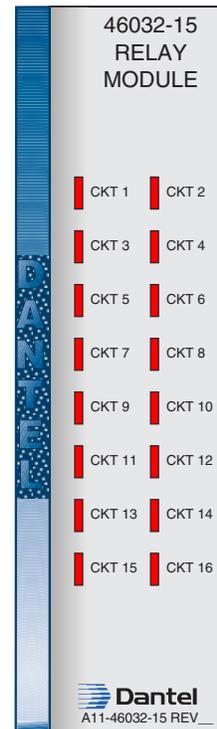


# 46032-15

## RELAY MODULE



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#### About this Practice:

This practice has been reissued to:

- Meet ISO 9001 requirements.

**Reissued Practices:** Updated and new content can be identified by a banner in the right margin.

**Issue date: January 1998**

UPDATED

### CAUTION

- Install or remove modules from the shelf only when the power is off. If you install a module in the shelf with the power on, the internal circuitry may suffer damage and the product warranty will be void.
- Remove and install circuit boards only in a static-safe environment (use antistatic wrist straps, smocks, footwear, etc.).
- Keep circuit boards in their antistatic bags when they are not in use.
- Do not ship or store circuit boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.
- For more complete information on electrostatic discharge safety precautions, refer to Bellcore™ Technical Reference # TR-NWT-000870.

# ORDERING INFORMATION

**NOTE:** This section lists the different options available for this product. To order any of the available options, contact Dantel Inside Sales through our toll-free number, **1-800-432-6835**.

OPTION NUMBER	FEATURES
A11-46032-15	Relay Module

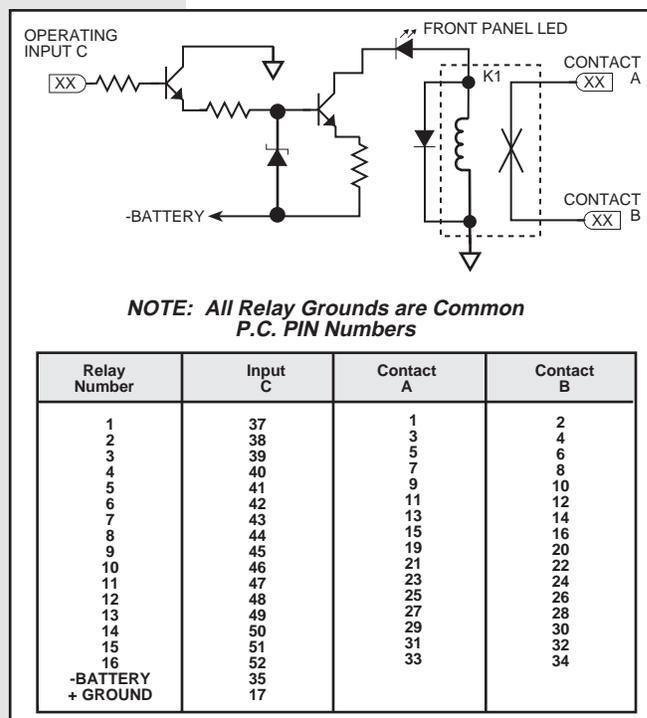
## GENERAL DESCRIPTION

The 46032-15 uses 16 normally open relays to operate LEDs, indicating lights, small motors, et cetera. Each relay is operated by voltages between -5 and -60 VDC.

## CIRCUIT DESCRIPTION

The 46032-15 Relay Module functional schematic is shown in Fig. 1. Relays K1 through K16 have Form A, normally open contacts. Relay activity is monitored separately by 16 LEDs on the front panel. These LEDs light when the corresponding circuit is energized. Each circuit provides a constant current source for the relay coil through the resistors, zener diode and transistors over the DC voltage range of -21 to -56 VDC.

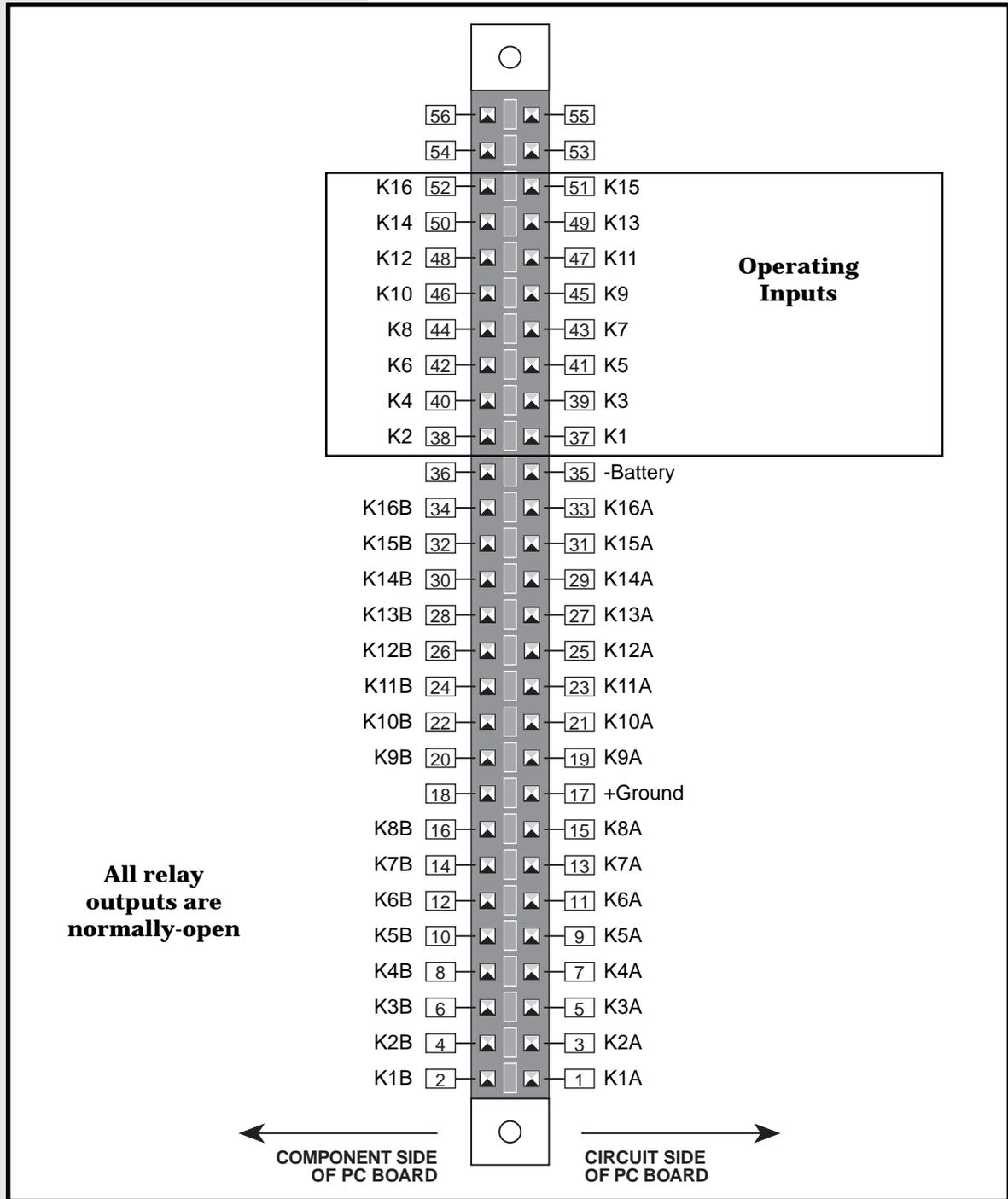
FIG. 1 - FUNCTIONAL SCHEMATIC, 46035-15



# INSTALLATION

Install the module in the proper slot in the shelf. The shelf is normally pre-wired at the factory. If necessary, refer to Figs. 1 and 2 for edge connector pin designations.

FIG. 2 - EDGE CONNECTOR PIN DESIGNATION, 46032-15



# OPERATION

The relays operate on any battery voltage from -5 to -60 VDC. There is no latching capability. The relay contacts open when voltage is removed. The individual LED should light on the front panel as power is applied to each relay. This, however, does not verify correct relay contact operation — only that power is applied to that individual relay coil.

# TECHNICAL SPECIFICATIONS

DESCRIPTION	DESCRIPTION			
Input Voltage Range	-21 to -56 VDC			
Current Requirements	@ -21VDC	@ -24 VDC	@ -48 VDC	@ -56 VDC
No relays Operating	0.0 mA	0.0 mA	0.0 mA	0.0 mA
One Relay Enabled	7.0 mA	8.0 mA	11.0 mA	12.0 mA
All Relays Enabled	112.0 mA	128.0 mA	176.0 mA	192.0 mA
Heat Dissipation	@ -21VDC	@ -24 VDC	@ -48 VDC	@ -56 VDC
One Relay Enabled	0.50 Btu/Hr	0.66 Btu/Hr	1.8 Btu/Hr	2.3 Btu/Hr
All Relays Enabled	8.0 Btu/Hr	10.5 Btu/Hr	28.8 Btu/Hr	36.7 Btu/Hr
Current per Input to Operate	0.13 mA @ -5 VDC; 2.75 mA @ -60 VDC			
Control Lead Input Voltage				
Minimum Operating	-2.75 VDC			
Maximum Release	-1.5 VDC			
Relay Contacts				
Current Rating	1 Amp @ 30 VDC			
Resistance	0.1 Ohm			
Operating Temperature	0° to 55° C.			
Physical Dimensions	1.4" x 6.0" x 5.6"			
Weight	7.5 Ounces			

# NOTES

# WARRANTY

## LIMITED WARRANTY

The Seller warrants that the standard hardware products sold will be free from defects in material and workmanship and perform to the Seller's applicable published specifications for a period of 18 months for hardware, and 3 months for software, from the date of the original invoice. The liability of the Seller hereunder shall be limited to replacing or repairing, at its option, any defective products which are returned F.O.B. to the Seller's plant, (or, at the Seller's option, refunding the purchase price of such products). In no case are products to be returned without first obtaining permission and a customer return authorization number from the Seller. In no event shall the Seller be liable for any consequential or incidental damages.

Equipment or parts which have been subject to abuse, misuse, accident, alteration, neglect, unauthorized repair or installation are not covered by warranty. The Seller shall make the final determination as to the existence and cause of any alleged defect. No warranty is made with respect to custom equipment or products produced to the Buyer's specifications except as specifically stated in writing by the Seller in the contract for such custom equipment.

This warranty is the only warranty made by the Seller with respect to the goods delivered hereunder, and may be modified or amended only by a written instrument signed by a duly authorized officer of the Seller and accepted by the Buyer.

Warranty and remedies on products not manufactured by the Seller are in accordance with warranty of the respective manufacturer. THE SELLER MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED; AND ALL IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEEDS THE AFORESAID OBLIGATIONS IS HEREBY DISCLAIMED BY THE SELLER.

## IN CASE OF DIFFICULTY

If you experience difficulty with this equipment, check the following, as appropriate:

1. Switch settings
2. Signal levels
3. Software configuration
4. Connections between Dantel's equipment and your equipment.

If there is still a problem, substitute equipment that is known to be good. For additional assistance, call Dantel's Technical Field Service Department weekdays, 6 A.M. to 5 P.M. pacific time:

**1-800-4DANTEL (1-800-432-6835).**

If a thorough checkout shows a piece of equipment has malfunctioned, you may return it to the factory. For repairs and emergency replacements, obtain a Return Material Authorization (RMA) number from the Customer Service Representative at **1-800-4DANTEL (1-800-432-6835)**.

To ensure expedient processing of your order, provide a purchase order number and shipping and billing information when requesting an RMA number. Also, when the units are returned to Dantel, include a description of the failure symptoms for each unit returned. Send defective equipment to:

**Dantel, Inc. • 2991 North Argyle Avenue • Fresno, California 93727-1388**

