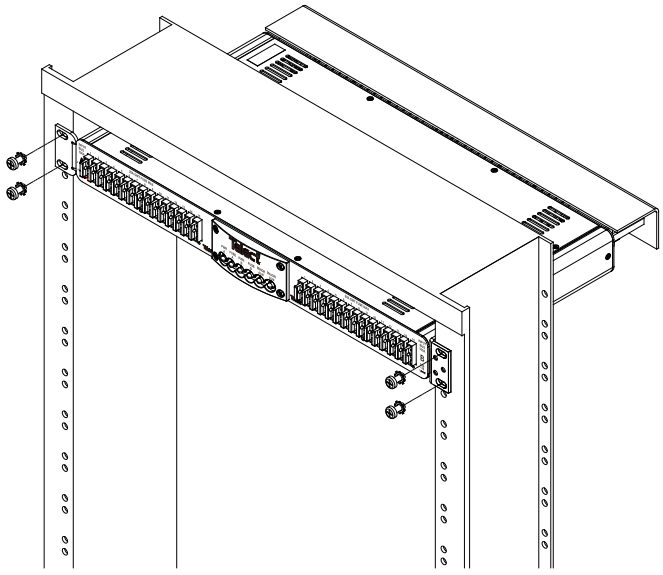

Figure 4 - Rack Mounting

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.

5. Use a listed (approved) crimping tool to attach a listed (approved), dual-hole, right-angle compression lug for #10 studs on 5/8-in. centers onto #6 AWG ground wire. (Min. #8 AWG for a 100A feed; #10 AWG for a 60A feed.)
6. If desired (highly recommended), lightly coat anti-oxidant on lug, grounding terminal, and surrounding contacting surface.
7. Connect the lug using the #10-32 KEPS nuts and flatwashers provided, as shown in Figure 5.
8. Tighten KEPS nuts to ~20 in.-lb (~2.3 N•m), max.
9. Make sure input power is off (open breaker, phoney fuse, or open fuse holder at primary power distribution unit [PDU]) before connecting this panel's input cables to that PDU.

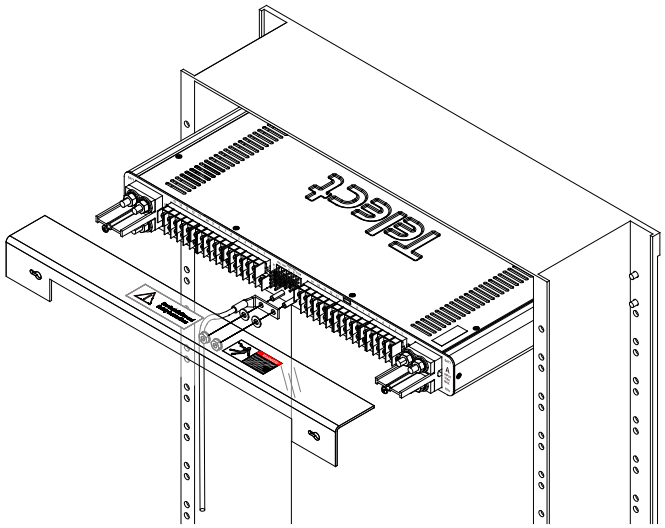

Figure 5 - Ground Lug Connection

WARNING

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

10. For input wiring — wiring used as inputs to this distribution the panel — do one of the following: (Refer to the following illustrations.)

    For input wiring on a 100A panel — (see page 9 for 60A input wiring instructions)

    a. Crimp dual-hole compression lugs onto #8 to #1/0 AWG conductors (#1/0 AWG with a 60C insulation rating, minimum for a 100A feed). Insulate lug barrels with UL94 V-0 rated heat-shrink tubing.

    b. Clean terminals and lugs with an nonabrasive, nonmetallic cloth.

    c. If desired (highly recommended), lightly coat anti-oxidant on lugs, terminals, and contacting surfaces.

    d. Connect lugs to input **BATT** and **RTN** terminals on the panel.

    e. Torque KEPS nuts to ~50 in.-lb (~5.6 N•m), max.

11. Make sure GMT fuse positions are either empty or contain dummy fuses (phoney, inoperative, all-plastic slugs).

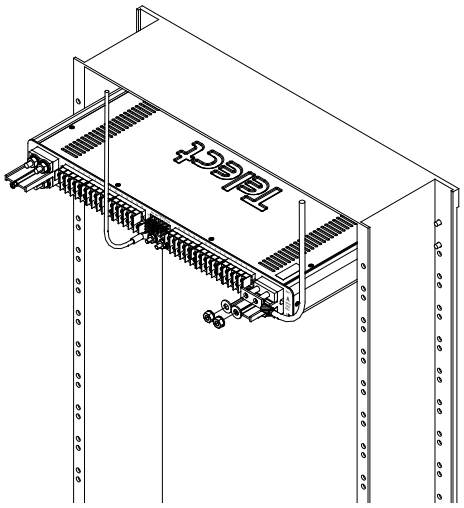

Figure 6 - Input Connections on a 100A Panel

For input wiring on a 60A panel —

a. Strip off about 3⁄4 in. (10 mm) of insulation at end of input conductors (min. #6 AWG for a 60A feed).

b. If desired (highly recommended), lightly coat anti-oxidant on the bare conductor.

c. Insert the bare conductor into the barrel connector as indicated in the illustration, and then tighten the screw to 16 in.-lb (1.8 N•m), max.

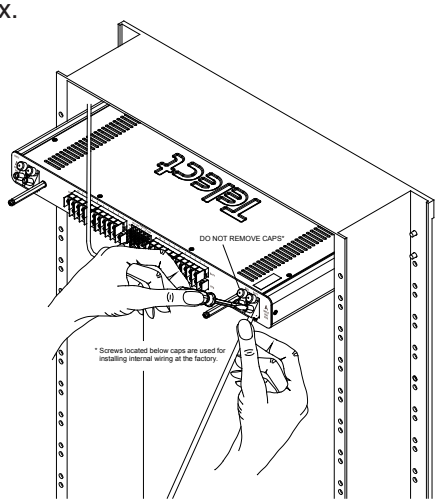

Figure 7 - Input Connections on a 60A Panel

⚠ ALERT

ALERT! Only service personnel may replace fuses. The installer must verify that a readily accessible protection device is incorporated in the building wiring feeding the fuse panel: 125A (max.) protection device for a 100A panel; 75A (max.) for a 60A panel.

12. Enable protection device (fuse or breaker) at primary PDU to turn on Feed A to Side A of panel and then check voltage and polarity at input connectors of panel. Also, check that
    - PWR A LED on front of panel turns on (green).
    - PWR B LED and both FUSE LEDs must be off.
13. With PWR A lit — but with PWR B LED off — test power-fail relay and contacts at PWR A alarm terminals on rear of panel:
    - Expect continuity (0Ω) between Terminals C and NC.
    - Expect an open circuit (00Ω) between Terminals C and NO.
14. Also, test fuse alarm relay contacts at FUSE alarm terminals, then
    - Expect continuity (0Ω) between Terminals C and NC.
    - Expect an open circuit (00Ω) between Terminals C and NO.
15. Repeat Steps 12 through 14 to power up Side B. PWR A and PWR B LEDs must both be green.
16. With PWR A and PWR B lit, test power-fail relay and contacts at PWR A and PWR B alarm terminals:
    - Expect continuity (0Ω) between Terminals C and NC.
    - Expect an open circuit (00Ω) between Terminals C and NO.
17. Make sure none of the fuse positions contain real, operable fuses.
18. For GMT output wiring, proceed as follows:
    For all Models except GMT20 —

    a. Working with one wire at a time, either:
       - Crimp a single-hole ring or fork lug for a #6-32 screw-post terminal, as required by NEC, or
       - Strip 3/8 in. (10 mm) of insulation from a #26 to #12 copper wire for a bare-wire connection.

    b. Clean the panel terminals and lug (if applicable) with a nonabrasive, nonmetallic cleaning pad.

    c. If required, lightly coat anti-oxidant on lug/wire and output BATT and RTN terminals, and then connect to terminals.

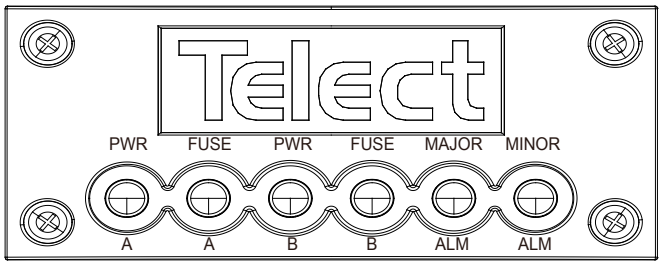

Figure 8 - Status LEDs on Face of Removable Alarm Card

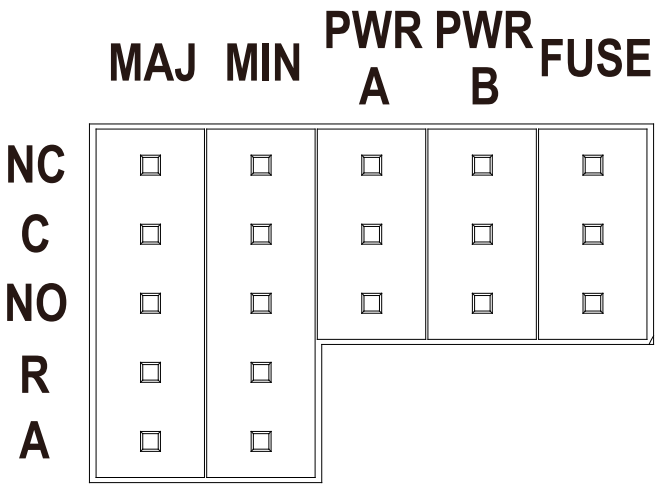

Figure 9 - Alarm Terminals on Rear of Panel

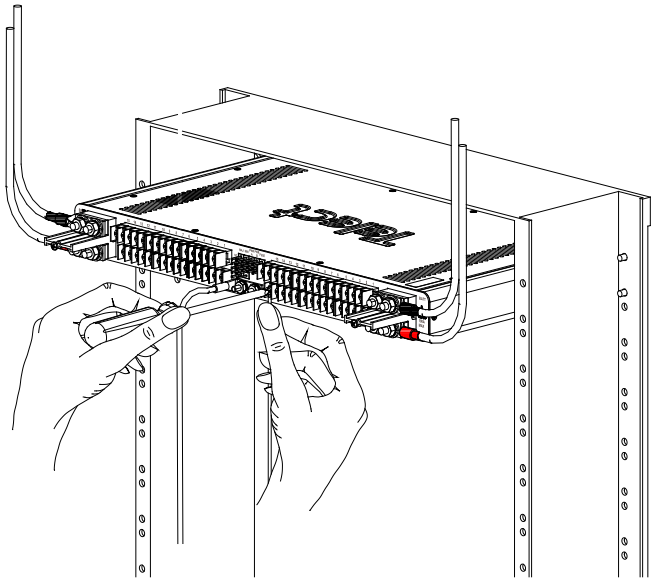

Figure 10 - Output Connections

(NEC specifies only one load at each output terminal.) Tighten #6-32 screws using either a flat-tipped screwdriver or Phillips screwdriver (for cross-recessed screw heads) to no greater than 6 in.-lb (~0.7 N•m). Connect other end of output wire to load.

For Model GMT20 —

a. Working with one wire at a time, either
- Crimp a single-hole ring or fork lug for a #3-48 screw-post terminal, as required by NEC, or
- Strip 3/8 in. (10 mm) of insulation from a #30 to #16 copper wire for a bare-wire connection.

b. Clean panel terminals and lug (if applicable) with a nonabrasive, nonmetallic cleaning pad.

c. If required, lightly coat anti-oxidant on lug/wire and output BATT and RTN terminals, and then connect to terminals. (NEC specifies only one load at each output terminal.) Tighten #5-40 screws using either a flat-tipped screwdriver or Phillips screwdriver (for cross-re- cessed screw heads) to no greater than 5 in.-lb (~0.6 N•m). Connect other end of output wire to load.

19. Record circuit assignments in accordance with operating company procedures and guidelines. The manufacturer's designation card, shown below, is a 10 in. (254 mm) by 21⁄2 in. (57 mm) card that folds in half to fit a card holder located below the status LEDs.

20. Make sure load devices are off (disabled) and then install GMT fuses. Remember, GMT fuses need to be installed so that failure indication flags are at the bottom,as shown in the following illustration.

SIDE A FUSETYPE			RACK/BAY#		
POS	AMP	DESCRIPTION	POS	AMP	DESCRIPTION

SIDE B FUSETYPE			RACK/BAY#		
POS	AMP	DESCRIPTION	POS	AMP	DESCRIPTION

Figure 11 - Designation Card

⚠ ALERT

ALERT! GMT fuses have a small 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 GMT fuse sizes between 10A and 20A not exceed 70% of the fuse rating. For example, the load for a 15A GMT fuse should not exceed 10.5A (15A x 0.70 = 10.5A).

The total load for all fuse outputs on each side must not exceed the panel's load rating: either 60A or100A.

21. Test power and polarity at input of each equipment load.
22. If possible, replace one of the operable GMT fuses with a blown fuse to verify that the applicable FUSE Alarm LED turns red. Also, check the FUSE alarm terminals on the rear of the panel:
    - Expect an open circuit (00Ω) between Terminals C and NC.
    - Expect continuity (0Ω) between Terminals C and NO. Re-install operable GMT fuse before proceeding.

    If desired, connect remote, external audio/visual panel alarm indicator wires (solid wires, #22 to #18 AWG) to wirewrap PWR and FUSE alarm pins on rear of panel, as shown below on the right.
23. If desired, connect remote audio/visual bay alarms indicator wires to the **MAJ** (major) and **MIN** (minor) alarm pins. Also install switch closure wires to the A (activate) and R (reference) pins, as shown above on the left, to control the bay alarm relay.
24. Re-install terminal cover.
25. Lastly, enable equipment loads one at a time to verify the proper operation of loads.

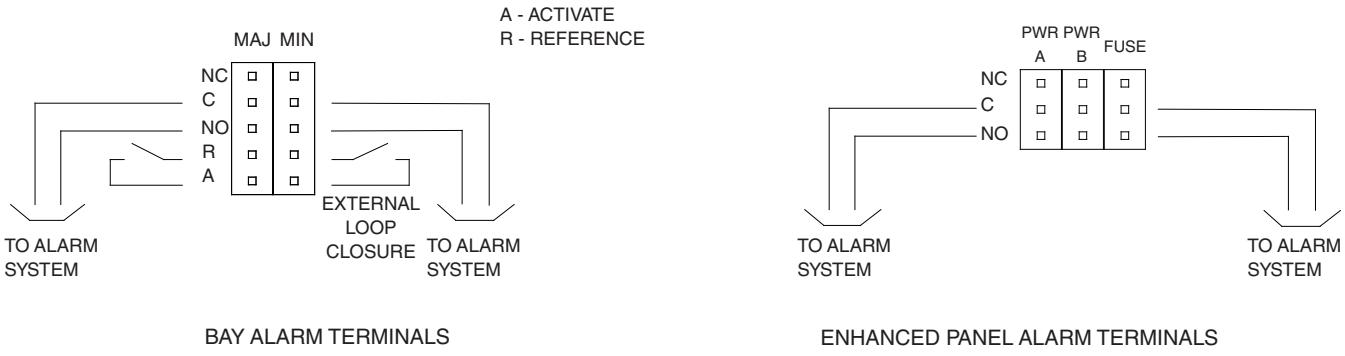

Figure 12 - Alarm Schematics (Rear of Designation Card)

1.6 Accessories & Alarm Card

The following lists optional and replacement items for the panel. For compression lugs, please refer to Wire Sizing & Label Convention Chart (Telect Part No. 117995) included with your panel.

⚠ WARNING

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

1.5.1 Input & GND Lugs

The following table describes the available input lugs for stranded copper conductors with straight dual-hole lugs for 1/4-in. studs on 5/8-in. centers.

Table 1 - Input Lugs

Source	#1/0 AWG	#2 AWG	#4 AWG	#6 AWG	#8 AWG
Telect		06117-02	06117-04	06117-01	06117-11
T & B			54206 (Die Code 29)	54205 (Die Code 24)	542040416 (Die Code 21)
Panduit		LCDN2-14A-Q (Die Code 33)	LCD4-14A-L (Die Code 29)	LCD6-14A-L (Die Code 24)	LCD8-14A-L (Die Code 21)
Burndy	YA25L2NT14 (Die Code12)		YA4CL2TC14 (Die Code 8)	YA6CL2TC14 (Die Code 7)	YA8CL2TC14 (Die Code 49)

The following table describes the available ground lugs for stranded copper conductors with 90° dual-hole lugs for #10 studs on 5/8-in. centers.

Table 2 - Ground Lugs

Source	#6 AWG	#8 AWG
T&B	256-30695-1356 (Die Code 24)	54204UB (Die Code 21)
Panduit	LCD6-10AF-L (Die Code 24)	LCD8-10AF-L (Die Code 21)
Burndy	YA6CL2TC1090 (Die Code 7)	YA8CL2TC1090 (Die Code 49)

1.5.2 Single-hole Lug Part Numbers for GMT20 Output Terminals (For #3 Panhead Screws)

The GMT20 output terminals accommodate bare wire up to #16 AWG. If lugs are required, only three with insulated barrels apply for accommodating #22 - #14 AWG:

- AMP 324608 with a flanged (dog-eared), straight, forked tongue for #22 - #16 AWG
- Burndy TP14-2F with a straight, forked tongue for #16 - #14 AWG
- Burndy TP14-2Z with a flanged, straight, forked tongue, also for #16 - #14 AWG

1.5.3 GMT Fuses

For additional dummy fuses, order part number 132748. For GMT safety (splash/splatter) covers, order part number 116915 for GMT fuses up to 15A. Telect recommends using only UL-recognized supplementary protectors.

GMT Fuse	Part Numbers GMT Fuse	Colored Designation Pin Part No.
.18A Yellow (YEL)	130781	102435-21
1⁄4A Violet (VIO)	100151	102435-2
1⁄2A Red (RED)	004001	102435-5
3⁄4A Brown (BRN)	004008	102435-7
1A Gray (GRY)	100991	102435-8
11/3A White (WHT)	004006	102435-9
11⁄2A White/Yellow (WHT/YEL)	004011	102435-10
2A Orange (ORN)	004002	102435-11
2.5A White/Orange (WHT/ORN)	130783	102435-12
3A Blue (BLU)	004012	102435-13
3.5A White/Blue (WHT/BLU)	130782	102435-14
4A White/Brown (WHT/BRN)	004013	102435-15
5A Green (GRN)	004014	102435-16
71⁄2A Black/White (BLK/WHT)	004010	102435-17
10A Red/White (RED/WHT)	004015	102435-18
12A Yellow/Green (YEL/GRN)	102287	102435-19
15A Red/Blue (RED/BLU)	102288	102435-20
20A White/Green Without Safety Cover (WHT/GRN)	127240RC	
20A White/Green With Safety Cover (WHT/GRN)	131340	102435-22

1.5.4 Alarm Card

The alarm card (Telect Part No. 304304; HPGMT20RC alarm card is Telect Part No. 304304RC) is fastened to the front of the panel by four Phillips screws (screws with cross-recessed heads). To remove the alarm card, remove the screws, gently slide out status LED bezel and alarm card, and then disconnect the header cables near the far end of the alarm card.

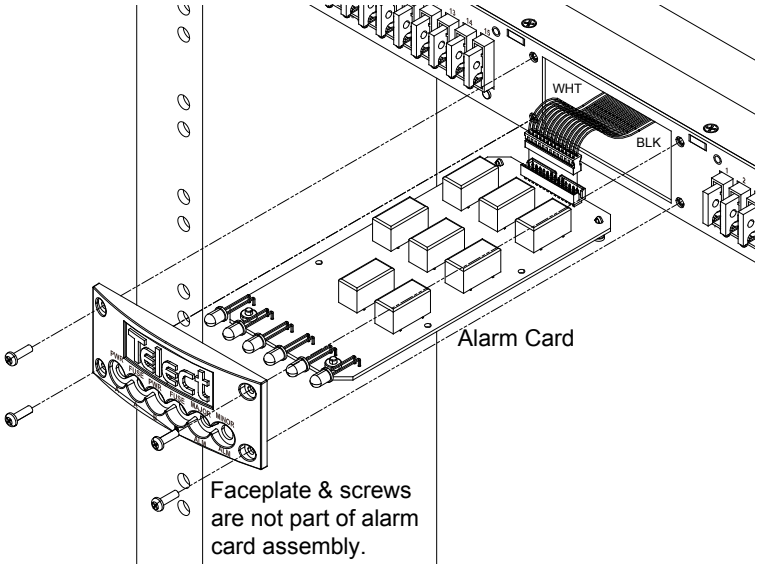

Figure 13 - Alarm Card

1.7 Diagrams

The diagrams that follow are representative of Telect's GMT-Series of power panels.

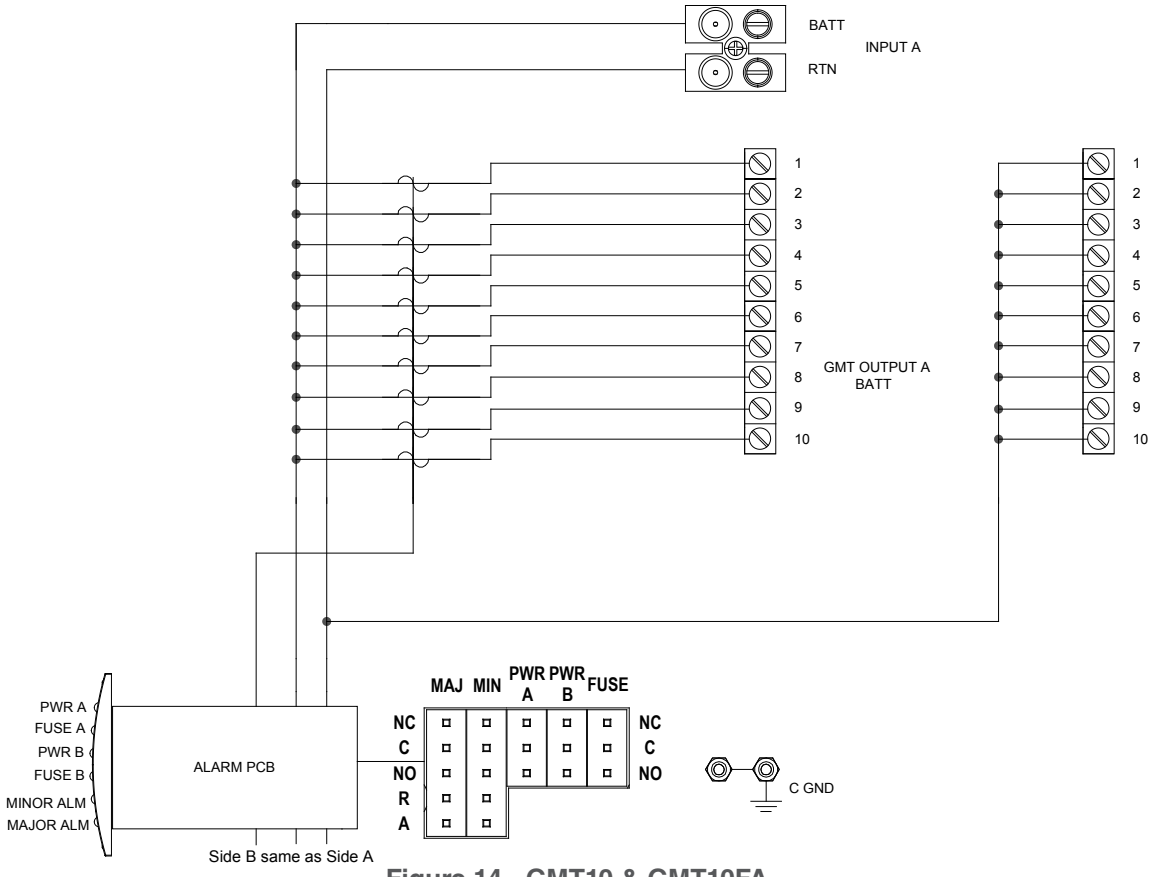

Figure 14 - GMT10 & GMT10FA

1.8 Dimensions

The dimensioned drawings that follow are representative of Telect's GMT-Series of power panels.

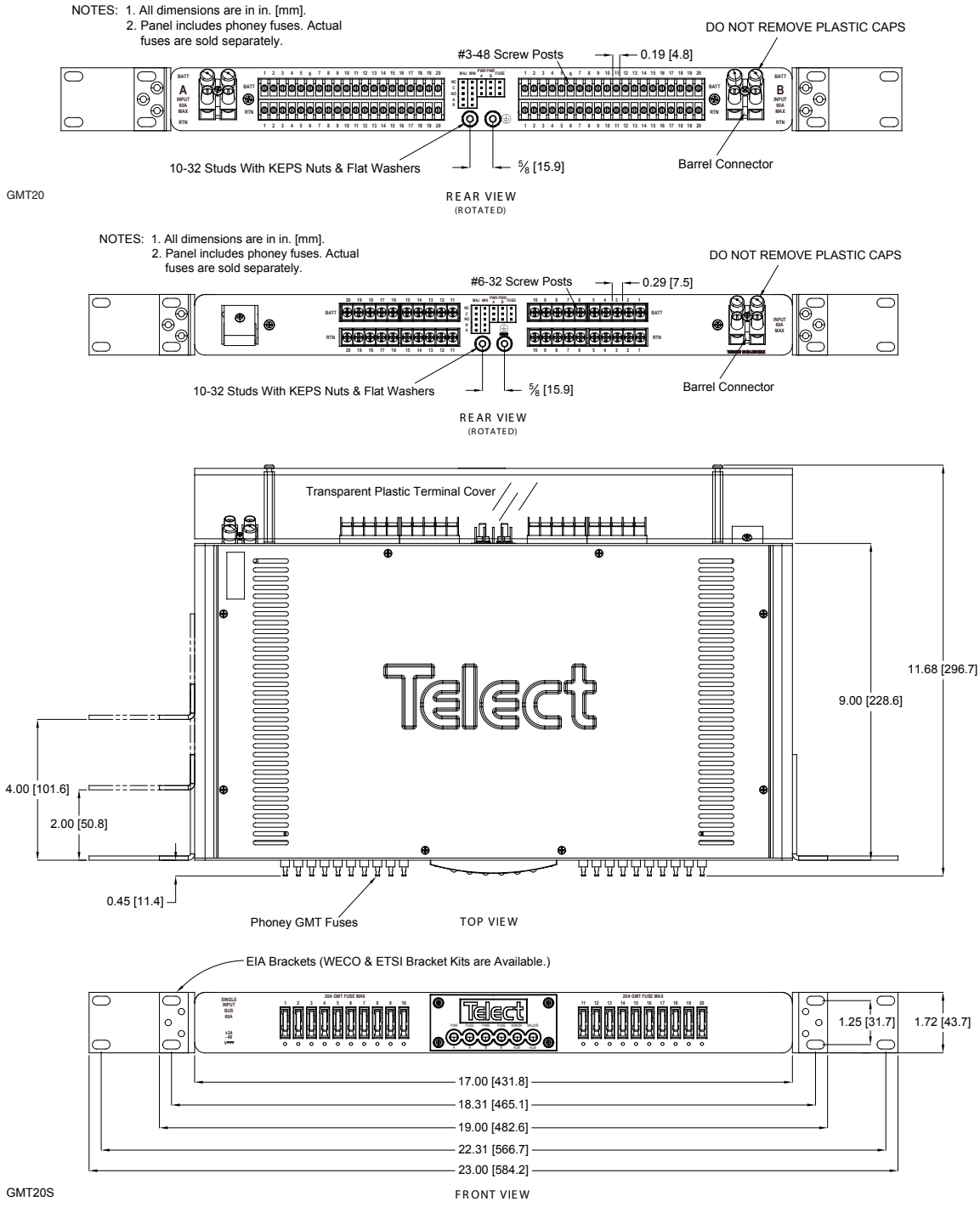

Figure 16 - GMT20S (Typical dimensions also for GMT20)

100A/60A Universal Voltage GMT Fuse Panels With Enhanced Power/Fuse & Bay Alarms

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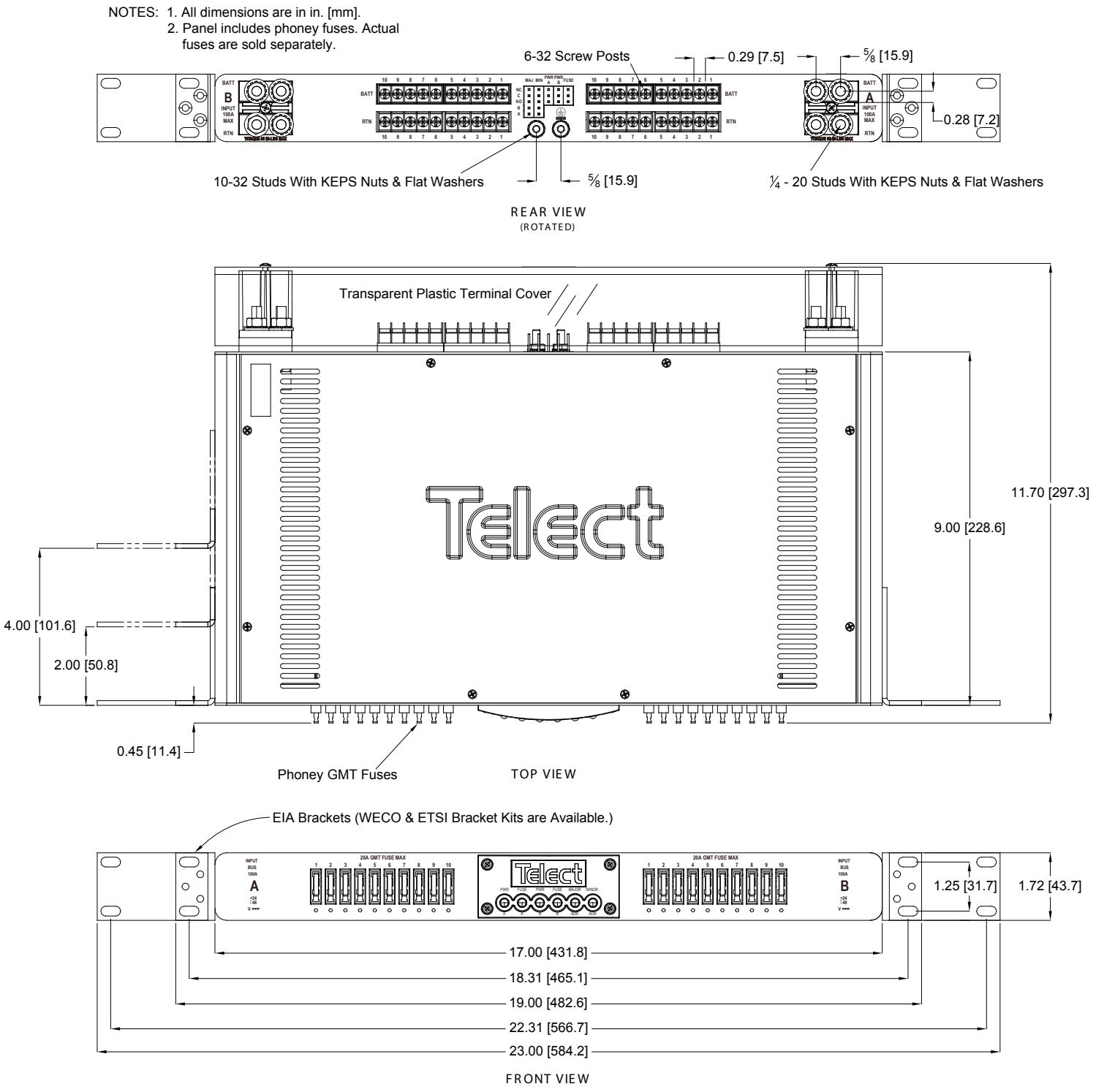

Figure 17 - Typical Dimensions for GMT10, HPGMT10-BLK, & HPGMT20S

100A/60A Universal Voltage GMT Fuse Panels With Enhanced Power/Fuse & Bay Alarms

Power :: HPGMTXX & GMTXX

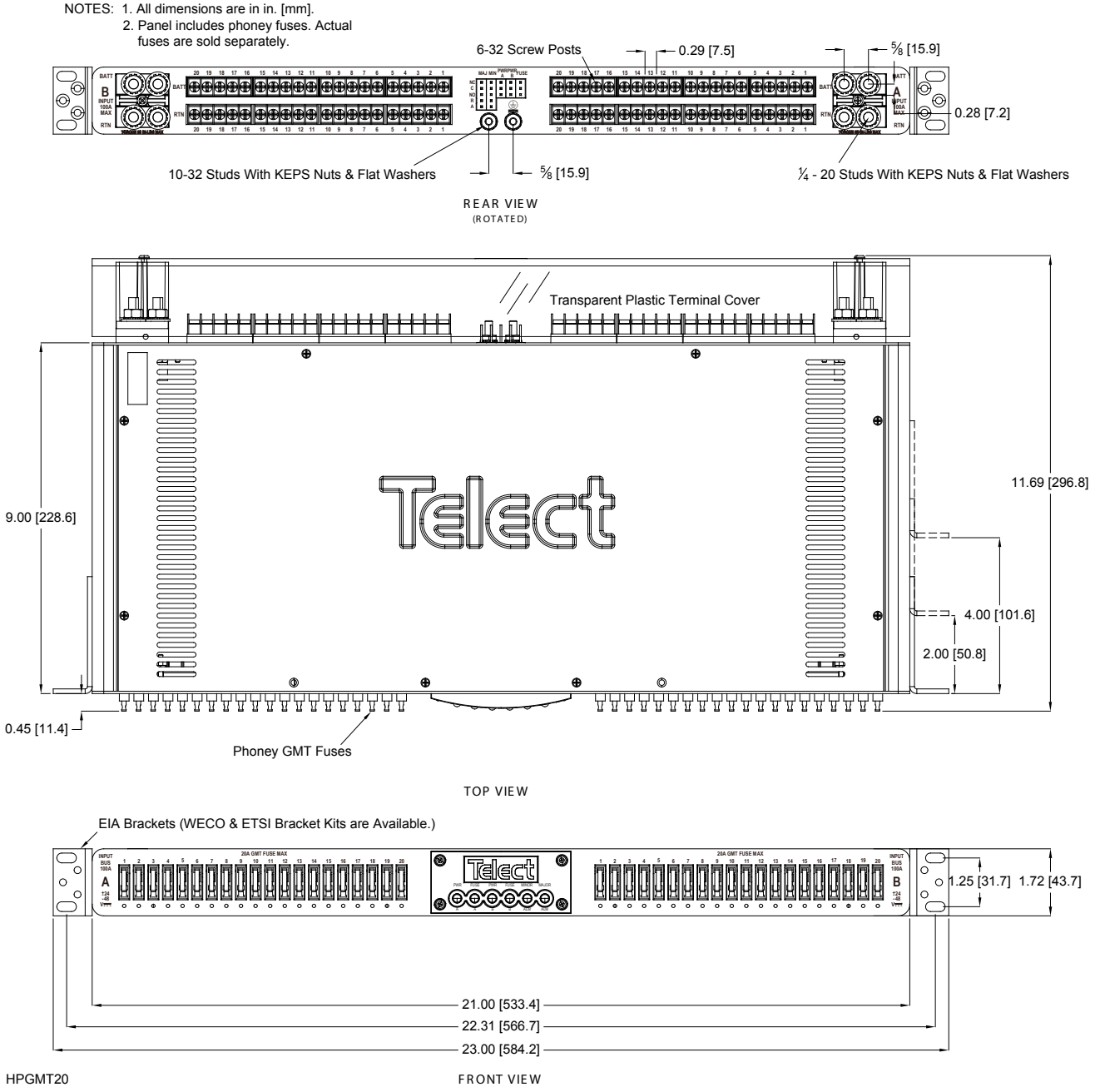

Figure 18 - HPGMT20 / HPGMT20RC

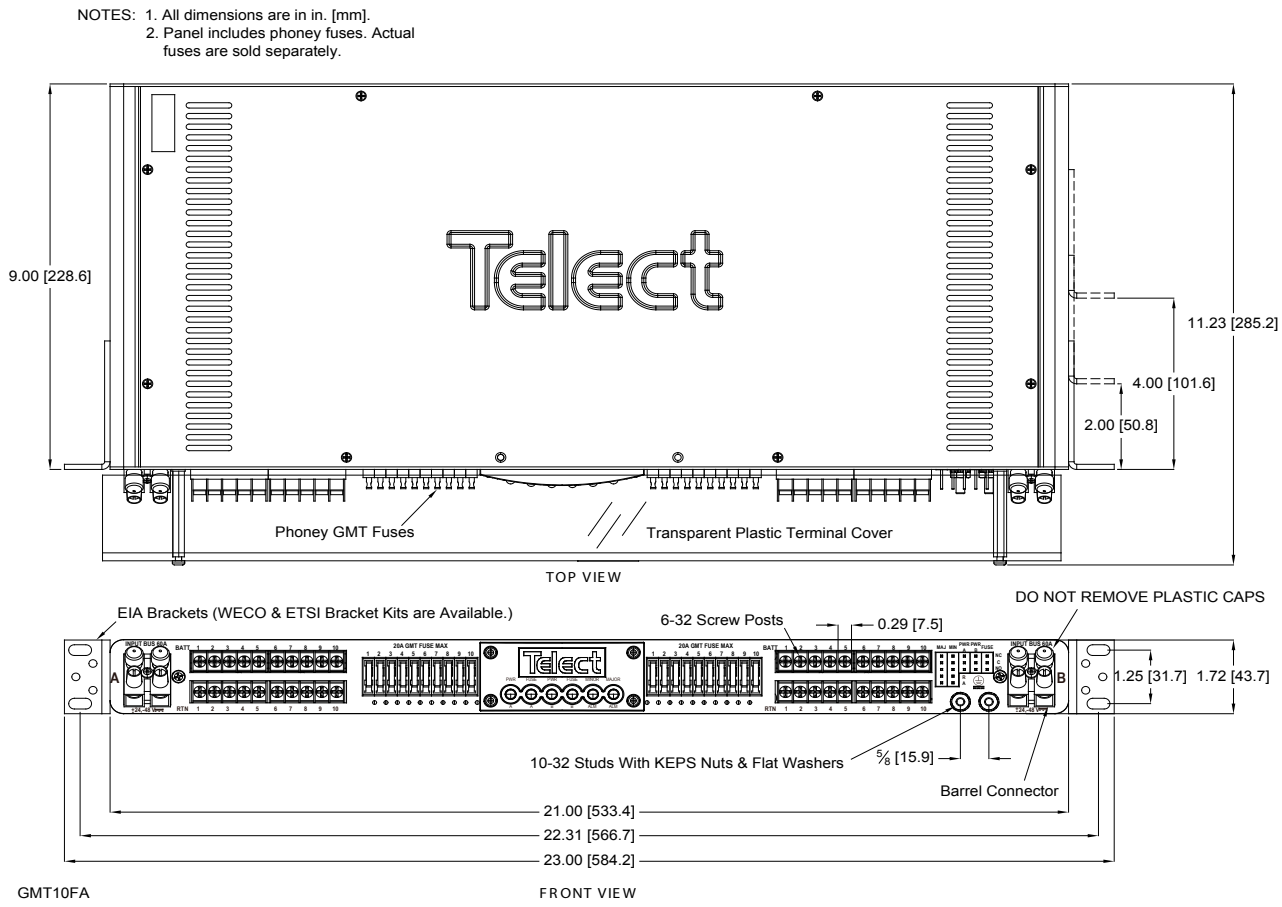

Figure 20 - GMT10FA

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