INSTALLATION INSTRUCTIONS

Original Issue Date: **6/07**
Model: **RDT and HDT Transfer Switches Equipped with MPAC™ 500 or DXPower™ 500 Controllers**
Market: **ATS**
Subject: **Accessory Board Kit GM38796-KP1**

Introduction

Accessory board kit GM38796-KP1 is designed for use with model RDT and HDT automatic transfer switches equipped with MPAC™ 500 or DXPower™ 500 transfer switch controller. See Figure 1 for controller identification.

The accessory board is required if the External Alarm Module (EAM) is installed.

The optional accessory board is mounted above the controller's main logic board. See Figure 2 and Figure 4 for the accessory board location.

The accessory board contains the following components:

- Audible alarm for system faults
- Rotary switches for time delay adjustments
- DIP switches for exercise interval, loaded or unloaded exercise, remote test switch operation, and load control functions
- Connectors for remote test input, programmable exerciser input, and generator set supplying load output
- Connector for the External Alarm Module (EAM)

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 2 for the installed kit location.

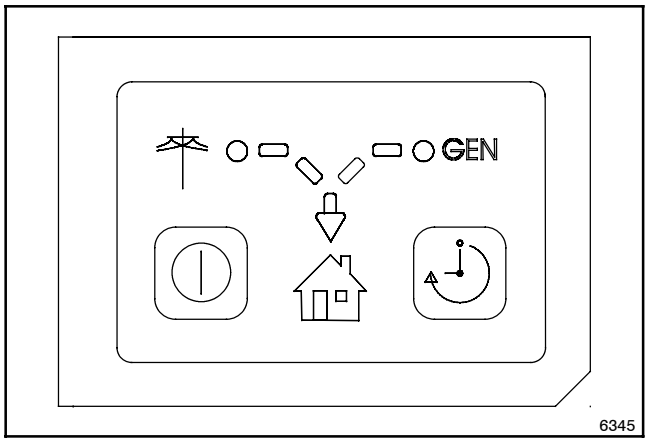
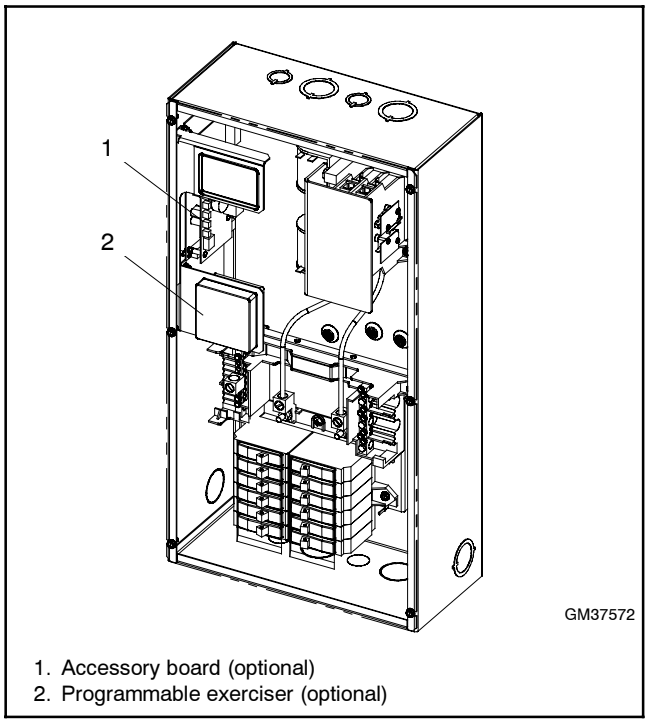


Figure 1 MPAC™ 500 or DXPower™ 500 ATS Controller User Interface



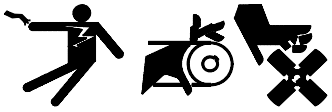
1. Accessory board (optional)
2. Programmable exerciser (optional)

Figure 2 Optional Accessory Locations, Typical

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.

⚠ DANGER

Hazardous voltage.
Will cause severe injury or death.

Only authorized personnel should open the enclosure.

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.

Circuit Board Handling

Improper removal, installation, transportation, storage, or service can damage sensitive electronic components. Observe the following guidelines to prevent damage when working with circuit boards or electronic components.

Circuit Board and Electronic Component Handling

- Keep circuit boards or electronic components inside the antistatic, cushioned factory packaging until installation.
- Store circuit boards or electronic components in a clean environment away from moisture, vibration, static electricity, corrosive chemicals, and solvents.
- Disconnect all power sources before removing or installing circuit boards or electronic components.
- Wear an approved, grounded, antistatic wrist strap when handling circuit boards or electronic components.
- Carefully hold the circuit board by its edges and not by any of its components or electrical contacts.
- Do not drop the circuit board or electronic components.
- Do not bend the circuit board, electronic components, or electronic component leads.
- Do not strike the circuit board or electronic components using or against a hard object.
- Clean dusty or dirty circuit boards with a vacuum cleaner or soft, dry brush.
- Never attempt circuit board repairs, adjustments, or modifications other than replacing plug-in service parts or performing manufacturer-approved installation or service procedures.

1 Installation Procedure

⚠ DANGER

Hazardous voltage.
Will cause severe injury or death.

Disconnect all power sources before opening the enclosure.

1. Disable the generator set and disconnect power to the transfer switch.

   a. Place the generator set master switch in the OFF position.

   b. Disconnect the power to the battery charger, if equipped.

   c. Disconnect the generator set engine starting battery(ies), negative (–) lead first.

   d. Disconnect power to the transfer switch.

2. Install the accessory board.

   a. Open the transfer switch enclosure and find the ATS controller. See Figure 2 and Figure 4.

   b. Place 4-pin header GM38445 into the accessory circuit board with the **longer** pins inserted into accessory board connector P8. See Figure 3 and Detail A of Figure 4.

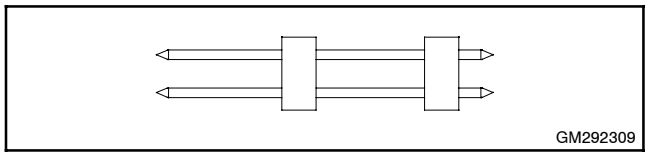


Figure 3 4-Pin Header, GM38445

   c. Position the accessory board as shown in Figure 4. Align the shorter pins of header GM38445 with the connector on the controller's logic board. Align the four standoffs on the accessory board with the mounting holes on the controller's logic board.

   d. Press the accessory board firmly until all four standoffs snap into the mounting holes.

   Note: Verify that the 4-pin header is in place between the two boards.

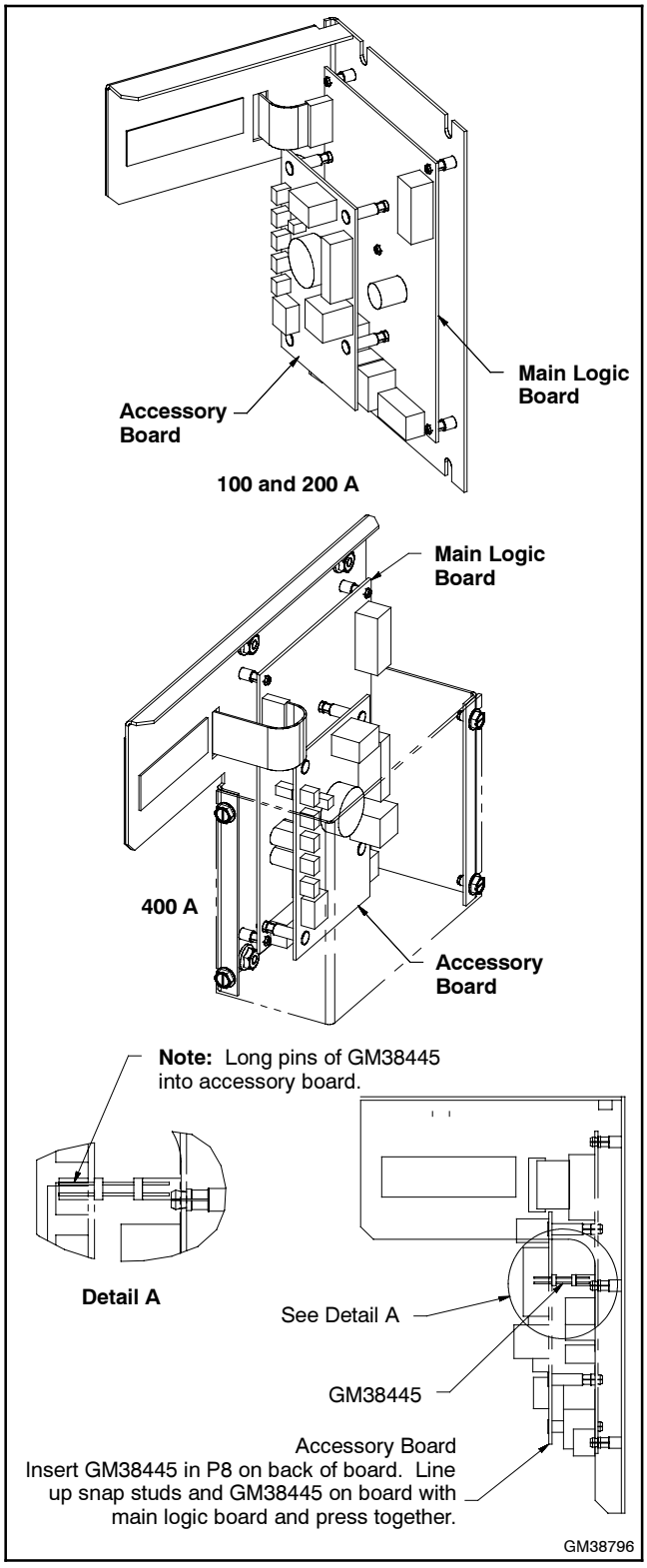


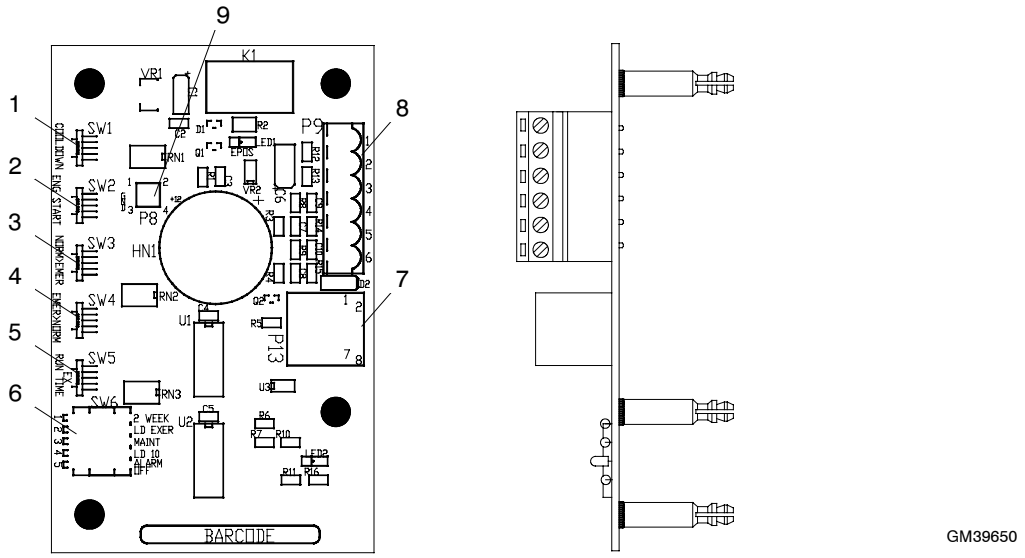
Figure 4 Accessory Board Installation

3. Connect inputs, outputs, and the EAM to the accessory board.

   a. Connect input and output leads to the black 6-pin connector P9 on the accessory board. See Figure 5. Refer to Figure 6 or the label on the enclosure cover for the connections. Use #12–24 AWG wire and tighten the connections to 0.5 Nm (4.4 in. lb.).

   Note: The ATS main logic board has a similar green 6-pin connector. Do not interchange the black and green mating connectors.

   b. Connect the External Alarm Module (EAM) to RJ-45 connector P13 (if equipped). Use Category 5 network cable. Refer to TT-1416, External Alarm Module, for more information about EAM installation.



1. Engine cooldown time delay adjust SW1
2. Engine start time delay adjust SW2
3. Normal to emergency time delay adjust SW3
4. Emergency to normal time delay adjust SW4
5. Exercise run time adjust SW5
6. DIP switches SW6
7. EAM connection P13
8. Input/output connector P9 (black)
9. Board connector P8

Figure 5 Accessory Board Component Locations

Terminals, Connector P9	Description	Notes
1 – 2	Generator set supplying load output Contact rated 10 amps @ 120VAC	This output provides a closed contact to indicate that the generator set is supplying the load when the transfer switch is in the Emergency position and the GEN source is available.
3 – 4	Remote exercise input	Connect the optional Programmable Exerciser to this input to allow scheduling of additional loaded or unloaded generator set exercise runs. DIP switch 2 affects the operation of this input.
5 – 6	Remote test input	Connect a remote switch to this input for remote starting and stopping of a loaded test. DIP switch 3 affects the operation of this switch.

Figure 6 Accessory Board Inputs and Outputs

4. Set the DIP switches.

   Set DIP switches SW6-1 through 5. See Figure 5 for the DIP switch location. See Figure 7 for settings.

Switch SW6-	Description	Off (Open)	On (Closed)	Notes
1	Exercise Interval	1 Week	2 Weeks	Sets the exercise interval for the exercise button on the controller's user interface only. Does not affect exercise periods set through the optional programmable exerciser. If the setting is changed after the exerciser has been set, the new DIP switch setting becomes effective *after* the next exercise.
2	Loaded/Unloaded Exercise	Unloaded	Loaded	Selects loaded or unloaded exercise. Setting applies to automatic exercises set at the ATS controller (excluding the first exercise) or the optional programmable exerciser.
3	External Test Function	Momentary	Maintained	For an optional remote switch, such as the start/stop switch on the EAM. Set switch to ON if the EAM is installed. Maintained position: Close a remote test switch or contact to start and run the generator set. Open the remote contact to end the test and signal the generator set to stop. Momentary position: Hold the test switch closed for at least 1 second and then release to start or stop a test.
4	Load Control Interval	5 Minutes	10 Minutes	For delayed connection of selected large loads to the generator set.
5	Audible Alarm Function	Alarm Disabled	Alarm Enabled	Enables or disables the alarm horn on the accessory board (inside the ATS enclosure). Does not affect the alarm horn on the External Alarm Module.

Figure 7 Accessory Board DIP Switches

5. Set the time delay switches.

   Set the time delay adjustment switches. Use a small screwdriver or other small tool to increase or decrease the time delays. The rotary switch positions are 1 to 10, with position 10 labeled 0 (zero). See Figure 8 for settings.

	Factory Setting		Adjustment with Optional Accessory Board	
Time Delay	Setting	Switch Position *	Range *	Increment
Engine Cooldown	5 minutes	5	1-10 minutes	1 minute
Engine Start	3 seconds	3	1-10 seconds	1 second
Transfer from Normal to Emergency	3 seconds	3	1-10 seconds	1 second
Retransfer from Emergency to Normal	15 minutes	5	3-30 minutes	3 minutes
Exercise Run Time	20 minutes	4	5-50 minutes	5 minutes
* Switch positions are 1 to 10, with position 10 labeled 0 (zero).				

Figure 8 Accessory Time Delay Adjustments

6. Reconnect power.

   a. Close and secure the transfer switch cover and/or door.

   b. Reconnect power to the transfer switch.

   c. Check that the generator set master switch is in the OFF position.

   d. Reconnect the generator set engine starting battery, negative (-) lead last.

   e. Reconnect power to the battery charger, if equipped.

   f. Move the generator set master switch to the AUTO position.

2 Operation

2.1 Audible Alarm

The audible alarm sounds on the fault conditions shown below.

Failure to Acquire Emergency Source Warning

The Failure to Acquire Emergency Source fault occurs if the transfer switch does not sense voltage from the generator set within 78 seconds after signalling the generator set to start. Check the generator set operation and the connections from the generator set to the ATS in the case of this fault.

The Failure to Acquire Emergency Time Delay is set for 78 seconds to allow for three generator set engine starting attempts.

The fault clears when the system acquires the emergency source.

Failure to Transfer Warning

The Failure to Transfer warning occurs if a signal to transfer is sent to the contactor and the position-indicating contacts do not indicate a complete transfer.

The controller will attempt to transfer three times before indicating the fault. If the transfer switch is in the Normal position, the Engine Cooldown time delay is executed and then the engine start contacts open to stop the generator set.

Reset the controller to clear the fault condition. See Section 2.2.

Auxiliary Switch Fault

An Auxiliary Switch fault occurs if the position-indicating contacts indicate that the ATS position changed when the controller did not send a signal to transfer.

An Auxiliary Switch fault also occurs if both auxiliary switches are open or closed so that the controller is unable to determine the transfer switch position.

Reset the controller to clear the fault condition. See Section 2.2.

2.2 Alarm Silence/Reset

Press and hold the test and exercise pushbuttons simultaneously to clear the fault and silence the alarm.

Always identify and correct the cause of the fault condition before resetting the controller. Contact an authorized distributor/dealer for service if the fault persists.

3 Parts List

Accessory Board Kit

Kit: GM38796-KP1		
Qty.	**Description**	**Part Number**
1	Header, PCB Pin, 4-position, Gold	GM38445
1	PCB Assy Time Delay Option	GM39650