FIRE·LITE® ALARMS

PN: 51315:A ECN 01-437

Battery Charger
CHG-75

Document	**#51315**	**A**
08/01/01	**Revision:**	

Fire Alarm System Limitations

While a fire alarm system may lower insurance rates, it is not a substitute for fire insurance!

An automatic fire alarm system–typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control with remote notification capability–can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premise following the recommendations of the current edition of the National Fire Protection Association Standard 72 (NFPA 72), manufacturer's recommendations, State and local codes, and the recommendations contained in the Guide for Proper Use of System Smoke Detectors, which is made available at no charge to all installing dealers. A study by the Federal Emergency Management Agency (an agency of the United States government) indicated that smoke detectors may not go off in as many as 35% of all fires. While fire alarm systems are designed to provide early warning against fire, they do not guarantee warning or protection against fire. A fire alarm system may not provide timely or adequate warning, or simply may not function, for a variety of reasons:

Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in or behind walls, on roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second-floor detector, for example, may not sense a first-floor or basement fire.

Particles of combustion or "smoke" from a developing fire may not reach the sensing chambers of smoke detectors because:

- Barriers such as closed or partially closed doors, walls, or chimneys may inhibit particle or smoke flow.
- Smoke particles may become "cold," stratify, and not reach the ceiling or upper walls where detectors are located.
- Smoke particles may be blown away from detectors by air outlets.
- Smoke detectors may be drawn into air returns before reaching the detector.

The amount of "smoke" present may be insufficient to alarm smoke detectors. Smoke detectors are designed to alarm at various levels of smoke density. If such density levels are not created by a developing fire at the location of detectors, the detectors will not go into alarm.

Smoke detectors, even when working properly, have sensing limitations. Detectors that have photoelectronic sensing chambers tend to detect smoldering fires better than flaming fires, which have little visible smoke. Detectors that have ionizing-type sensing chambers tend to detect fast-flaming fires better than smoldering fires. Because fires develop in different ways and are often unpredictable in their growth, neither type of detector is necessarily best and a given type of detector may not provide adequate warning of a fire.

Smoke detectors cannot be expected to provide adequate warning of fires caused by arson, children playing with matches (especially in bedrooms), smoking in bed, and violent explosions (caused by escaping gas, improper storage of flammable materials, etc.).

Heat detectors do not sense particles of combustion and alarm only when heat on their sensors increases at a predetermined rate or reaches a predetermined level. Rate-of-rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist. *Heat detectors are designed to protect property, not life.*

IMPORTANT! ***Smoke detectors*** *must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power.* If detectors are not so located, a developing fire may damage the alarm system, crippling its ability to report a fire.

Audible warning devices such as bells may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building. Any warning device may fail to alert people with a disability or those who have recently consumed drugs, alcohol or medication. Please note that:

- Strobes can, under certain circumstances, cause seizures in people with conditions such as epilepsy.
- Studies have shown that certain people, even when they hear a fire alarm signal, do not respond or comprehend the meaning of the signal. It is the property owner's responsibility to conduct fire drills and other training exercise to make people aware of fire alarm signals and instruct them on the proper reaction to alarm signals.
- In rare instances, the sounding of a warning device can cause temporary or permanent hearing loss.

A fire alarm system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time and only if the batteries have been properly maintained and replaced regularly.

Equipment used in the system may not be technically compatible with the control. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled. For added protection against telephone line failure, backup radio transmission systems are recommended.

The most common cause of fire alarm malfunction is inadequate maintenance. To keep the entire fire alarm system in excellent working order, ongoing maintenance is required per the manufacturer's recommendations, and UL and NFPA standards. At a minimum, the requirements of Chapter 7 of NFPA 72 shall be followed. Environments with large amounts of dust, dirt or high air velocity require more frequent maintenance. A maintenance agreement should be arranged through the local manufacturer's representative. Maintenance should be scheduled monthly or as required by National and/or local fire codes and should be performed by authorized professional fire alarm installers only. Adequate written records of all inspections should be kept.

Installation Precautions

Adherence to the following will aid in problem-free installation with long-term reliability:

WARNING - *Several different sources of power can be connected to the fire alarm control panel.* Disconnect all sources of power before servicing. Control unit and associated equipment may be damaged by removing and/or inserting cards, modules, or interconnecting cables while the unit is energized. Do not attempt to install, service, or operate this unit until this manual is read and understood.

CAUTION - *System Reacceptance Test after Software Changes.* To ensure proper system operation, this product must be tested in accordance with NFPA 72 Chapter 7 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0-49° C/32-120° F and at a relative humidity of 85% RH (noncondensing) at 30° C/86° F. However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and all peripherals be installed in an environment with a nominal room temperature of 15-27° C/60-80° F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning-induced transients. Although no system is completely immune from lightning transients and interferences, proper grounding will reduce susceptibility. *Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes.* Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

Remove all electronic assemblies prior to any drilling, filing, reaming, or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer, and printed circuit board location.

Do not tighten screw terminals more than 9 in-lbs. Over-tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.

Though designed to last many years, system components can fail at any time. This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static-suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation by authorized personnel.

FCC Warning

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his own expense.

Canadian Requirements

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

Notes

Table of Contents

It is imperative that the installer understand the requirements of the Authority Having Jurisdiction (AHJ) and be familiar with the standards set forth by the following regulatory agencies:

- Underwriters Laboratories Standards
- NFPA 72 National Fire Alarm Code

Before proceeding, the installer should be familiar with the following documents.

NFPA Standards

NFPA 72 National Fire Alarm Code

UL 864 Standard for Control Units for Fire Protective Signaling Systems
UL 1481 Power Supplies for Fire Protective Signaling Systems

Other:

EIA-485 Serial Interface Standard
NEC Article 250 Grounding
NEC Article 300 Wiring Methods
NEC Article 760 Fire Protective Signaling Systems
Applicable Local and State Building Codes
Requirements of the Local Authority Having Jurisdiction (LAHJ)

SECTION 1 Product Description

The CHG-75 battery charger is designed to charge lead-acid batteries that provide emergency standby power for an FACP (Fire Alarm Control Panel) and related equipment. Two 12 volt batteries are used in series to supply a nominal 24VDC. The battery charger is compatible with any FACP that uses lead-acid batteries with a rating of 25 AH (Amp Hours) to 75 AH. The FACP must have a feature that allows the disabling of the control panel battery charger.

The CHG-75 can be configured for 120 VAC operation or 220/240 VAC operation via jumper selection.

1.1 Features

- 120 VAC or 220/240 VAC operation via JP1 jumper selection
- Charger capacity of 25 AH to 75 AH
- Mounts in a BB-26, BB-55F, MS-9600 and MS-9200 enclosure
- Screw terminal connection for battery
- F2, 15 amp replaceable fuse provides battery current-limiting, short circuit and overload protection
- Screw terminal connection for battery backup to other equipment
- F3, 15 amp replaceable fuse provides current-limiting and overload protection for output to connected equipment
- Fail-safe Form-C trouble relay rated for 2 amps @ 30 VDC (resistive)
- Ground fault detection circuit which can be disabled by cutting jumper JP2
- Battery and charger voltage supervision
- AC voltage supervision
- AC loss reporting delay option, jumper selectable for 8 or 16 hour delay
- Connectors for trouble input and trouble output which direct CHG-75 troubles to FACP and allows daisy-chaining of external troubles through the charger without affecting charger operation
- Master trouble input allows monitoring of another device or zone
- Connectors for optional AM-1 ammeter and VM-1 voltmeter
- LEDs for monitoring charger condition
- Screw terminal connection for SLC loop
- Direct SLC interface for charger trouble and/or AC loss reporting to the FACP

1.2 Specifications

Primary (AC) Power - TB1, Terminals 1 (Hot), 2 (Neutral) & 3 (Earth)
120 VAC, 60 Hz, 2.05 amps maximum
220/240 VAC, 50 Hz, 1.14 amp maximum (JP1 cut)
Fuse F1 - 6.25 amp (slow blow 3AG)
Wire size: minimum 14 AWG with 600 volt insulation

Secondary Power (Battery) Charging Circuit - TB2, Terminals 1 (+) & 2 (-)
Supports lead-acid batteries only
Float Charge Voltage: 27.6 VDC
Maximum Charge Current: 4.5 amps (peak)
Maximum Battery Capacity: 75 AH
Supervised and Current-limited: F2 - 15 amp replaceable fuse

24 VDC Secondary (Battery) Input Power
The CHG-75 current consumption from the battery is as follows:
- During AC Loss: 60 mA
- With AC Present: 0 mA

Note: use these values in battery calculations for host FACP

Battery Output - TB2, Terminals 3 (+) & 4 (-)
Provides battery backup connection to other loads
Current-limited: F3 - 15 amp replaceable fuse

SLC (Signal Line Circuit) Connector - TB3, Terminals 1(B+), 2(A+), 3(B-) & 4(A-)
Provides connection to an addressable FACP (Fire Alarm Control Panel) SLC loop. A built-in addressable monitor module can be used to indicate a charger trouble condition or loss of AC by programming the FACP to monitor the address assigned to the charger.
Voltage: 24 VDC nominal, 27.6 VDC maximum
Maximum Loop Current: 400 mA (short circuit) or 100 mA (normal)
Maximum Loop Resistance: 40 ohms
Supervised and Power-limited

Trouble Contact Rating - TB4, Terminals 1 (C), 2 (NO) & 3 (NC)
Fail-safe Form-C Relay Contacts: rated for 2 amps @ 30 VDC (resistive)

Trouble In and Out Connectors - J1 (In) & J2 (Out)
Trouble In is an open collector circuit which can be used to monitor trouble conditions on other equipment. It can be connected to the trouble bus of a peripheral, such as a power supply, which is compatible with open collector circuits.

Trouble Out can be used to send the Trouble In signal and/or charger trouble signal to a monitoring circuit on an FACP (daisy chain).

Trouble In Master - J3
Circuit monitors trouble from other devices by looking for a ground condition. When input is brought to ground potential, charger will operate trouble relay

1.3 LED Indicators

LEDs are provided on the battery charger circuit board to monitor various conditions:

- AC LED - green LED indicates AC power is present
- Trouble LED - yellow LED turns on for charger troubles or trouble indication from the Master Trouble Input
- Low Battery LED - yellow LED turns on when the battery voltage drops too low
- Charging LED - yellow LED indicates battery is being charged, turns off when the CHG-75 is trickle charging
- Ground Fault LED - yellow LED turns on to indicate ground fault on the charger
- SLC Communication LED - green LED indicates SLC communication with FACP

1.4 Charger Maintenance

The charger does not require regular maintenance. While installing the charger, however, do not cut any jumpers when power is applied and make sure to maintain proper polarity when connecting power leads and battery connections. To ensure optimal operation of the charger, observe the following:

✓ **Overload and reverse-polarity protection** - fuses F2 and F3 (15 A, P/N: 12057) provide overload and reverse-polarity protection. Replace a blown fuse with a fuse that has the same rating and type. Determine the cause of the blown fuse.

✓ **Periodic Inspection** - periodically inspect the batteries for corrosion and make sure that corrosive effects to the batteries do not affect the charger or cabinet.

✓ **Troubleshooting** - most problems with a charger are due to faulty batteries or loose connections. If you encounter problems, inspect the charger, the batteries and all connections for loose wiring or short circuits.

✓ **Replacing Batteries** - replace batteries only with the same charge rate and capacity as the other batteries in the set. For example, if replacing one of four 25 AH batteries, make sure the replacement battery has the same charge rate and capacity as the other three batteries.

SECTION 2 Installation and Configuration

2.1 Precautions

Battery and Charger Precautions

When installing the CHG-75 battery charger, observe the following precautions:

- ❒ Do not cut any jumpers when power is applied to the charger
- ❒ Observe polarity when making connections
- ❒ Do not connect the Battery Interconnect Cable until instructed
- ❒ Mounting batteries requires proper mounting hardware. Follow the battery manufacturer's installation instructions
- ❒ Be careful when lifting and handling batteries: batteries are heavy
- ❒ Batteries, although sealed, contain sulfuric acid which can cause severe burns to the skin and eyes, and can destroy fabrics. If contact is made with sulfuric acid, immediately flush the skin or eyes with water for 15 minutes and seek immediate medical attention
- ❒ Charging batteries can cause flammable hydrogen gas

2.2 Charger Connections, Jumpers and Switches

The following figure illustrates all connections, jumpers and switches needed to maintain, configure and operate the charger:

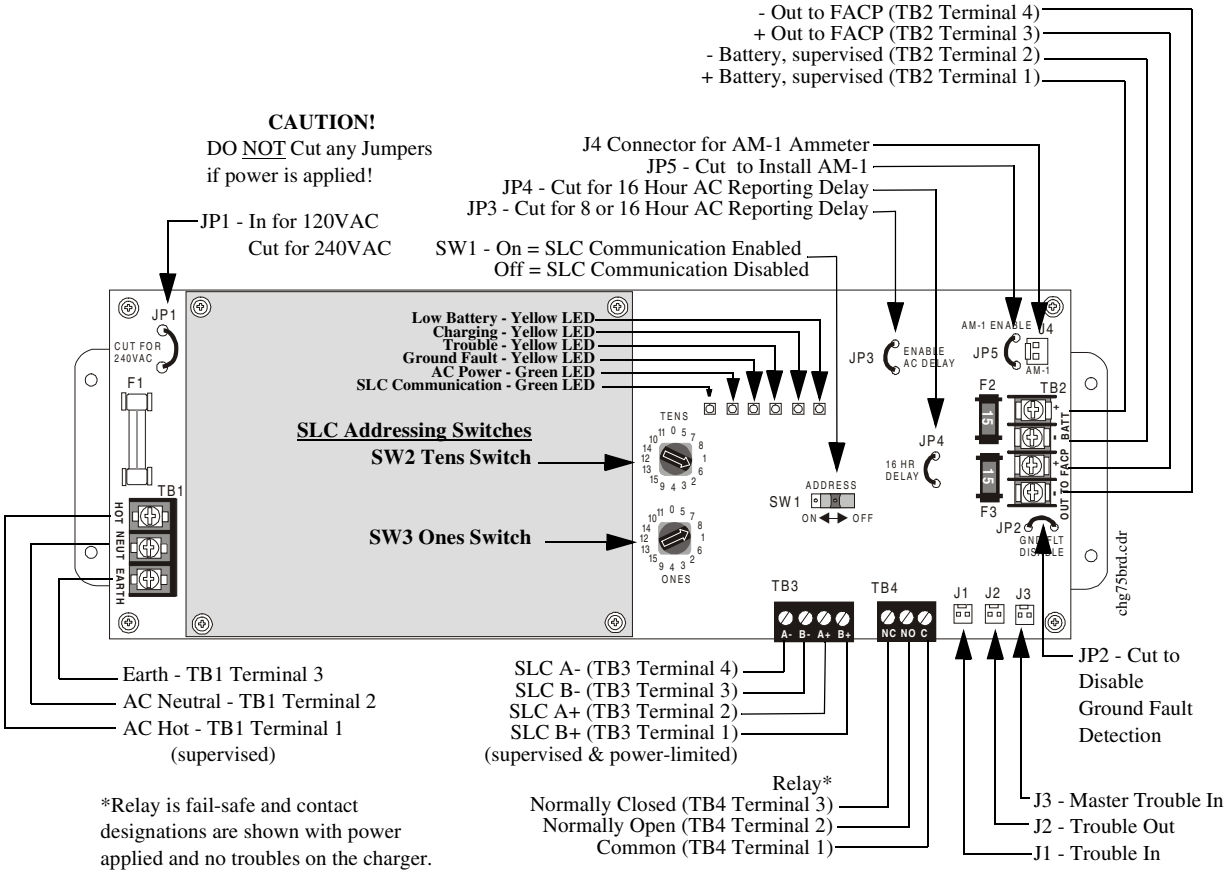


Figure 2.1 Charger Components

2.3 Charger Configuration

2.3.1 SW2 & SW3 SLC Addressing Switches

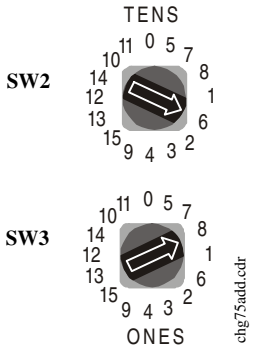
An addressable monitor module has been incorporated into the circuitry of the CHG-75 to allow a host FACP (Fire Alarm Control Panel) to monitor the charger condition via its SLC. This monitor module will create an open circuit condition when any local charger trouble occurs. If AC power is lost, the monitor module will create a short condition which will be seen by the FACP immediately, even if AC delay is enabled. By addressing and connecting the charger to an addressable control panel's SLC, the panel can be programmed to monitor this module for activation.

Rotary switches SW2 & SW3 are used to address the CHG-75 for connection to the addressable control panel's SLC. The switches must be set to a unique address which has not been programmed for any other device on the SLC

To set the desired address, turn switch SW2 to the *tens* digit of the address and SW3 to the *ones* digit of the address. For example, to set the charger to address *125*, position SW2 so the arrow points to *12* and position SW3 so the arrow points to *5*.

In the following example, the power supply has been set to address *68*, with SW2 Tens switch pointing to *6* and SW3 Ones switch pointing to *8*.

Figure 2.2 CHG-75 Addressing



2.3.2 SW1 SLC Communication Enable Switch

Slide switch SW1 is used to enable and disable the SLC communication between the CHG-75 and the FACP. Positioning SW1 to the left (ON) will enable SLC communication while positioning the switch to the right (OFF) will disable communication. Refer to Figure 2.1 on page 10, for the location of switch SW1.

Note that if the FACP has been programmed to monitor the charger via the SLC, positioning SW1 to the right (OFF) position will disable SLC communication between the charger and control panel, causing the FACP to indicate a communication fault for the charger address.

2.3.3 AC Loss Reporting Delay - Central Station Applications

If a Digital Alarm Communicator (DACT) is being used, the reporting of an AC loss condition to a Central Station must be delayed. This will delay the activation of the trouble bus and Form-C trouble contacts when the AC fails. The charger can be configured for an 8-hour or 16-hour delay as follows:

1. **JP3** - Cut jumper JP3 to enable a delay in reporting AC loss
2. **JP4** - Leave jumper JP4 in to delay AC loss reporting for 8 hours
   Cut jumper JP4 to delay AC loss reporting for 16 hours

Refer to Figure 2.1 on page 10, for location of the jumpers.

2.3.4 Ground Fault Detection Disable

Cut jumper **JP2** to disable reporting of a local ground fault condition. The charger's ground fault detection circuit might be disabled when the charger is connected to equipment with its own ground fault detection circuit to prevent *competition* between the two circuits. Note that Ground Fault detection is required in Canada. Refer to Figure 2.1 on page 10, for location of the jumper.

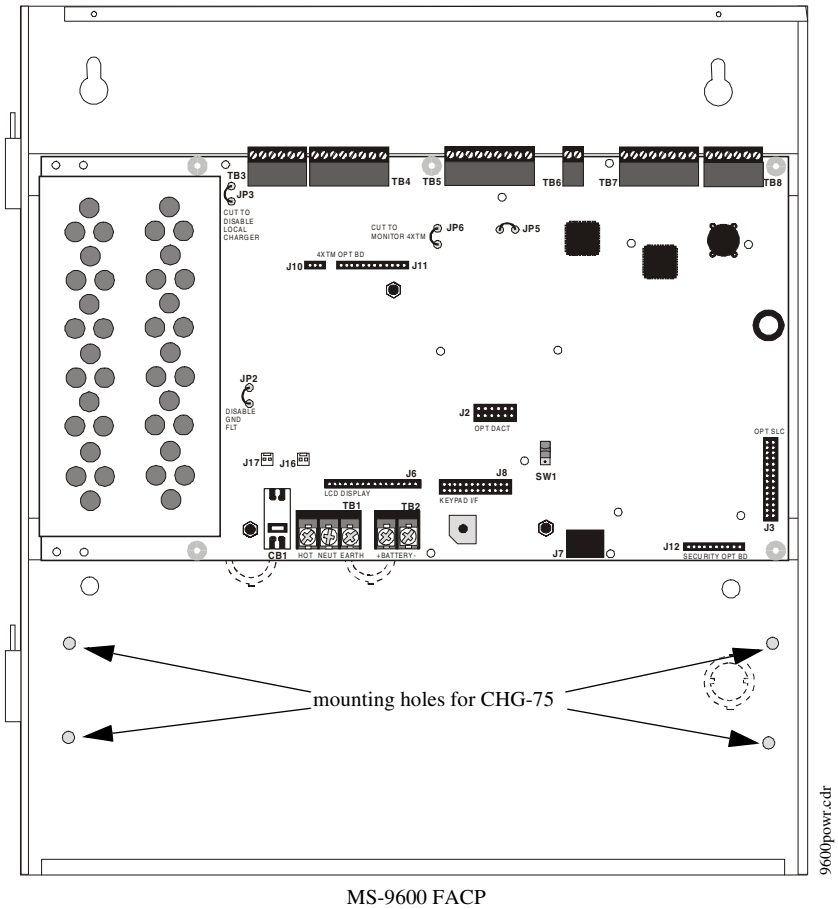
2.3.5 AM-1 Ammeter Enable

Cut jumper **JP5** to enable the operation of the AM-1 Ammeter when installed on the CHG-75 charger. Refer to Figure 2.1 on page 10, for location of the jumper.

2.4 Mounting the Charger

2.4.1 Mounting the Charger in an FACP

The CHG-75 can be mounted in the bottom of the MS-9600 backbox, using the self-tapping screws included with the charger. In a similar fashion, the supplied nuts can be used to mount the charger to pem studs located in the bottom of the MS-9200 backbox. A separate battery box must be used to house the batteries when employing these configurations. Figure 2.3 illustrates the CHG-75 mounting location in the MS-9600. The pem studs are located in the same area in the MS-9200 backbox .
Note: The CHG-75 must be mounted in the same room and within 20 feet of the FACP.



MS-9600 FACP

Figure 2.3 MS-9600 Backbox

2.4.2 Mounting the Charger in a BB-55F Battery Box

The CHG-75 can mount in a BB-55F Battery Box at the location indicated in Figure 2.4. Use the supplied self-tapping screws to secure the charger to the backbox.

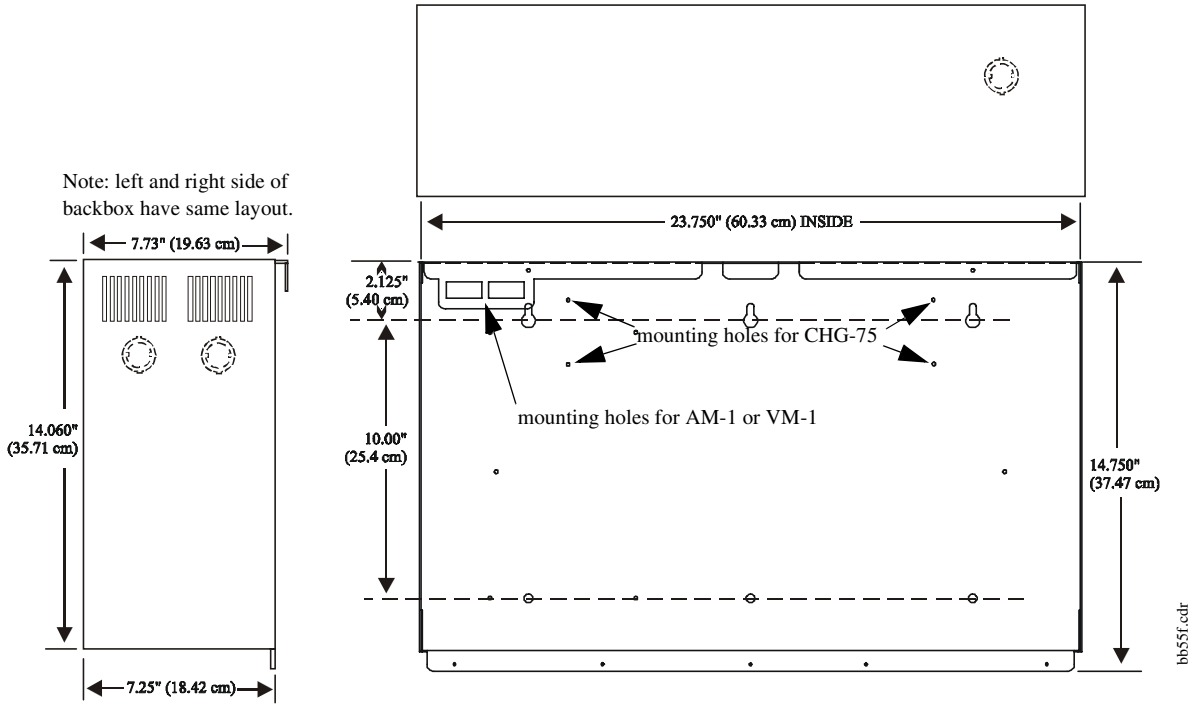


Figure 2.4 BB-55F Battery Box

2.4.3 Mounting Charger in BB-26 Battery Box

The CHG-75 can mount in a BB-26 Battery Box at the location indicated in Figure 2.5. Use the supplied nuts to secure the charger to the backbox mounting studs.

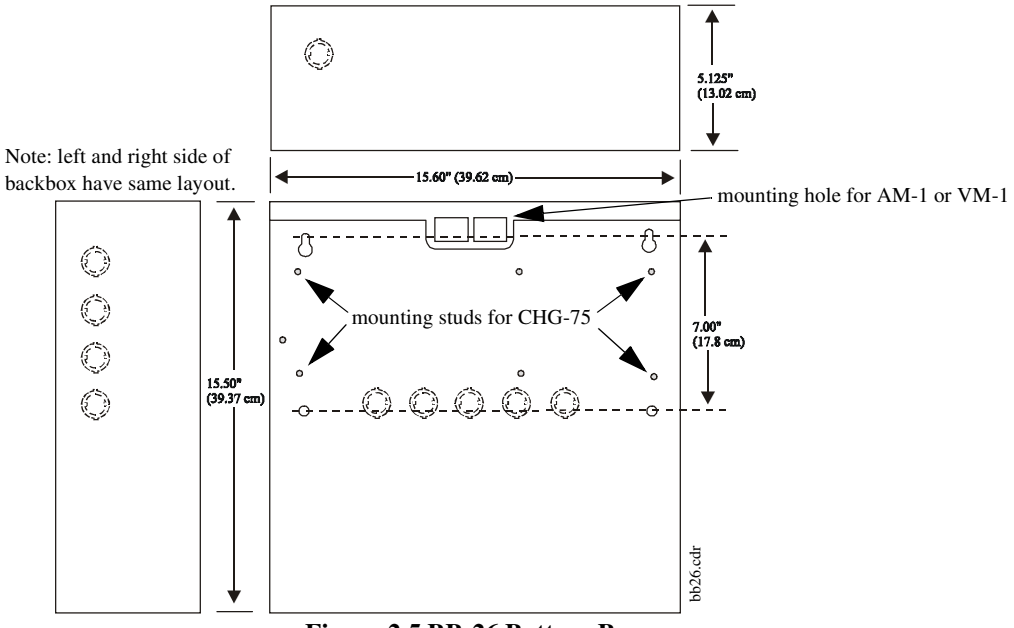


Figure 2.5 BB-26 Battery Box

2.5 UL Power-limited Wiring Requirements

Power-limited and nonpower-limited wiring must remain separated in the cabinet. All power-limited circuit wiring must remain at least 0.25" away from any nonpower-limited circuit wiring. Furthermore, all power-limited circuit wiring and nonpower-limited circuit wiring must enter and exit the cabinet through different conduits. Examples are shown in the following illustrations. Your specific application may require different conduit knockouts to be used. Any conduit knockouts may be used. For power-limited applications, use of conduit is optional.

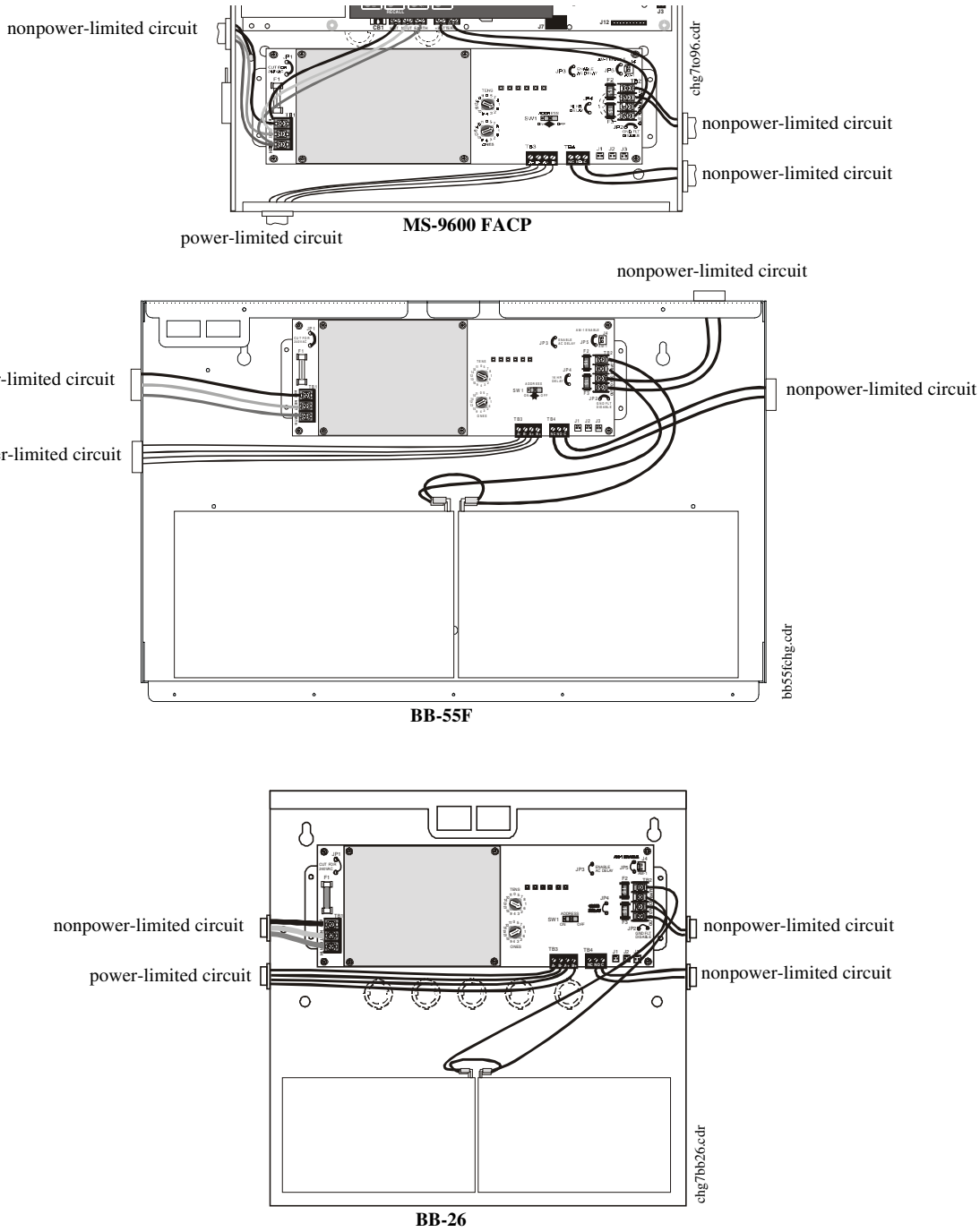


Figure 2.6 UL Power-limited Wiring Examples

2.6 Optional Voltmeter/Ammeter Installation

An ammeter (AM-1) or voltmeter (VM-1) can be installed for use with the CHG-75 charger. If installing an AM-1 or VM-1, mount the meter to a BB-26 or BB-55F battery box as illustrated below.

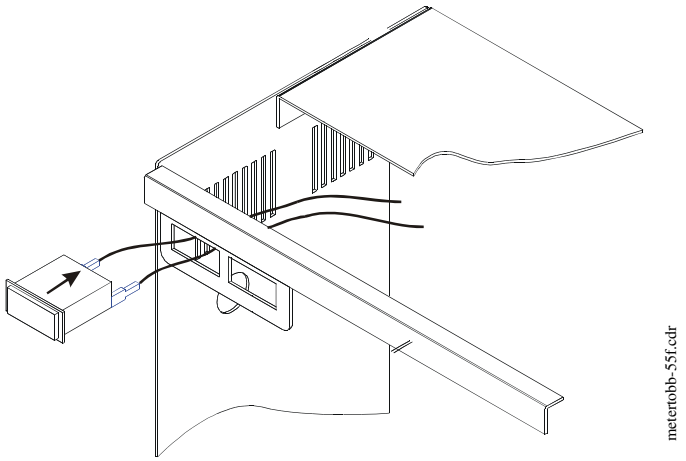


Figure 2.7 Mounting AM-1 or VM-1 on BB-55F Battery Box

VM-1 Voltmeter Connections - the VM-1 can be installed on the CHG-75 to provide a visual indication of the battery/charger voltage. When the battery is disconnected, the voltmeter measures charger voltage only. The VM-1 can mount to a BB-26 or BB-55F battery box. To connect the VM-1 to the CHG-75:

- ✓ Connect the VM-1 positive lead to TB2 Out (+)
- ✓ Connect the VM-1 negative lead to TB2 Out (-)
- ✓ Mount the VM-1 into a mounting slot on the front of the battery box

AM-1 Ammeter Connections - the AM-1 can be installed on the CHG-75 to provide a visual indication of the charger current. The AM-1 can mount to a BB-26 or BB-55F battery box. To connect the AM-1 to the CHG-75:

- ✓ Cut jumper JP5 on the CHG-75
- ✓ Connect the AM-1 harness to connector J4 on the CHG-75. Be sure to observe polarity
- ✓ Mount the AM-1 into a mounting slot on the front of the battery box

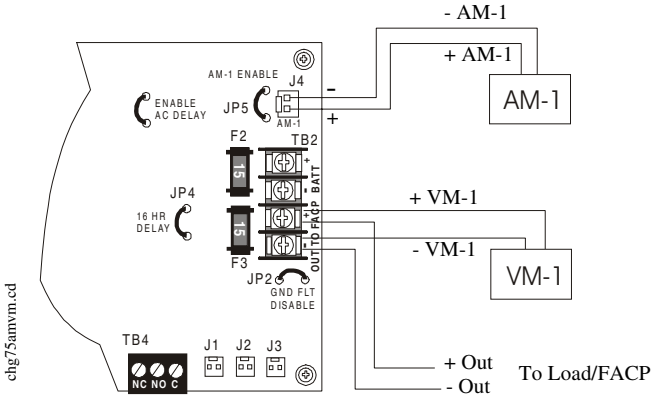


Figure 2.8 Wiring AM-1 or VM-1 to CHG-75

2.7 Connecting AC Power to the Charger

CAUTION! *Disconnect all sources of power before making any connections, cutting any jumpers or servicing the charger.*

AC power connections are made to TB1 of the CHG-75 battery charger. Primary power source for the CHG-75 is 120 VAC, 60 HZ, 2.05 amps or, if JP1 is cut, 220/240 VAC, 50 Hz, 1.14 amps. Run a pair of wires (with ground conductor) from the protected premises main breaker box to TB1. As per National Electric Code, use 14 AWG (1.6 mm O.D.) or heavier gauge wire with 600 volt insulation.

The following figure illustrates the steps for connecting the charger to the main AC power source.

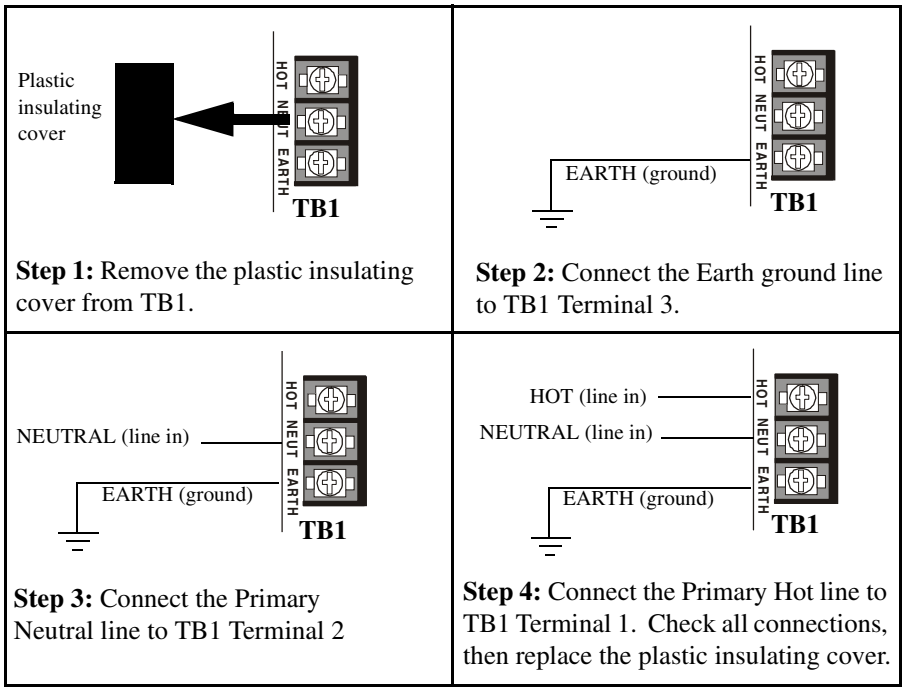


Figure 2.9 Connecting AC Power

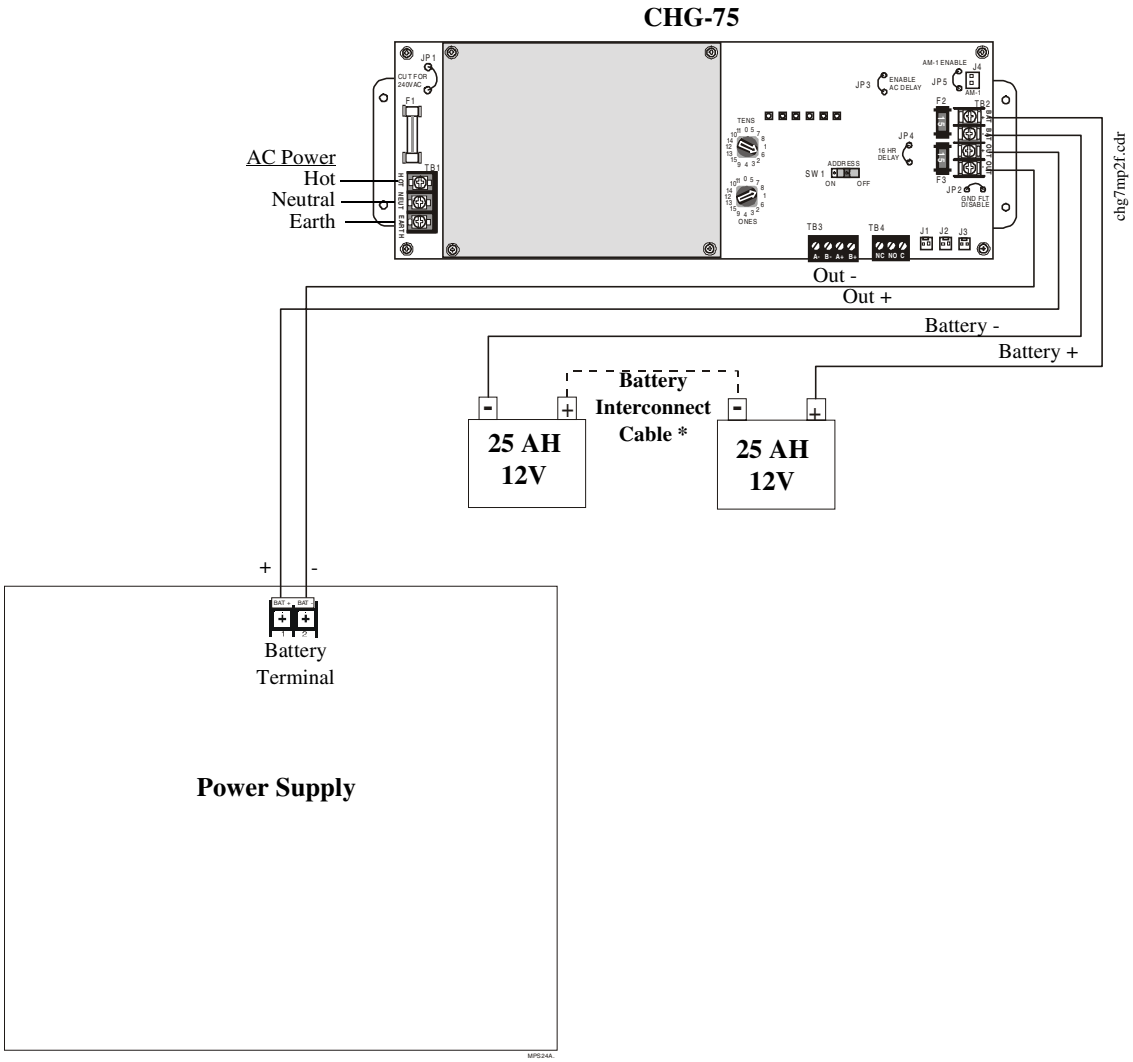
2.8 Connecting Batteries to the Charger

Batteries ranging from 25 AH to 75 AH can be connected to the charger. This section provides illustrations and instructions for connecting two or four batteries.

2.8.1 Connecting Two Batteries

The following steps must be followed when connecting two batteries to the charger:

1. Remove all power sources to the charger
2. Connect the battery negative (-) cable to TB2, Terminal 2 on the charger (labeled BATT -) as illustrated in Figure 2.10
3. Connect the battery positive cable to TB2, Terminal 1 on the charger (labeled BATT +) as illustrated in Figure 2.10
4. *Do not connect the Battery Interconnect Cable at this time.* Proceed to the section titled "Powering the Charger" on page 25



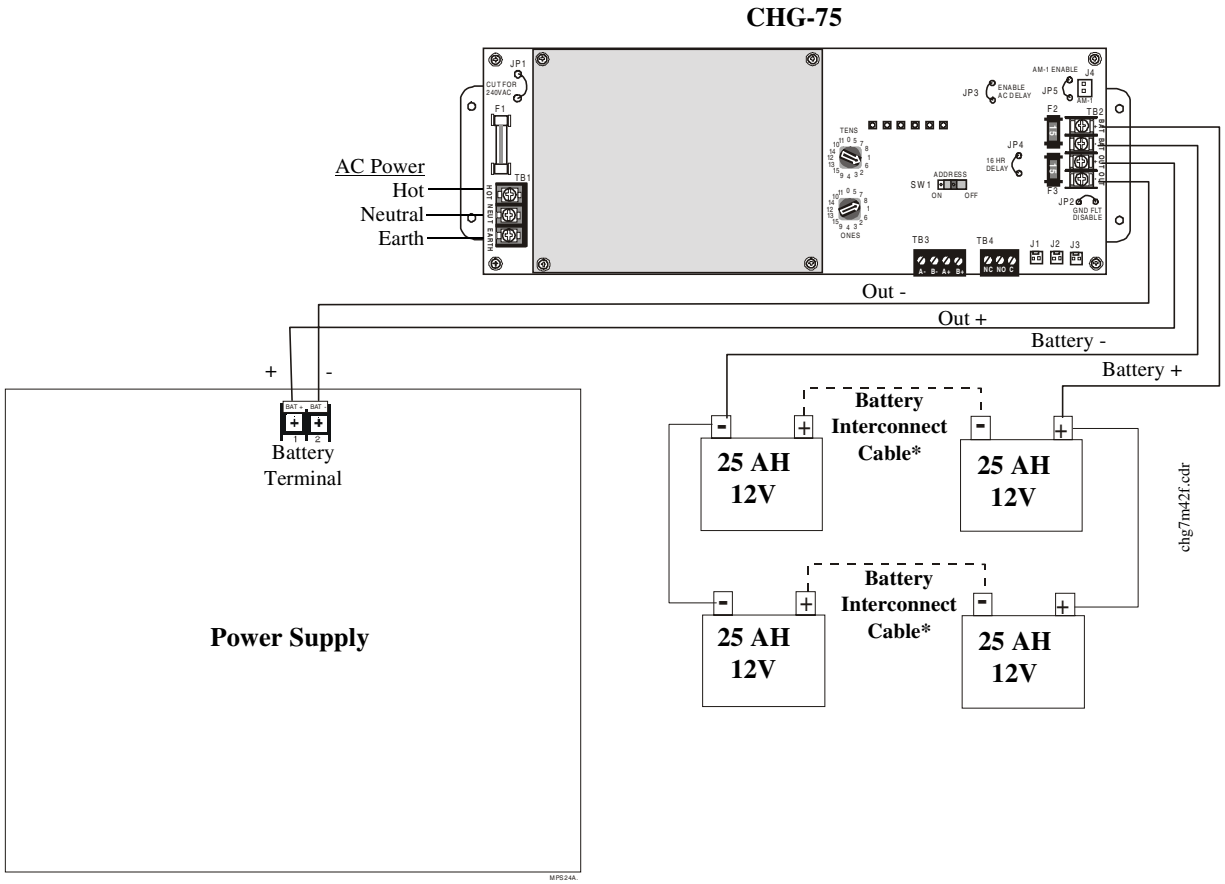
*Do not connect the Battery Interconnect Cable at this time. Refer to "Powering the Charger" on page 25.

Figure 2.10 Connecting Two 25 AH Batteries

2.8.2 Connecting Four Batteries

The following steps must be followed when connecting four batteries to the charger:

1. Remove all power sources to the charger
2. Connect the batteries in pairs by connecting the battery negative terminals and the battery positive terminals as illustrated in Figure 2.11
3. Connect the battery negative (-) cable to TB2, Terminal 2 on the charger (labeled BATT -) as illustrated in Figure 2.11
4. Connect the battery positive cable to TB2, Terminal 1 on the charger (labeled BATT +) as illustrated in Figure 2.11
5. *Do not connect the Battery Interconnect Cable at this time.* Proceed to the section titled "Powering the Charger" on page 25



*Do not connect the Battery Interconnect Cable at this time.
Refer to "Powering the Charger" on page 25

Figure 2.11 Connecting Four Batteries to the Charger

2.9 Connecting the Charger to a Load

This section provides three applications for connecting a charger to a load. While connecting a charger to a load, observe the following precautions:

- Make sure all power has been removed from the charger and the load
- Observe polarity when making connections.

2.9.1 Connecting the Charger to a Single Load

The CHG-75 is designed to provide additional charging capability to an existing FACP power supply. The charger can be connected to a single power supply as illustrated in Figure 2.12.

To connect the charger to a single load:

1. Connect the Battery (+) and Battery (-) terminals of the power supply to the CHG-75 Output Circuit TB2, Terminal 3 (Out +) and Terminal 4 (Out -) as illustrated in Figure 2.12
2. Connect the batteries to the CHG-75 (refer to Figure 2.10 or Figure 2.11)

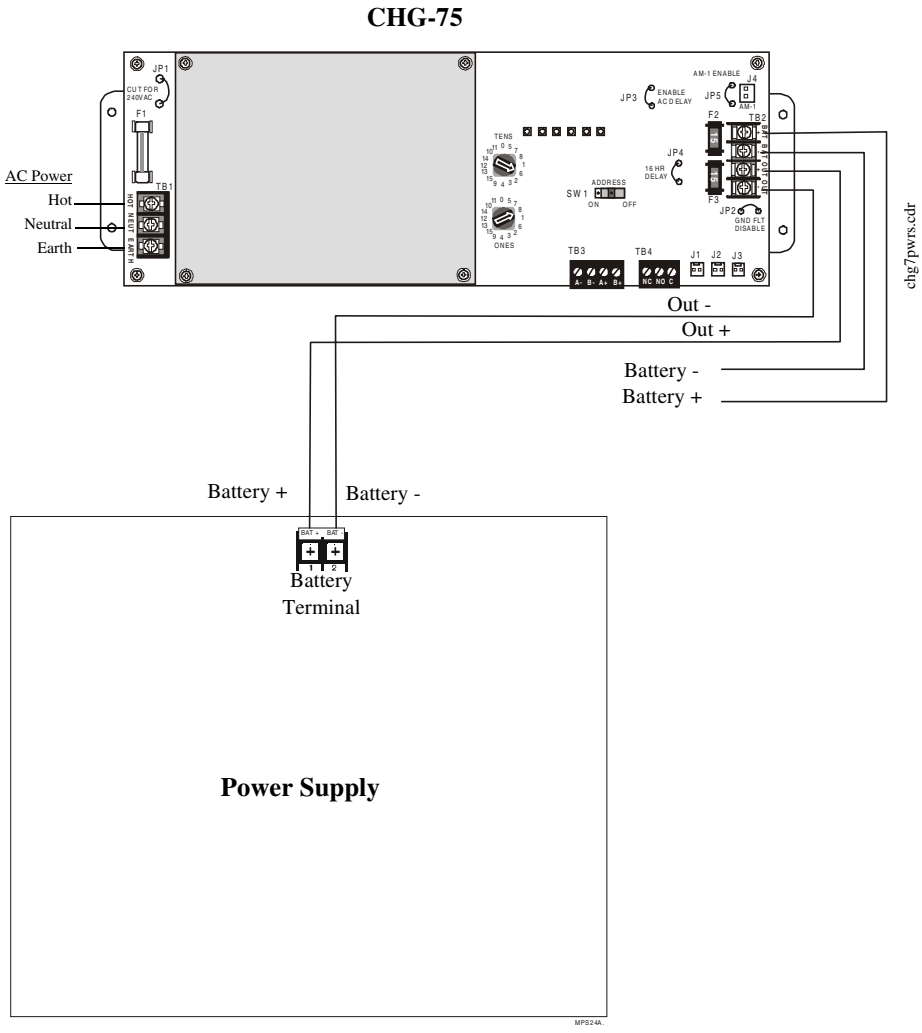


Figure 2.12 Typical Charger Wiring to Single Load

2.9.2 Connecting the Charger to an MS-9200

The charger can be connected to an FACP power supply, such as an MS-9200, by disabling the local charger. The MS-9200 charger is disabled by cutting jumper JP1.

WARNING! *Do not attempt to connect the CHG-75 to older versions of the MS-9200 FACP main circuit board, which does not allow disabling of the FACP battery charger (no JP1 jumper). System damage will result.*

To connect a charger to the MS-9200:

1. Disconnect all power (AC and DC) from the MS-9200 and CHG-75
2. Cut jumper JP1, which is located on the MS-9200 main circuit board, to disable the FACP battery charger
3. Disconnect the battery ends of the battery cable connected to J2 on the MS-9200. Cut off the battery connectors and strip the ends of the wire.
4. Connect the stripped wire ends to the CHG-75 Output Circuit TB2, Terminal 3 (Out +) and Terminal 4 (Out -) as illustrated in Figure 2.13. *Be certain to observe proper polarity.*
5. Connect the batteries to the charger (refer to Figure 2.10 and Figure 2.11).

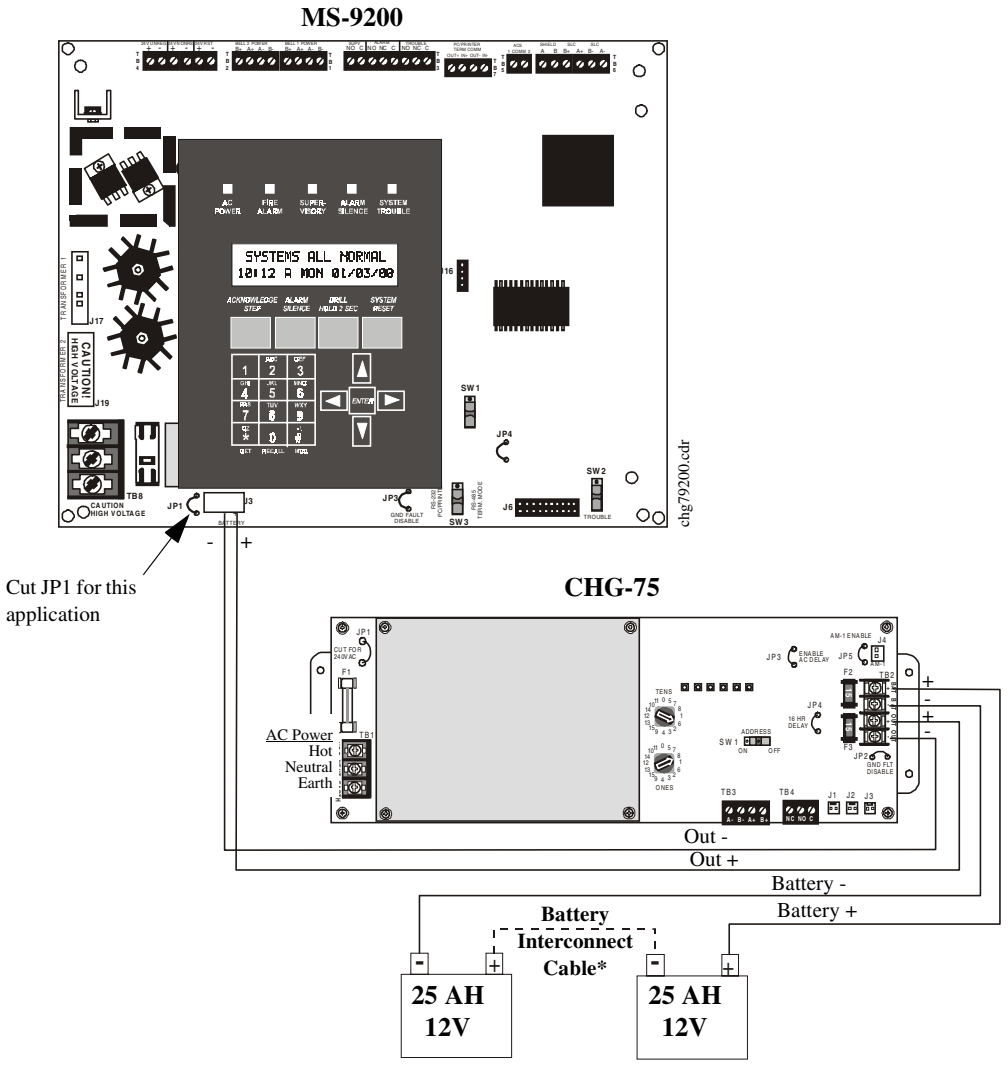


Figure 2.13 CHG-75 Wiring to MS-9200

2.9.3 Connecting the Charger to an MS-9600

The charger can be connected to an FACP power supply, such as an MS-9600, by disabling the local charger. The MS-9600 charger is disabled by cutting jumper JP3.

To connect a charger to the MS-9600:

1. Disconnect all power (AC and DC) from the MS-9600 and CHG-75
2. Cut jumper JP3, which is located on the MS-9600 main circuit board, to disable the FACP battery charger
3. Connect the CHG-75 Output Circuit TB2, Terminal 3 (Out +) to MS-9600 battery connector TB2 (+) terminal and Terminal 4 (Out -) to MS-9600 battery connector TB2 (-) terminal as illustrated in Figure 2.13. *Be certain to observe proper polarity.*
4. Connect the batteries to the charger (refer to Figure 2.10 and Figure 2.11).

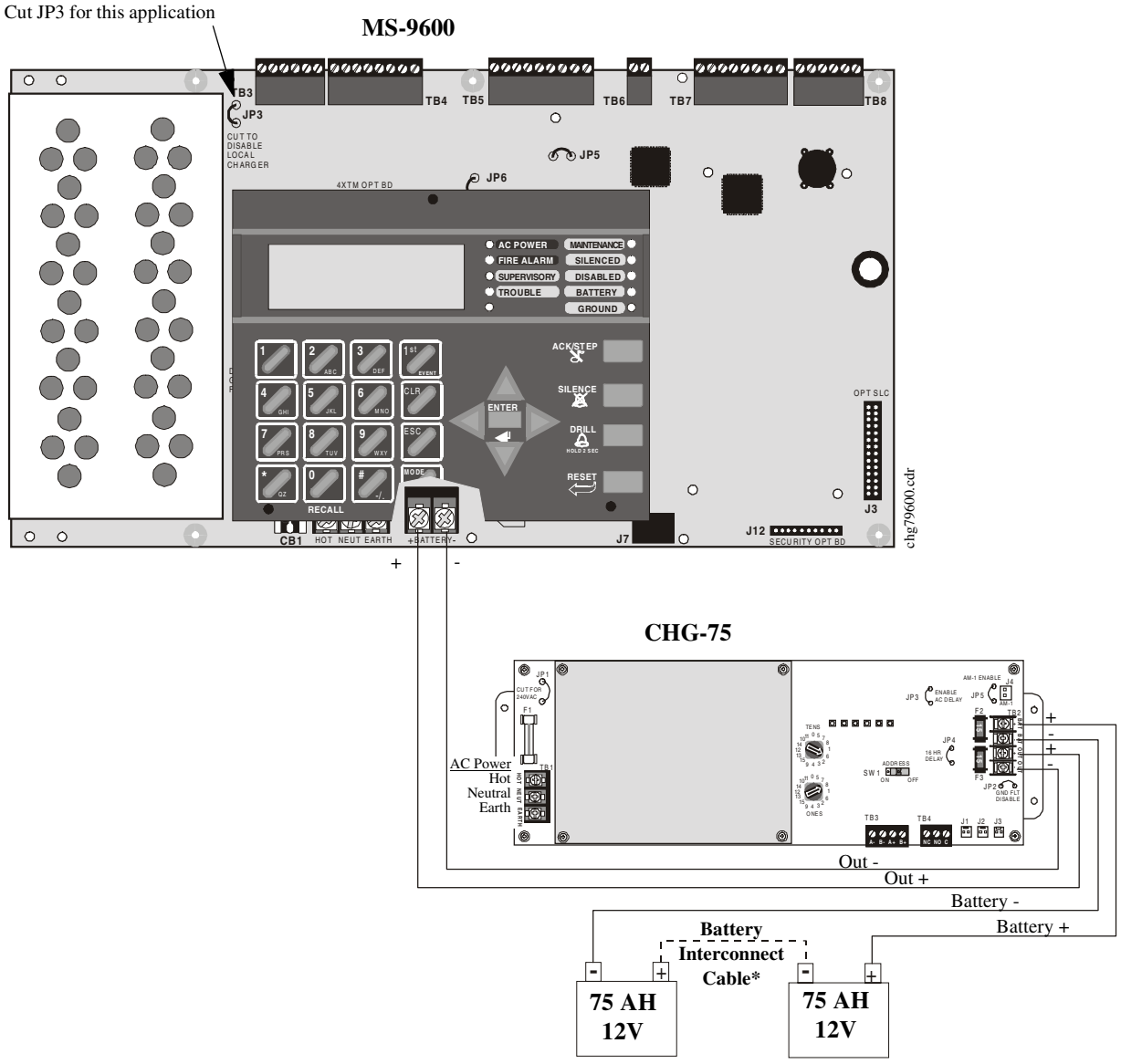


Figure 2.14 CHG-75 Wiring to MS-9600

2.9.4 Connecting the Charger to Multiple Loads

The CHG-75 charger can be connected to multiple loads, such as a main power supply, auxiliary power supply, auxiliary devices, etc., as illustrated in Figure 2.15. To connect the charger to multiple loads:

1. Connect the Battery + and Battery - terminals of an optional external device to the charger Output Circuit TB2, Terminal 3 (Out +) and Terminal 4 (Out -)
2. Connect the Battery + and Battery - terminals of the power supply to the charger Battery Circuit TB2, Terminal 1 (Battery +) and Terminal 2 (Battery -)
3. Connect the batteries to the same charger Battery Circuit described in step 2, TB2, Terminal 1 (Battery +) and Terminal 2 (Battery -)

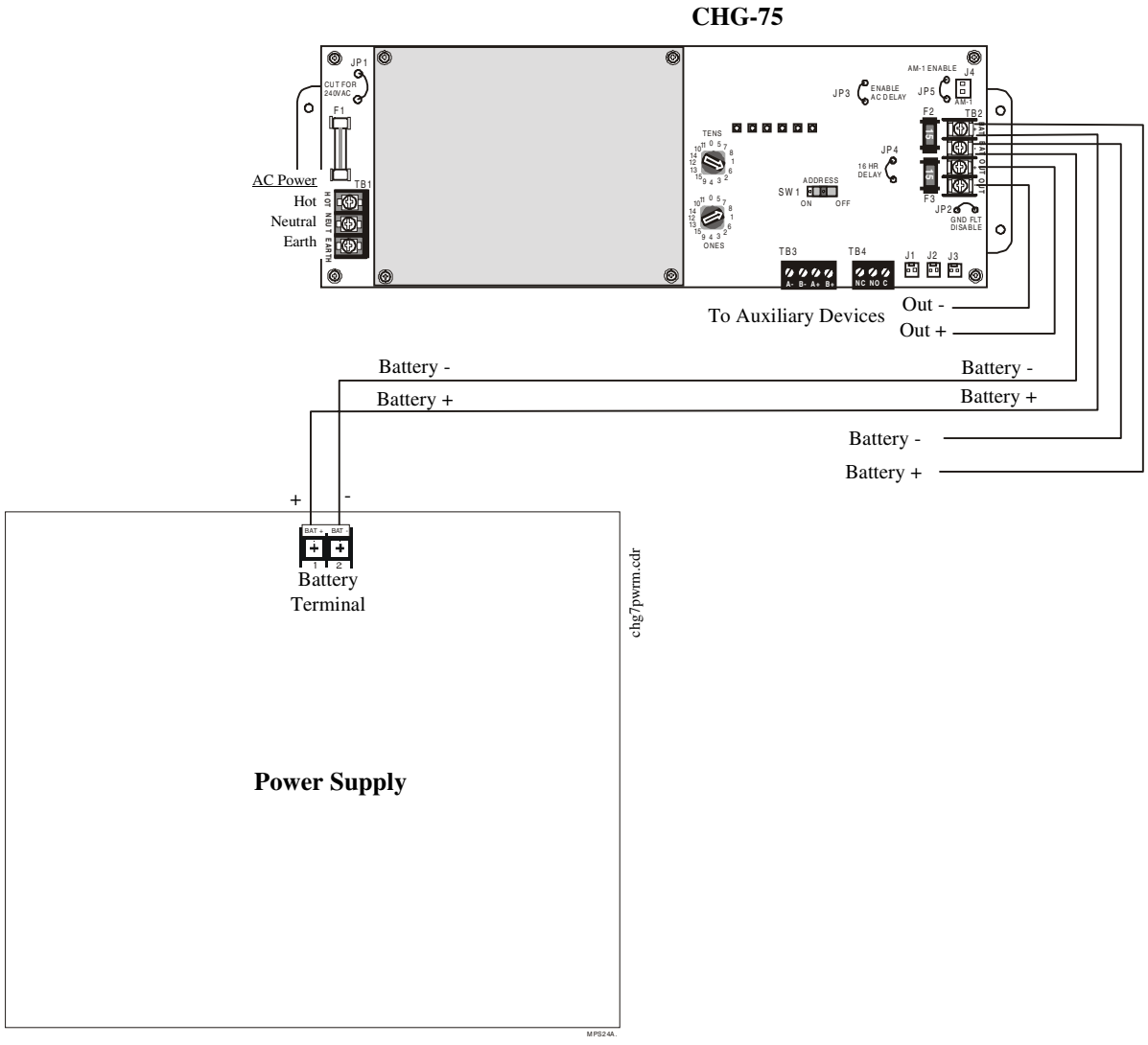


Figure 2.15 Typical Wiring of Charger to Multiple Loads

2.10 Trouble Monitoring

The CHG-75 charger has three connectors (J1, J2 & J3), a Form-C trouble relay (TB4) and an SLC (Signal Line Circuit - TB3) which can be used for trouble monitoring by an FACP. These connections are optional and, therefore, are not required for the proper operation of the charger. They are, however, necessary when the FACP is required to indicate a trouble condition for the charger. One or more of the following may be used to transmit the trouble condition to the FACP:

- **J1** - Trouble IN (2-pin connector)
  Open collector input allows connection to trouble bus from other devices which are compatible with open collector inputs. This connection allows daisy chaining of trouble signals through the charger without affecting the charger operation or activating the local trouble relay.
- **J2** - Trouble OUT (2-pin connector)
  Open collector output allows connection of trouble bus to other devices which are compatible with open collector outputs. This connection allows daisy chaining of trouble signals from the Trouble IN connector. A trouble on the charger will also be transmitted from this connector
- **J3** - Trouble IN Master (2-pin connector)
  This input can receive trouble signals from another device, such as a spare zone, and will in turn activate the local trouble relay. This input is compatible with an open collector output from another device
- **TB4** - Trouble Relay
  This fail-safe Form-C Trouble relay will activate when the charger detects a local trouble, such as AC fail, ground fault (if enabled), low battery, etc., or when a trouble signal is received at the Trouble IN Master (J7)
- **TB3** - SLC Connector
  A built-in monitor module will create an open circuit condition when any local charger trouble occurs except for AC fail. If AC is lost, the monitor module will create a short condition which will be seen by the FACP immediately even if AC delay is enabled. By addressing and connecting the charger to an addressable control panel's SLC, the FACP can be programmed to monitor this built-in monitor module for activation. Refer to the SLC manual for information on wiring an SLC loop

Figure 2.16 on page 24 provides an illustration of CHG-75 connector locations and terminal connections.

Trouble Monitoring Connections

The following figure illustrates the various connections which can be made to allow trouble monitoring of the CHG-75. Any one or more of these connections can be made, depending on the capabilities of the host FACP.

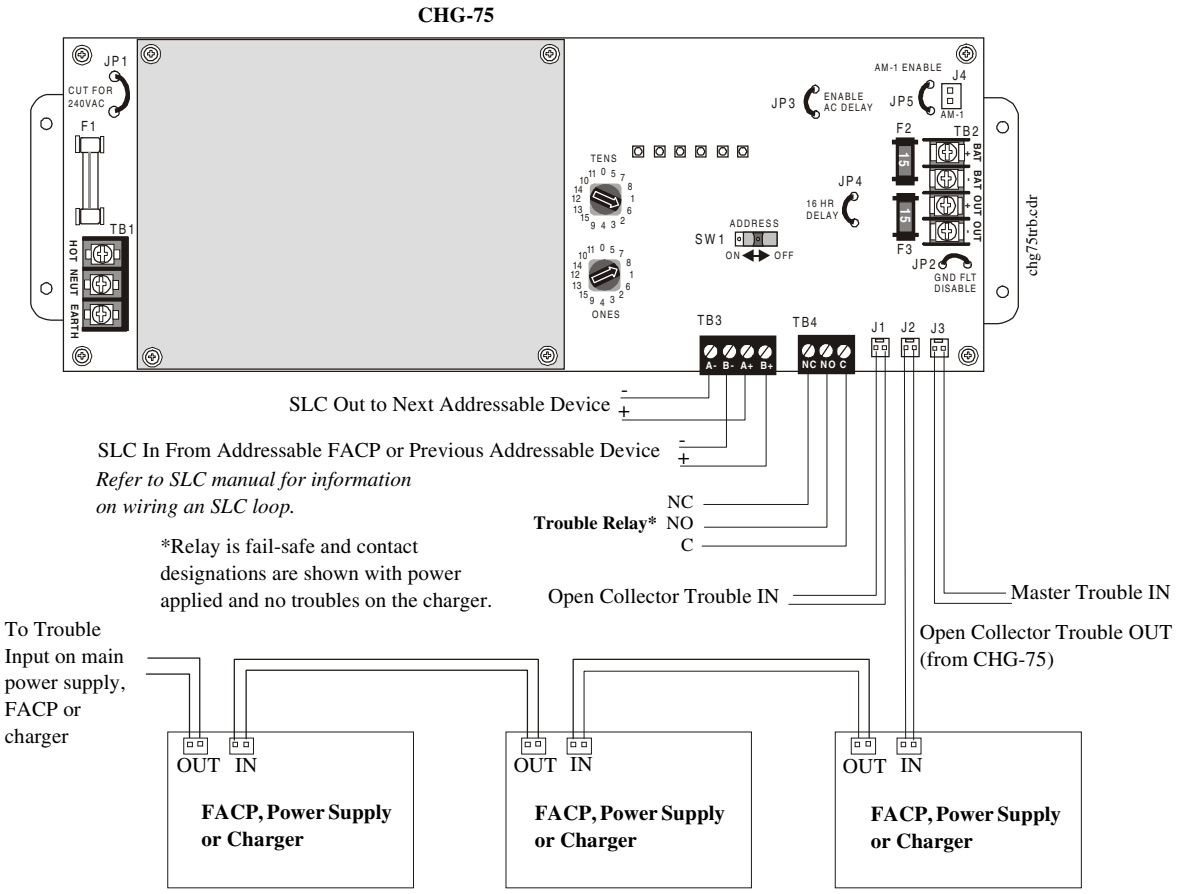


Figure 2.16 Trouble and Form-C Relay Connections

SECTION 3 Operation

3.1 Powering the Charger

WARNING! *Prior to applying power to the charger, perform the following check list:*

- ❒ Follow the installation instructions described in the section titled "Installation and Configuration" on page 10
- ❒ Verify the proper polarity on all connections between the charger and the batteries, loads and optional meters
- ❒ Make sure there are no short circuits between leads and between battery terminals. Also, check to make certain that jumpers which have been cut are not shorting together or to other components on the circuit board
- ❒ Make sure the Battery Interconnect Cable(s) is not connected

To power the charger, perform the following steps:

1. Apply AC power to the charger. The Trouble LED should turn on
2. Connect the batteries to the charger
3. Connect the Battery Interconnect Cable(s). The Trouble LED should turn off
4. Connect the charger to the load (such as a power supply, amplifier, FACP with local charger disabled, etc.)

3.2 LED Status Indicators

The CHG-75 provides six LED status indicators as illustrated in Figure 3.1.

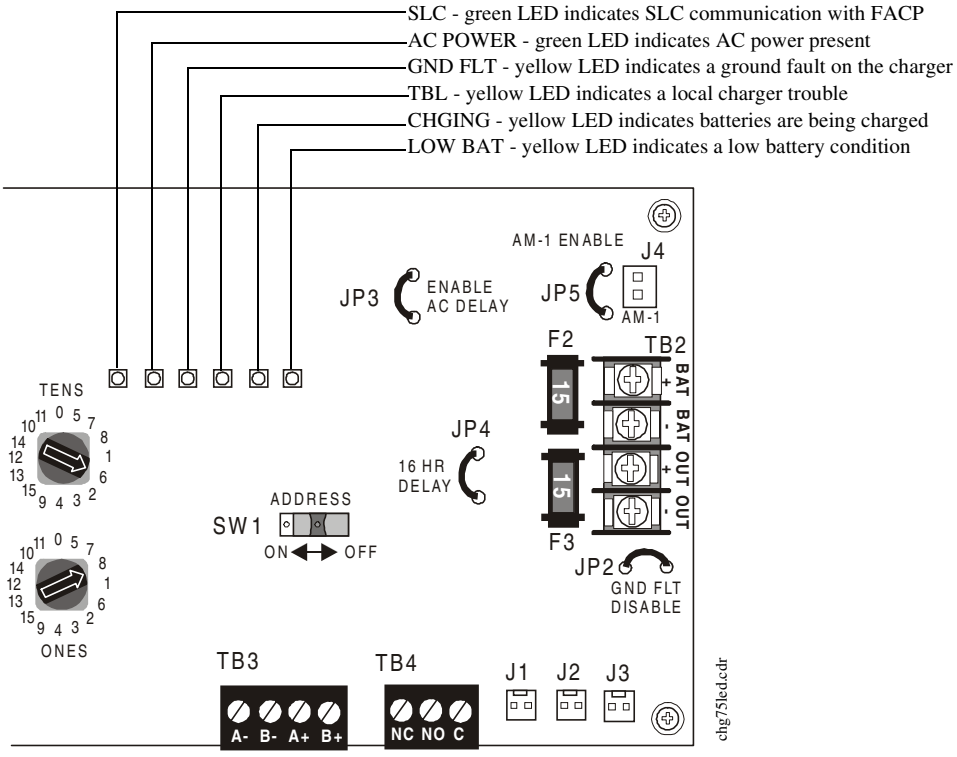


Figure 3.1 LED Status Indicators

3.3 Normal Operation

While charging the batteries, the CHGING (charging) LED will turn on. When batteries are fully charged, the charger maintains a float charge of 27.6 VDC. The SLC LED and AC LED are the only other LEDs that should be on during normal operation if SLC communication is programmed at the FACP and the SLC enable switch SW1 is On.

LED	Normal Operation	AC Fail	AC Fail (with AC loss reporting delay enabled	Battery Fault (low battery)	Disconnected Battery	Ground Fault	Short Circuit	System Trouble (with Master Trouble In Connected
SLC (if programmed and enabled)	✓	✓	✓	✓	✓	✓	✓	✓
AC Power On	✓							
Trouble		✓	✓	✓	✓	✓	✓	✓
Ground Fault						✓		
Low Battery				✓	✓			
Charging				✓				
✓= LED On (Note that Charge LED may blink on momentarily when switching to trickle charge. LED will extinguish if battery is disconnected)								

Table 3.1 LED Status Indicators

Index

Notes

Limited Warranty

The manufacturer warrants its products to be free from defects in materials and workmanship for eighteen (18) months from the date of manufacture, under normal use and service. Products are date-stamped at time of manufacture. The sole and exclusive obligation of the manufacturer is to repair or replace, at its option, free of charge for parts and labor, any part which is defective in materials or workmanship under normal use and service. For products not under the manufacturer's date-stamp control, the warranty is eighteen (18) months from date of original purchase by the manufacturer's distributor unless the installation instructions or catalog sets forth a shorter period, in which case the shorter period shall apply. This warranty is void if the product is altered, repaired, or serviced by anyone other than the manufacturer or its authorized distributors, or if there is a failure to maintain the products and systems in which they operate in a proper and workable manner. In case of defect, secure a Return Material Authorization form from our customer service department. Return product, transportation prepaid, to the manufacturer.

This writing constitutes the only warranty made by this manufacturer with respect to its products. The manufacturer does not represent that its products will prevent any loss by fire or otherwise, or that its products will in all cases provide the protection for which they are installed or intended. Buyer acknowledges that the manufacturer is not an insurer and assumes no risk for loss or damages or the cost of any inconvenience, transportation, damage, misuse, abuse, accident, or similar incident.

THE MANUFACTURER GIVES NO WARRANTY, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR OTHERWISE WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. UNDER NO CIRCUMSTANCES SHALL THE MANUFACTURER BE LIABLE FOR ANY LOSS OF OR DAMAGE TO PROPERTY, DIRECT, INCIDENTAL, OR CONSEQUENTIAL, ARISING OUT OF THE USE OF, OR INABILITY TO USE THE MANUFACTURER'S PRODUCTS. FURTHERMORE, THE MANUFACTURER SHALL NOT BE LIABLE FOR ANY PERSONAL INJURY OR DEATH WHICH MAY ARISE IN THE COURSE OF, OR AS A RESULT OF, PERSONAL, COMMERCIAL, OR INDUSTRIAL USE OF ITS PRODUCTS.

This warranty replaces all previous warranties and is the only warranty made by the manufacturer. No increase or alteration, written or verbal, of the obligation of this warranty is authorized.

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