INSTALLATION INSTRUCTIONS

Original Issue Date: **3/98**
Model: **Power Monitor**
Market: **Industrial**
Subject: **Ten-Relay Dry Contact Kits PA-353398 and PA-353398-SD**

The ten-relay dry contact accessory kit allows the power monitor to provide normally open (N.O.) and normally closed (N.C) contact outputs. Connect lamps, audible alarms, and other devices to signal auxiliary warning 1-6 and transfer switch position (normal, off, or emergency.)

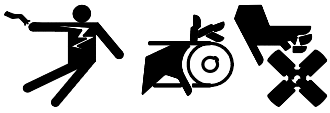
Customer-provided accessories require a separate electrical power supply and must not exceed the following relay contact ratings.

Relay Contact Ratings

Maximum Switching Voltage . . . . . 120 vac, 28 vdc
Maximum Switching Current . . . . . 10 amps
Minimum Switching Power . . . . . 10 milliamps at 28 volts DC or equivalent

For a 12 volt DC supply voltage make connections to battery positive at the starter solenoid and to battery negative (–) at the engine ground. Do not use terminals 42A and 2 of the dry contact kit (power monitor accessory output) to supply voltage to relay contacts. Use separate leads directly from the battery for supply voltage. Size leads according to local, state, and national electrical codes.

⚠ WARNING



Accidental starting.
Can cause severe injury or death.

Disconnect battery cables before working on generator set. (Remove negative (–) lead first when disconnecting battery. Reconnect negative (–) lead last when reconnecting battery.)

Disabling generator set. Accidental starting can cause severe injury or death. Before working on the generator set or connected equipment, disable the generator set as follows: 1) Turn the generator set master switch to OFF position. 2) Disconnect power to battery charger. 3) Remove battery cables (remove negative (–) lead first). Reconnect negative (–) lead last when reconnecting battery. Follow these precautions to prevent starting of generator set by an automatic transfer switch or remote start/stop switch.

⚠ WARNING

Hazardous voltage.
Can cause severe injury or death.

Disconnect all power sources before opening enclosure.

(under 600 Volt)

Opening power monitor enclosure. Hazardous voltage can cause severe injury or death. Only trained and qualified personnel should open power monitor enclosure.

Opening power monitor enclosure. Hazardous voltage can cause severe injury or death. Transfer switch or generator set, when part of the system, can automatically energize power monitor or accessories. Disconnect all power sources before opening enclosure. Move generator set master switch on controller to OFF position and disconnect battery negative (–) lead before proceeding.

Current transformer voltage. Hazardous voltage can cause severe injury or death. Do not disconnect current transformer leads and reenergize the power source or equipment damage and personal injury may occur. If the situation requires reenergizing the power source, reconnect the current transformer leads or short leads together first.

Installation

NOTE

Install AC and DC wiring in separate raceways, cables, or conduit. Observe all applicable national, state, and local electrical codes during installation.

1. Disconnect all power sources before opening the power monitor enclosure.
2. Mount the dry contact assembly in the location shown in Figure 1.
   a. Place six spacers (X-712-9) on the mounting studs for the dry contact assembly.
   b. Place the dry contact assembly on the mounting studs in the position shown.
   c. Place a lock washer (X-22-7) and hex nut (X-70-12) on each of the six studs and tighten the nuts carefully. Overtightening the nuts can damage the contact assembly.
3. Connect the contact assembly to the power monitor terminal strip TB1 using the wiring harness (353313) provided. Figure 2 shows a typical factory hookup that provides all output signals available on the power monitor and leaves one relay unused. Figure 3 provides identification of TB1 terminals on the power monitor.

NOTE

Allow sufficient slack in the wiring to components mounted on the enclosure door to ensure that the enclosure door opens and closes without stress or wear on the wiring. Neatly route or bundle wiring to prevent dangling wires from causing damage to internal components when opening and closing the enclosure door.

   a. Wire the RDOs from the power monitor to the desired relay inputs K1-K10 on the dry contact assembly.

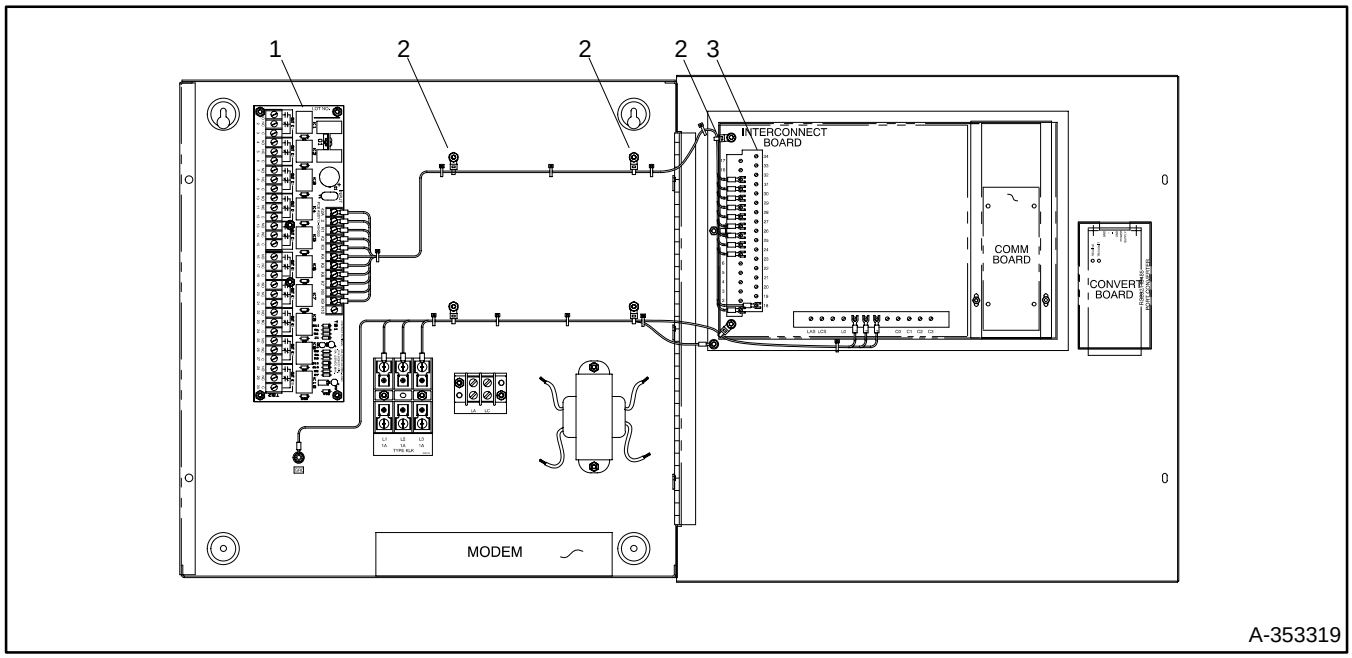
NOTE

Connect up to three dry contact relays to a single relay driver output (RDO) on the power monitor terminal strip.

   b. Connect terminal 42 of the dry contact assembly to any of TB1 terminals 18-20, Accessory DC power supply positive(+).
   c. Connect terminal 2 of the dry contact assembly to any of TB1 terminals 1-5, Accessory DC power supply negative(–).
   d. Secure the wiring harness to the enclosure using the tie straps (X-468-3) and nuts (X-6210-4) at the locations shown in Figure 1.
4. Select normally open (N.O.) or normally closed (N.C.) contacts from each relay depending upon application requirements.
5. Verify that the relay contact electrical supply meets the requirements of the customer-provided devices connected to the dry contact kit.
6. Close and replace the screws that hold the enclosure door closed before reapplying power.

Ten-Relay Dry Contact Kit

Parts List		
Kits: PA-353398 and PA-353398-SD		
Qty.	**Description**	**Part Number**
1	Dry contact assembly, 10-relay	D-294303
6	Washer, lock #8	X-22-7
6	Nut, hex	X-70-12
6	Spacer	X-712-9
1	Harness, dry contact wiring	353313
2	Tie strap, nylon cable	X-468-3
2	Nut, hex 8-32	X-6210-4



1. Ten-Relay Dry Contact Assembly
2. Cable Tie Attatchment Locations
3. Terminal Strip TB1 for DC Power and Control Connections (Standard)

Figure 1. Dry Contact Kit Location in Power Monitor (front view with enclosure door open to right)

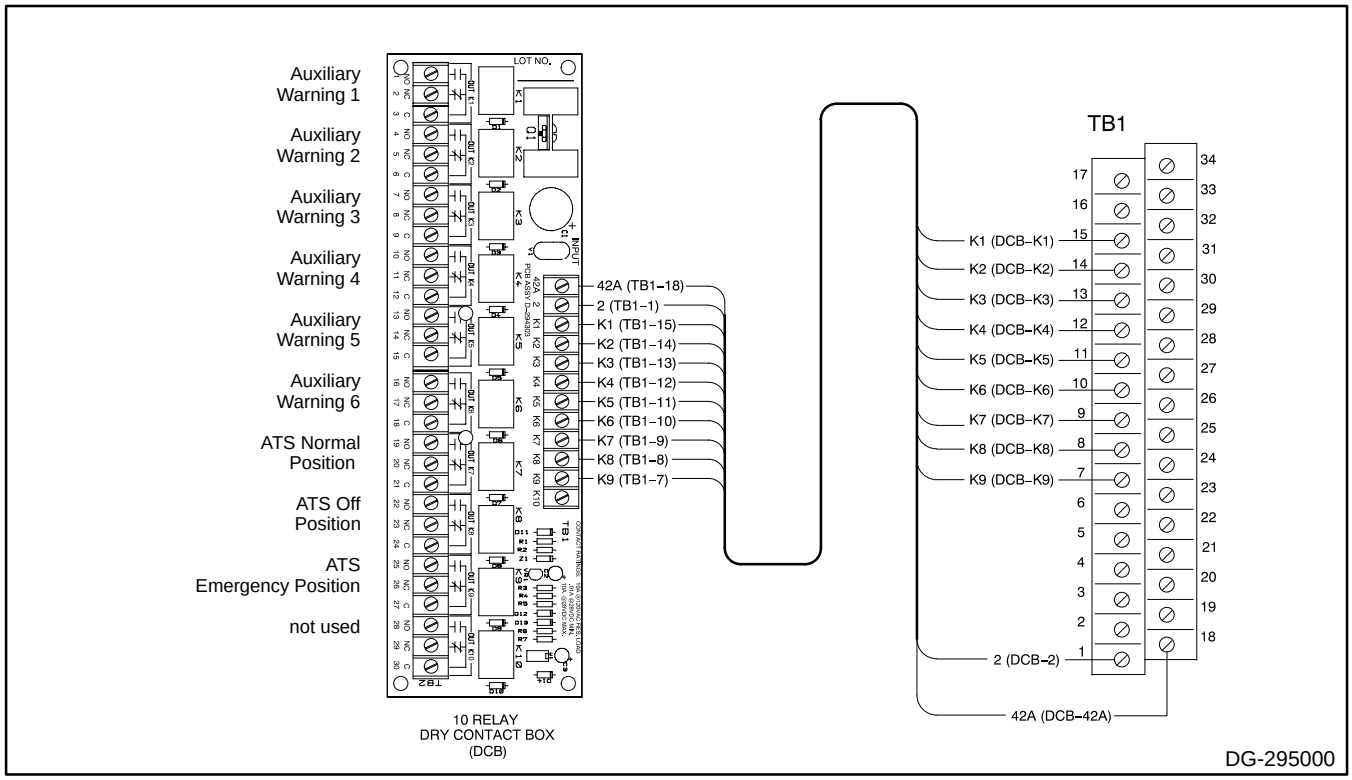


Figure 2. Ten-Relay Dry Contact Wiring (factory hookup)

Term.	Description
1	Accessory DC power supply negative (–). Note 1
2	Accessory DC power supply negative (–). Note 1
3	Accessory DC power supply negative (–). Note 1
4	Accessory DC power supply negative (–). Note 1
5	Accessory DC power supply negative (–). Note 1 Also DC power supply input negative (–) when powered by a DC supply
6	Not used
7	ATS emergency position relay driver output (RDO). Note 2
8	ATS off position relay driver output (RDO). Note 2
9	ATS normal position relay driver output (RDO). Note 2
10	Auxiliary warning 6 relay driver output (RDO). Note 2
11	Auxiliary warning 5 relay driver output (RDO). Note 2
12	Auxiliary warning 4 relay driver output (RDO). Note 2
13	Auxiliary warning 3 relay driver output (RDO). Note 2
14	Auxiliary warning 2 relay driver output (RDO). Note 2
15	Auxiliary warning 1 relay driver output (RDO). Note 2
16	Analog auxiliary input 2 positive (+). Note 3
17	Analog auxiliary input 1 positive (+). Note 3
18	Accessory DC power supply positive (+). Note 4
19	Accessory DC power supply positive (+). Note 4
20	Accessory DC power supply positive (+). Note 4
21	DC power supply positive (+) input 10-32 vdc (when powered by a DC supply). Note 5
22	Not used
23	ATS test mode normally closed (N.C.) contact. Note 6
24	ATS test mode common (C.) contact. Note 6
25	ATS test mode normally open (N.O.) contact. Note 6
26	ATS emergency position contact input. Note 7
27	ATS off position contact input. Note 7
28	ATS normal position contact input. Note 7
29	Auxiliary warning contact 6 input. Note 7
30	Auxiliary warning contact 5 input. Note 7
31	Auxiliary warning contact 4 input. Note 7
32	Auxiliary warning contact 3 input. Note 7
33	Auxiliary warning contact 2 input. Note 7
34	Auxiliary warning contact 1 input. Note 7

Note 1: Accessory DC power supply negative terminals are common connection terminals for negative DC inputs and outputs.

Note 2: Relay Driver Outputs (RDOs) can drive a maximum of three dry contact accessory relays.

Note 3: Analog auxiliary inputs: voltage range 0-10 vdc, input impedance about 75 kΩ. The use of separate shielded cables for each input recommended for noise immunity.

Note 4: Accessory DC outputs are common terminals for accessory DC power and F2 fuse limits current to 3 amps DC max.

Note 5: DC power supply positive input 10-32 vdc, current requirement approximately 0.5 amps DC with display on and no load on accessory DC power supply positive outputs. Fuses limit input current to about 6 amps DC max.

Note 6: ATS test mode N.O. and N.C. contacts switch during ATS test mode and are each rated at 10 A @ 120 vac max. resistive load, 10 A @ 28 vdc max., 10 mA @ 28 vdc min.

Note 7: Contact inputs connect to isolated contacts or open collector inputs. Complete circuit to accessory DC power supply negative (terminals 1-5 of TB1) to activate. Operating voltage 12 vdc, operating current 10 mA DC min.

Figure 3. TB1 Terminal Strip—DC and I/O Connections