

46097

OPTOCOUPLER

INTERFACE MODULE



Table of Contents

Ordering Information	2
General Description	2
Circuit Description	3
Installation	5
Operation	11
Technical Specification	11
Warranty	12

About this Practice:

This practice has been reissued to:

- Update the Technical Specifications table.

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

Issue date: July 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
A11-46097-00	Basic unit with LED display, 16 inputs, 16 outputs.

GENERAL DESCRIPTION

The 46097 Optocoupler Interface Module uses optical couplers to provide isolation between equipment that generates alarms and Dantel's equipment that receives the alarms.

The module has 16 inputs and 16 outputs. Red LEDs on the front panel light for each output when there is an alarm.

Each input, depending on how it is strapped, can accept one of the following alarm inputs:

REFERENCED	ALARM
+5VDC	0V
0V	+5VDC
0V	-Battery
-Battery	0V
Special	Consult Application Engineer

The alarm inputs are converted to ground outputs that can go to any of Dantel's alarm input devices:

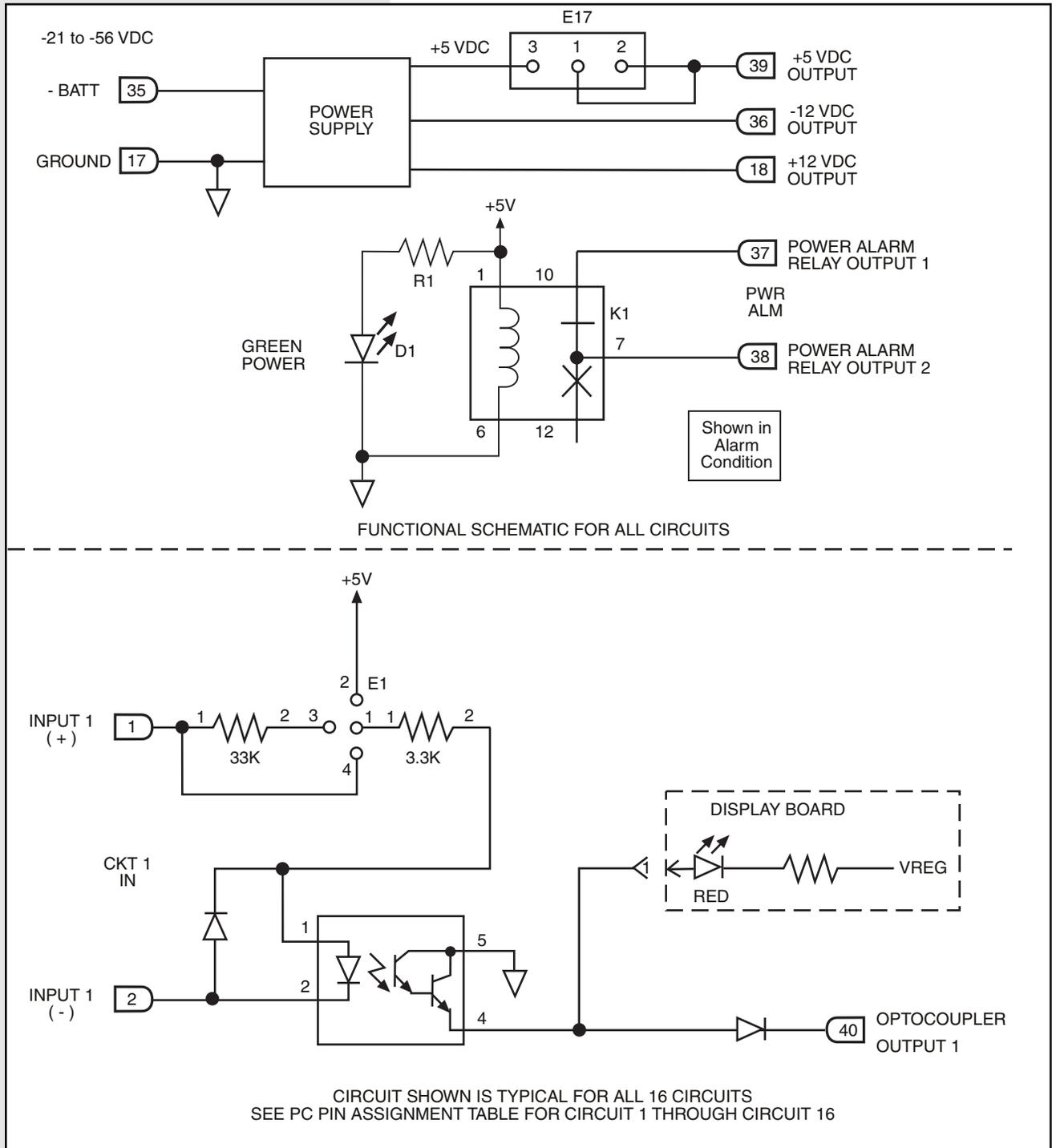
- ◆ 46009 and 46010 Multiple Alarm Transmitters (MATs)
- ◆ 46121 Scan and Control Interface
- ◆ 46131 and 46132 Alarm Processing Units
- ◆ 46210 Alarm Block
- ◆ 46220 Alarm and Control Block

If the power supply on the module fails or if power is removed from the module, a relay contact closes. The relay contacts can be wired to an audible or visual alarm to indicate the loss of power.

CIRCUIT DESCRIPTION

Fig. 1 shows the functional schematic for the 46097 Optocoupler Interface Module. This schematic is typical for all circuits. Table A displays PC pin assignments.

FIG. 1 - FUNCTIONAL SCHEMATIC, 46097 OPTOCOUPLER INTERFACE MODULE



CIRCUIT DESCRIPTION

TABLE A - PC PIN ASSIGNMENT

TABLE: PC PIN ASSIGNMENT FOR CIRCUIT 1 - 16			
Circuit #	Input (+)	Input (-)	OPTOCOUPLER OUTPUT
1	1	2	40
2	3	4	41
3	5	6	42
4	7	8	43
5	9	10	44
6	11	12	45
7	13	14	46
8	15	16	47
9	19	20	48
10	21	22	49
11	23	24	50
12	25	26	51
13	27	28	52
14	29	30	53
15	31	32	54
16	33	34	55

Each input, depending on how it is strapped, can accept one of the following alarm inputs:

- ◆ TTL +5 VDC to 0 VDC
- ◆ 0 VDC to +5 VDC
- ◆ Negative voltage (-21 VDC to -56 VDC)
- ◆ Ground signal, referenced to either +5 VDC or -21 to -56 VDC

Refer to the Installation chapter for typical applications.

When the module receives an alarm, the Darlington transistor in the optical coupler turns on to provide a ground output and operate the red alarm LED.

When TTL alarm inputs are used, as shown in Figure 6, the +5 VDC needed to operate the optical couplers can be supplied either internally (strap in position 1-2) or externally (strap in position (1-4). When supplied externally, the +5 VDC is supplied at the pin designated Input +, and bypasses the 33K-ohm resistor.

When the module has power applied to it, current flows through the coil of relay K1. This causes the relay contacts to open. Current also flows through the green LED that is in parallel with K1 to indicate that the module has power. When there is no power, the green LED is off, and the relay contacts are closed. The relay contacts can be wired to an external audible or visual alarm that operates when the module has no power.

The module also supplies the following voltages to the edge connector for off-board use:

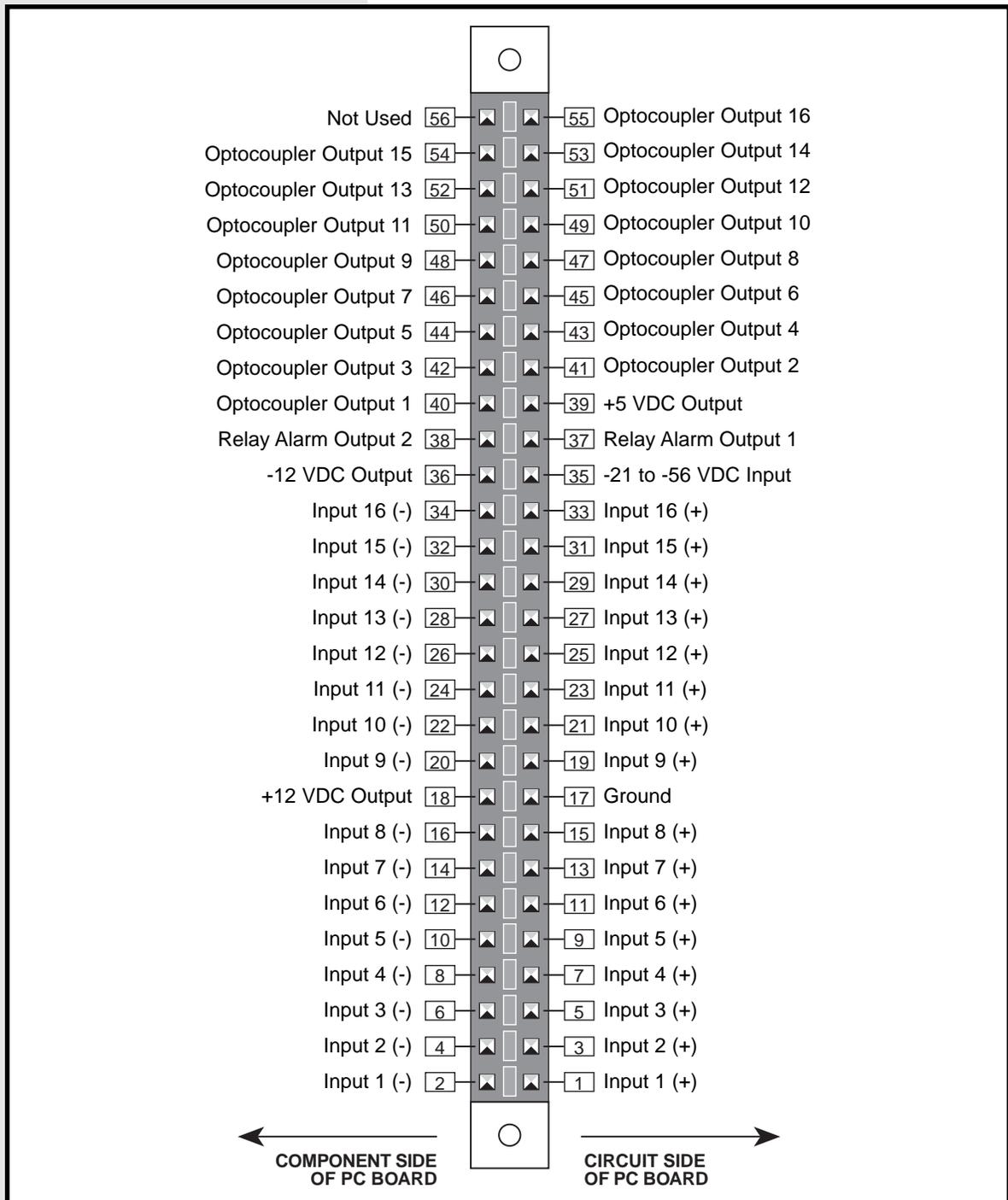
- ◆ +5 VDC (optional - strap E17 (1-3))
- ◆ + 12 VDC
- ◆ -12 VDC

INSTALLATION

Installation consists of setting the straps and installing the module in an equipment shelf.

There are 16 identical optical coupler circuits on the module. Figure 1 shows the pinouts for circuit 1. Table A and Figure 2 show the pinouts for the other 15 circuits.

FIG. 2 - EDGE CONNECTOR PIN ASSIGNMENTS



INSTALLATION

1. Set the straps for each of the 16 inputs.
 - ◆ Refer to Fig. 3 for the locations of the straps.
 - ◆ Refer to Table B for the strap designations.
 - ◆ Refer to Fig. 4 for a typical wiring and strapping application. The input wiring determines how you set the straps.

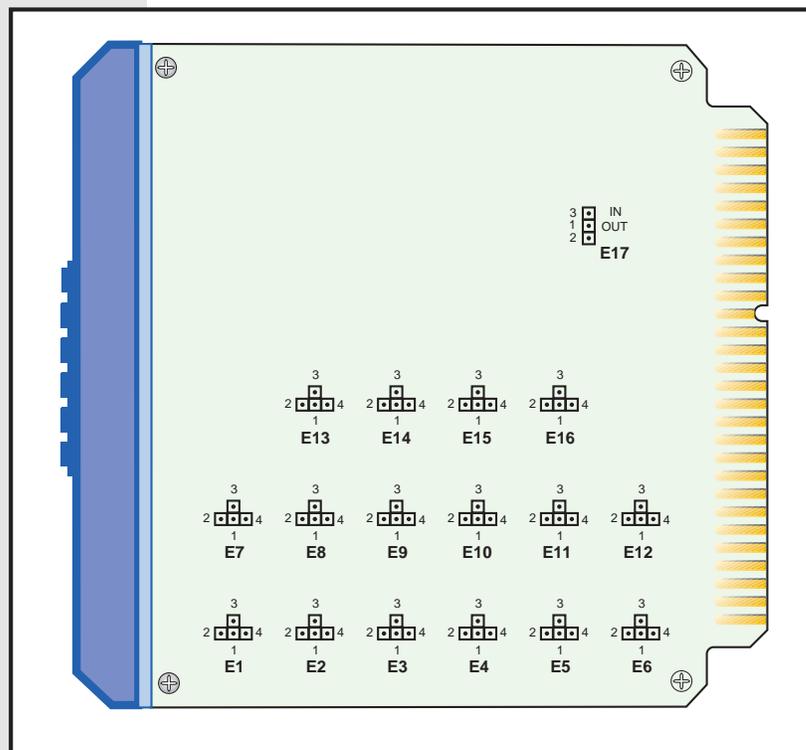
TABLE B - STRAP SETTINGS

OPTION	ALARM TYPE	STRAP LOCATIONS	REFERENCE INPUT
0V to +5V	+5V	1 & 4	GND
+5V to 0V	GND	1 & 2	+5V
GND to -Battery	-Battery	1 & 3	GND
-Battery to GND	GND	1 & 3	-Battery
Other		Per application	Spec.

FIG. 3 - STRAP LOCATIONS

NOTE:

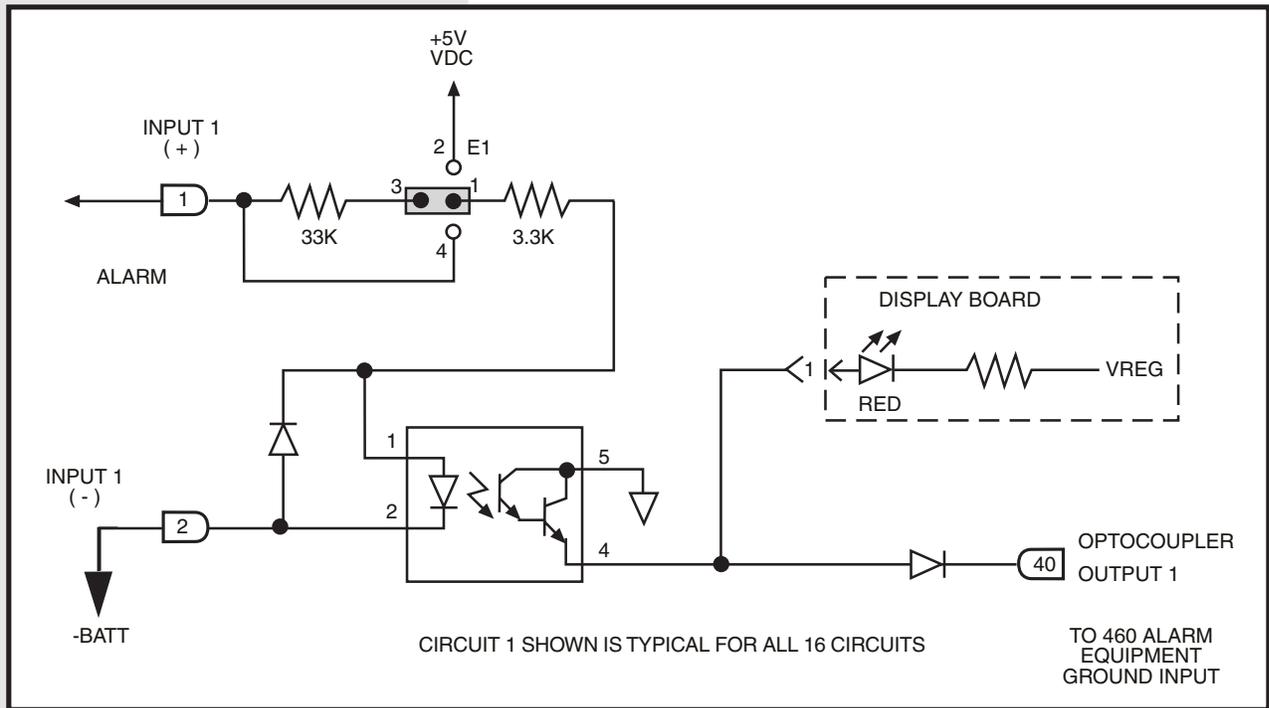
E1 = Circuit 1
 E2 = Circuit 2
 E3 = Circuit 3
 :
 :
 :
 E16 = Circuit 16



CONTINUED . . .

INSTALLATION

FIG. 4 - TYPICAL GROUND VOLTAGE ALARM APPLICATION (-BATT TO GND) INPUT



NOTE:

Fig. 4 is a logical representation of the circuit. To see the physical strap layout, refer to Fig. 3.

In Fig. 4, pin 2 is wired to negative battery (pin 35). Pin 1 is connected to the alarm source.

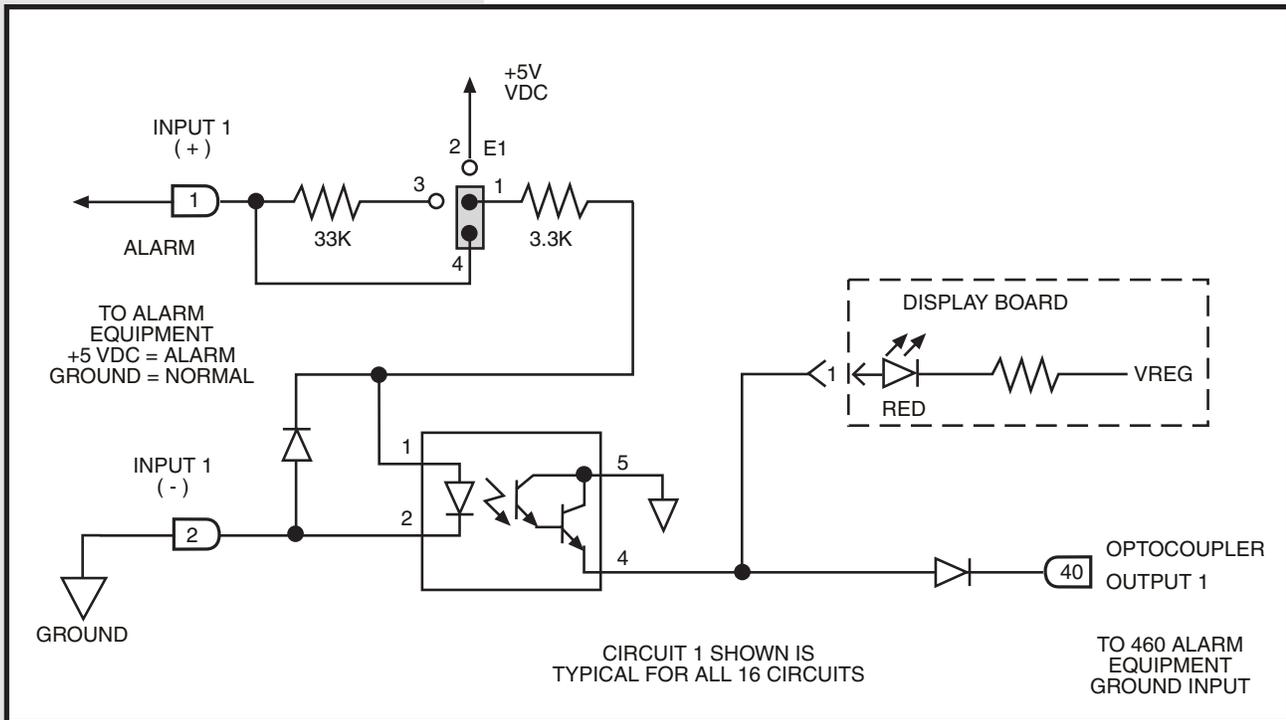
In this case: Strap 1 & 3

- ◆ GND = Alarm
- ◆ -Batt = Normal

CONTINUED . . .

INSTALLATION

FIG. 5 - TYPICAL TTL ALARM APPLICATION USING FOR 0 TO +5V INPUT



NOTE:

Fig. 5 is a logical representation of the circuit. To see the physical strap layout, refer to Fig. 3.

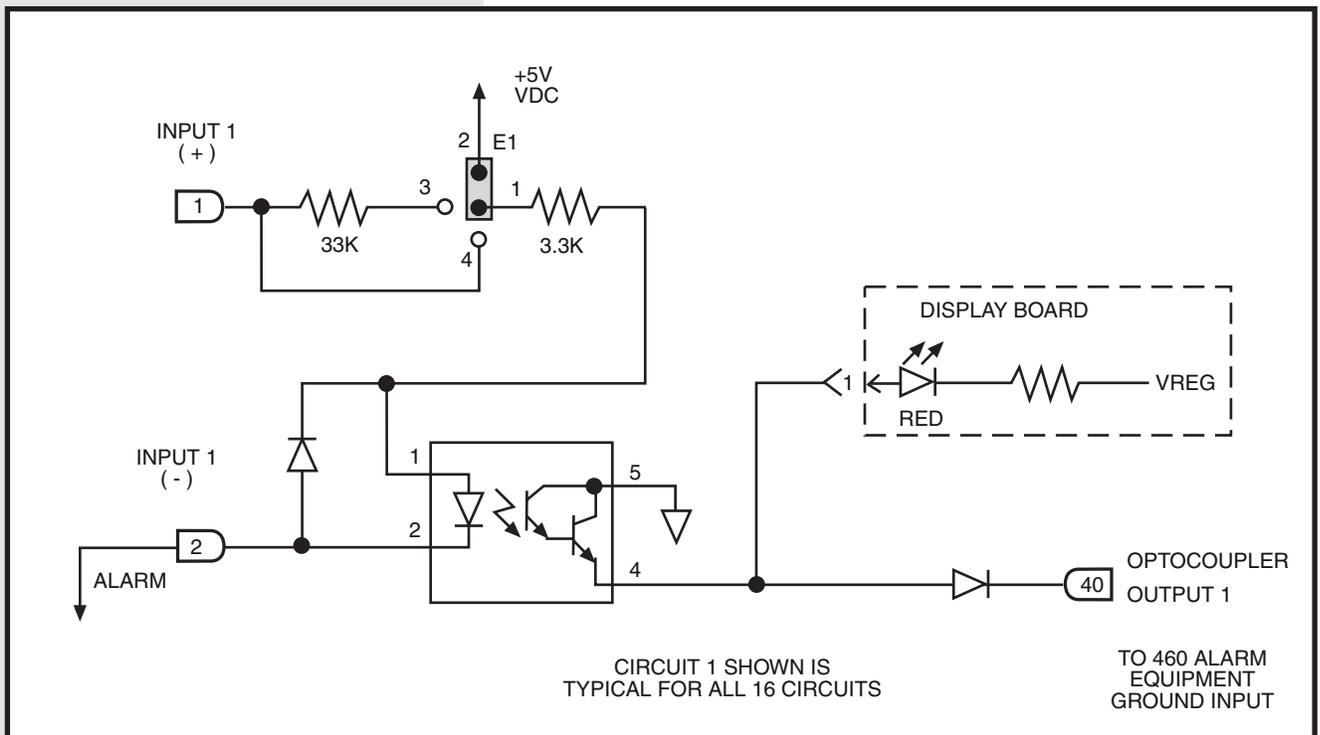
In Fig. 5, pin 2 can be wired to ground and pin 1 can be wired to an alarm source (the strap changed to position 1 & 4).

- ◆ Ground = Normal
- ◆ +5 VDC = Alarm

CONTINUED . . .

INSTALLATION

FIG. 6 - TYPICAL POSITIVE VOLTAGE ALARM APPLICATION (+5VDC TO GND)



NOTE:

Fig. 6 is a logical representation of the circuit. To see the physical strap layout, refer to Fig. 3.

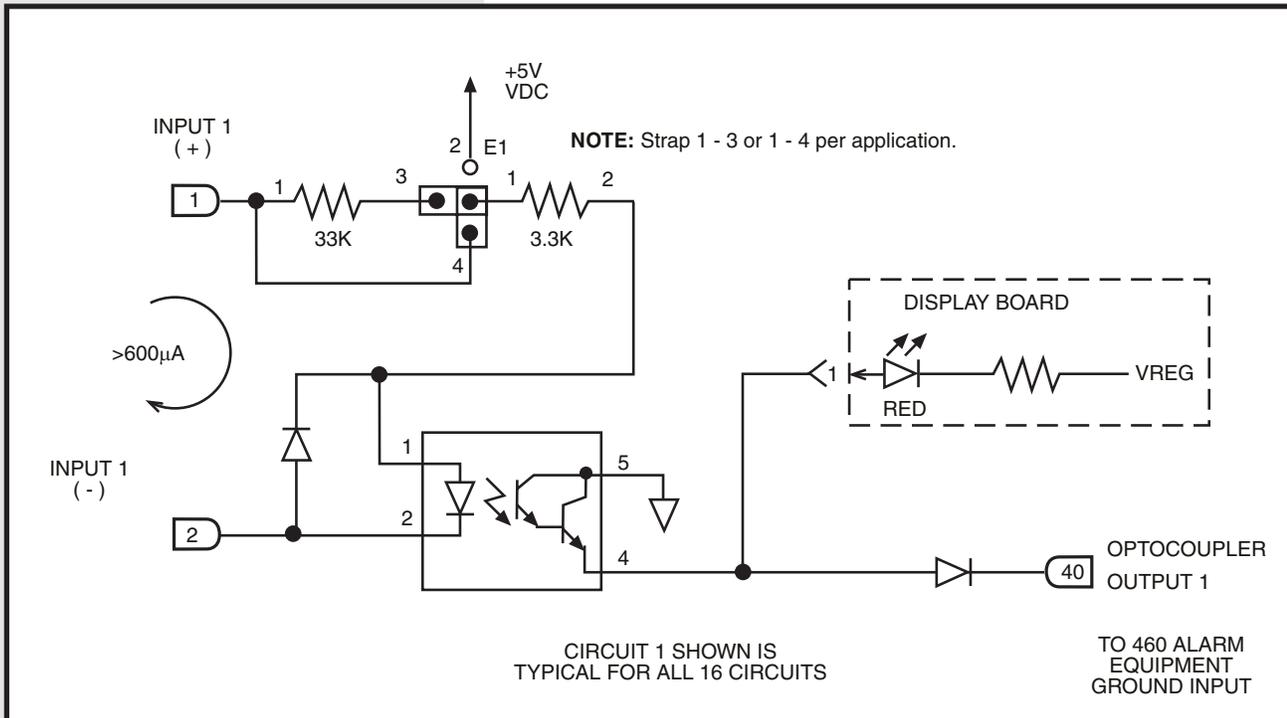
In Fig. 6, pin 2 is wired to an alarm source. Pin 1 not used and must be left unconnected (the strap changed to position 1 & 2).

- ◆ +5VDC = Normal
- ◆ 0 VDC = Alarm

CONTINUED . . .

INSTALLATION

FIG. 7 - TYPICAL NEGATIVE VOLTAGE ALARM APPLICATION



NOTE:

+12VDC and -12VDC voltages are available at pins 18 and 36 to bias for special applications. Refer to Fig. 1.

In Fig. 7, various voltage combinations can realize alarm conditions when the input loop exhibits a forward current greater than 600 microamps. Strap E1 to limit the current in its maximum range; positions 1 & 4 for 12VDC max. or positions 1 & 3 for 60VDC max.

2. Set the strap for the external +5 VDC.
 - ◆ Set strap E17 in position 1 & 2 if you do not want +5 VDC supplied to output pin 39. (Normal default position.)
 - ◆ Set strap E17 in position 1 & 3 if you want +5 VDC supplied to output pin 39.
3. Install the module in the proper slot of the equipment shelf.
4. Verify the proper operation of the module.
 - ◆ Turn on the power. The green LED lights.
 - ◆ Generate alarms for each input. The proper red LEDs light, and alarms are forwarded to Dantel's alarm input devices.
 - ◆ Return the inputs to their non-alarm states. The red LEDs turn off, and Dantel's alarm input devices detect the change of state.
 - ◆ Remove power from the module but not the rest of the system. Do not remove power by pulling the module out of the equipment shelf. The green LED turns off. If you wired the module's relay contacts to an audible or visual alarm-indicating device, it activates, indicating the module's failure.

OPERATION

When an input receives an alarm, the red LED for that input will light on the front panel.

The green LED on the front panel lights whenever the module has power. If power is removed from the module, or if there is a failure of the +5 VDC power supply on the module, the light goes out and the relay contact closes. If you wired the relay contacts to an audible or visual alarm-indicating device, it activates, indicating the module's failure.

TECHNICAL SPECIFICATION

DESCRIPTION	VALUE			
Input Voltage Range	-21 to -56 VDC			
Input Current	@-24 VDC		@-48 VDC	
	Idle	Operate	Idle	Operate
	90 mA	180 mA	65 mA	155 mA
Heat Dissipation	7.4 Btu	14.7 Btu	10.6 Btu	25.4 Btu
ALARM INPUTS				
TTL ALARM INPUTS				
Voltage Range	0 to +5 VDC			
Current Range	600 μ A to 3.6 mA			
Resistance	3.3K ohms + 1 Diode (0.6 volt)			
BATTERY ALARM INPUTS				
Voltage Range	21 to 56 VDC			
Current Range	600 μ A to 2.0 mA			
Resistance	36.3K ohms + 1 Diode (0.6 volt)			
RELAY OUTPUT				
Contact Type	Single Form-B Dry Contact			
Contact Ratings	Max. 1 Amp @ 24 VDC			
	Max. 0.5 Amp @ 125 VAC			
Weight	8 oz.			
Physical Dimensions	1.4"W x 6"D x 5.6"H			
Operating Temperature Range	0 to 55 Degrees C.			
VOLTAGE		CURRENT AVAILABLE		
+5 VDC	1000 mA			
+12 VDC	100 mA			
-12 VDC	100 mA			

UPDATED

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



P.O. Box 55013 • Fresno, CA 93747-5013 Phone (209) 292-1111 Fax (209) 292-9355 <http://www.dantel.com>