

INSTALLATION INSTRUCTIONS

Original Issue Date: **6/15**

Model: **RDT and RXT ATS with Load Management**

Market: **Residential/Commercial ATS**

Subject: **Power Relay Module Kit GM92001-KP1-QS**

Introduction

The power relay module kit contains one 50 amp relay with connecting lugs in a NEMA type 3R enclosure. Use up to four power relay module kits with the following load management devices:

- RDT automatic transfer switch with load shed kit GM88281-KA1 or GM88281-KP1-QS
- RXT automatic transfer switch with load shed kit GM88281-KA1 or GM88281-KP1-QS
- RXT automatic transfer switch with combined interface/load management board

Note: A load shed kit or RXT combined interface/load management board is **required** for load management. See TT-1609 for the load shed kit or TP-6807, RXT Operation and Installation Manual, for load management operation information.

The power relay modules can be mounted indoors or outdoors. Mount the modules on a sturdy vertical surface with the drain holes at the bottom of the module.

Two (2) 120 VAC loads (shed simultaneously) or a single 240 VAC load can be wired to each relay.

An adequate electrical supply is required for operation of the power relay module. The 120 VAC relays require a customer-supplied voltage source. Check the electrical requirements of the customer-provided equipment prior to installation to determine the wire size and circuit protection required. Verify that customer-provided equipment complies with applicable local and national electrical codes.

Read the entire installation procedure and compare the kit parts with the parts list at the end of this publication before beginning installation. Perform the steps in the order shown.

See Figure 1 for an illustration of the power relay module.

Equipment Required

- Two to four #8 screws to mount each module
- Drill with 7/8 inch and/or 1 3/8 inch bits or hole saws
- Level
- Power cable for relay source and load connections (see Specifications below)
- Control cable for relay coil connection (see Specifications below)
- Conduit
 - If the modules are mounted outside, use outdoor-rated conduit hubs .
 - If metal conduit is used, use conduit hubs with screw terminals for the ground connection.



Figure 1 Power Relay Module

Specifications

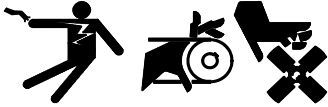
Relay Rating	50 A @ 240 VAC
Operating Temperature	-20 to 55°C (-4 to 131°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Relay Type	DPST - NC
Coil Voltage	120 VAC
Control Relay Output Connection (to relay coil)	#6-32 screw 12-18 AWG cable (ring terminals included)
Connecting Lug Wire Size (qty. 4, relay source and load connections)	#4-14 AWG (Copper only)

Figure 2 Specifications

Safety Precautions

Observe the following safety precautions while installing the kit.


⚠ WARNING



Accidental starting.
Can cause severe injury or death.

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

Disabling the 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) Move the generator set master switch to the OFF position. (2) Disconnect the power to the battery charger. (3) Remove the battery cables, negative (-) lead first. Reconnect the negative (-) lead last when reconnecting the battery. Follow these precautions to prevent starting of the generator set by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer.

⚠ DANGER

Hazardous voltage. Will cause severe injury or death.
Disconnect all power sources before opening the enclosure.

Short circuits. Hazardous voltage/current can cause severe injury or death. Short circuits can cause bodily injury and/or equipment damage. Do not contact electrical connections with tools or jewelry while making adjustments or repairs. Remove all jewelry before servicing the equipment.

1 Installation Procedure

Note: Load management priorities are determined by the relay connections to the load shed kit or interface/load management board. See TT-1609 for the load shed kit or TP-6807, RXT Operation and Installation Manual, for load priority and load management operation information.

1.1 Prevent the generator set from starting.

1. Place the generator set master switch in the OFF position.
2. Disconnect the utility power to the generator set.
3. Disconnect the generator set engine starting battery(ies), negative (-) lead first.

1.2 Install the power relay modules.

1. Identify a convenient location near the transfer switch or the load. The module will be connected to the load shed kit or the transfer switch's combined interface/load management board and to the non-essential circuits that can be added or shed by the load management system.
2. Remove the cover from the module.
3. Cover or remove the relay from the box to protect it from debris.
4. Use a drill or hole saw to cut openings for the cables into and out of the box. 7/8 inch and 1 3/8 inch openings for 1/2 inch and 1 inch conduit hubs are marked on the box in recommended locations.
5. Use a screwdriver to knock out the mounting holes in the bottom of the box. Knock out only the holes that will be used to mount the box.
6. Be sure to install the box with the drain holes pointing down. Use a minimum of two mounting screws at opposite corners of the box. Using the dimensions shown in Figure 7 or using the bottom of the box as a template, mark and drill two or four pilot holes or mounting holes for #8 screws as needed in the mounting surface.
Note: Be sure to install the box with the drain holes pointing down.
7. Remove debris from the box and reinstall the relay, if it was removed. Tighten the relay mounting screws to 2.3 Nm (20 in-lbs).
8. Use two or four #8 screws to mount the box securely with the drain holes pointing down.

1.3 Relay Connections to a Load Shed Kit

This section applies to models RDT ATS and RXT ATS equipped with load shed kit GM88281-KA1 or GM88281-KP1-QS. For the RXT with combined interface/load management board, go to Section 1.4.

See Figure 2 for cable specifications.

Note: See the instructions provided with the load shed kit for load priority and load management operation information.

Load management priorities are determined by the control relay output connections to the load shed kit. Typically, Load A is added first and shed last.

1. Disconnect power to the transfer switch.
2. If the load shed kit is not already installed, follow the instructions provided with the load shed kit to install the load shed kit into the transfer switch enclosure and connect it to the generator set controller and current transformer.
3. Connect customer-supplied leads to the control relay output terminals on the load shed kit terminal block. See Figure 3 and Figure 4.
4. See Figure 7 for the coil connection screws on the relay. Connect the control leads from the load shed kit to the relay coil using ring terminals X-283-2.
5. See Figure 4 and Figure 8 for the source and load connections to the relay.

- a. Connect the line side of the relay to the source power circuit as shown in Figure 4.
- b. Connect the load side of the relay to the non-essential load circuits as shown in Figure 4. Two (2) 120 VAC loads (shed simultaneously) or a single 240 VAC load can be wired to each relay.

6. Connect the 120 VAC power circuit to the the load shed kit terminal block as shown in Figure 4.

Note: The AC power supply circuit must be protected by an appropriately sized fuse or circuit breaker.

7. For all other load shed kit installation and connection instructions, see the installation instructions provided with the load shed kit.

8. Go to Section 1.5.

Relay *	Load Shed Kit TB10 Connection
Load A	TB10-1 and TB10-2
Load B	TB10-3 and TB10-4
Load C	TB10-5 and TB10-6
Load D	TB10-7 and TB10-8

* Load add/shed priority is based on the order of connection to the terminal block.

Figure 3 Relay Coil Control Connections to Load Shed Kit

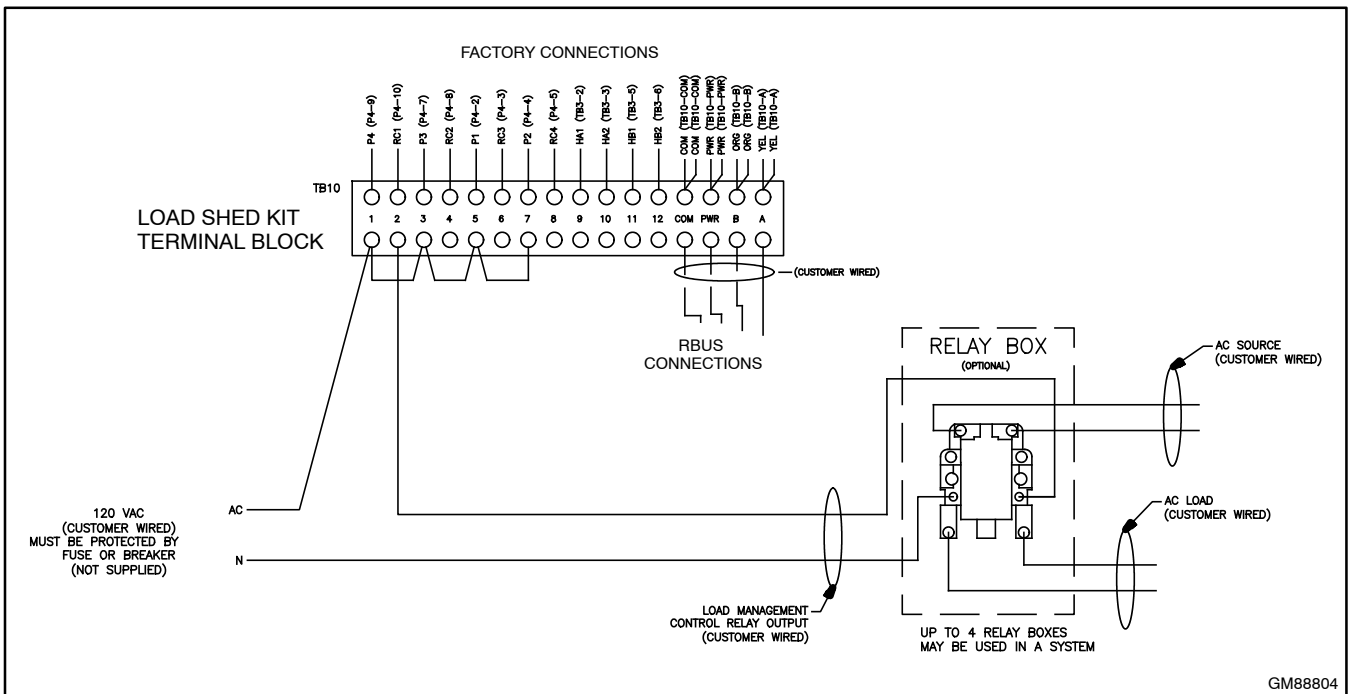


Figure 4 Relay Connections to Load Shed Kit

1.4 Relay Connections to an RXT Combined Interface/Load Management Board

This section applies to the RXT ATS equipped with the combined interface/load management board. For models RDT ATS and RXT ATS equipped with the load shed kit, go to Section 1.3.

See Figure 2 for cable specifications.

Note: See the RXT Operation and Installation Manual for load priority and load management operation information.

Load management priorities are determined by the control relay output connections to the RXT interface/load management board. Typically, Load A is added first and shed last.

1. Disconnect power to the transfer switch.
2. If the combined interface/load management board is not already connected to the generator set, follow the instructions in TP-6807, RXT ATS Operation and Installation Manual, to connect the interface board to the generator set controller and current transformer.
3. Connect customer-supplied leads to the control relay output terminals on the combined interface/load management board. See Figure 5 and Figure 6.
4. See Figure 7 for the coil connection screws on the relay. Connect the control leads from the RXT combined interface/load management board to the relay coil using ring terminals X-283-2.

5. See Figure 6 and Figure 8 for source and load connection points on the relay.
 - a. Connect the line side of the relay to the source power circuit as shown in Figure 6.
 - b. Connect the load side of the relay to the non-essential load circuits as shown in Figure 6.

6. Connect 120 VAC power to connections AC1 and N on interface board connection TB2 as shown in Figure 6.

Note: The AC power supply circuit must be protected by an appropriately sized fuse or circuit breaker.

7. Connect the load side of the relay to the non-essential load circuits. Two (2) 120 VAC loads (shed simultaneously) or a single 240 VAC load can be wired to each relay.
8. For all other load control connection instructions, see the Operation/Installation Manual provided with the RXT automatic transfer switch.
9. Proceed to Section 1.5.

Relay *	Interface Board TB2 Connection
Load A	A and N
Load B	B and N
Load C	C and N
Load D	D and N

* Load add/shed priority is based on the order of connection to the interface board.

Figure 5 Relay Coil Control Connections to RXT Combined Interface/Load Management Board

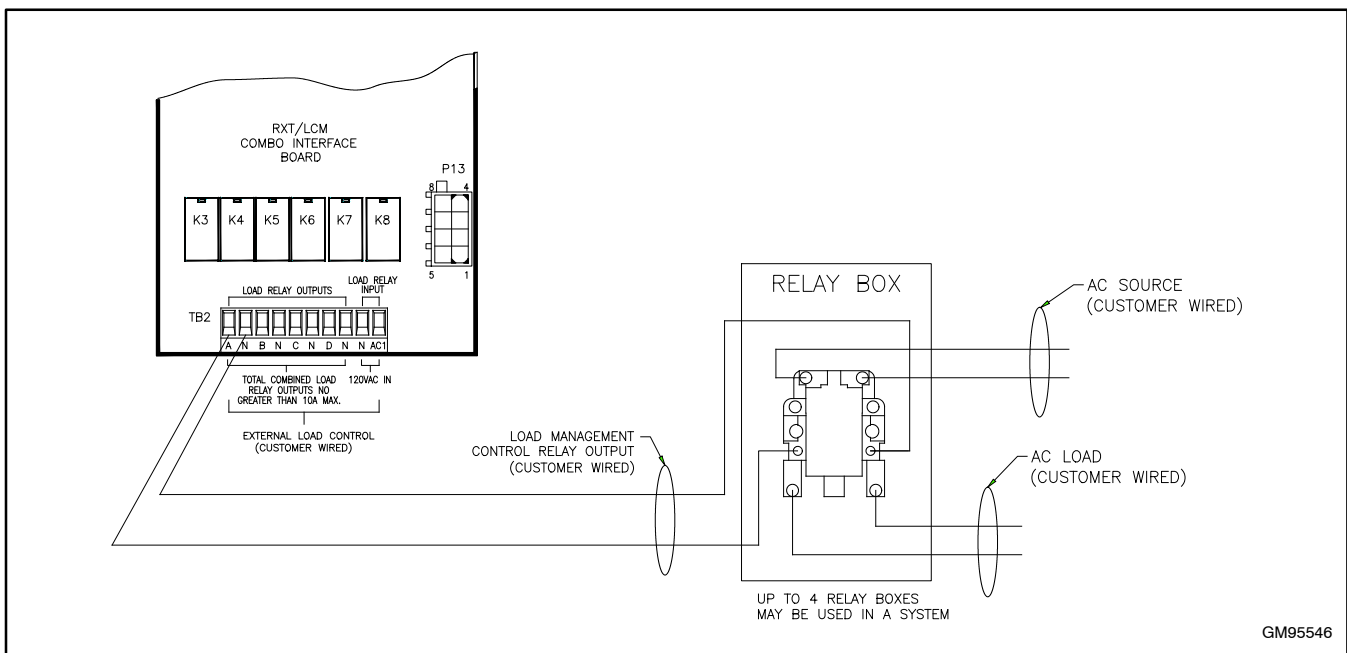


Figure 6 Relay Connections to RXT Combined Interface/Load Management Board

1.5 Ground the box.

Note: The power relay module uses a non-conductive resin enclosure. Bonding between conduit connections is not automatic and must be provided as part of the installation.

1. Connect ground leads to the 1/4-20 post near the bottom of the box using nut X-81-8. See Figure 7. If metal conduit is used, use conduit hubs with screw terminals for the ground connection. Connect the ground leads LK-1006-1515, supplied with the kit, to the grounding post. Connect the other ends of the ground leads to the conduit hub screw terminals.
2. Ground the system according to the NEC and applicable state and local codes.

1.6 Install the module cover.

1. Check that gasket GM92009 is in place in the groove around the edge of the box, with a gap at the bottom as shown in Figure 7.
2. Place the cover on the box and reinstall the four cover screws.

1.7 Return the system to automatic operation.

1. Check that the generator set is OFF.
2. Reconnect the generator set engine starting battery, negative (-) lead last.
3. Reconnect utility power to the generator set.
4. Press the AUTO button on the generator set controller.
5. Reconnect power to the transfer switch.

2 Operation

The power relay module operation is controlled by the load management device, which is either a load shed kit or the RXT combined interface/load management board. The relay is normally closed so that the connected load is powered when the normal source is available.

When the transfer switch is in the emergency source position and power is supplied by the generator set, the load management device signals the relay to open or close. When the relay is open, the load is not powered. When the relay closes, the load is powered by the generator set. The loads are prioritized according to the relay connections to the load management device. See TT-1609 for the load shed kit or TP-6807, RXT ATS Operation/Installation Manual, for information about operation of the load management device.

Note: The power relay modules are *not* RBUS modules.

3 Dimension Drawings

The dimension drawings for the power relay module are shown in Figure 7 and Figure 8.

4 Parts Lists

Power Relay Module Kit

Kit: GM92001-KP1-QS		
Qty.	Description	Part Number
1	Decal, Nameplate	GM92008
1	Enclosure, Base	GM91999
1	Enclosure, Cover	GM92000
2	Screw, Thread Forming	GM92003
1	Gasket (2.56 ft.)	GM92009
1	Relay, Sub Assy	GM92005
1	Decal	GM97546
2	Terminal, ring, male, 16-14 AWG	X-283-2
2	Lead	LK-1006-1515
4	Screw, Phillips pan head, thread-form	X-6071-2
1	Nut, hex, 1/4-20	X-81-8
1	Installation Instructions	TT-1646

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