High-Current Demarcation Panel

Installation Guide

009-7001-0104B-TFD

Applies to: 009-7001-0104B & 009-7001-0104B-TFD

Amphenol
NETWORK SOLUTIONS™

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Installation Guide, Part Number 146161-3 A0

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About

Amphenol Network Solutions is a global innovative original equipment manufacturer that serves the data and communications markets. We design, manufacture, and distribute products for customers who need an end to end solution for network connectivity, fiber, power distribution and rack management. We collaborate with our customers to deliver product solutions that exceed expectations with innovative designs and world class quality. Amphenol Network Solutions is the industry thought leader on network cable management.

Telect, Inc. has been a market leader in secondary DC power distribution for over 36 years. Through our acquisition by Amphenol and our merger with All Systems Broadband, to become Amphenol Network Solutions, we have continued to deliver reliable, high-quality solutions to power, protect, and monitor today's network servers and equipment. We are proud to be an Amphenol company that will continue to be Powered by Telect.

Technical Support

Email: support@amphenol-ns.com
Phone: 509.926.6000

High-Current Demarcation Panel

1.1 Overview

The Amphenol Network Solutions 009-7001-0104B demarcation fuse panel with alarms provides TPS/TLS fuse or circuit breaker protection at the equipment interface. The low-profile, white panel supports four TFD fuse holders or circuit breakers, a replaceable alarm card containing power and alarm LEDs, alarm contact relays, rear-access terminals and wire-wrap alarm relay contacts. Each fuse holder has separate BATT/RTN inputs and outputs rated up to 125A for either 24 VDC or 48 VDC applications.

The 009-7001-0104B-TFD model comes with TFD fuse holders installed in each position.

Hardware is included for either flush or extended mounting in a 19-inch or 23-inch relay rack. Visit our website (amphenol-ns.com) for ordering accessories and replaceable parts: fuses (up to 125A, each), TFD fuse holders, circuit breakers (up to 100A) and more.

Front with TPS fuses

Rear without I/O terminal covers

Fig. 1: Model 009-7001-0104B-TFD (UL Listed, File E139903)

1.2 Inspection

Please read and understand all instructions before installation. If you have questions, contact Amphenol Network Solutions Technical support at support@amphenol-ns.com or call 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 Amphenol Network Solutions Quality at quality@amphenol-ns.com or call 509-926-6000.

Amphenol Network Solutions is not liable for transit damage. If the product is damaged, please report it to the carrier and contact Amphenol Network Solutions Quality.

NOTE: For service or warranty information, please visit amphenol-ns.com and click on the support tab, email Amphenol Network Solutions at getinfo@amphenol-ns.com or call us at 509-926-6000.

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> ⚠ **ALERT**
>
> **ALERT! Only qualified personnel may install and maintain this product. Verify that all connections meet requirements specified in local electric codes or operating company guidelines before supplying power.**

1.3 Specifications

Inputs/Outputs:	Specification:
Max. fuse rating (each)	100A: Circuit breaker 125A: TFD holder
Max. total load rating of panel	320A: Circuit breaker 400A: TFD holder
Voltage range	±20 to ±28 VDC -40 to -60 VDC
BATT & RTN wire size	#8 to #1 AWG recommended (see note below)
Ground wire size	#10 to #2 AWG recommended (see note below)
Terminal stud sizes (Input, output and earth ground)	1/4"-20 dual studs on 5/8" centers Maximum lug width: 0.61-inches
Power dissipation	17W per channel
Short-circuit withstand rating	5000A
Alarms:	**Specification:**
Alarm relay contacts	0.6A @ 60 VDC
Alarm card power rating	1W
Alarm wire size	Solid: #26 to #22 AWG
Dimensions:	**Specification:**
Nominal, without brackets:* Width: Height: Depth:	 17.25" (43.8 cm) 1.75" (4.4 cm) 10.4" (26.4 cm)
Weight:	**Specification:**
Weight, shipping	~11 lbs. (~4.5 kg): 009-7001-0104B ~12 lbs. (~5 kg): 009-7001-0104B-TFD
Environment:	**Specification:**
Operating temperature	-5°C (23°F) to 55°C (131°F)

NOTE: Wire sizes are recommended based on generally available lug sizes. Ensure wire sizes meet amperage requirements per NEC.

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1.4 Installation

NOTES:

- Amphenol Network Solutions ships 009-7001-0104B panels without installed fuse holders or fuses. Amphenol Network Solutions includes blank covers over the empty fuse holder positions. Amphenol Network Solutions ships 009-7001-0104B panels without installed fuses.

- Fuse holders without fuses are sold separately. Order fuses and fuse holder at amphenol-ns.com. Fuse part numbers are shown on page 12.

- For safety, install blank covers over all unused fuse positions on model 009-7001-0104B.

- Amphenol Network Solutions recommends that circuit breakers or fuse holders — without fuses — be installed prior to mounting the panel on the rack. Amphenol Network Solutions recommends not mixing circuit breakers and TFD fuse holders in the same panel. (TFD fuse holders are for TPS or TLS fuses. TPS and TLS fuses are compatible, but are made by different manufacturers.)

1.4.1 Important Installation Guidelines

- **Elevated Operating Ambient Temperature:** 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. Take care to install the equipment in an environment compatible with the maximum operating temperature.

- **Reduced Air Flow:** Maintain the amount of air flow required for safe operation when installing the equipment in a rack.

- **Mechanical Loading:** Ensure mechanical loading is even to prevent hazardous conditions.

- **Circuit Overloading:** Overloading circuits may affect your overcurrent protection and supply wiring. Use equipment nameplate ratings.

- **Reliable Earthing:** Maintain reliable earthing or rack-mounted equipment. Pay 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.

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1.4.2 Installation Procedure

1. As shown in Fig. 2, remove the blank cover(s) over the intended fuse holder position(s). The unit can operate with one, two, three or four fuse positions occupied.

   NOTE: For safety, leave blank covers over all unused positions.

   Notice that "LINE" and "LOAD" appear above the fuse positions. Remember: the LOAD end of the fuses holders are always outboard — farthest away — from the LED display. Meaning that fuse holders will be installed "right" side up on one side of the display and right side down on the other.
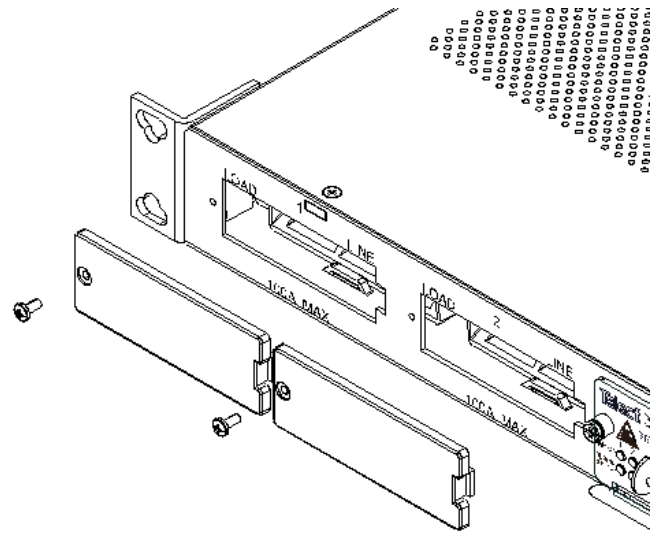

Fig. 2: Removing blank covers from model 009-7001-0104B

⊙ ALERT

ALERT! You can install fuse holders backwards. Observe the LINE and LOAD designations on the panel vs. the designations on the fuse holders.

2. With the input power off, firmly install the circuit breakers or fuse holders in the panel. As shown in Fig. 3, install the TFD fuse holders and bezel(s):

   a. As directed in the illustration, make sure alarm connector on the breaker or fuse holder is straight prior to installation.

   b. Use the two screws supplied with each fuse holder to secure the holders to the bezel.

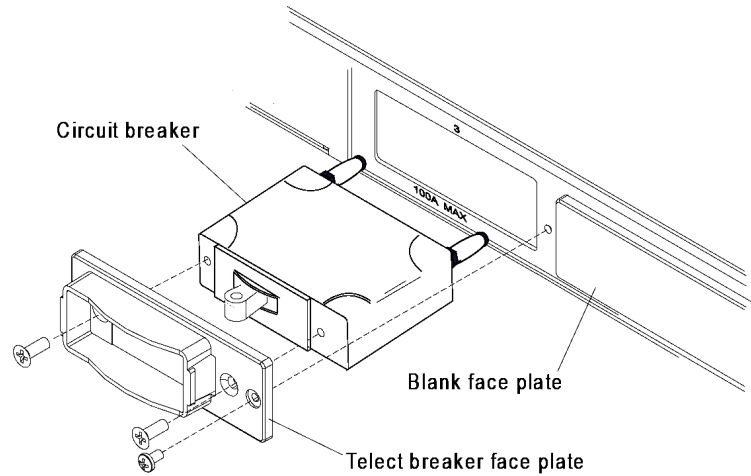   c. Attach the bezel to the chassis with a blank cover screw.

   NOTE: Panel brackets are installed at the factory for flush mounting in a 19-inch rack. A pair of 23-inch rack brackets are also included. Either pair of brackets can be moved or installed to extend front of panel beyond the face of the rack in 1-inch (2.54 cm) increments.
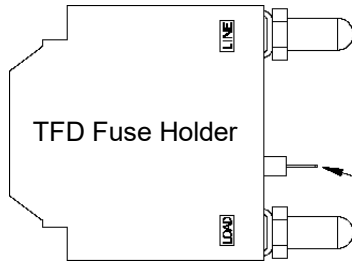
⚠ WARNING

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

⚠ WARNING

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

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Circuit breaker

100A MAX

3

Blank face plate

Telect breaker face plate

CAUTION!

TFD Fuse Holder

LINE

LOAD

MAKE SURE ALARM CONNECTOR ON FUSE HOLDER
IS STRAIGHT BEFORE INSERTING INTO THE PANEL.

A bent alarm bayonet on a fuse holder
can either cause internal damage to the
panel or fail to make electrical contact
with alarm wiring within the panel.
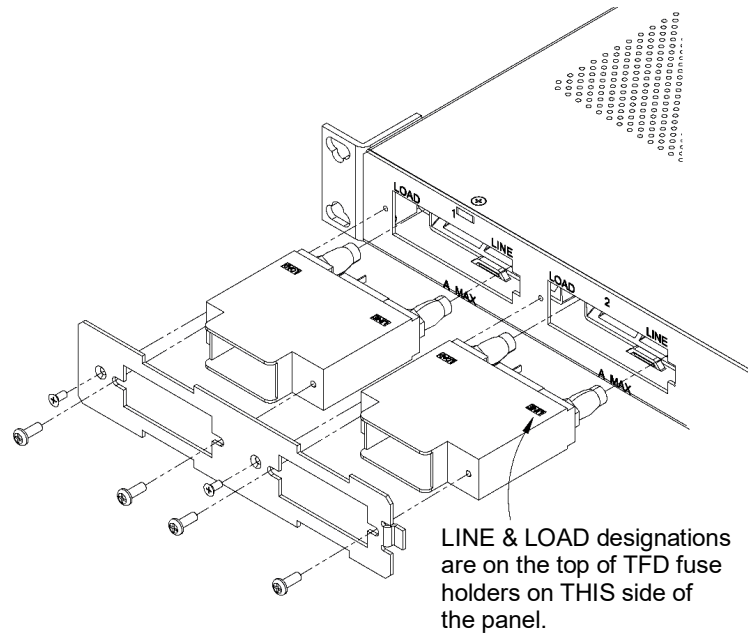
LOAD 1
LINE
A MAX
LOAD 2
LINE
A MAX

LINE & LOAD designations
are on the top of TFD fuse
holders on THIS side of
the panel.

Fig. 3: Installing circuit breakers and TFD fuse holders
on model 009-7001-0104B

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3. If necessary, to move or replace the 19-inch brackets, remove three screws on sides of breaker panel, as shown in Fig. 4.

4. Install 19-inch or 23-inch brackets for flush or extended panel presentation on rack.

5. Locate an unused rack position and mount panel using the four thread-cutting screws provided, as shown in Fig. 5. Tighten the screws to 35 in/lb. (4.29 N•m).

6. Use a UL/NRTL-approved crimping tool to attach a UL/NRTL-approved, 2-hole compression lug onto a #10 to #2 AWG ground wire. (The size of the ground wire depends on size of input BATT wires.)

7. Attach the opposite end of the ground wire to the relay rack, per local practices.

8. If required, lightly coat antioxidant on lug, grounding terminal and contacting surface.

9. Connect the lug to the terminal using the nuts and washers (supplied), refer to Fig. 6.
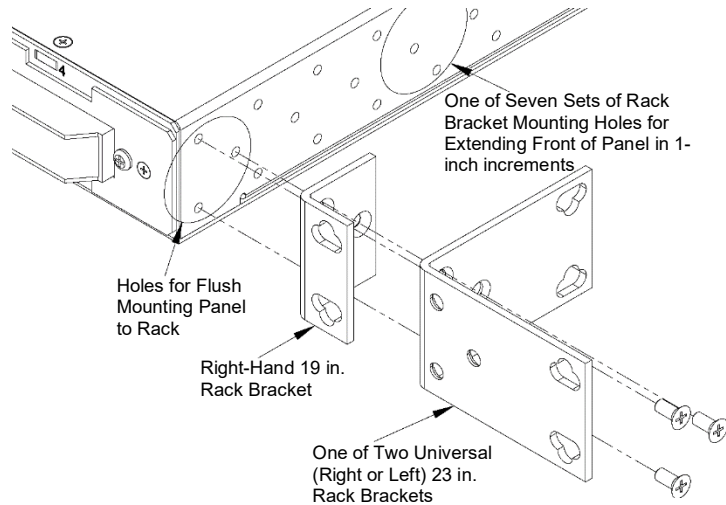
10. Tighten the nut to 36 in/lb. (4 N•m).

NOTE: Input and output wire size for this panel must be rated for the corresponding breaker/fuse size at the power distribution unit (PDU). The input wiring to this panel may be a greater size to accommodate a voltage drop from the primary power source.

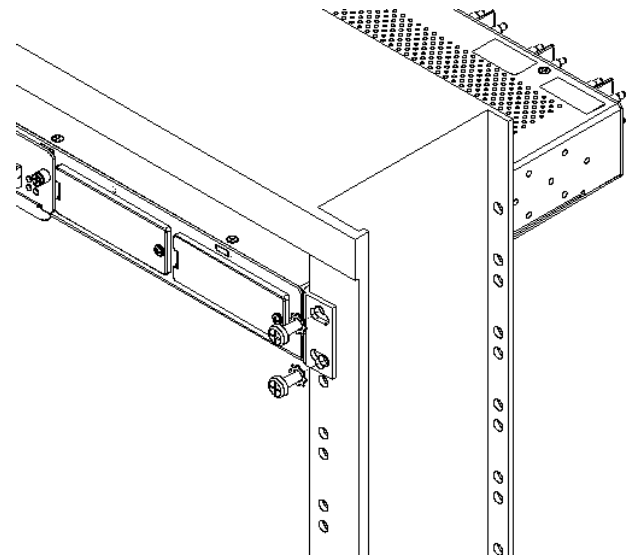NOTE: Always follow operating company guidelines when connecting input wiring to the primary power source.

11. Make sure the input power is OFF.

12. For input wiring, crimp straight or angled, 2-hole compression lugs onto #8 to #1 copper wires. Insulate lug barrels with UL94 V-0 rated heat shrink tubing.

Fig. 4: Bracket orientation

Fig. 5: Rack mounting

Fig. 6: Ground lug connection

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13. Clean the terminals with a nonabrasive, nonmetallic pad.

14. If required, lightly coat antioxidant on lugs and input terminals and then connect lugs to input terminals on back of panel. Tighten lugs to 36 in/lb. (4 N•m).

15. Before installing breakers and output wiring, turn power on to verify input power and indicators:

    • Verify input voltage and polarity
    • Whenever power is supplied, expect the corresponding PWR ON LED to light

16. For output wiring, repeat steps 8 through 12 for **BATT** and **RTN** outputs (crimp output wires to lugs, clean output terminals and attach lugs to output terminals). Heat shrink the insulation onto the lug barrels.

17. Record the circuit assignments on the pull-out designation card below the alarm display.

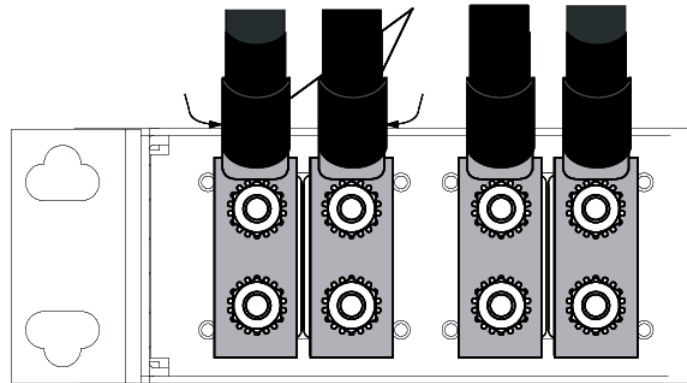18. Attach the plastic covers over all output terminals.

Fig. 7: Input/Output lug connections

Fig. 8: Power and alarm LEDs on front panel

⚠ **CAUTION**

CAUTION! Amphenol Network Solutions recommends that the individual circuit load not exceed 80% of fuse capacity (for example, 100A fuse x .80 = 80 max. load).

19. Make sure output devices — devices fed from the outputs of this demarcation panel — are disabled.

20. With input power on, firmly install each fuse in panel, as shown in Fig. 9.

    Fuses are designed so that the fuses can be installed in one way only.

21. Check voltage and polarity at output terminals and equipment ends.
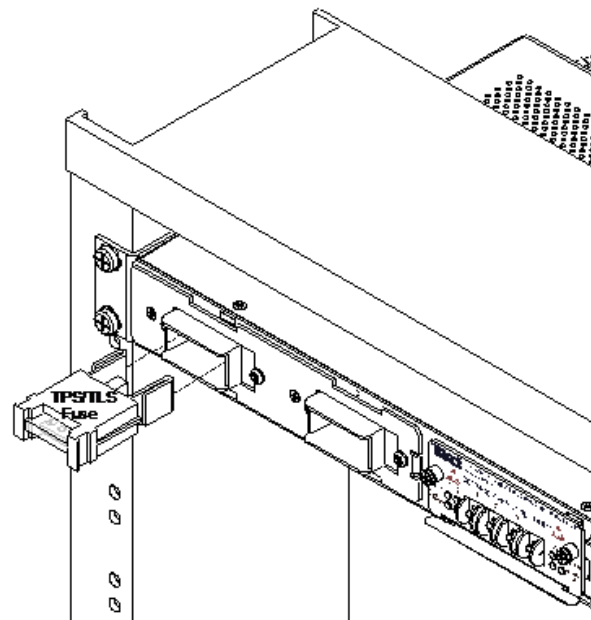
22. Test the alarm card:

Fig. 9: Installing fuses

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a. Expect an open circuit (∞Ω) between Terminals **C** and **NO** (see Fig. 10). The ALARM CUTOFF LEDs should not be lit.

NOTE: Under normal conditions, that is, with power on and fuse installed, expect an open circuit (∞Ω) between Terminals **C** and **NO** on the rear of the demarcation panel.

NOTE: If a fuse, expect continuity (0Ω) between Terminals **C** and **NO**.

23. Wire-wrap alarm pins with solid #26 to #22 AWG.

24. Enable loads and verify the normal operating conditions outlined in the preceding Notes.
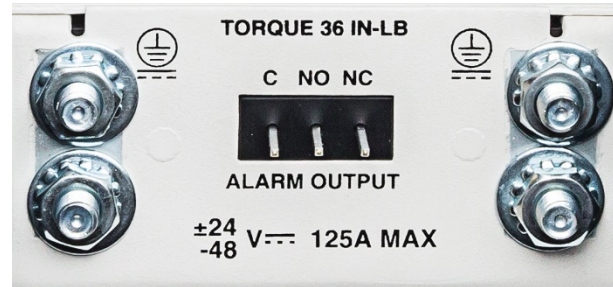
Fig. 10: Alarm relay terminals on rear of panel

1.5 Replacing Alarm Cards

The alarm card is held in place by two captive thumbscrews on the front of the alarm card panel.

To remove and replace an alarm card, unscrew the thumbscrews and pull out the card.

When replacing an alarm card, make sure the edge connector on the far end of the assembly docks securely into the connector inside the panel.

Fig. 11: Replacing the alarm card

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1.6 Accessories

Item	Description	Part Number
Alarm card, Demarc ACO	PWR ON / ALARM LEDs	400774
TFD fuse holder	25-125A with bullet-style connectors for TPS/TLS fuses	129816

Item	Description	Part Number
TPS fuses	5A	130481
	10A	130485
	15A	130487
	20A	130489
	25A	130476
	30A	130478
	40A	130482
	50A	130484
	60A	130486
	70A	130488

Item	Description	Part Number
TLS fuses	80A	140640
	90A	140641
	100A	140642
	110A	140643
	125A	140644

Item	Description	Part Number
Circuit breakers	5A	090-0052-0005
	10A	090-0052-0010
	20A	090-0052-0020
	25A	090-0052-0025
	30A	090-0052-0030
	40A	090-0052-0040
	50A	090-0052-0050
	60A	090-0052-0060
	70A	090-0052-0070
	80A	090-0052-0080
	90A	090-0052-0090
	100A	090-0052-0100

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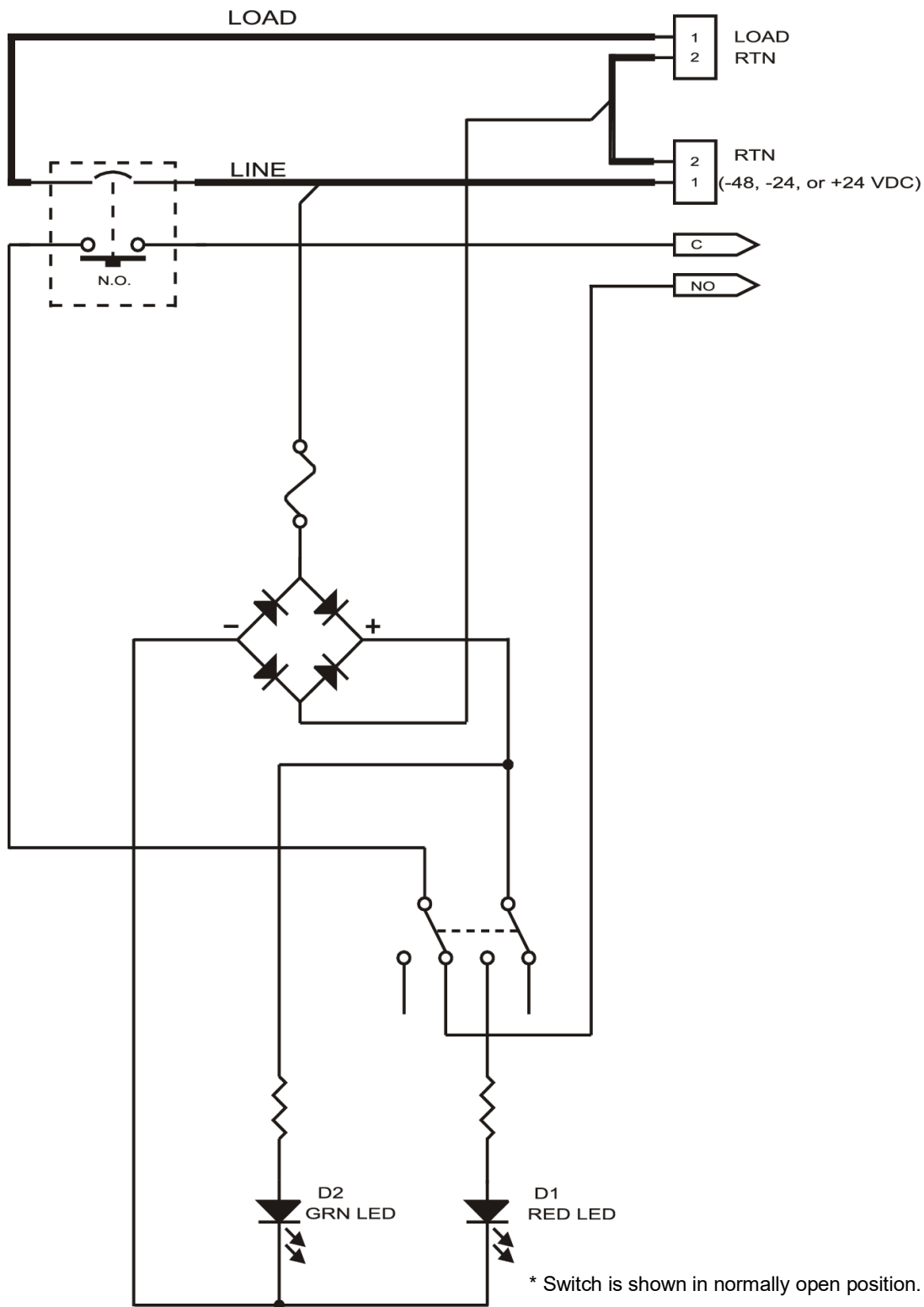
ALERT! Only use components and crimping tools approved by agencies or certifying bodies recognized in your country or region such as Underwriter's Laboratories (UL), TUV, etc.

Table 1 – Lugs (support dual 1/4-20 studs, 5/8" C-C)

	#8 AWG	#6 AWG	#4 AWG	#2 AWG
T & B	54204040 (Die Code 21)	54205 (Die Code 24)	54206 (Die Code 29)	
Burndy	YA8CL-2TC14 (Die Code 49)	YA6CL-2L (Die Code 7)	YA4C-2L (Die Code 8)	YA2CL-2NT14 (Die Code 10)
Panduit	LCD8-14A-L (Die Code 21)	LCD6-14A-L (Die Code 24)		LCDN2-14A-Q (Die Code 33)

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1.8 Referance Schematic (1 of 4 Circuits)

* Switch is shown in normally open position.

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1.9 Dimensions

Notes:

1. Dimensions are in inches (millimeters)
2. Fuse holders and fuses are not supplied
3. Max. lug width: .685"
4. Hole spacing: 1/4-20 on .625" centers

$\begin{bmatrix} 43.94 \end{bmatrix}$
1.730

Front View

$\begin{bmatrix} 443.48 \end{bmatrix}$
17.460

$\begin{bmatrix} 288.91 \end{bmatrix}$
11.374

Top View

Rear View
Rotated & shown without terminal covers

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