INSTALLATION INSTRUCTIONS

Original Issue Date: **3/07**
Model: **Model K1/S1 Transfer Switches Equipped with Series 1500 Controls**
Market: **Transfer Switches**
Subject: **Accessory Module Installation**

Introduction

This document provides installation instructions for the kits listed in Figure 1. The accessory modules listed here are designed for use on automatic transfer switches and bypass/isolation switches equipped with Series 1500 transfer switch controls.

Kit Number	Description
GM40808-KP1	Alarm/Preferred Source Module Kit
GM46258-KP1	Module Mounting Kit
GM46888-KP1	Standard Input/Output (I/O) Module Kit
GM46889-KP1	External Battery Supply Module Kit (EBSM or Battery Option Board)
GM46890-KP1	High Current/Voltage I/O Module Kit

Figure 1 Module and Mounting Kits

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.

The I/O modules and alarm modules require setup after installation. Refer to the transfer switch operation and installation manual for instructions to assign inputs, outputs, and alarms. See Figure 2.

Transfer Switch Model	O/I Manual
KCS/KCP/SCS/SCP	TP/MP-6446
KSS/KSP/SSS/SSP	TP/MP-6447
KBS/KBP/SBS/SBP	TP/MP-6448
KGS/KGP/SGS/SGP	TP/MP-6449

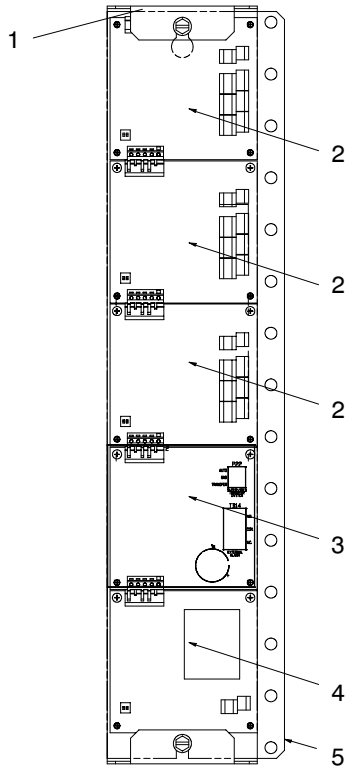
Figure 2 ATS Operation/Installation Manuals

The transfer switch uses a standard bus system for connecting accessory modules to the controller. This bus incorporates a standard serial communication interface for passing data back and forth between the main logic board and the assemblies on the expansion bus.

The mounting kit holds up to five optional modules. The maximum total current is 300 mA. See Figure 3. If an External Battery Supply (EBSM) Module is installed, there is no current restriction. See Figure 4.

Module Current Requirements, mA *	
Alarm/Preferred Source Module	75
Standard I/O Module	75
High Current/Voltage I/O Module	100
* 300 mA maximum total unless EBSM is installed	

Figure 3 Module Current Requirements



1. Wire harness connection
2. I/O modules GM46888-KP1 or GM46890-KP1 (if equipped)
3. Alarm/preferred source module GM40808-KP1 (if equipped)
4. External battery module GM46888-KP1 (must be last, if equipped)
5. Module mounting kit GM46258-KP1

Figure 4 Modules and Mounting Bracket

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.

Servicing the transfer switch. Hazardous voltage can cause severe injury or death. Deenergize all power sources before servicing. Open 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

- **Disconnect all power sources before removing or installing circuit boards or electronic components. Connecting or disconnecting modules with power connected will damage the transfer switch controller.**
- 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.
- 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

1.1 Prevent accidental starting of the generator set and disconnect power to the transfer switch.

1. Place the generator set master switch in the OFF position.
2. Disconnect the power to the battery charger, if equipped.
3. Disconnect the generator set engine starting battery(ies), negative (-) lead first.
4. Disconnect power to the transfer switch before opening the enclosure.

1.2 Identify the mounting location.

1. Refer to Figure 6 through Figure 12 for typical module mounting locations. Locate the figure for your enclosure type and size.

1.3 Install the mounting bracket in a framework-style enclosure. See Figure 6.

For other types of enclosures, proceed to step 1.4.

1. Connect the ground lead from the module harness (GM46921) to the mounting screw near the top of the bracket as shown in Figure 5.
2. Install the module mounting bracket (GM46754) inside the enclosure using three screws (X-67-114) through existing holes in the enclosure's framework. The typical module location in a framework-style enclosure is shown in Figure 6.
3. Proceed to step 1.5.

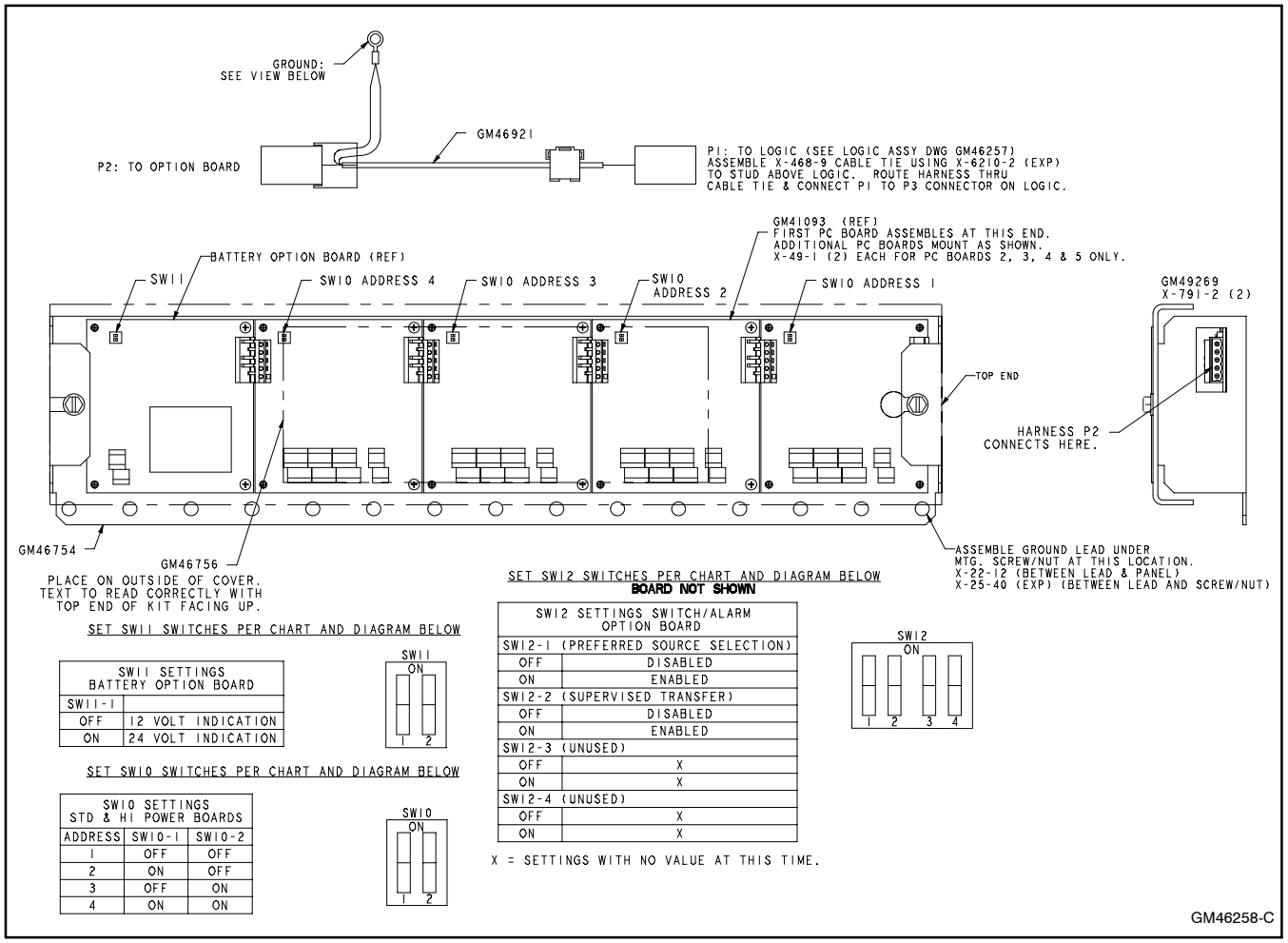
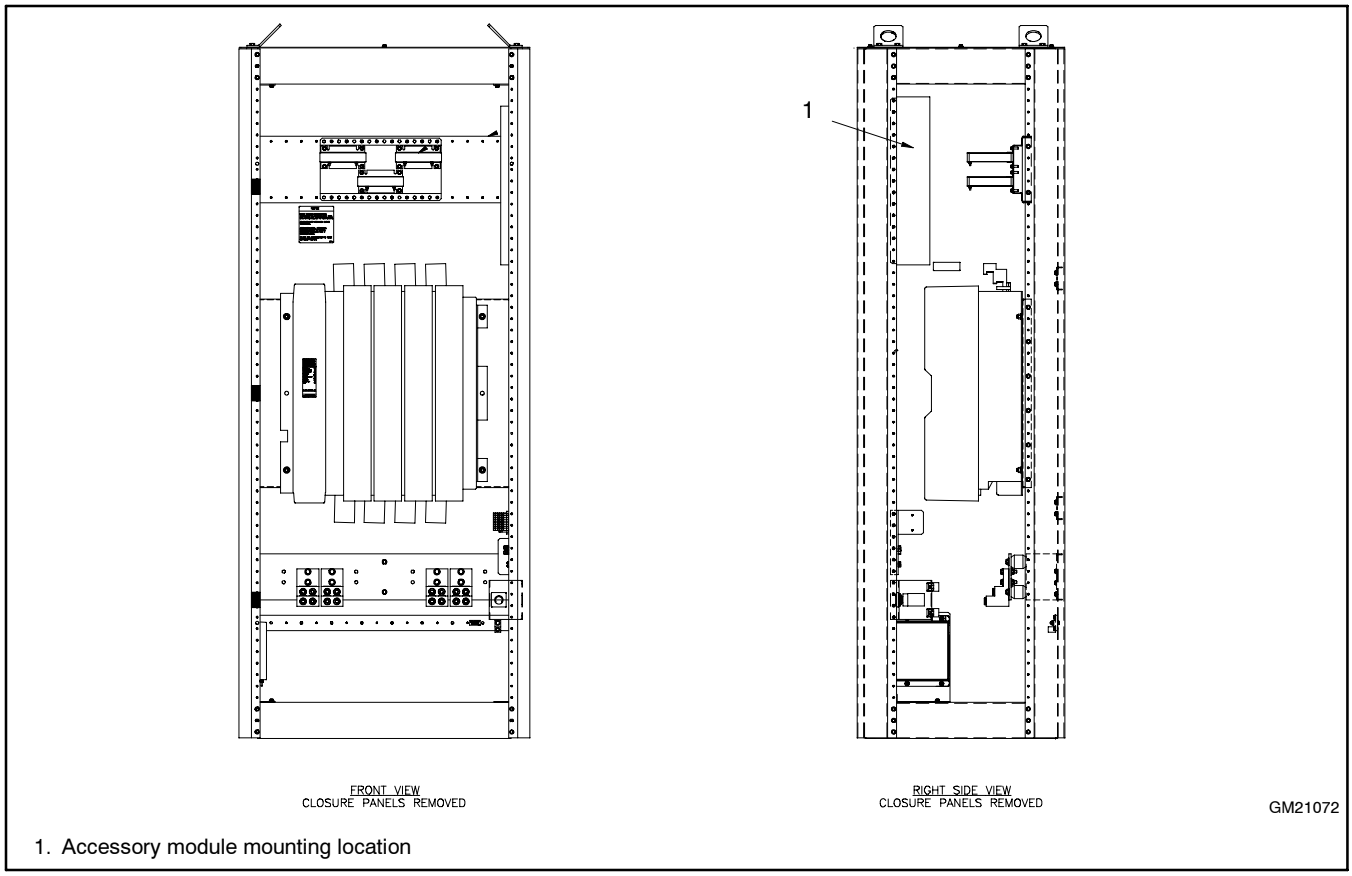


Figure 5 Accessory Module Mounting



1. Accessory module mounting location

Figure 6 Typical Module Location, 1200–2000A Framework-Style Enclosures

1.4 Install the mounting bracket in a welded transfer switch enclosure or bypass/isolation switch enclosure.

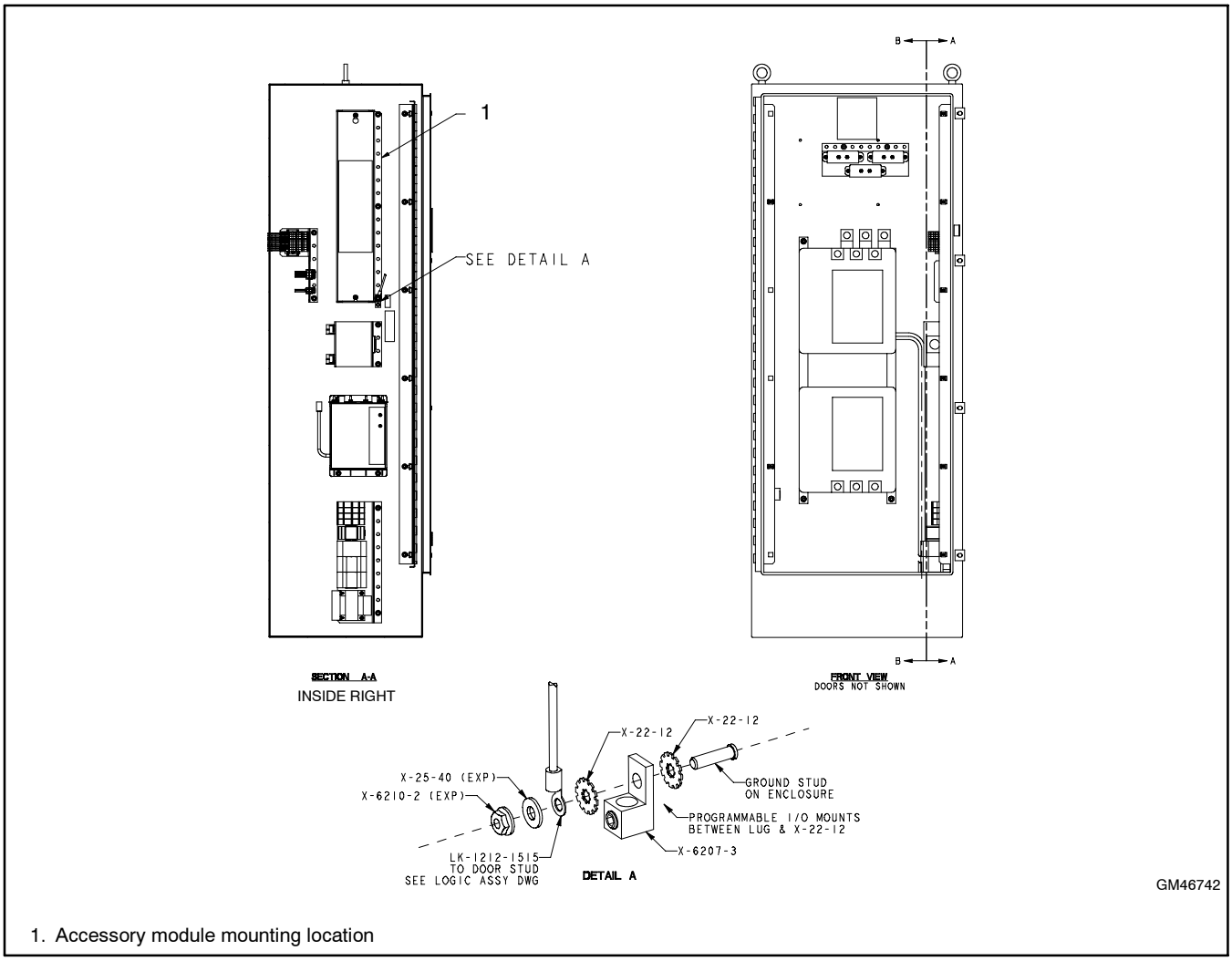
1. See Figure 7 through Figure 12. Orient the mounting bracket (GM46754) with the mounting holes on the left, right, or top as shown in the figure that corresponds to your unit.

2. Install the mounting bracket on the three studs provided inside the enclosure, connecting the module harness (GM46921) ground lead to the top mounting screw as shown in Figure 5.

   If the ground lug assembly is mounted on the lower stud, install the mounting bracket between the ground lug and the washer as shown in detail A of Figure 7. (Not applicable to door-mounted module assemblies.)

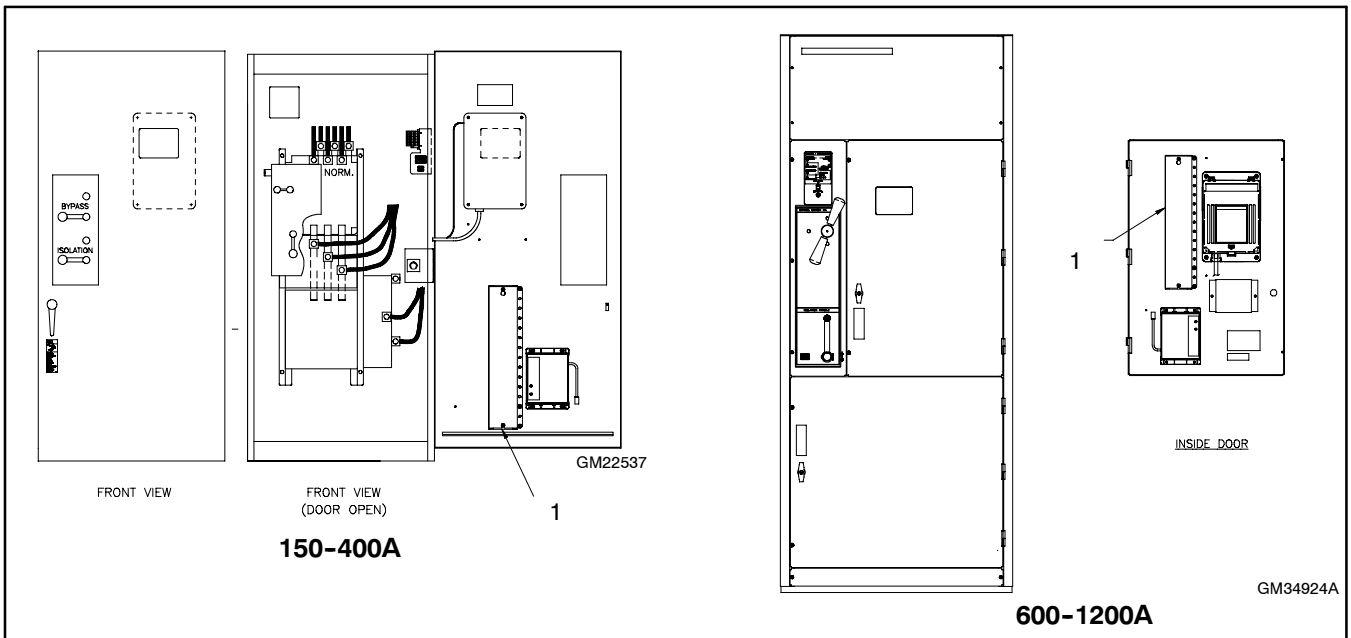
3. Secure the assembly using three 1/4-20 nuts (X-6210-2).

   Note: The three screws (X-67-114) included with the mounting kit are not used for welded enclosures and may be discarded.



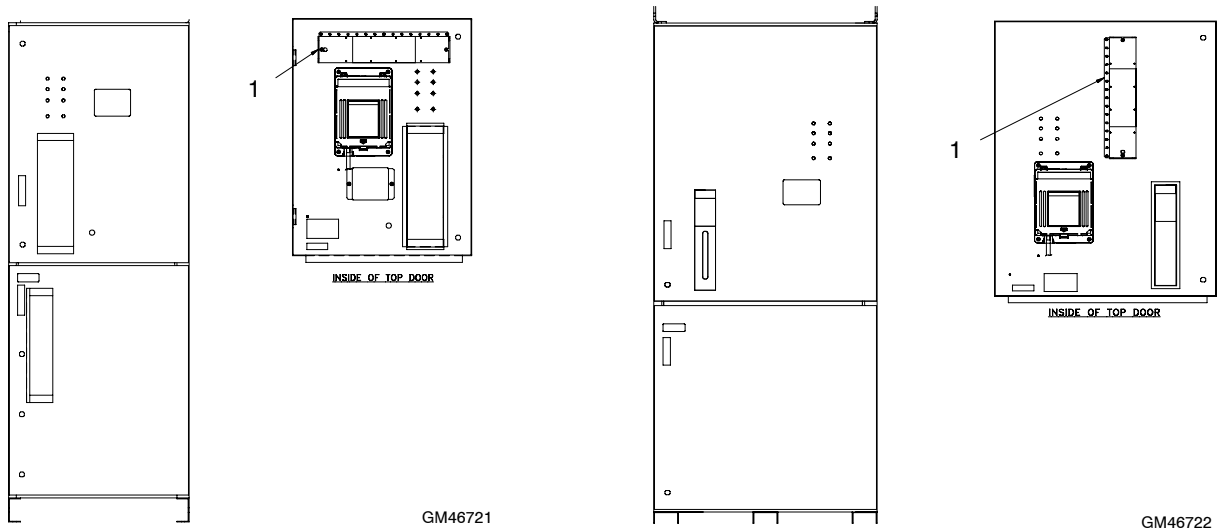
1. Accessory module mounting location

Figure 7 Typical Module Location, Welded Enclosures



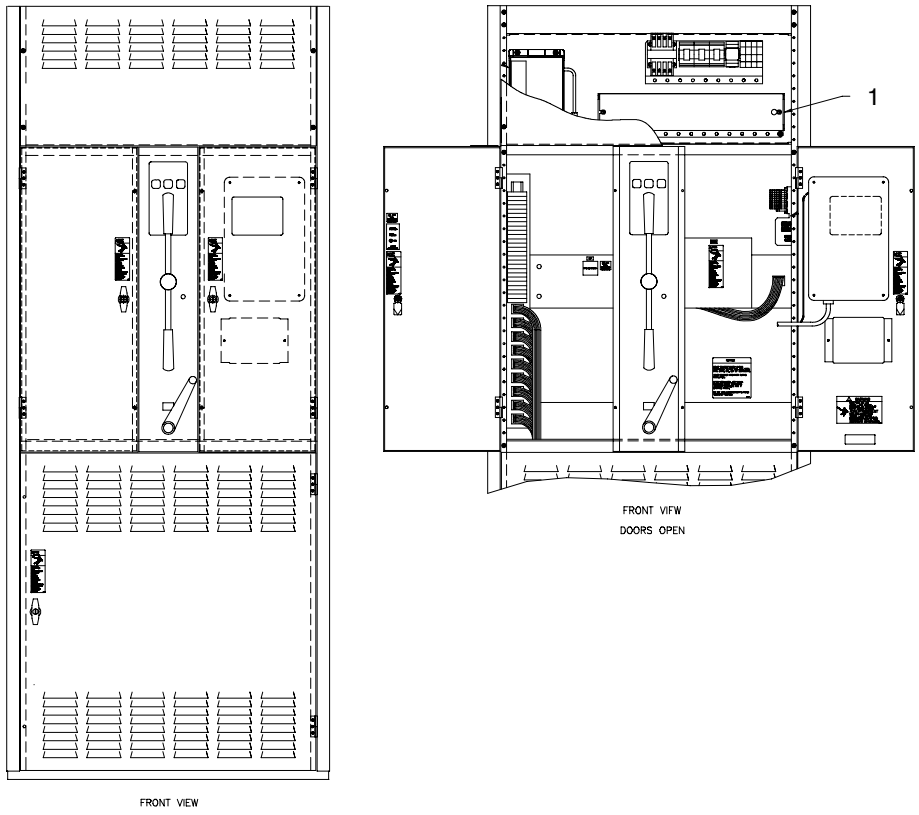
1. Accessory module mounting location

Figure 8 Module Location, 150–1200A Model KB/SB Bypass/Isolation Switches



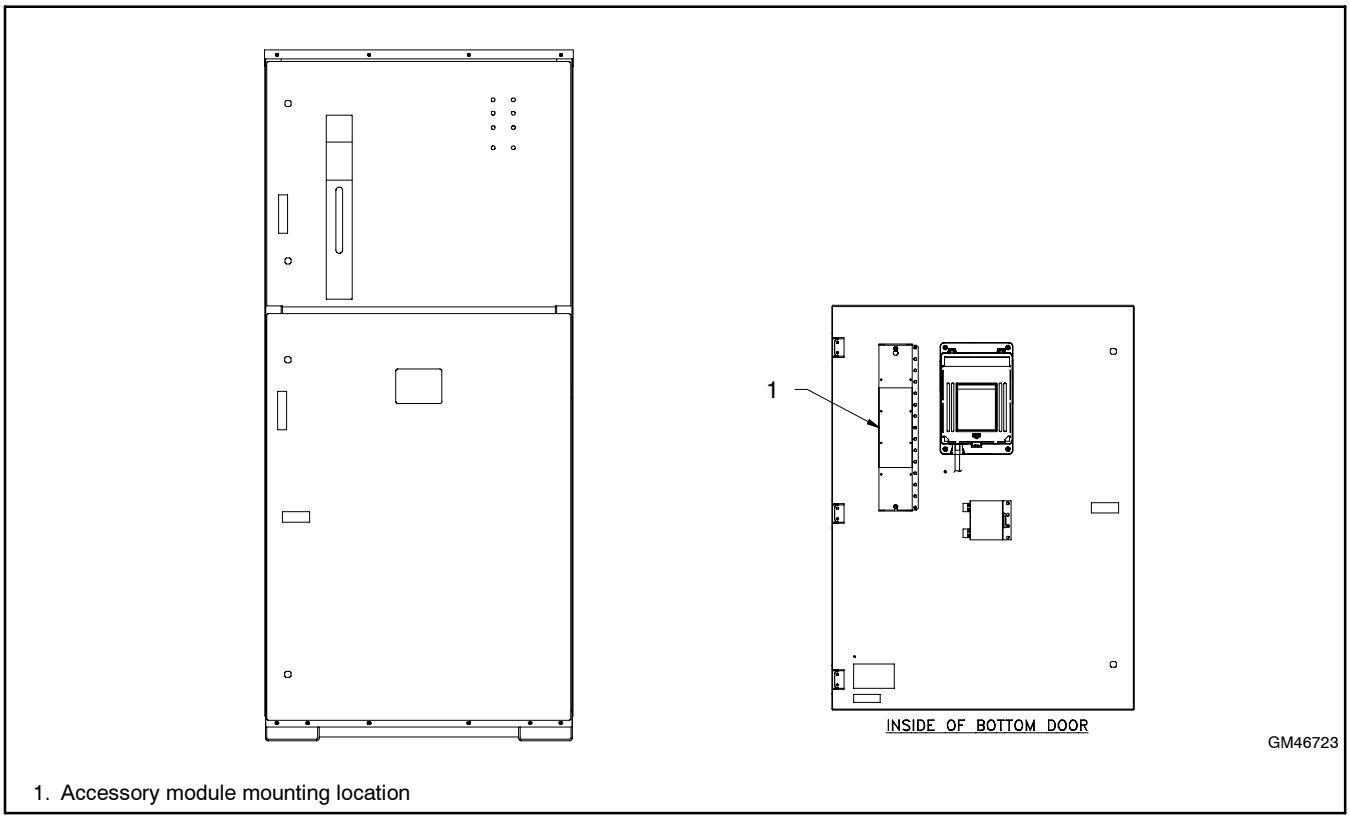
1. Accessory module mounting location

Figure 9 Module Mounting Location, 150-1200A Model KG/SG Bypass/Isolation Switches



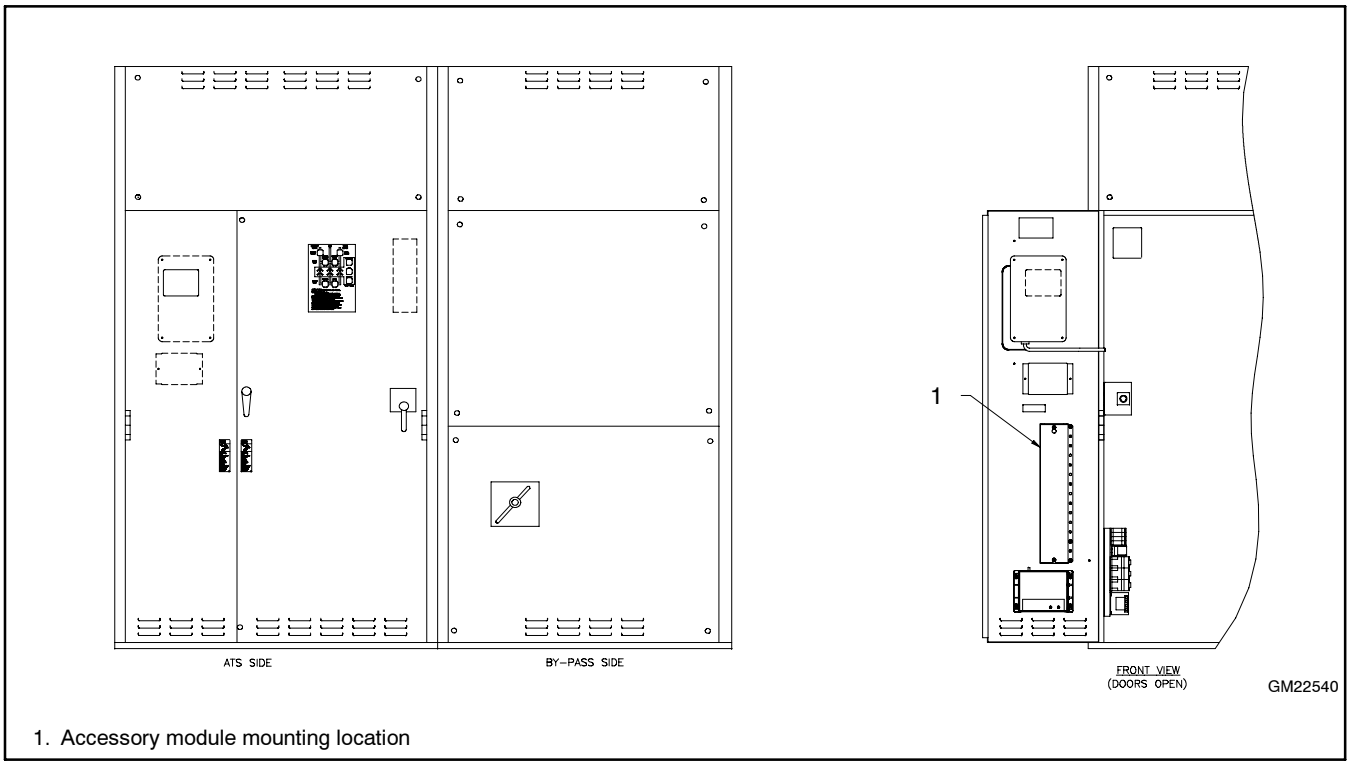
1. Accessory module mounting location

Figure 10 Typical Module Mounting Location, 1600-3000A Model KB/SB Bypass/Isolation Switches



1. Accessory module mounting location

Figure 11 Typical Module Mounting Location, 1600–3000A Model KG/SG Bypass/Isolation Switches



1. Accessory module mounting location

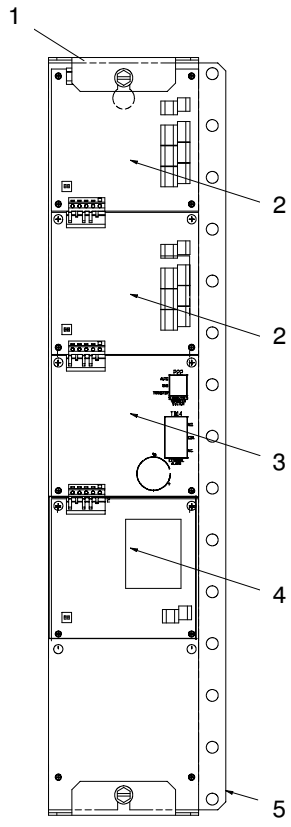
Figure 12 Module Mounting Location, 4000A Bypass/Isolation Switches

1.5 Install modules onto the mounting bracket.

Note: Verify that power is disconnected before installing or removing accessory modules. **Connecting or disconnecting modules with power connected will damage the transfer switch controller.**

Mount the accessory modules on the module mounting bracket, GM46754. Starting at the end of the module mounting bracket nearest the cable connection, install any I/O modules first (GM41093 or GM42186), then install the alarm board (GM40764), if used. The external battery module (GM42227), if used, must be the last module on the bus. See Figure 13.

Note: Some models may have the I/O module assembly installed with the cable connection end pointing to the side or the bottom. Regardless of the actual orientation of the assembly, the I/O modules must be installed closest to the cable connection, followed by the alarm module and then the external battery module, if used.



1. Harness connection
2. I/O modules GM41093 or GM42186 (if equipped)
3. Alarm module GM40764 (if equipped)
4. External battery module GM42227 (must be the last module, if equipped)
5. Mounting bracket GM46754

Figure 13 Module Mounting Bracket with Modules

1. Place the first module over the top four standoffs on the mounting bracket (nearest the opening for the connecting cable). See Figure 5. Align the four corner holes over the standoffs and press firmly until all four standoffs snap into the holes.

2. Align the P20 connector on the next module with the P21 connector of the installed board. Push the board so that the connectors are joined and the four mounting holes align with the standoffs. Press the board firmly until the lower standoffs snap into the holes. Use the #6-32 screws (X-49-1) provided with the module to secure the module to the top two standoffs.

3. Repeat step 1.5.2. for additional modules.

1.6 Connect inputs and outputs to I/O modules (GM41093 and GM42186) and set the module addresses.

1. Use #14-24 AWG cable to connect to inputs and outputs on standard or high-power I/O modules. See Figure 15 or Figure 16. Each output is a form C SPDT contact. Connect the normally open or normally closed contacts to the terminals as labeled on the module circuit board.

2. Set address DIP switch SW10 on each I/O module to a different address. See Figure 14 for the SW10 settings.

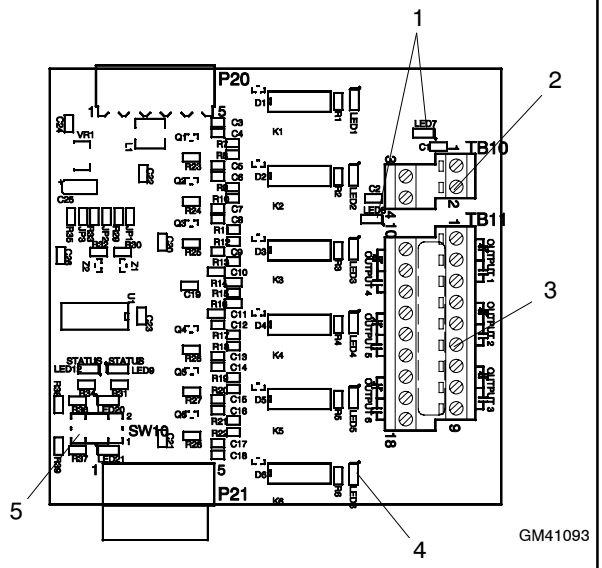
3. Record input and output connections on the decal provided with the mounting kit. See Figure 18.

   Assign I/O functions after installation is complete. See step 1.14.

	DIP Switch SW10-	
Address *	**1**	**2**
1	Off	Off
2	On	Off
3	Off	On
4	On	On

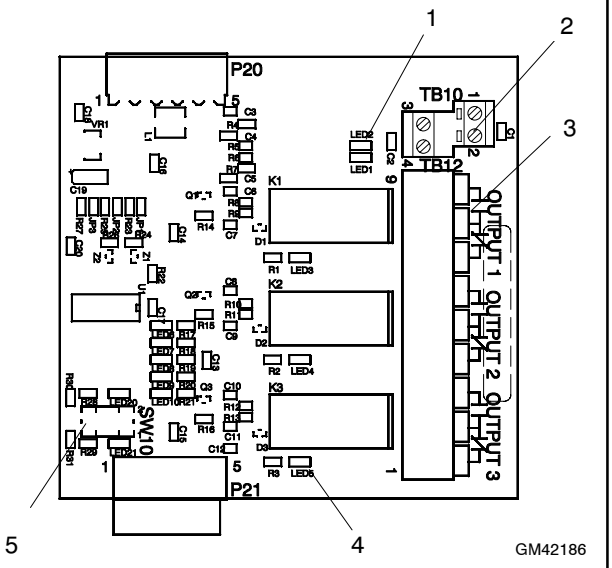
* I/O decal GM46756 may show addresses 0–3 instead of 1–4.

Figure 14 I/O Module Address Settings



1. Input LEDs 7 and 8 for inputs 1 and 2
2. Input connector (see Figure 17)
3. Output connector
4. Output LEDs 1-6
5. Address DIP switches

Figure 15 Standard I/O Module GM41093



1. Input LEDs 1 and 2
2. Input connector (see Figure 17)
3. Output connector
4. Output LEDs 3-5 for outputs 1, 2, and 3
5. Address DIP switches

Figure 16 High-Power I/O Module GM42186

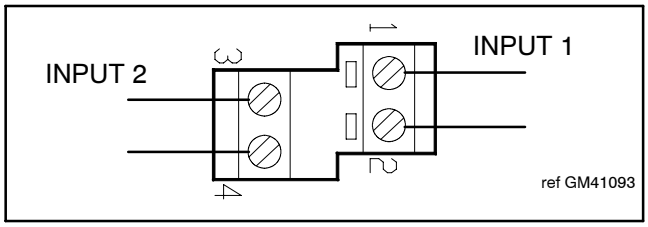


Figure 17 I/O Module Input Connections (TB1 or TB10)

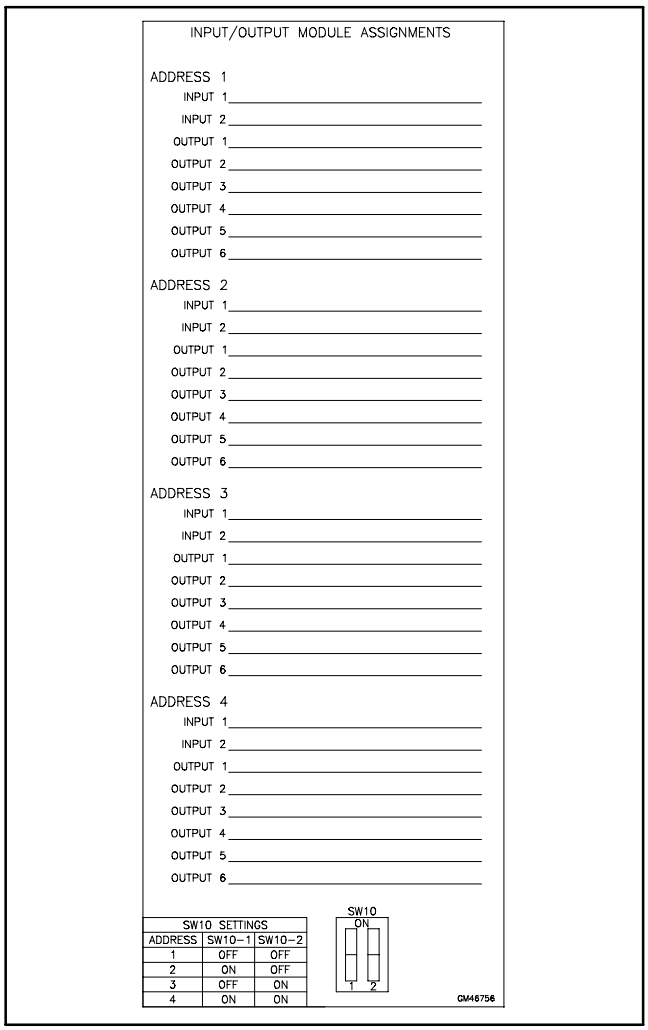
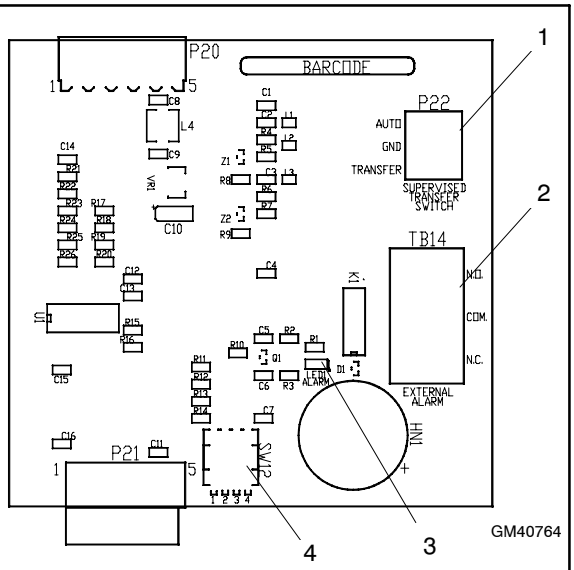


Figure 18 Input/Output Decal GM46756

1.7 Connect alarm module (GM40764) and set the module's DIP switches.

1. To enable the preferred source selection function, set alarm module DIP switch SW12-1 to ON. See Figure 19 and Figure 20.

   Note: See the transfer switch operation and installation manual for instructions to change the preferred source selection using the controller's Set Sources screen. An alarm board must be installed and DIP switch 12-1 must be ON in order to change the preferred source selection on the transfer switch.



1. Supervised Transfer Switch Connection, P22
2. External Alarm Connection, TB 14
3. Alarm Indicator, LED1
4. DIP Switches

Figure 19 Switch/Alarm Module GM40764

DIP Switch SW12-	Function
1	Preferred source selection enable (ON)
2	Supervised transfer enable (ON)
3	Not used
4	Not used

Figure 20 Alarm Board DIP Switches

2. If the transfer switch is equipped with an optional external alarm, connect it to TB14. Connect to the normally open or normally closed contact as recommended by the alarm manufacturer's instructions. See Figure 21.

Item	Specification
Wire Size	#12-22 AWG Cu
Contact Voltage Rating	500 mA @ 120 VAC
	250 mA @ 240 VAC

Figure 21 External Alarm Connection Specifications

3. If the transfer switch is equipped with a supervised transfer control switch:

   a. Connect the supervised transfer control switch to P22. See Figure 19 and Figure 21.

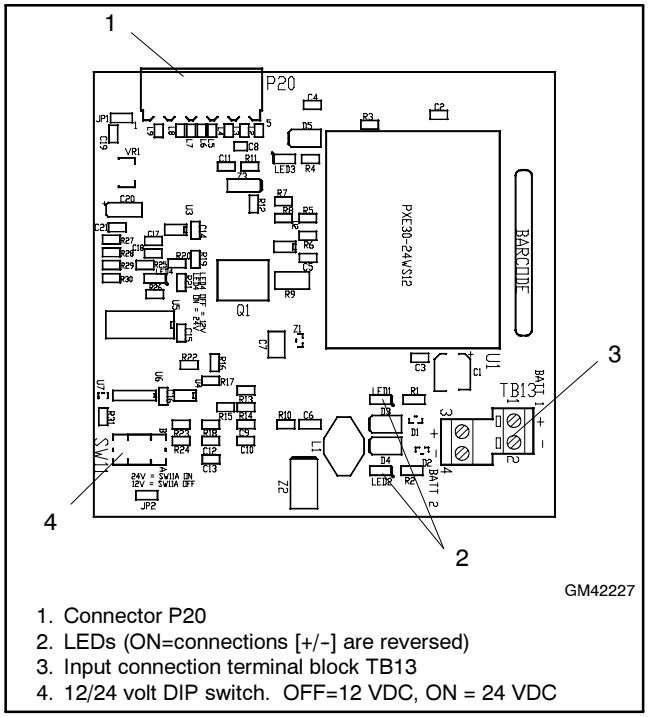
   b. Set DIP switch SW12-2 to ON. See Figure 20.

Note: There are no address switches on this module. The alarm module has a fixed address.

Note: Alarm module GM40764 is required for Chicago Alarm Mode operation.

1.8 Connect the battery(ies) to the external battery supply module (EBSM) (GM42227) and set the voltage selector switch.

1. Use #14-28 AWG wire to connect one or two batteries to terminal block TB13. (A second battery can be connected but is not required.) Follow the marking on the board for the positive (+) and negative (–) connections. See Figure 22 and Figure 23.



1. Connector P20
2. LEDs (ON=connections [+/–] are reversed)
3. Input connection terminal block TB13
4. 12/24 volt DIP switch. OFF=12 VDC, ON = 24 VDC

Figure 22 External Battery Supply Module

Note: If the battery connections are reversed, red LED1 or LED2 will light. See Figure 22.

TB13 Terminal Number	Connection
1	Battery 1 positive (+)
2	Battery 1 negative (-)
3	Battery 2 positive (+)
4	Battery 2 negative (-)

Figure 23 TB13 Battery Connections

2. Set voltage selector switch SW11A to 12 or 24VDC. See Figure 22 and Figure 24. Switch SW11B is not used.

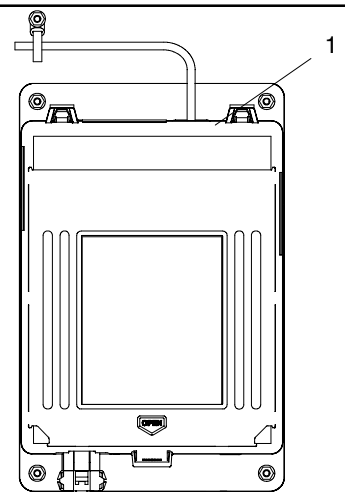
Note: The EBSM has no address but must be the last board on the bus.

Battery Voltage	DIP Switch SW11A	LED 4
12 VDC	OFF	OFF
24 VDC	ON	ON

Figure 24 Battery Voltage Selection DIP Switch

1.9 Connect the module harness (GM46921).

1. Connect P2 on harness GM46921 to the module assembly. See Figure 5.
2. Connect the ground lead (ring terminal) of the harness to the top mounting screw on the module mounting bracket.
3. Connect P1 on harness GM46921 to the ATS controls. See Figure 25.



1. Module wiring harness GM46921 connection to ATS controller

Figure 25 Module Harness Connection to ATS Controller

1.10 Install the module cover (GM49269).

1. Attach the cover (GM49269) using two screws X-791-2. See Figure 5.
2. Affix the input/output decal (GM46756) to the cover. See Figure 18.

1.11 Close and secure the transfer switch enclosure door.

1.12 Restore the standby power system to service.

1. Check that the generator set master switch is in the OFF position.
2. Reconnect the generator set engine starting battery, negative (-) lead last.
3. Reconnect power to the battery charger, if equipped.
4. Reconnect power to the transfer switch.
5. Move the generator set master switch to the AUTO position.

1.13 Reset the module(s).

1. Check the ATS display for the Module Status Change message. See Figure 26. Press the Reset button to display Reset New Module. Press the Reset button from that screen. The controller automatically recognizes the module type(s).

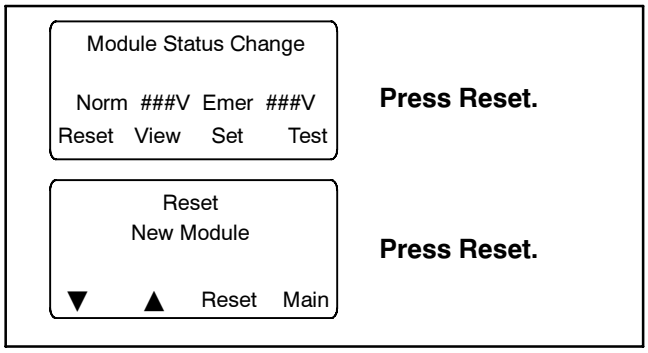


Figure 26 Screens after Module Connection

2. Navigate to the Set Inputs/Outputs>Set Auxiliary I/O screen. Step through the module screens to check that the controller has recognized the connected modules. Check the module type, address, and status for each module. See Figure 27 and Figure 28. Stay in this menu for the next step.

Description	Module Type
Switch/Alarm Module (alarm option board)	AOB
Standard I/O Module (standard option board)	SOB
High-Power I/O Module (power option board)	POB

Figure 27 Module Types

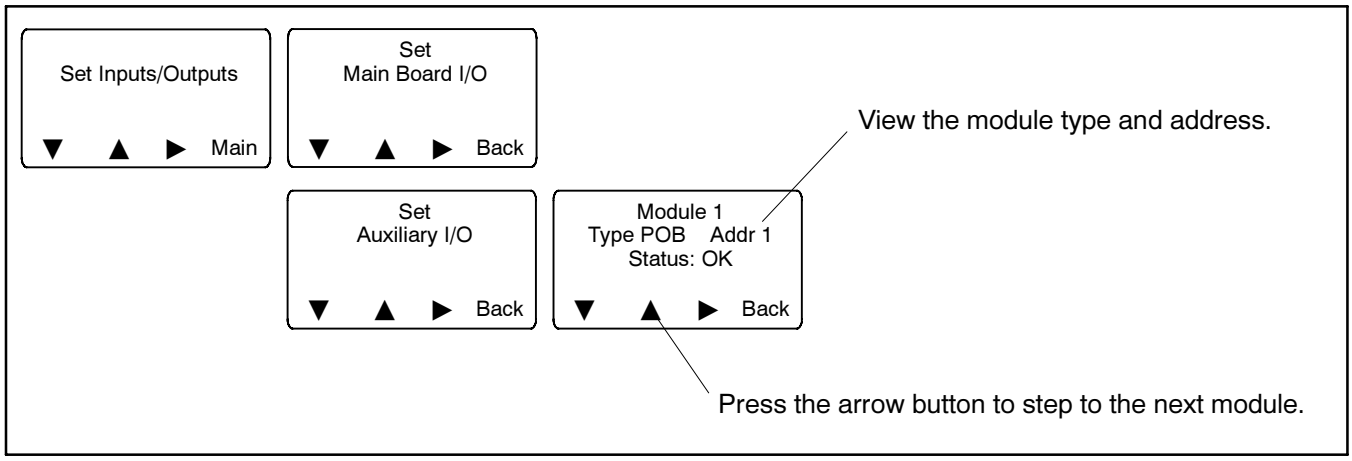


Figure 28 Checking the Module Status

1.14 Assign inputs, outputs, and alarms.

Use the ATS controller to assign inputs, outputs, and/or alarms as required for the application. Refer to the transfer switch operation/installation manual for instructions.

1. Use the Set Inputs/Outputs>Set Auxiliary I/O screens to assign functions to the inputs and outputs connected to the I/O module(s).

2. Use the Common Alarms Setup screen to assign functions to the audible alarm. Set Audible Alarm: Y for each function that should trigger the alarm.

   Note: For **Chicago Alarm Mode**, use the Common Alarm Setup screen to assign the Contactor in Standby condition to trigger the audible alarm. Alarm module GM40764 is required for Chicago Alarm Mode operation.

2 Input/Output (I/O) Module Specifications

Two types of input/output modules are available. The standard I/O Module has two inputs and six outputs. The high-power I/O module has two inputs and three outputs. See Figure 29 and Figure 30 for I/O module specifications.

Inputs	
Available Inputs	2
Input Definition	Contact closure
Current	5 mA Max
Connection Type	Terminal strip
Wire Size	#14-24 AWG
Max Distance	700 ft.
Outputs	
Outputs Available	6
Contact Type	Form C (SPDT)
Contact Voltage Rating	2 A @ 30 VDC 500 mA @ 125 VAC
Connection Type	Terminal strip
Wire Size	#14-24 AWG

Figure 29 Standard Input/Output Module GM41093

Inputs	
Available Inputs	2
Input Definition	Contact closure
Current	5 mA Max
Connection Type	Terminal strip
Wire Size	#14-24 AWG
Max Distance	700 ft.
Outputs	
Outputs Available	3
Contact Type	Form C (SPDT)
Contact Voltage Rating	12 A @ 24 VDC 12 A @ 250 VAC 10 A @ 277 VAC 2 A @ 480 VAC
Connection Type	Terminal strip
Wire Size	#14-24 AWG
Environmental Specifications	
Temperature	-40°C to 85°C (-40°F to 185°F)
Humidity	35% to 85% noncondensing

Figure 30 High-Power Input/Output Module GM42186

3 External Battery Supply Module (EBSM)

External battery supply module GM42227 allows connection to the generator set engine start battery(ies) or other batteries to provide 12 VDC power to the ATS controller. The external battery supply module kit is required for the following applications:

- **Systems using extended engine start time delays.** The EBSM provides power to the ATS controller during extended time delays longer than 15 sec., when neither the Normal nor the Emergency source is available.
- **Three-source systems.** Three-source systems use two transfer switches and two standby power sources in addition to the preferred power source. The EBSM provides power to the second ATS controller when the preferred source (connected to ATS1) is supplying the load. Refer to the ATS operation/ installation manual for more information about three-source systems.
- **Installations with frequent utility power outages.** The EBSM provides power to the ATS controller when neither source is available, preserving the controller's backup battery.

The EBSM produces 2 amps at 12 VDC with 9-36 VDC input. The EBSM input is reverse-polarity protected. The EBSM outputs a low battery voltage signal when the external battery voltage falls below 11 VDC for a 12-volt system or 22 VDC for a 24-volt system.

The EBSM is sometimes referred to as the battery option board.

4 Switch/Alarm Module

4.1 Switch/Alarm Module Functions

The functions provided by alarm module GM40764 are:

- 90 dB audible alarm (any alarm function can be programmed to trigger the audible alarm)
- Chicago alarm operation
- Preferred source selection
- Supervised transfer control (supervised transfer control switch required)
- Connection for external alarm

The audible alarm can be set to sound under selected fault conditions through the Common Alarm Setup Screen on the ATS controller.

The preferred source selection can be changed through the ATS controller screens only if the alarm board is installed and the preferred source selection DIP switch SW12-1 is ON.

4.2 Alarm Operation

The horn sounds any time a fault event happens in the system. The horn continues to sound unless the alarm silence button is pressed. When the fault is cleared, the alarm silence is ended and reset for the next alarm.

Chicago Alarm mode requires the horn to sound and a lamp or LED to light when the switch is in the emergency (non-preferred) position. For Chicago Alarm Mode, use the Common Alarm Setup screen to assign the Contactor in Standby condition to trigger the audible alarm.

A remote alarm or indicator light can also be connected to the alarm board to indicate the alarm condition. See step 1.7.

4.3 Alarm Silence Mode

In Alarm Silence Mode, the horn is disabled. Alarm Silenced appears on the display and the system alert LED lights.

The Alarm Silenced condition can be assigned to a programmable output. See the transfer switch operation and installation manual for instructions to assign outputs.

Instructions to silence the alarm:

When the alarm is activated, the word Alarm appears on the main display screen above the first button on the ATS controller. See Figure 31. Press the Alarm button to open the Reset screen. Then press the button labeled Reset to silence the alarm.

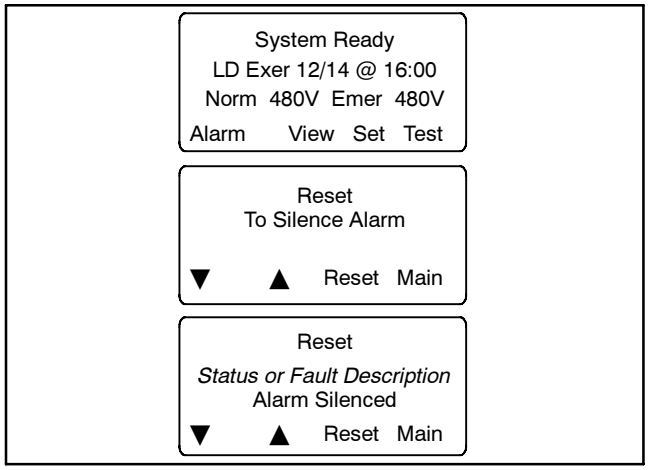


Figure 31 Alarm Silence

5 Module Warnings and Faults

5.1 Module Status Change

If the Module Status Change message appears on the controller display, first verify that the cable from the controller to the accessory module assembly is not loose or disconnected.

The Module Status Change message automatically clears if the fault condition is corrected (self-resetting fault).

Module Connection (new or reconnected module)

Installing or reconnecting one or more accessory modules triggers the Module Status Change message.

1. If the ATS display shows the Module Status Change, press the Reset button. See Figure 32.

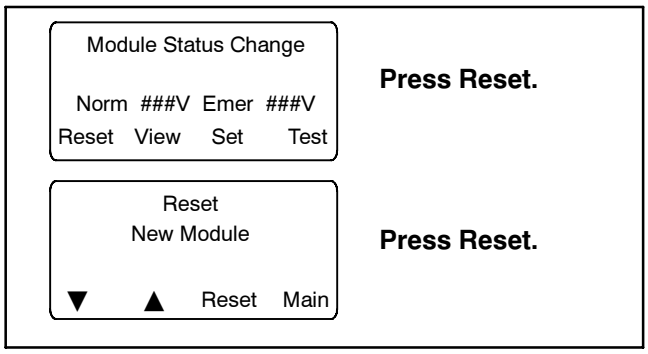


Figure 32 Screens after Module Connection

2. The ATS display will show Reset New Module. Press the Reset button from that screen. The controller recognizes the module type(s).

3. Navigate to the Set Input/Outputs>Set Aux I/O screen to check that the controller has recognized the connected modules. See Figure 33.

See the transfer switch operation/installation manual for instructions to assign programmable inputs and outputs to I/O modules or assign functions to the audible alarm for an Alarm Module.

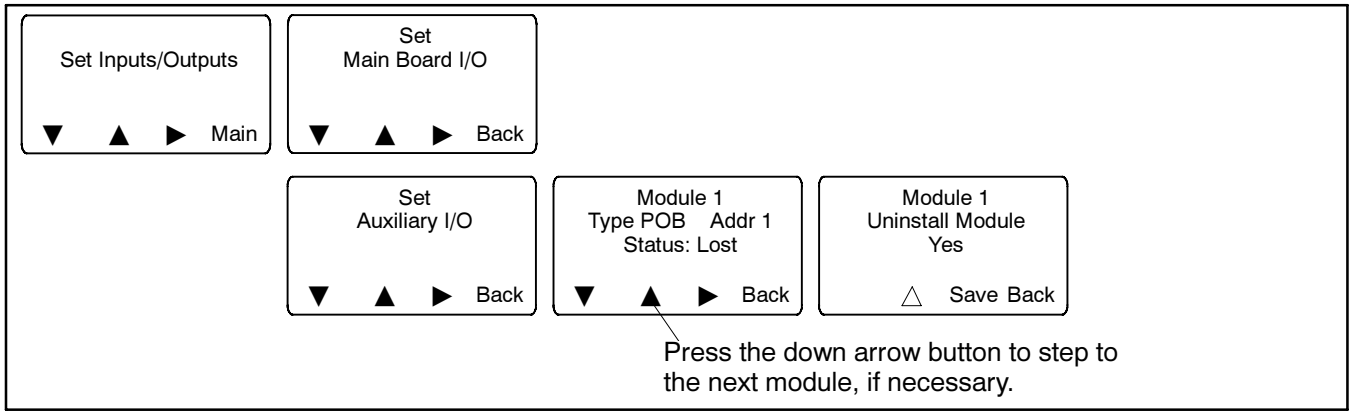


Figure 33 Uninstall Module

Disconnected Module

If one or more accessory modules are disconnected from the controller, the message Module Status Change appears. See Figure 34. When modules are physically disconnected from the transfer switch, they must be uninstalled through the controller keypad. Use the following Module Uninstall Procedure.

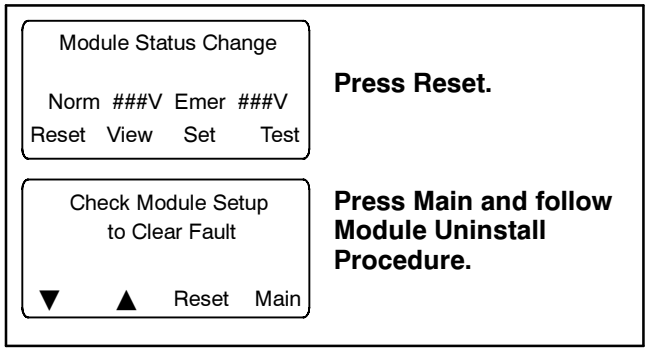


Figure 34 Screens after Module Disconnection

Module Uninstall Procedure

1. If the ATS display shows Module Status Change, press the button labelled Reset.
2. If the ATS display shows Check Module Setup to Clear Fault, press Main to return to the main screen.
3. Press Set to enter setup mode.
4. Enter the setup password.
5. Press the down arrow to step to the Set Inputs/ Outputs screen. See Figure 33.
6. Navigate to the Set Auxiliary I/O screen. See Figure 33. Press the right arrow button to see the status of module 1. Press the down arrow to step to the next module, if necessary, until the screen shows Status: Lost.
7. Press the right arrow button to move to the Uninstall Module screen. Verify that the screen says Uninstall Module Yes. (Press the open arrow button to toggle no/yes, if necessary.)
8. When Yes is displayed, press Save to uninstall the module.
9. Repeat the uninstall procedure for additional modules, if necessary.

Other Module Status Change Conditions

A Module Status Change message that cannot be cleared as described in this section may indicate a failure of the controller's real-time clock. Carefully follow the Module Connection or Module Uninstall procedures to attempt to reset the fault. If the fault cannot be reset, the controller's logic board may need to be replaced. Contact an authorized distributor/dealer for service.

5.2 Module Status Conflict

The message Module Status Conflict appears if one type of module is replaced with another type of module that has the same address. Follow the procedure below to resolve the conflict.

Procedure to Clear a Module Status Conflict

1. Disconnect power to the transfer switch.
2. Disconnect the module.
3. Close the enclosure door and reconnect power to the ATS. The display will show Module Status Change.
4. Press the button labelled Reset. The display will show Check Module Setup to Clear Fault.
5. Follow the procedure in step 5.1 to uninstall the module through the ATS controller keypad.
6. Disconnect power to the ATS.
7. Connect the new module.
8. Close the enclosure door and reconnect power to the ATS. The display will show Module Status Change. See Figure 32.
9. Press the button labeled Reset to display Reset New Module. Press the reset button from that screen. The controller will now recognize the new module type.
10. Navigate to the Set Auxiliary I/O screen to check the status and settings for the new module. See Figure 33. Press the right arrow button to see the status of module 1. Press the down arrow to step to the next module, if necessary,

See the transfer switch operation/installation manual for instructions to assign programmable inputs and outputs to I/O modules or assign functions to the audible alarm for an Alarm Module.

Parts Lists

Module, Alarm/Preferred Source

Kit: GM40808-KP1		
Qty.	**Description**	**Part Number**
1	PCB assembly switch/alarm board	GM40764
2	Screw, pan head, 6-32 x 5/16	X-49-1

Module Mounting Kit

Kit: GM46258-KP1		
Qty.	**Description**	**Part Number**
1	Bracket, I/O	GM46754
1	Decal	GM46756
1	Harness, wiring	GM46921
1	Cover, I/O assembly	GM49269
1	Washer, lock, 0.262 ID x 0.743 in. OD	X-22-12
1	Cable tie	X-468-9
3	Nut, flange spiralock, 1/4-20	X-6210-2
3	Screw, hex washer, thread-forming	X-67-114
2	Screw, slotted hex washer head, mach	X-791-2

Module, Programmable Input/Output, Standard

Kit: GM46888-KP1		
Qty.	**Description**	**Part Number**
1	PCB assembly, standard I/O module	GM41093
2	Screw, pan head, 6-32 x 3/8	X-49-2

Module, External Battery Supply (Battery Option Board)

Kit: GM46889-KP1		
Qty.	**Description**	**Part Number**
1	PCB assembly, external battery module	GM42227
2	Screw, pan head, 6-32 x 3/8	X-49-2

Module, High-Voltage/Current Input/Output

Kit: GM46890-KP1		
Qty.	**Description**	**Part Number**
1	PCB, assembly, high power I/O	GM42186
2	Screw, pan head, 6-32 x 5/16	X-49-1

Notes

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