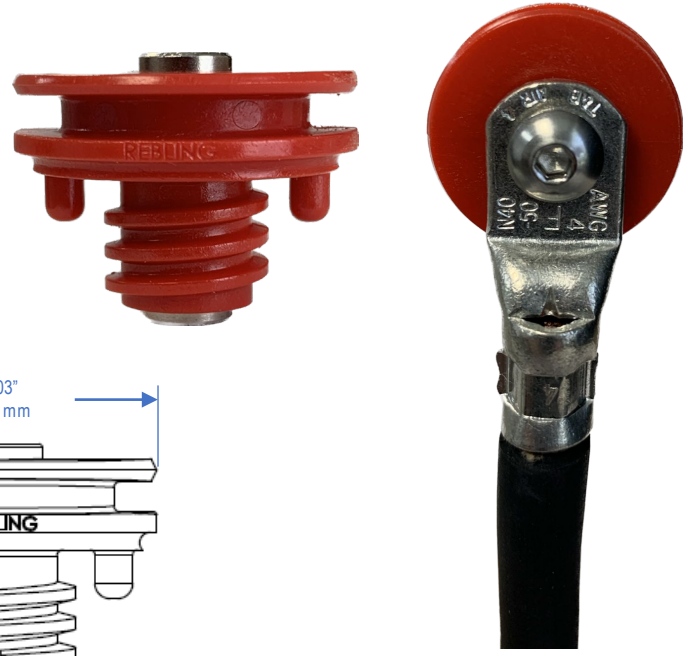
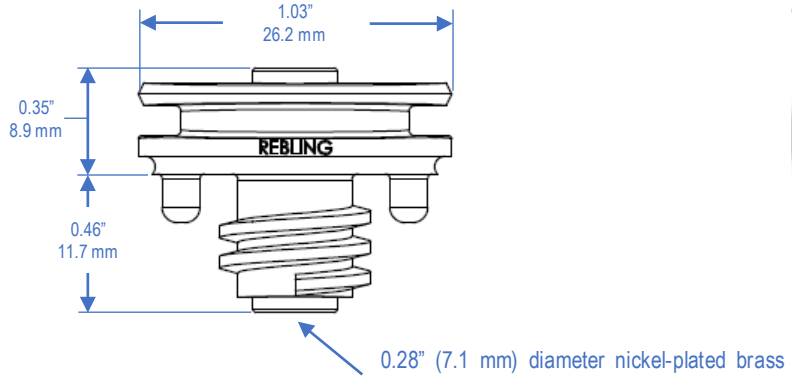
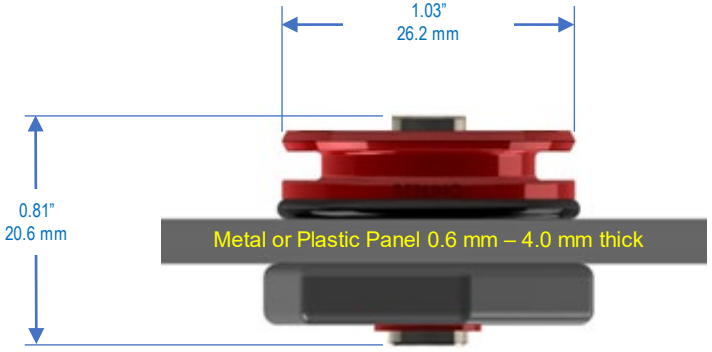
Rebling Datasheet: 100 amp TFT-style Feed-through Terminal

Our TFT-style terminal provides 100 amp continuous current performance, can be mounted to metal or plastic panels from 0.03” to 0.16” (0.6 to 4.0 mm) thick, it exhibits the same 2,000 volt rating and water-tight properties as the other members of our feed-through terminal family. The TFT’s innovative design eliminates the need for auxiliary panel-mounting hardware and accepts optional rigid and flexible covers. Equipping your smaller lithium battery modules or power conditioning modules with the TFT enables your product to fit into the tight spaces allocated by your end users.







For complete dimensions, download 3D Step files of Terminal and Accessories at Rebling.com

Electrical

Current each current profile causes a max 30° C temperature rise when tested per IEC 61984

Current Profile #1	Continuous Rated Current (CRC)			100 amps
Current Profile #2	50% CRC for 60min	+ 1 sec peak	+ 50% CRC for 60 min	600 amps
Current Profile #3	50% CRC for 60min	+ 10 sec peak	+ 50% CRC for 60 min	400 amps
Current Profile #4	50% CRC for 60min	+ 30 sec peak	+ 50% CRC for 60 min	300 amps
Current Profile #5	50% CRC for 60min	+ 60 sec peak	+ 50% CRC for 60 min	200 amps

Voltage & Resistance

Continuous Rated Voltage	UL1977 Section 17	2,000 volts
Minimum Dielectric Withstanding Voltage	UL1977 Section 17	5,000 volts
Insulation Resistance	MIL-PRF-18148D Section 3.12.6	500 mega-ohms
Maximum Contact Resistance	MIL-STD-202H Method 307	150 micro-ohms

Mechanical & Environmental

Flammability Rating:	Terminal and Covers	UL 94	V-0
Environmental Sealing:	with Optional O-ring	IEC 60529	IP68+ watertight
	without Optional O-ring	IEC 60529	IP65
Operating Temperature:	Terminal and Rigid Cover		-40 to +125 C
	Flexible Cover		-40 to +90 C
Mechanical Shock		MIL-STD-202H Method 213 Condition A	50 Gs – 3 axes
Vibration		MIL-STD-202H Method 204 Condition A	10 Gs – 3 axes
Panel Thickness Required for Mounting – Minimum			0.025” (0.6 mm)
	Maximum		0.157” (4.0 mm)
Maximum Wire Size:	Terminal Only		1 AWG (40 mm^2)
	with Rigid or Flexible Snap-On Cover		2 AWG (32 mm^2)

Compliance & Conformance

RoHS, REACH, CMRT/3TG	All parts listed on this datasheet are RoHS, REACH and CMRT/3TG Compliant
UL and CE Conformance	Declarations of UL and CE Conformity can be downloaded from Rebling.com

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P/N	Description	Plastic Color	Weight (Grams)	Min Thick (mm)	UL 94 Rating	UL Material Yellow Card # **
TFT-P-B	Terminal Kit*, Brass, Nickel plated	Black	17	1.5	V-0	E121562-220886
815A1927-B	Flexible Cover	Black	6	1.5	V-0	E80017-250533
814A1926-B	Rigid Cover	Black	7	1.5	V-0	E121562-101513781
TFT-P-R	Terminal Kit*, Brass, Nickel plated	Red	17	1.5	V-0	E121562-220886
815A1927-R	Flexible Cover	Red	6	1.5	V-0	E80017-250533
814A1926-R	Rigid Cover	Red	7	1.5	V-0	E121562-101513781
TFT-P-E	Terminal Kit*, Brass, Nickel plated	Blue	17	1.5	V-0	E121562-220886
815A1927-E	Flexible Cover	Blue	6	1.5	V-0	E80017-250533
814A1926-E	Rigid Cover	Blue	7	1.5	V-0	E121562-101513781
812A1925	O-Ring for TFT Terminal	Black	0.2	1.5	V-0	Material = EPDM
825A1959	Gasket for TFT Terminal	Black	0.3	1.5	V-0	E80017-250533
813A1930	Panel Nut	Black	4	1.5	V-0	E121562-220886

*Terminal Kit = one Terminal + one Panel Nut + two Bolts + two Split Washers, all parts in a small poly bag
**UL Material Yellow Cards can be downloaded from ULprospector.com

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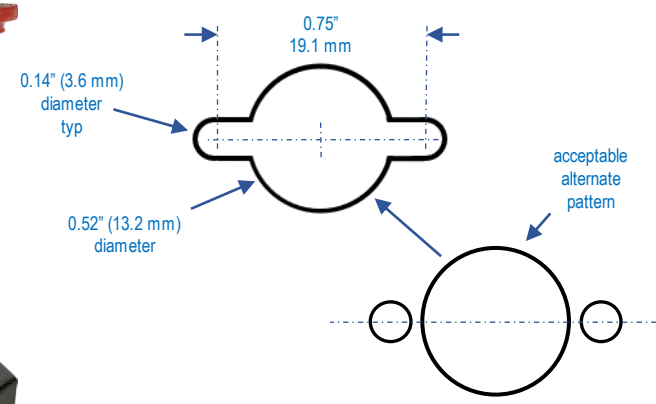


Mounting Hole Pattern

Mounting and Assembly

Panel Thickness - Minimum	0.025" (0.6 mm)	
Maximum	0.157" (4.0 mm)	
Torque on M5 Bolts:		
Recommended	15 in-lbs (1.7 Nm)	electrical performance does not get better or worse above 15 in-lbs (1.7 Nm)
Maximum Recommended	25 in-lbs (2.8 Nm)	a Grade 4, M5 stainless bolt will snap at 50 in-lbs (5.6 Nm),
Torque on Panel Nut (with or without O-Ring):		
Recommended	15 in-lbs (1.7 Nm)	all datasheet parameters were tested at this torque level
Maximum Recommended	25 in-lbs (2.8 Nm)	the panel nut will begin to deform at 40 in-lbs (4.5 Nm)
Maximum Crimp Lug Tongue Width:		
with Flexible Cover	0.90" (23 mm)	
with Rigid Cover	0.80" (20 mm)	

Application Notes

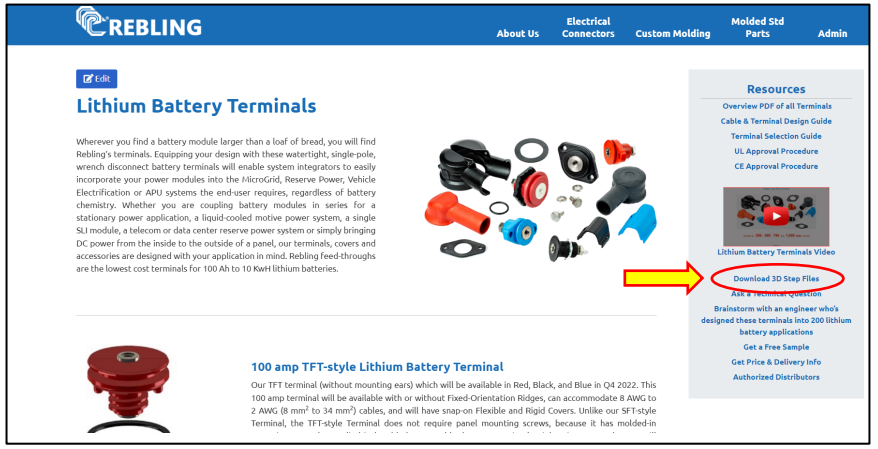
1. Watertight is superior to IP68: Rebling terminals are completely watertight to a depth of 20 meters which is superior to any IP Rating. The definitions of IP67, IP68 and IP69k per IEC 60529 state that "water may penetrate the seal but shall do no harm", a condition that is unacceptable to lithium battery designers.
2. Panel Nut Wrench: the hexagonal panel nut can be tightened using either a 27mm or 1 1/16" socket wrench.
3. Minimum Separation between Adjacent Terminals: the minimum centerline to centerline distance between the mounting holes of adjacent TFT terminals is 1.36" (34.6mm). This is based upon the maximum outside dimension of the panel nut or flexible cover (1.22"), the outside diameter of a 27mm socket (1.42") and a reasonable clearance margin (0.040"). This separation distance is based upon the TFT's geometry and is not a requirement for any performance parameter.
4. **Loctite (Thread Locking Fluid) Warning: some thread-locking fluids can cause a terminal's plastic body to crack.** Loctite's datasheets warn that its products should not be used near any thermoplastic because their fluid (or its vapor) can change the chemical structure of thermoplastic, causing stress cracks to appear weeks or months after the fluid was applied to metal bolts on or near a terminal.
5. Recommended crimp lug P/Ns: see table on right

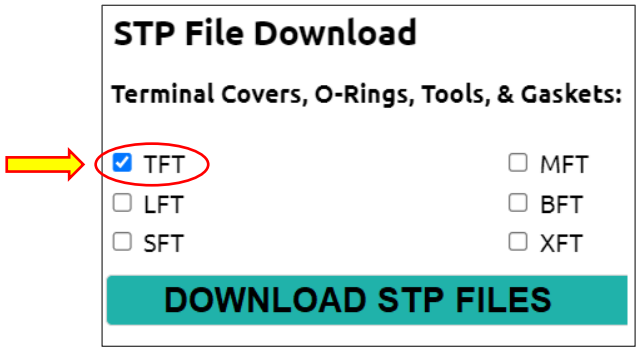
Mfg	2 AWG (32 mm²)	4 AWG (19 mm²)	6 AWG (13 mm²)	8 AWG (8 mm²)	10 AWG (5 mm²)	12 AWG (3 mm²)	14 AWG (2 mm²)
TE	330301	33114	52197	31807	130191	130191	130106
T&B	G926	F10261	E10261	D10361	K10-10R		K14-10R
Panduit	P2-10R	P4-10R	P6-10R	P8-10R	P10-10R		P14-10R
Burndy	-----	YAD4CM5E10	YAD6CM5E10	YAD8CM5E10	YAV10H		YAV14H

O-Ring Application Tool

To apply an O-Ring to the ultra-compact TFT Terminal:

1. Download the application tool's step file from our website then print the tool on a 3D printer
2. Place the tool onto the pins of the TFT terminal
3. Roll the O-Ring down the tool and into the O-Ring groove





Lithium Battery Terminals

Wherever you find a battery module larger than a loaf of bread, you will find Rebling's terminals. Equipping your design with these watertight, single-pole, wrench disconnect battery terminals will enable system integrators to easily incorporate your power modules into the MicroGrid, Reserve Power, Vehicle Electrification or APU systems the end-user requires, regardless of battery chemistry. Whether you are coupling battery modules in series for a stationary power application, a liquid-cooled motive power system, a single SLI module, a telecom or data center reserve power system or simply bringing DC power from the inside to the outside of a panel, our terminals, covers and accessories are designed with your application in mind. Rebling feed-throughs are the lowest cost terminals for 100 Ah to 10 KwH lithium batteries.

100 amp TFT-style Lithium Battery Terminal

Our TFT-style terminal (without mounting ears) is the most economical, smallest footprint, simplest environmental seal, battery terminal which can reduce connector costs on a single microgrid energy storage system by $2,000 and offers a battery module designer the protection options of snap-on rigid or flexible covers. This 100 amp terminal is available with or without Fixed-Orientation Ridges, can accommodate 8 AWG to 2 AWG (8 mm2 to 34 mm2) cables, and will have snap-on Flexible and Rigid Covers. Unlike our SFT-style Terminal, the TFT-style Terminal does not require panel mounting screws, because it has molded-in mounting pegs. These cylindrical molded pegs enable the TFT to resist the tightening torque the user will apply to the terminal's M5 electrical connection bolts.

250 amp LFT-style Lithium Battery Terminal

Our LFT-style terminal (without mounting ears) is the most economical, smallest footprint, simplest environmental seal, battery terminal which can reduce connector costs on a single microgrid energy storage system by $2,000 and offers a battery module designer the protection options of snap-on rigid or flexible covers. The brass core of our LFT is available with nickel plating for harsh environments and stays cool even at extreme charge or discharge rates. Equipping your design with these watertight, single pole, wrench disconnect, battery terminals will enable system integrators to easily incorporate your power modules into the MicroGrid, Reserve Power, Vehicle Electrification or APU systems the end-user requires, regardless of battery chemistry.

250 amp SFT-style Lithium Battery Terminal

Our SFT-style terminal (with mounting ears) has performance characteristics identical to our LFT-style terminal but is specially designed for mounting onto thin or weak panels. The SFT can also reduce the costs of a single microgrid energy storage system by $2,000 and can accept the same snap-on rigid or flexible covers as our LFT-style terminal. The brass core is available with nickel plating for harsh environments and remains cool at extreme charge or discharge rates. Equipping your design with these watertight, single pole, wrench disconnect, battery terminals will enable system integrators to easily incorporate your modules into the MicroGrid, Reserve Power, Vehicle Electrification or APU systems the end-user requires, regardless of battery chemistry.

250 amp Top Seal Lithium Battery Terminal

The Top Seal Terminal saves the OEM $15 of material and labor on each battery produced and reduces each battery's volume by 200 cc. The Top Seal eliminates 20 inches (500 mm) of cable + 4 crimp lugs + production labor from each battery. The Top Seal is designed for OEMs transitioning from manufacturing hundreds of batteries annually to scaling up to production levels ranging from tens of thousands to hundreds of thousands per year.

Our 250 amp Top Seal Terminal uses the same nickel-plated brass conductor, accepts the same rigid and flexible covers, and has the same performance characteristics as Rebling's 250 amp SFT-style feed-through terminal. This terminal is intended for lithium battery OEMs which are packaging their cell packs inside molded plastic or aluminum cases that are 1 to 20 times the size of an automotive starter battery.

The Top Seal Terminal enables the OEM to attach the terminal to the lithium cell pack first, place the cell pack into the battery case, place the lid onto the battery case (allowing the terminals to poke through clearance holes in the lid), attach the lid to the terminals with flat-head sheet metal screws then screw, glue or weld the battery lid to the battery case. The Top Seal Terminal reduces the amount of labor and eliminates two cables which the OEM previously used to attach the terminals.

The “Arc of Forgiveness” feature allows the terminal to be mis-rotated by 30 degrees and still align with the screw holes in the battery lid. It also includes an “Orientation Key” feature which high precision OEMs can use to aid in alignment.

500 amp MFT-style Lithium Battery Terminal

Our MFT-style terminal (with mounting ears) provides 500 amp continuous current performance, the ability to be mounted to panels of any material or thickness, and retains the same 2,000 volt rating, IP68 sealing capability, and nickel plating option as the lower power members of our battery terminal family. The MFT can accept the same snap-on rigid or flexible covers as our LFT and SFT-style terminals. Equipping your design with these watertight, single pole, wrench disconnect, battery terminals will enable system integrators to easily incorporate your modules into the MicroGrid, Reserve Power, Vehicle Electrification or APU systems the end-user requires, regardless of battery chemistry.

500 amp Top Seal Lithium Battery Terminal

The Top Seal Terminal saves the OEM $15 of material and labor on each battery produced and reduces each battery's volume by 200 cc. The Top Seal eliminates 20 inches (500 mm) of cable + 4 crimp lugs + production labor from each battery. The Top Seal is designed for OEMs transitioning from manufacturing hundreds of batteries annually to scaling up to production levels ranging from tens of thousands to hundreds of thousands per year.

Our 500 amp Top Seal Terminal uses the same nickel-plated brass conductor, accepts the same rigid and flexible covers, and has the same performance characteristics as Rebling's 500 amp MFT-style feed-through terminal. This terminal is intended for lithium battery OEMs which are packaging their cell packs inside molded plastic or aluminum cases that are 1 to 20 times the size of an automotive starter battery.

The Top Seal Terminal enables the OEM to attach the terminal to the lithium cell pack first, place the cell pack into the battery case, place the lid onto the battery case (allowing the terminals to poke through clearance holes in the lid), attach the lid to the terminals with flat-head sheet metal screws then screw, glue or weld the battery lid to the battery case. The Top Seal Terminal reduces the amount of labor and eliminates two cables which the OEM previously used to attach the terminals.

The "Arc of Forgiveness" feature allows the terminal to be mis-rotated by 30 degrees and still align with the screw holes in the battery lid. It also includes an "Orientation Key" feature which high precision OEMs can use to aid in alignment.

750 amp BFT-style Lithium Battery Terminal

Our 750 amp BFT-style terminal (without mounting ears) consists of a nickel-plated brass core which stays cool at 750 amps of continuous current or when charge and discharge currents hit short term peaks of 4,000 amps. These small footprint terminals are designed for the temperature-sensitive environment of lithium battery cells and the charging rates of ultracapacitors and supercapacitors. Equipping your power module with these watertight, single-pole, wrench disconnect, brass battery terminals will facilitate the incorporation of your modules into cutting edge GenSet, APU or Vehicle Electrification systems

750 amp XFT-style Lithium Battery Terminal

Our 750 amp XFT-style terminal (with mounting ears) has performance characteristics identical to our BFT-style 750 amp terminal but is specially designed for mounting onto thin or weak panels. The XFT-style 750 amp terminal's nickel-plated brass core stays cool at 750 amps of continuous current or for short term peaks of 4,000 amps. These terminals are designed for the temperature-sensitive environment of lithium battery cells and the charging rates of ultracapacitors and supercapacitors. Equipping your power module with these watertight, single-pole, wrench disconnect, brass battery terminals will facilitate the incorporation of your modules into cutting edge GenSet, APU or Vehicle Electrification systems.

1,000 amp BFT-style Lithium Battery Terminal

Our 1,000 amp BFT-style terminal (without mounting ears) consists of a nickel-plated copper core which stays cool at 1,000 amps of continuous current or when charge and discharge currents hit short term peaks of 5,000 amps. These small footprint terminals are designed for the temperature-sensitive environment of lithium battery cells and the charging rates of ultracapacitors and supercapacitors. Equipping your power module with these watertight, single-pole, wrench disconnect, copper battery terminals will facilitate the incorporation of your modules into cutting edge EV, APU, Fuel Cell and Weapons Systems.

1,000 amp XFT-style Lithium Battery Terminal

Our 1,000 amp XFT-style terminal (with mounting ears) has performance characteristics identical to our 1,000 amp BFT-style terminal but is specially designed for mounting onto thin or weak panels. The 1,000 amp XFT-style terminal's nickel-plated copper core stays cool at 1,000 amps of continuous current or at short term peaks of 5,000 amps. These terminals are designed for the temperature sensitive environment of lithium battery cells and the charging rates of ultracapacitors and supercapacitors. Equipping your power module with these watertight, single pole, wrench disconnect, copper battery terminals will facilitate the incorporation of your modules into cutting edge EV, APU, Fuel Cell, and Weapons Systems.