FEDERAL SIGNAL
Safety and Security Systems

Battery Charger Retrofit Kit Q860000236-01 for UVIC Cabinet

Retrofit Manual

25500366
Rev. A0 1216
Printed in U.S.A.

Limited Warranty

This product is subject to and covered by a limited warranty, a copy of which can be found at www.fedsig.com/SSG-Warranty. A copy of this limited warranty can also be obtained by written request to Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60484, email to info@fedsig.com or call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or implied, contractual or statutory, including, but not limited to the warranty of merchantability, warranty of fitness for a particular purpose and any warranty against failure of its essential purpose.

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⚠ WARNING

It is important to follow all instructions shipped with this product. This device is to be installed by trained personnel who are thoroughly familiar with the country electric codes and will follow these guidelines as well as local codes.

Federal Signal reserves the right to make changes to devices and specifications detailed in the manual at any time in order to improve reliability, function or design. The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for any inaccuracies.

- Electrocution or severe personal injury can occur when performing various installation and service functions such as making electrical connections, drilling holes, or lifting equipment. Therefore only experienced electricians should install this product in accordance with national, state and any other electrical codes having jurisdiction. Perform all work under the direction of the installation or service crew safety foreman.
- The sound output of sirens is capable of causing permanent hearing damage. To prevent excessive exposure, carefully plan siren placement, post warnings and restrict access to areas near the sirens. Sirens may be operated from remote control points. Whenever possible, disconnect all siren power including batteries before working near the siren.
- After installation or service, test the siren system to confirm that it is operating properly. Test the system regularly to confirm that it will be operational in an emergency.
- If future service personnel do not have these warnings and all other instructions shipped with the equipment to refer to, the siren system may not provide the intended audible warning and service personnel may be exposed to death, permanent hearing loss, or other bodily injury. File these instructions in a safe place and refer to them periodically. Give a copy of these instructions to new recruits and trainees. Also, give a copy to anyone who is going to service or repair the sirens.

Failure to understand the capabilities and limitations of your siren system could result in permanent hearing loss, other serious injuries or death to persons too close to the sirens when you activate them or to those you need to warn. Carefully read and thoroughly understand all safety notices in this manual and all operations-related-items in all instruction manuals shipped with equipment. Thoroughly discuss all contingency plans with those responsible for warning people in your community, company, or jurisdiction.

Safety Message to Installers

⚠ WARNING

People's lives depend on your proper installation and servicing of Federal Signal products. It is important to read and follow all instructions shipped with this product and the original product. In addition, listed below are some other important safety instructions and precautions you should follow:

- You must be a properly trained technician or electrician in order to install this product.
- Wear safety glasses.
- Remove metal jewelry; for example, rings and watches. Metal could cause a short circuit.
- Make sure that every wire terminal you remove, does not touch any other wire, cabinet, or battery terminal.
- Batteries have the risk of explosion, which could result in damage and personal injury. Take precautions to prevent open flames, sparks, or electric arcs in battery area.

General Description

Introduction

This manual describes how to replace the 24 Vdc charger in the UVIC cabinet.

The charger features a switch mode voltage/current regulator to improve efficiency and reduce heat. The charger incorporates a three-stage charge algorithm to charge two series 12 volt batteries for 24 Vdc while minimizing gassing and maintaining the batteries at the optimum charge level.

The charger delivers a trickle charge, a bulk charge, and a float voltage. The charger incorporates a temperature sensor that limits float voltage during high temperature conditions.

The charger monitors for faults and provides the following indicators:

- If the charger has AC power and is producing charge voltage, and, if no fault is detected, the charge status output is on.
- If the charger is in trickle or bulk mode or not supplying enough current (for example, not charging) a fault is detected.
- If the battery voltage is lower than the charger voltage (for example, due to a blown fuse) a fault is detected.
- If the charge voltage is too high (for example, due to charger regulation failure) a fault is detected.

If a fault is detected, the FAULT LED lights and the charge status output is off.

Features

- Three-stage charger algorithm to charge the battery while minimizing gassing for longer battery life
- Temperature compensated charge voltage
- Efficient switch mode design
- Over-temperature protection
- Status LEDs: Trickle, Bulk, Ready, and Fault
- Charger status output
- Voltage and current regulating

Qualifications

You must be a properly trained technician or electrician in order to install this product.

Required Equipment

You need the following equipment. Standard Technician's Tool Kit that includes the following.

Table 1 Required Tools Checklist

	Description
	Ratchet set with universal joint angle extension
	Ratchet extension bar, 3 or 6 inches in length
	7/16 inch socket
	3/8 inch socket
	1/8 inch flat head screwdriver
	1/4 to 1/2 inch in width flat head screwdriver
	Wire cutter
	2 wire ties
	Needle nose pliers
	Wire strippers
	Battery load tester
	Voltmeter
	Electrical tape

Unpacking the Kit

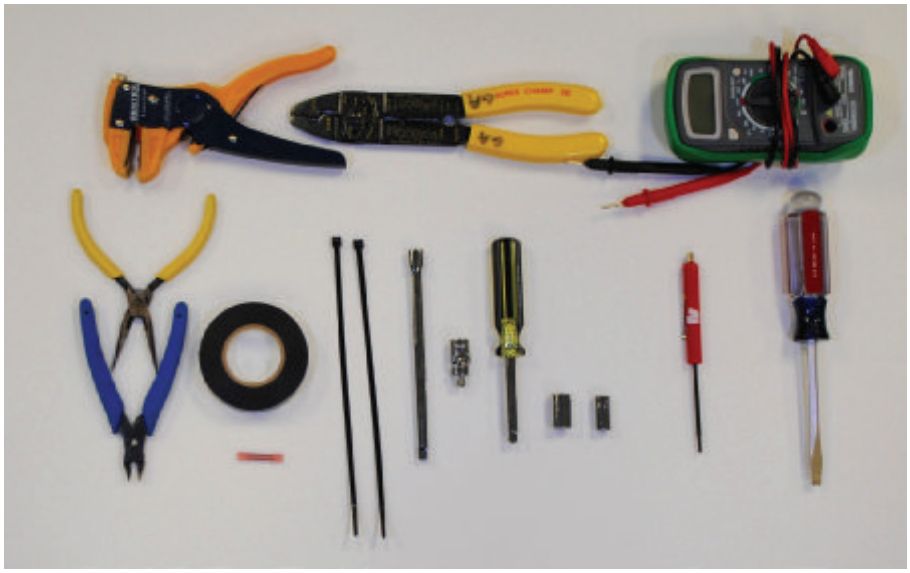
Ensure that the parts listed are included in the kit. If you are missing any parts, contact Customer Support. See Getting Service.

Table 2 UVIC Kit Contents (Q860000236-01)

Quantity	Item Number	Description
1	860000236-01	Federal Signal Charger for UVIC
1	25500366	Retrofit Manual
1	1612731A	Label, DIN rail, UVIC, 115 Vac

The required tool are shown below. The battery load tester and ratchet set are not pictured.

Figure 1 Tools Required



You will replace the existing charger with the following charger.

Figure 2 Federal Signal 24 V Charger for UV

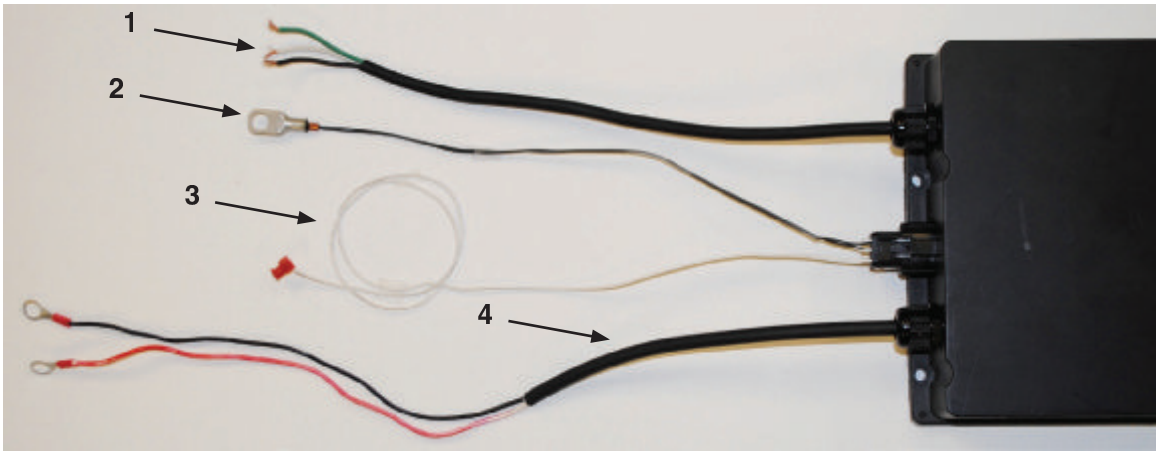


Table 3 Charger wires description

Wire number	Wire	Description
1	AC power wires black/ green/white	Connects into terminal slots attached to the DIN rail.
2	Black temperature sense	Connects to Battery 1 (negative).
3	White wire	Connects to JP20 on the motherboard.
4	Black wire/Red wire	Black wire connects to Battery 1 (negative). Red wire connects to Battery +24 Vdc.

Replacing the Battery Charger in the UVIC Cabinet

Before installing the new battery charger, determine the battery float voltage selection. The charger comes from the factory preset for float voltage of 13.5 Vdc per battery. This preset works with Federal Signal supplied batteries. Some batteries may recommend a different float voltage, the charger can be set from 13.2 to 13.8 Vdc per battery (actual voltage is 26.4 to 27.6 Vdc). If the battery float voltage requires adjustment, remove the cover on the charger and change the JP7 jumper to the appropriate settings.

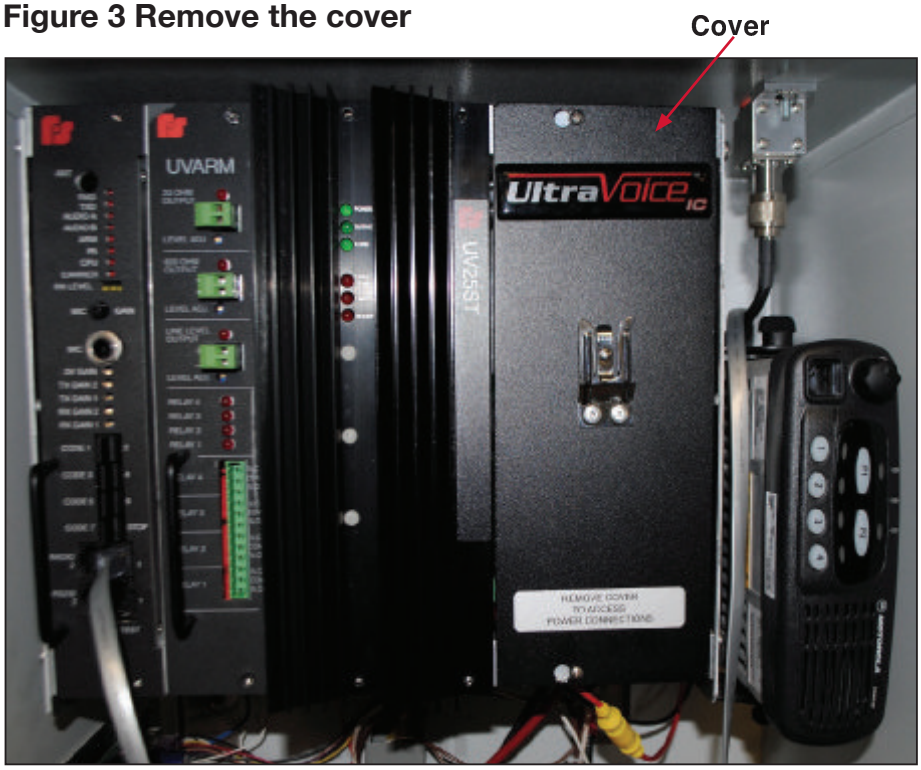
To install the new battery charger, do the following.

Turning off the Power

1. Remove AC power to the control cabinet. Locate the AC disconnect box. Turn off the power to the cabinet.
2. Verify AC power is off by measuring with a voltmeter.

   NOTE: Load test the batteries and replace batteries as necessary before proceeding.
3. Remove cover by removing two Phillips head screws. You now have access to the power connections. (See Figure 3.)

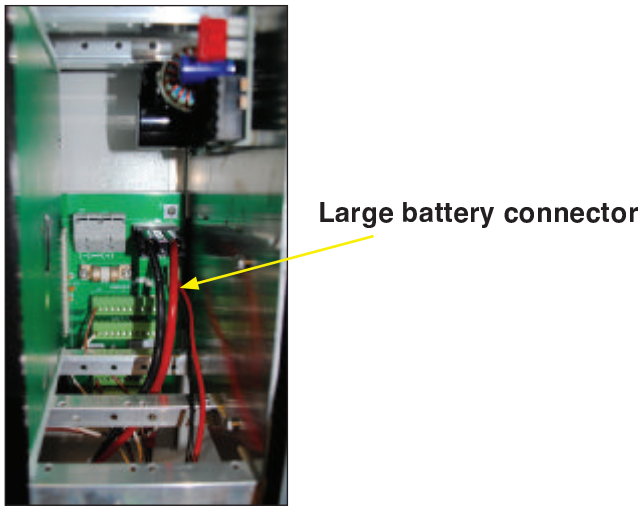
Figure 3 Remove the cover



Disconnecting the Wires

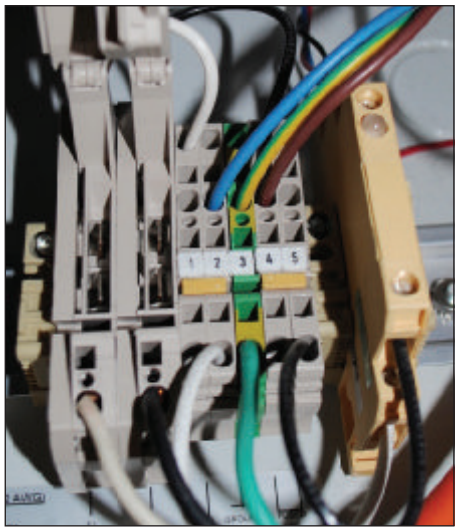
4. Disconnect large battery connector from the UVIC motherboard. (See Figure 4.)

Figure 4 Remove the large battery connector



5. Press screwdriver firmly into terminal release slot to remove charger AC power wires 2, 3, and 4. (See Figure 5

Figure 5 Remove wires 2, 3, and 4 (from charger to DIN rail)



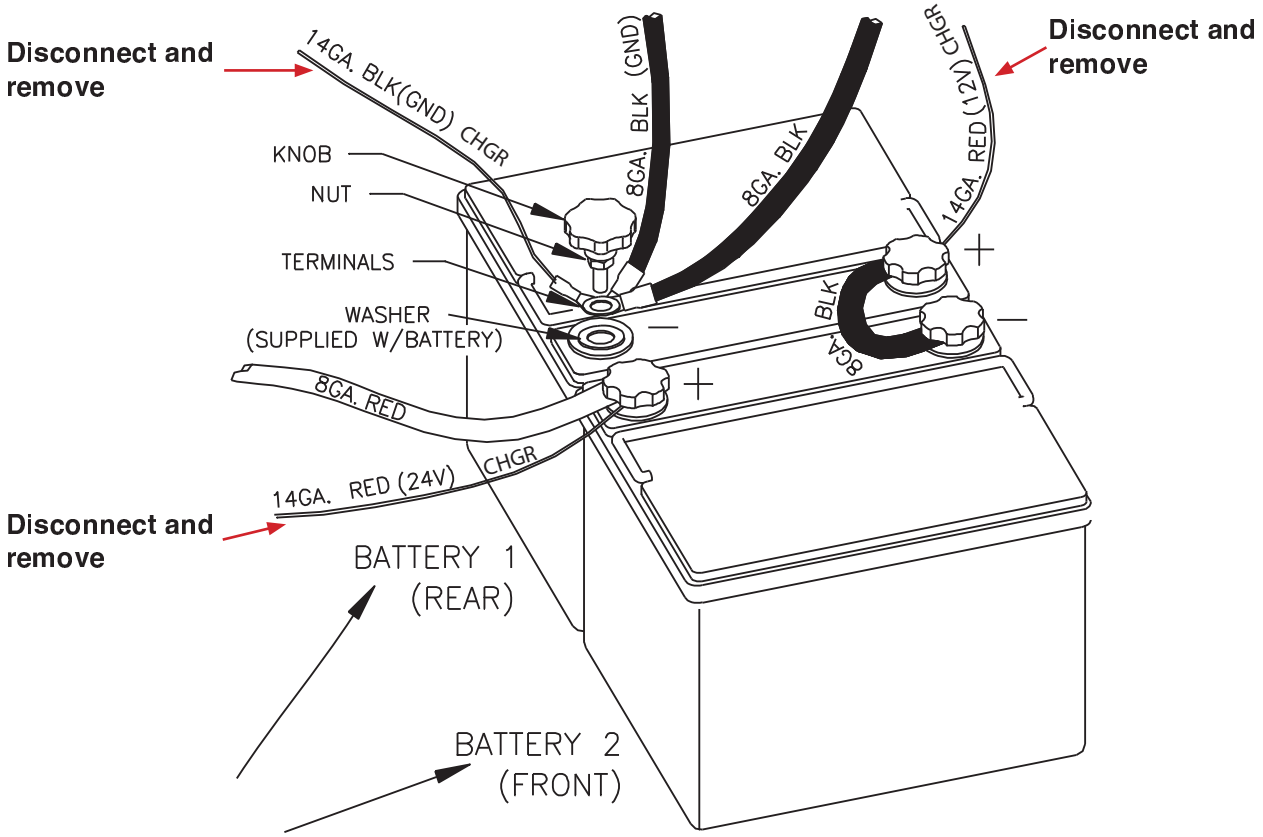
6. Unscrew battery terminals. (See Figure 6.) Remove the following three wires from the battery terminal:

   a. Charger ground (black wire)

   b. Charger 12 Vdc (red wire)

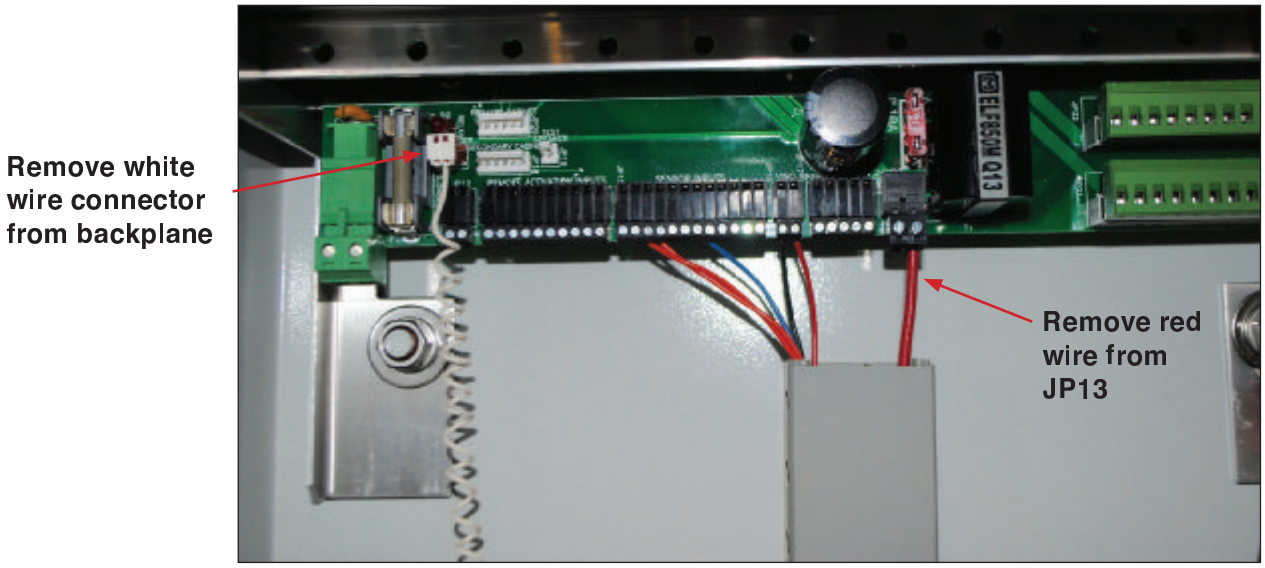
   c. Charger 24 Vdc (red wire)

Figure 6 Battery Connections Drawing



7. Disconnect white wire and connector from the charger jack (JP20) on the UVIC backplane. (See Figure 7.)
8. Disconnect red wire with a fuse from JP13 (positive) from backplane motherboard. (See Figure 7.)

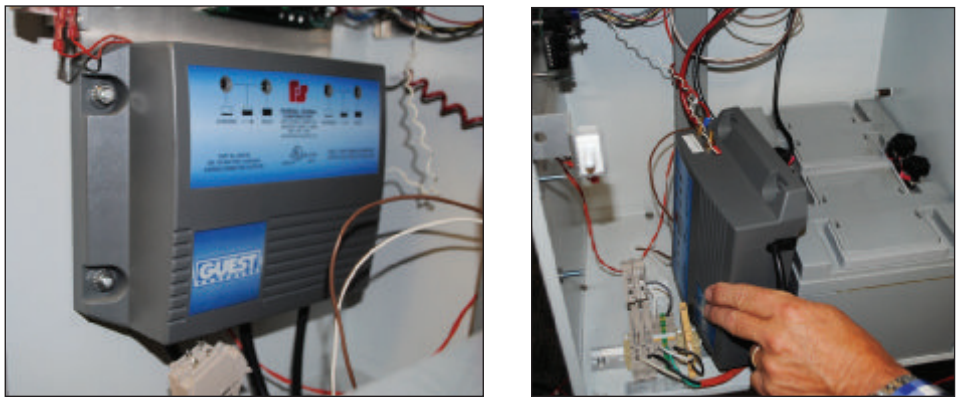
Figure 7 Remove white and red wires from backplane motherboard



Removing the Charger

9. Use a 7/16 inch socket to remove charger. Remove the back two Keps nuts, and then the front two Keps nuts and set aside. (You will reuse the Keps nuts for the new charger.)
10. Carefully remove charger.

Figure 8 Remove the charger



Installing the New Charger

11. Loosen the screws on DIN rail. Move the 120 V DIN rail terminals to the right as far as possible. This is to allow the new charger to minimize contact with the DIN rail components. (See Figure 9.)

Figure 9 Move DIN rail

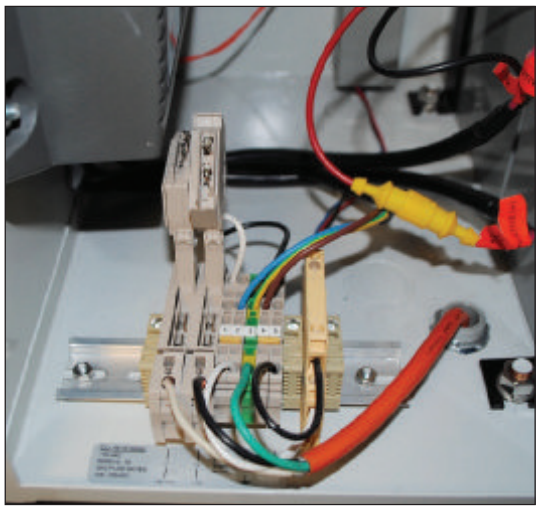
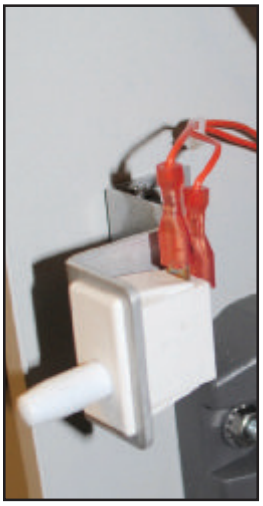


Figure 10 Remove wires



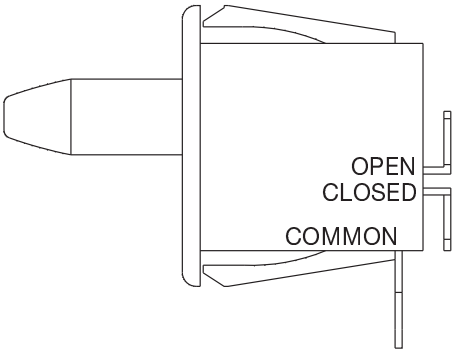
12. Disconnect the wires from intrusion switch to allow the new charger to be easily installed. (See Figure 10.)

13. Install new charger with the cables facing the back and the LEDs facing the top. Use the Keps nuts from original charger. (See Figure 11.)

Figure 11 Install new charger

14. Reinstall wires for the intrusion switch to NO (Normally Open) and COMM (Common) terminals. Polarity is not important. (See Figure 12.)

Figure 12 Reinstall intrusion switch wires

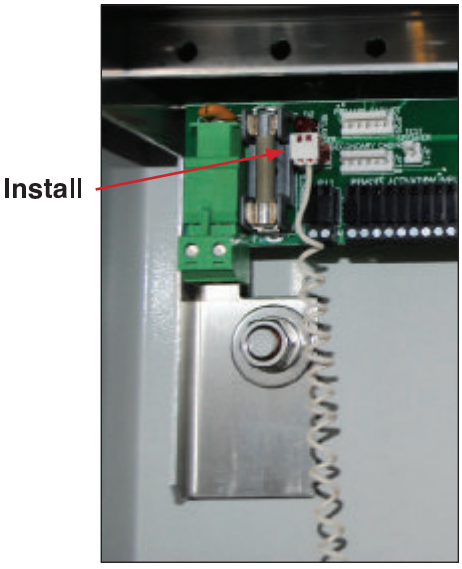


15. Reposition new label in front of the DIN rail.

Connecting the Charger Wires

16. Connect the white wire connector from charger to UVIC backplane motherboard JP20. (See Figure 13.)

Figure 13 Connect the white wire from charger



17. Connect the following three wires from the charger to the battery terminal:
    a. Charger ground (black wire) to Battery 1 (negative).
    b. Charger 24 Vdc (red wire) to Battery 2 (positive).
    c. Black temperature sensor wire from charger to Battery 1 (negative).
18. If the replacement charger has a three prong power cord, cut the AC power plug end from the new charger and strip the insulation off the wire.

19. Connect the following AC power wires from the new charger:
    a. White wire into the 2 slot.
    b. Green wire into the 3 slot.
    c. Black wire into the 4 slot.

Figure 14 Attach wires 2, 3, and 4

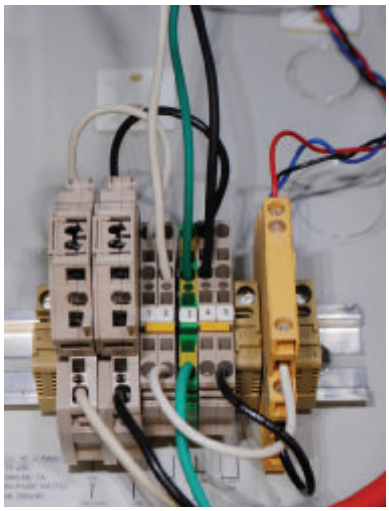
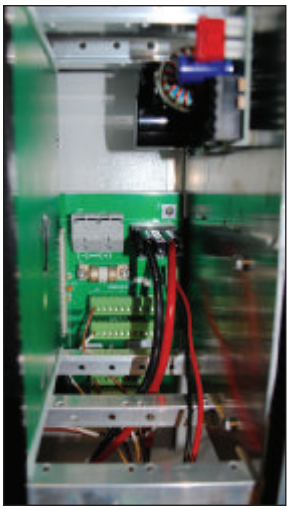


Figure 15 Connect battery connector



20. Connect the large battery connector to the UVIC motherboard. (See Figure 15.)
21. Verify that all battery connections are tight.
22. Replace the cover over the power connections.
23. Measure the overall battery voltage between Battery 1 (negative) and Battery 2 (positive). The battery voltage should be 25 to 27 Vdc (nominal).
24. Turn on the AC power to the control cabinet.

25. Check battery charger. The READY light should be green, or if batteries have been discharged see Table 4 for status.

Figure 16 LEDs on charger

Table 4 LEDs description

LED	Description
CURRENT	Green LED indicates charge current is being delivered to the battery. LED intensity increases with charge current.
TRICKLE	Yellow LED indicates battery voltage is below 20 V and the charger is trickle charging at a low current level.
BULK	Yellow LED indicates battery voltage has dropped below 90% of the float voltage setting and charger is charging at a high current level.
READY	Green LED indicates battery has reached the float voltage. The charger is float charging at the float voltage setting.
FAULT	Red LED indicates a charger fault. Charger may be delivering abnormally low current or has a blown fuse or is not producing the correct output voltage.

NOTE: Battery Voltage is temperature compensated when the temperature is above 86°F (30°C).

26. Measure the overall charger voltage between Battery 1 (negative) and Battery 2 (positive). Ensure the voltage is rising up to 27 Vdc (nominal).

27. Close control cabinet door.

The charger retrofit procedure is now completed. Federal Signal recommends testing the warning system prior to putting back into service.

Testing

⚠ WARNING

The output sound level of a siren is capable of causing severe hearing discomfort or permanent hearing damage. Therefore, always wear adequate hearing protection and minimize exposure time when performing any testing or maintenance on the siren.

Qualified personnel familiar with the siren, associated controls, and power sources being used, should perform service or maintenance.

Before servicing or maintaining, ensure that remote activation cannot occur and disconnect power to the siren and the associated control equipment.

Failure to properly test the siren system before placing into service may prevent the siren from operating in an emergency. Tests and maintenance must be performed by an experienced technician prior to using the siren system.

Review the Installation section of the siren you are working on.
Visit **http://www.fedsig.com/** for manuals. The required parts are listed in the manual and may change according to local code.

Getting Service

If you are experiencing any difficulties, contact Federal Signal Customer Care at: 800-548-7229 or 708-534-3400 extension 5822 or Technical Support at: 800-524-3021 or 708-534-3400 extension 7329 or through email at: techsupport@fedsig.com. For instruction manuals and information on related products, visit: http://www.fedsig.com/

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