

INSTALLATION INSTRUCTIONS

Original Issue Date: 12/07

Model: **RSB Intelligent Transfer Switch**

Market: **Transfer Switches**

Subject: **Load Shed Kits GM53096-KP1 and KP2**

Introduction

The optional load shed kit allows disconnection of selected loads before transfer to the generator set. All remote-controlled circuit breakers connected to the optional load shed rail(s) open before transfer to the generator set. After transfer back to the utility source, the remote-controlled circuit breakers close.

These instructions explain installation of one or two load shed modules and the associated remote-controlled circuit breakers. Type 1 (indoor) enclosures can use one or two load shed modules. Type 2 (outdoor) enclosures can accommodate only one module.

Note: To install two modules in one Type 1 enclosure, order one GM53096-KP2 kit to obtain the required module connection cables. Do not order two single-module kits.

Up to six 1- or 2-pole remote-controlled circuit breakers can be connected to each load shed module. The circuit breakers are not included with the load shed module kit. Obtain the remote controlled circuit breakers required for the application separately. See the Parts List for available remote-controlled circuit breakers.

Controller application software version 1.06 or higher is required for load shed operation. Check the transfer switch serial number on the nameplate. Transfer switches with serial numbers after K2161786 have the new software version. Switches with lower serial numbers will require software upgrade.

The following items are required for software upgrade:

- Programming service kit GM59159
- Belden #9841 shielded twisted-pair cable or equivalent
- A 24 VDC power supply
- A personal computer

Program Loader software, instruction sheet TT-1285, and the MPAC™ 550 controller application code are included in programming kit GM59159. Only one

programming kit is required for updating multiple controllers.

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 and Figure 2 for illustrations of the installed kits.

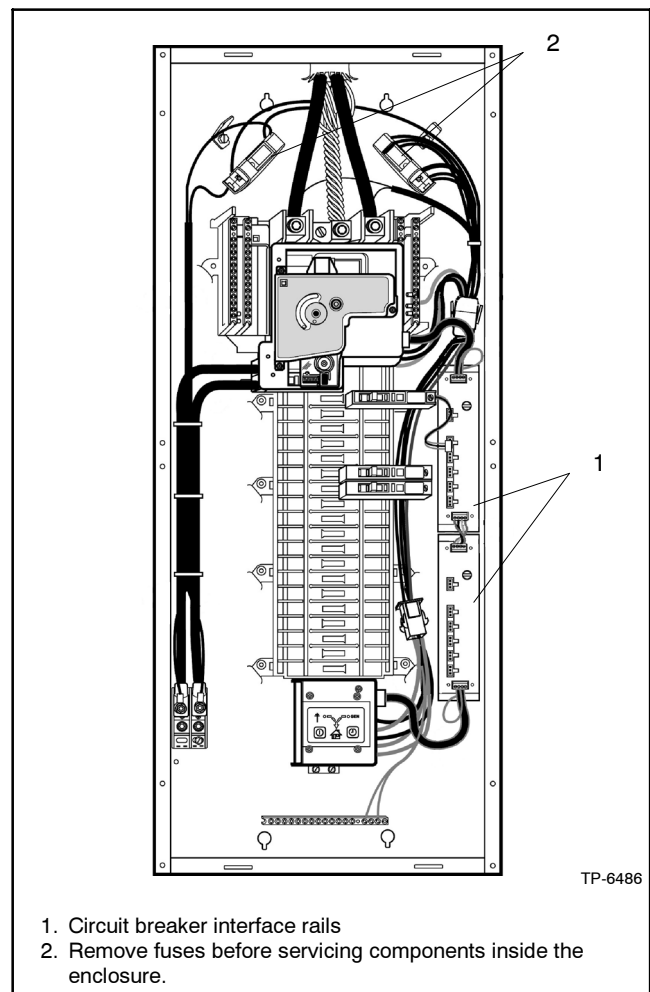


Figure 1 Type 1 Enclosure with Two Circuit Breaker Interfaces

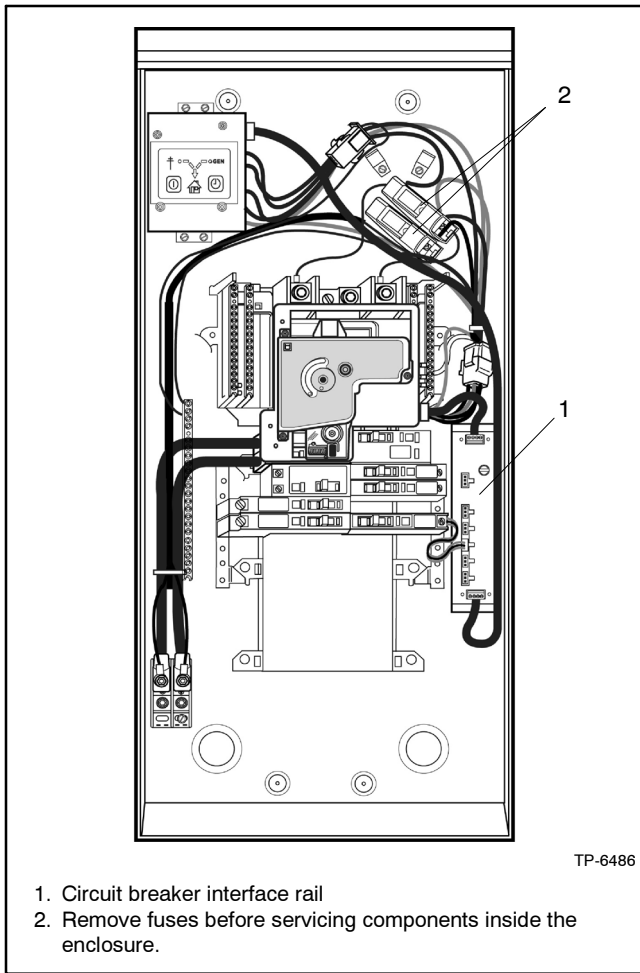


Figure 2 Type 3R Outdoor Enclosure with Circuit Breaker Interface

Safety Precautions

Observe the following safety precautions while installing the kit.

⚠ DANGER
<p>Hazardous voltage. Will cause severe injury or death.</p> <p>This equipment must be installed and serviced by qualified electrical personnel.</p>

⚠ DANGER
<p>Hazardous voltage. Will cause severe injury or death.</p> <p>Disconnect all power sources before opening the enclosure.</p>

Servicing the transfer switch. Hazardous voltage can cause severe injury or death. Deenergize all power sources before servicing. Turn off the main circuit breakers of all transfer switch power sources and disable all generator sets as follows: (1) Move all generator set master controller switches to the OFF position. (2) Disconnect power to all battery chargers. (3) Disconnect all battery cables, negative (-) leads first. Reconnect negative (-) leads last when reconnecting the battery cables after servicing. Follow these precautions to prevent the starting of generator sets by an automatic transfer switch, remote start/stop switch, or engine start command from a remote computer. Before servicing any components inside the enclosure: (1) Remove all jewelry. (2) Stand on a dry, approved electrically insulated mat. (3) Test circuits with a voltmeter to verify that they are deenergized.

Remove the fuses located inside the load center enclosure before servicing the transfer switch. See Figure 1 and Figure 2 for the fuse locations.

Installing Circuit Breaker Interface(s)

1. Place the generator set master switch in the OFF/RESET position.
2. Disconnect the power to the generator set battery charger, if equipped.
3. Disconnect the generator set engine starting battery(ies), negative (-) lead first.
4. Disconnect all power sources to the transfer switch by opening switches or circuit breakers.

Remove the fuses located inside the load center enclosure before servicing the transfer switch. See Figure 1 and Figure 2 for the fuse locations.

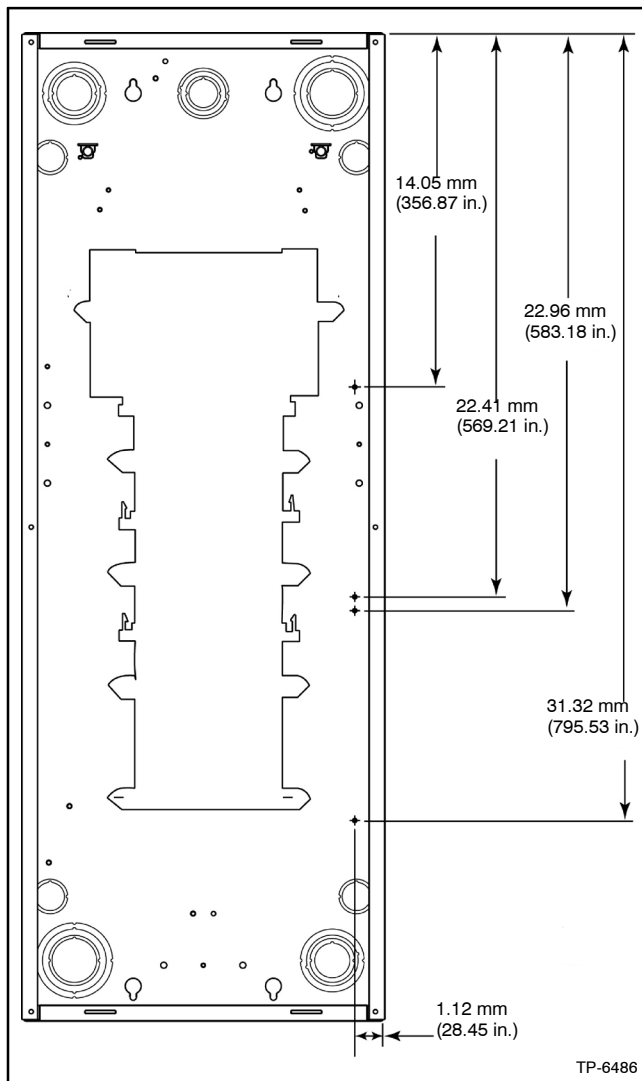


Figure 3 Drill Pattern, Type 1 Enclosures

5. If the load center does not have predrilled mounting holes, use a drill and a number 28 (0.140 in.) drill bit to drill the appropriate number of mounting holes for the installation. Refer to Figure 3 or Figure 4 for the drill pattern.

Note: The holes must be located as shown to maintain the required spacing.

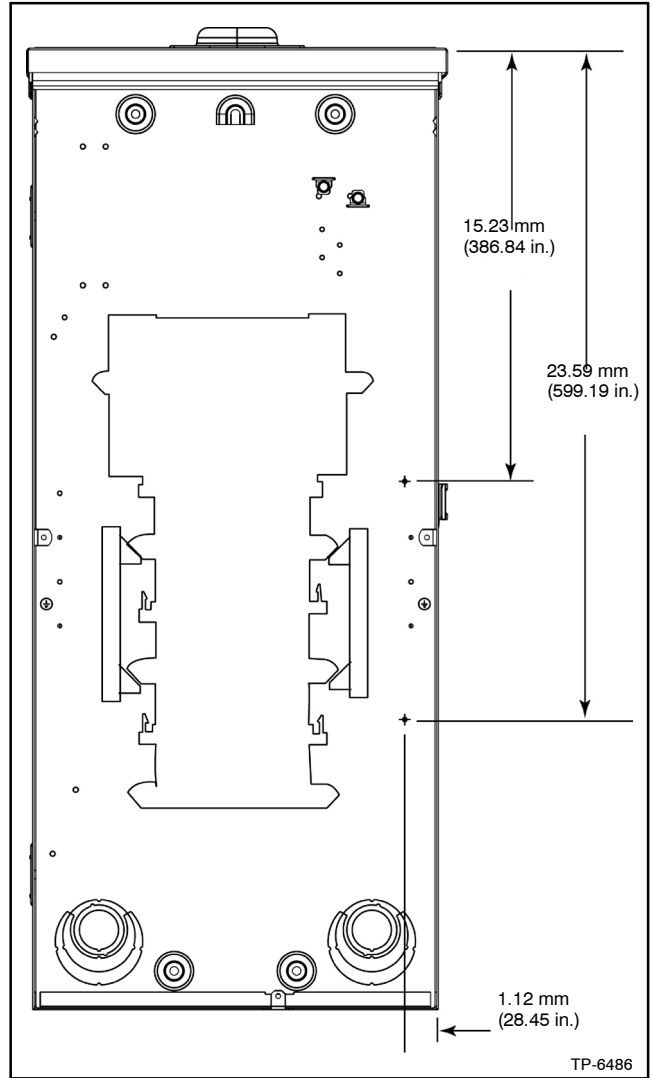


Figure 4 Drill Pattern, Type 3R Enclosures

Note: You can install one or two interfaces in the Type 1 load center. If you are installing one interface and the load center is not inverted, install the interface in either the top or bottom mounting location. See positions A and B in Figure 5.

If you are installing one interface and the load center is inverted, you must install the interface in position C as shown in Figure 5. The communication cable is not long enough to install the interface in position D.

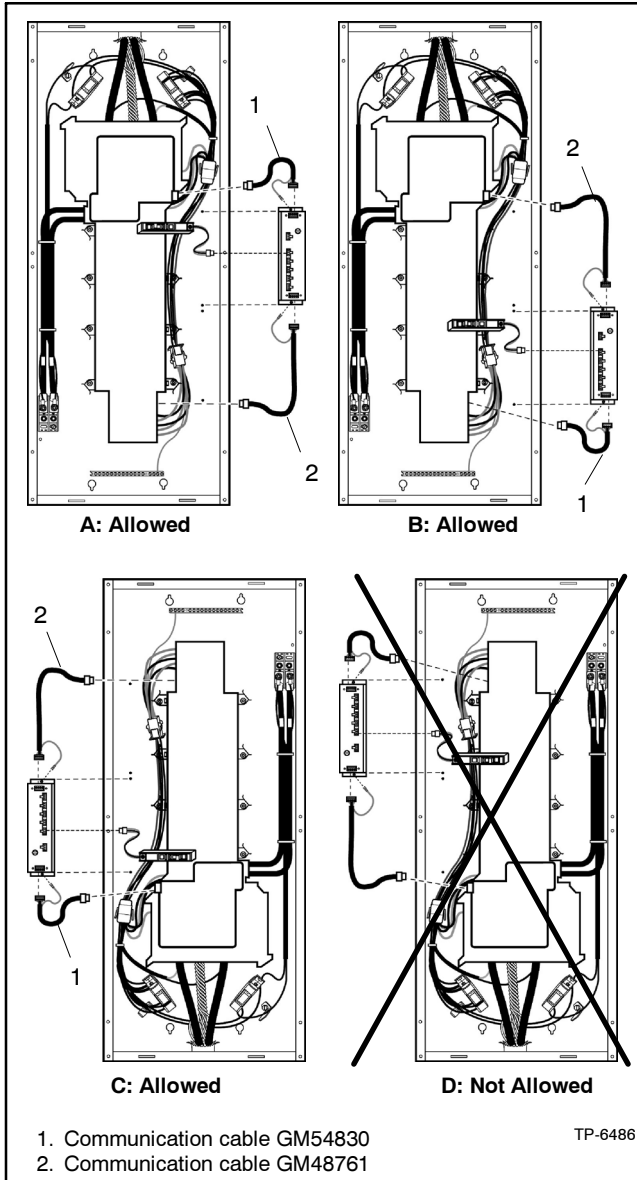


Figure 5 Circuit Breaker Interface Installation

6. Place the circuit breaker interface in the load center as shown in Figure 6 or Figure 7 and loosely secure it with the two captive screws provided.
7. Referring to Figure 6 or Figure 7, install the communication cables provided with the circuit breaker interface:
 - a. Slide the spade connector of the shield wire (Figure 6, item 7, or Figure 7, item 6) for cable GM54832 (Type 1) or cable GM48761 (Type 3R) between the mounting screw of the circuit breaker interface and the interface housing as shown in Figure 6 or Figure 7. Secure the mounting screw, taking care not to crush the shield wire connector. Connect cable GM54832 (Type 1) or cable GM48761 (Type 3R) to the bottom connector of the circuit breaker interface and to terminal TB1 on the generator control unit.
 - b. Slide the spade connector of the shield wire (Figure 6, item 2, or Figure 7, item 3) for communication cable GM54830 between the mounting screw of the circuit breaker interface and the interface housing. Secure the mounting screw, taking care not to crush the shield wire connector. Connect cable GM54830 to the top terminal of the circuit breaker interface and to terminal J3 on the automatic transfer mechanism.
 - c. If you installed two circuit breaker interfaces in the Type 1 load center:
 - Install the jumper cable GM54831 between the two modules.
 - Set the interface selector switches to two *different* settings.

Note: The two interface selector switches *must* be set to *different* positions.

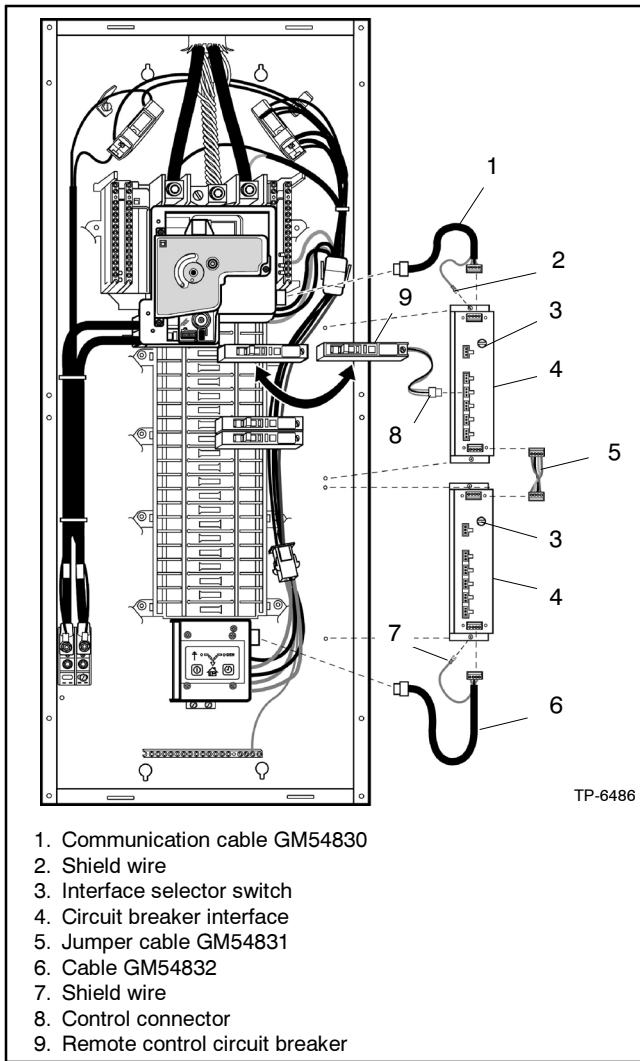


Figure 6 Circuit Breaker Interface Installation, Type 1 Enclosures

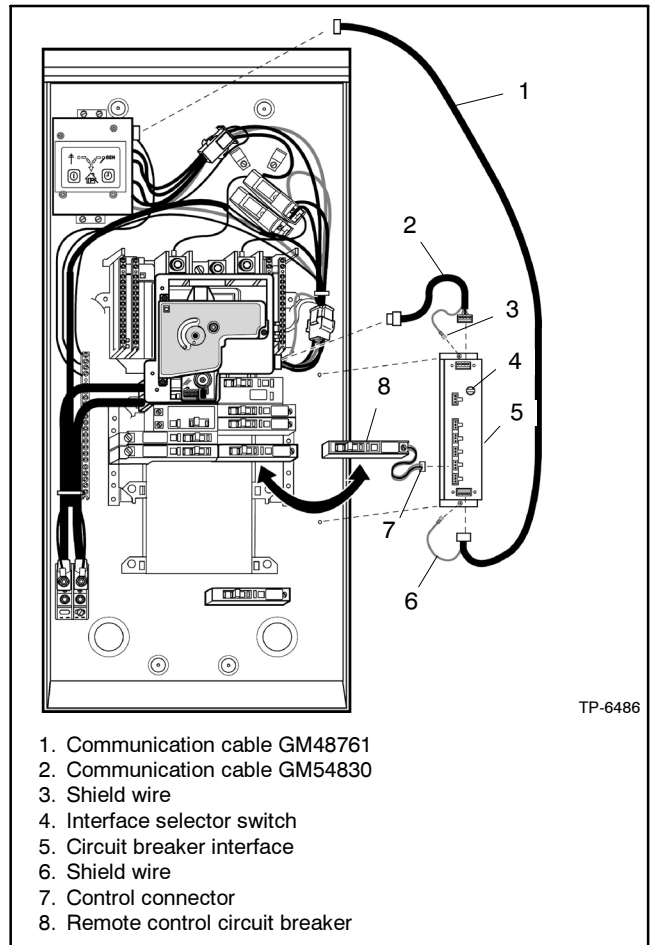


Figure 7 Circuit Breaker Interface Installation, Type 3R Enclosures

Cable No.	Cable Length, mm (in.)
GM54830	152.4 (6)
GM54831	76.2 (3)
GM54832	406.4 (16)
GM48761	899.0 (35)

Figure 8 Circuit Breaker Interface Cables

Installing Remote-Controlled Circuit Breakers

One circuit breaker interface can control a maximum of six remote-controlled circuit breakers. A Type 1 installation with two circuit breaker interfaces can control a maximum of twelve remote-controlled circuit breakers.

Install the required number of remote-controlled circuit breakers in the Square D® Intelligent Load Center as follows. When refitting an existing circuit in an Intelligent Load Center, always select a remote-controlled circuit breaker whose rated current is the same as the circuit breaker being replaced.

1. Before installing the circuit breaker, turn the circuit breaker handle to the OFF (O) position.
2. Position the mounting clip of the circuit breaker onto the mounting rail of the Intelligent Load Center, and snap the plug-on connector onto the bus bar connector. Refer to the instruction bulletin provided with the circuit breaker for complete installation instructions and operational checks.
3. Plug the remote-controlled circuit breaker control connectors into the remote-controlled breaker module interface (see item 8 in Figure 6 or item 7 in Figure 7).

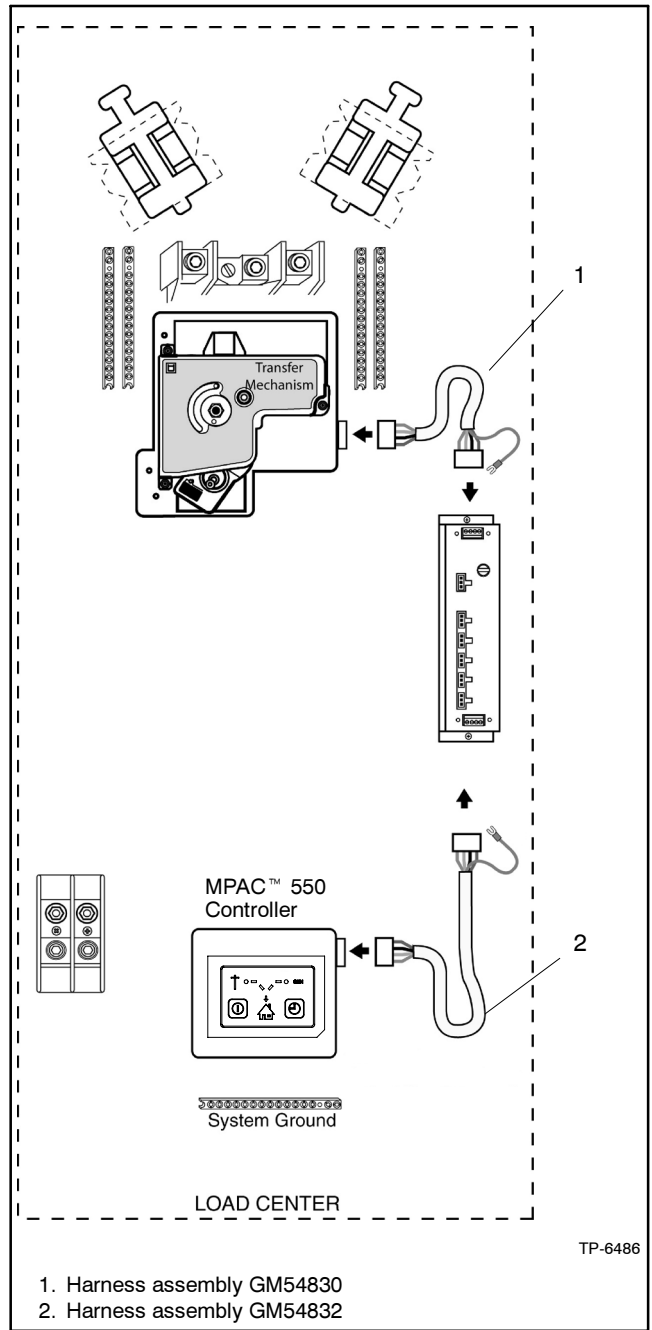


Figure 9 Communication Harness Wiring With One Circuit Breaker Interface, Type 1 Enclosures

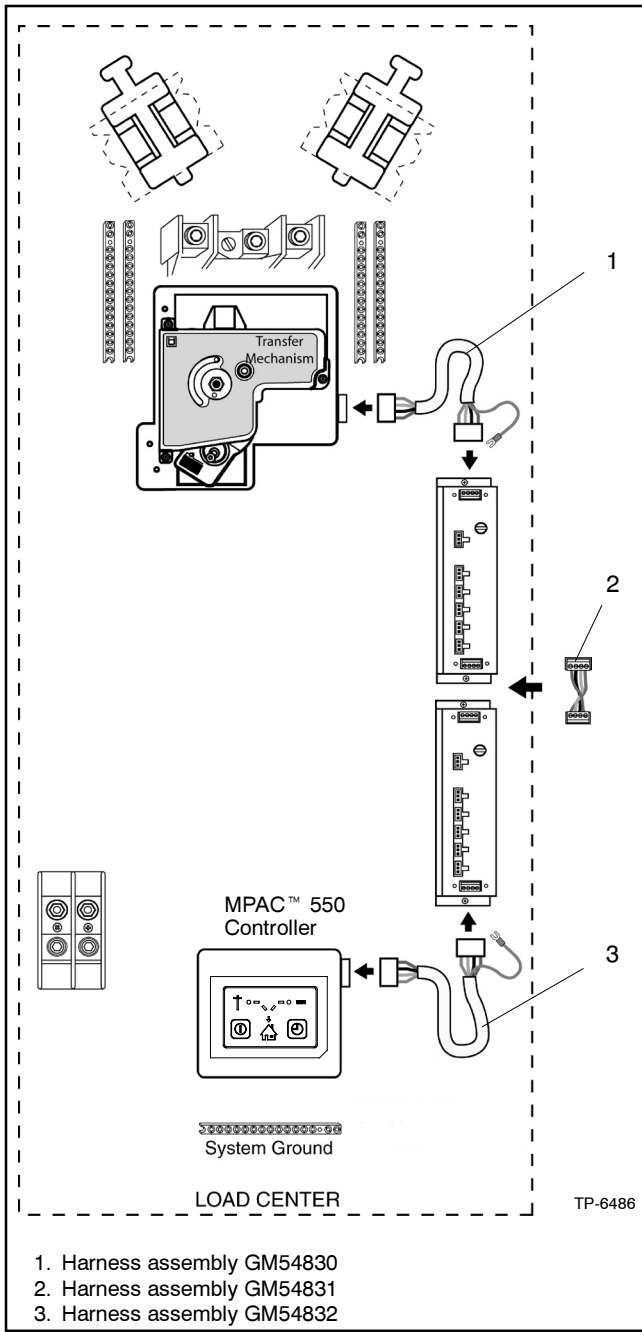


Figure 10 Communication Harness Wiring With Two Circuit Breaker Interfaces, Type 1 Enclosures

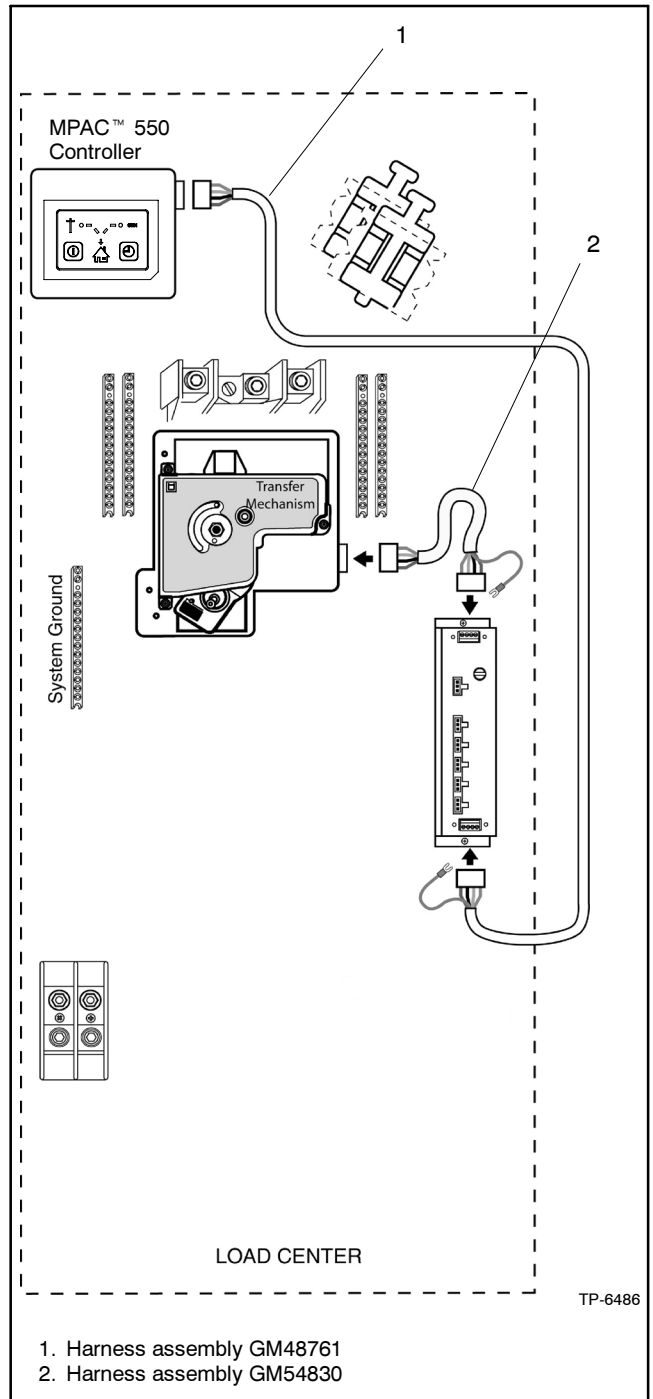


Figure 11 Communication Harness Wiring With Circuit Breaker Interface, Type 3R Enclosures

Controller Software Upgrade

Controller application software version 1.06 or higher is required for load shed operation. Check the transfer switch serial number on the nameplate. Transfer switches with serial numbers after K2161786 have the new software version. Switches with lower serial numbers will require software upgrade.

Use the Program Loader software to load the controller application program onto the Series 550 ATS controller for the Model RSB Transfer Switch, shown in Figure 12.

Follow the instructions in TT-1285, Program Loader Instructions. See Figure 6 or Figure 7 for the controller location.

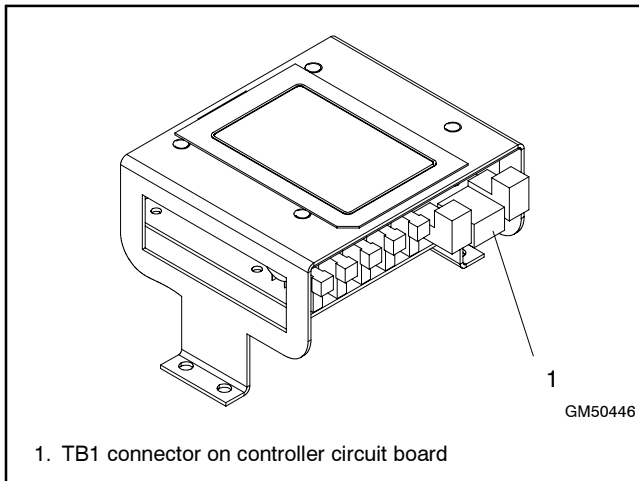
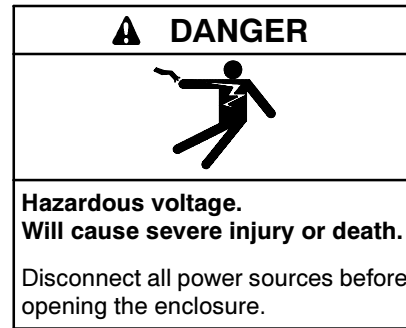


Figure 12 Series 550 ATS Controller

The following items are required for software upgrade:

- A personal computer
- A 24 VDC power supply
- Belden #9841 shielded twisted-pair cable or equivalent (not provided; obtain length required locally)
- Programming kit GM59159. Kit includes:
 - RS-232 to RS-485 converter GM41096
 - Mating connector GM40557
 - Program Loader software (on CD-ROM) and instruction sheet TT-1285
 - MPAC 550 application code version 1.06 or higher (on CD-ROM)



1. Place the generator set master switch in the OFF/RESET position.
2. Disconnect the power to the generator set battery charger, if equipped.
3. Disconnect the generator set engine starting battery(ies), negative (-) lead first.
4. Disconnect all power sources to the transfer switch by opening switches or circuit breakers.
5. Open the transfer switch enclosure door and remove the fuses inside the load center. See Figure 1 and Figure 2 for the fuse locations.
6. Connect the RS-232 side of RS-232 to RS-485 converter GM41096 to the serial port on the PC. See Figure 13 and Figure 14.
7. Disconnect the communication cable from TB1 on the MPAC 550 controller. See Figure 12.
8. Use shielded twisted-pair cable (Belden #9841 or equivalent) and 4-pin connector GM40557 to connect the RS-232 to RS-485 converter to the TB1 connector on the controller's main logic board. See Figure 14.
9. Connect the 24 VDC power supply to pins 3 and 4 of 4-pin connector GM40557. See Figure 14. Do not turn on the power supply until instructed to do so during the software upgrade procedure in step 10.

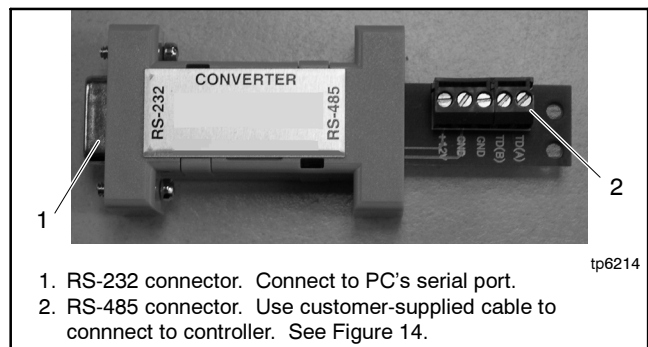


Figure 13 RS-232 to RS-485 Converter GM41096 (included in service kit GM59159)

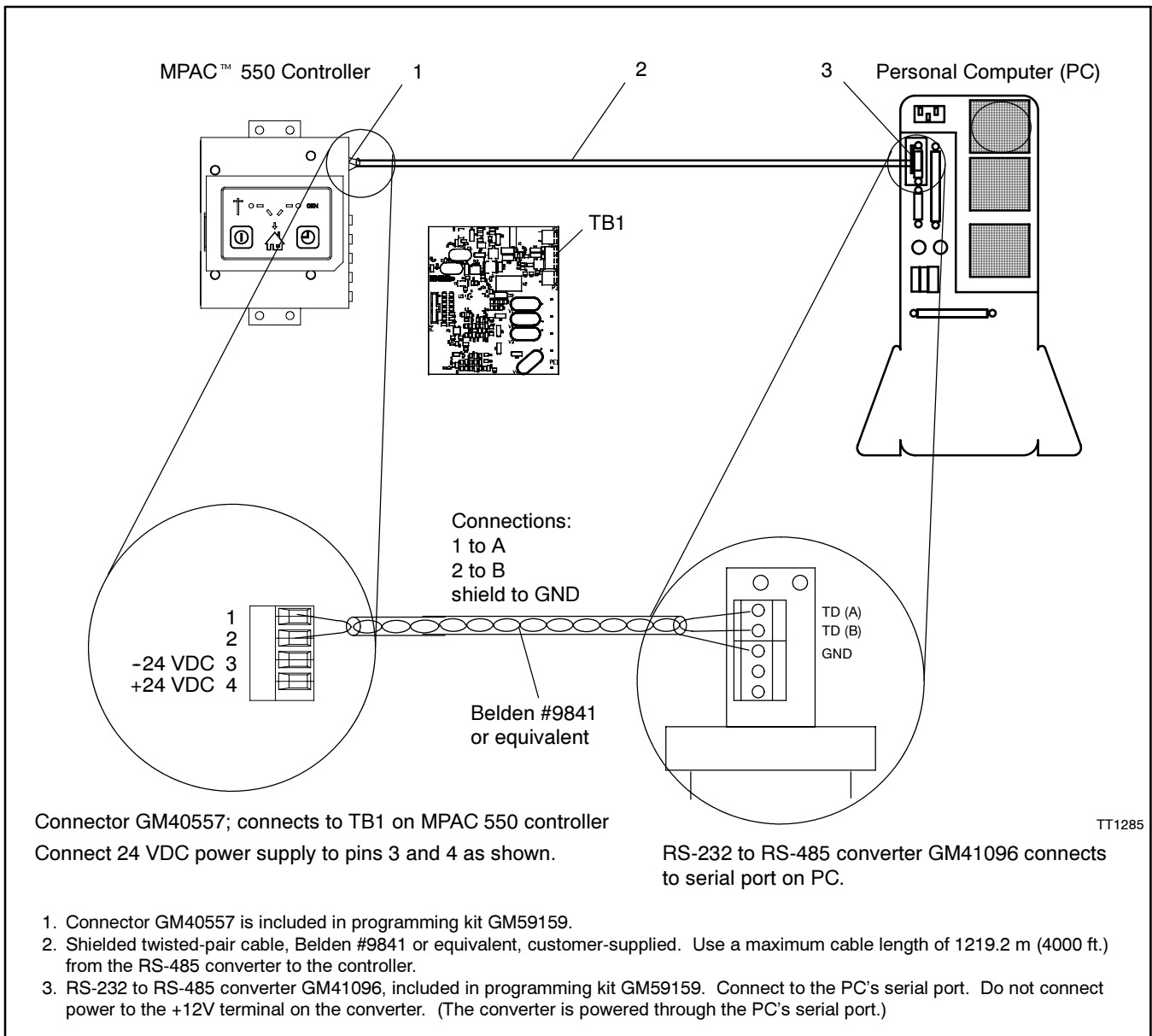


Figure 14 MPAC 550-to-Personal Computer Connection

10. Follow the instructions in TT-1285 to use Program Loader to load new application code onto the controller.
11. Remove the 24 VDC power supply.
12. Disconnect the programming cable from the MPAC 550 controller.
13. Reconnect the transfer switch communication cable to TB1 on the MPAC 550 controller.
14. Replace the transfer switch fuses. Close and secure the ATS enclosure door.
15. Reconnect power to the transfer switch.
16. Reconnect the generator set engine starting battery, negative (-) lead last.
17. Reconnect power to the battery charger, if equipped.
18. Place the generator set master switch in the AUTO position.
19. Set the exerciser. Refer to TP-6487, Transfer Switch Operation Manual, for instructions to set the exerciser function.
20. Run a test to check the load shed operation. Use the following procedure.

Testing

Note: Refer to the test procedures in Section 4, Commissioning, of TP-6486.

1. From the MPAC 550 controller, issue a command to the automatic transfer mechanism to transfer to generator. Follow the instructions in TP-6487, Model RSB Intelligent Transfer Switch Operation Manual, to start a loaded test.

When the command is received, the transfer mechanism will transfer to generator power (its location indicator will move from the Utility position to the Generator position). During the transfer, the main circuit breaker will open and the generator circuit breaker will close.

If the mechanism does not move or does not complete the movement, refer to the Troubleshooting Section of TP-6486, Installation Manual and to TP-6487, Operation Manual.

2. This step applies power to branch circuits. Confirm that the load center branch circuits have been inspected, approved, and subsequently powered-up. Do not power up any branch circuits that have not been inspected and approved. Verify that the application of power to any load connected to the branch circuits will not result in a hazard when the load is energized. Follow appropriate lockout/tagout procedures as described in NFPA 70E for all loads.
 - a. Place the remote-controlled branch circuit breakers in the ON position.
 - b. Verify that no power is present at the loads controlled by the remote-controlled circuit breakers. If power is present, refer to Troubleshooting.
 - c. From the MPAC 550 controller, issue a command to the automatic transfer mechanism to transfer to the utility. Once the automatic transfer mechanism begins to move, you

should hear a clicking sound from the remote-controlled circuit breakers as the circuit breaker contacts close.

- d. Verify that power is present at the loads controlled by the remote-controlled circuit breakers. If no power is present, refer to the Troubleshooting Section.
 - e. Check each branch circuit as follows:
 - (1) Move the handle of each remote-controlled circuit breaker to the OFF position and verify that power is removed from the associated branch circuit.
 - (2) If power is still present, refer to the Troubleshooting Section.
 - (3) After checking each branch circuit, set the handle of each remote-controlled circuit breaker to the ON position.
 - f. From the MPAC 550 controller, issue a command to the automatic transfer mechanism to transfer to the generator set. Once the automatic transfer mechanism begins to move, you should hear a clicking sound from the remote-controlled branch circuit breakers as the circuit breaker contacts open
 - g. Verify that no power is present at the loads controlled by the remote-controlled circuit breakers. If power is still present, refer to the Troubleshooting Section.
3. Shut down the generator set. Refer to the instructions provided by the generator set manufacturer for stopping the generator.
 4. Close all branch circuit breakers. Restore the load center main circuit breaker to the state it was in before starting this procedure.
 5. Restore the generator disconnect and the generator to the state they were in before starting this procedure.

Troubleshooting

Symptom	Probable Cause	Troubleshooting Procedure
The remote-controlled circuit breaker(s) installed in the Intelligent Load Center cannot be switched to the ON state when the automatic transfer mechanism is set to utility source.	Control wiring is not correct.	Review the installation procedures.
	The interface selector switches are incorrectly set on circuit breaker interface.	Set the interface selector switches. Refer to Installing Circuit Breaker Interface.
	The remote-controlled circuit breakers are shipped with the internal control mechanism set to the open position. The internal control mechanism must be in the closed position for the handle to close the circuit.	Cycle the automatic transfer mechanism from utility to generator set, and back to generator set.
	The remote-controlled circuit breaker is inoperative.	Replace the remote-controlled circuit breaker.*
	The circuit breaker interface is inoperative.	Replace the circuit breaker interface.*
The remote-controlled circuit breaker(s) installed in the Intelligent Load Center do not switch to the OFF state when the automatic transfer mechanism moves to the generator source.	The control wiring is not correct.	Review the Installation Procedures.
	The interface selector switches are incorrectly set on the circuit breaker interface.	Set the interface selector switches. Refer to Installing Circuit Breaker Interface.
	The remote-controlled circuit breaker is inoperative.	Replace the remote-controlled circuit breaker.*
	The circuit breaker interface is inoperative.	Replace the circuit breaker interface.*
Branch circuits controlled by the remote-controlled circuit breakers do not switch ON or OFF properly when the automatic transfer mechanism changes state.	The branch circuit is not connected to remote-controlled circuit breaker.	Verify that the branch circuit is connected to the correct remote-controlled circuit breaker.
	The branch circuit is incorrectly wired.	Have an authorized service representative correct the wiring.
	The remote-controlled circuit breaker is inoperative.	Replace the remote-controlled circuit breaker.*
	The circuit breaker interface is inoperative.	Replace the circuit breaker interface.*
The remote-controlled circuit breaker(s) installed in the Intelligent Load Center cannot be switched to the ON state when the automatic transfer mechanism is set to utility source.	The remote-controlled circuit breaker is inoperative.	Replace the remote-controlled circuit breaker.
	The circuit breaker interface is inoperative.	Replace the circuit breaker interface.*
The remote-controlled circuit breaker(s) installed in the Intelligent Load Center do not switch to the OFF state when the automatic transfer mechanism moves to the generator source.	The remote-controlled circuit breaker is inoperative.	Replace the remote-controlled circuit breaker.
	The circuit breaker interface is inoperative.	Replace the circuit breaker interface.*

* An authorized service representative must replace the circuit breaker or circuit breaker interface.

Schematic

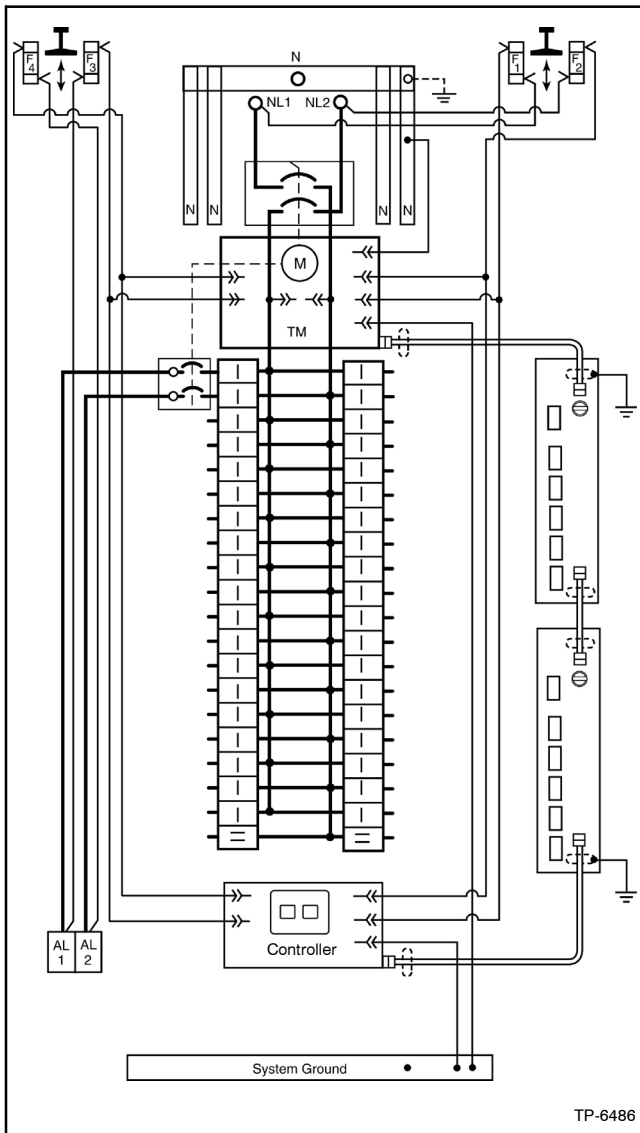


Figure 15 Intelligent Load Center Schematic With Circuit Breaker Interface, Type 1 Shown

Parts Lists

Load Shed, Indoor and Outdoor, NEMA 1 and 3R Single Module Kit

Kit: GM53096-KP1		
Qty.	Description	Part Number
1	Module, Load Shed	GM53042
1	Harness, Communications	GM54830
1	TT Load Shed Kit	TT-1463

Load Shed, Indoor NEMA 1 Two Module Kit

Kit: GM53096-KP2		
Qty.	Description	Part Number
2	Module, Load Shed	GM53042
1	Harness, Communications	GM54830
1	Harness, Communications	GM54831
1	Harness, Communications	GM54832
1	TT Load Shed Kit	TT-1463

Remote-Controlled Circuit Breakers

Remote-Controlled Circuit Breaker Description	Part Number
Circuit Breaker, 1P, 15A	GM55210-KP5
Circuit Breaker, 1P, 20A	GM55210-KP6
Circuit Breaker, 2P, 30A	GM55210-KP1
Circuit Breaker, 2P, 40A	GM55210-KP2
Circuit Breaker, 2P, 50A	GM55210-KP3
Circuit Breaker, 2P, 60A	GM55210-KP4