FIRE·LITE® ALARMS
by Honeywell

Remote Fire Indicator
LCD-80FC
Instruction Manual

Document 53244
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P/N 53244:B ECN 13-439

Fire Alarm & Emergency Communication System Limitations

While a life safety system may lower insurance rates, it is not a substitute for life and property 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 panel (FACP) 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.

An emergency communication system—typically made up of an automatic fire alarm system (as described above) and a life safety communication system that may include an autonomous control unit (ACU), local operating console (LOC), voice communication, and other various interoperable communication methods—can broadcast a mass notification message. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire or life safety event.

The Manufacturer recommends that smoke and/or heat detectors be located throughout a protected premises following the recommendations 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. This document can be found at http://www.systemsensor.com/appguides/. 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, chimneys, even wet or humid areas 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, such as air conditioning vents.
- Smoke particles 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, compromising its ability to report a fire.

Audible warning devices such as bells, horns, strobes, speakers and displays 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:

- An emergency communication system may take priority over a fire alarm system in the event of a life safety emergency.
- Voice messaging systems must be designed to meet intelligibility requirements as defined by NFPA, local codes, and Authorities Having Jurisdiction (AHJ).
- Language and instructional requirements must be clearly disseminated on any local displays.
- 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 to or comprehend the meaning of the signal. Audible devices, such as horns and bells, can have different tonal patterns and frequencies. It is the property owner's responsibility to conduct fire drills and other training exercises 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 life safety 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 panel. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premises 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 life safety system malfunction is inadequate maintenance. To keep the entire life safety 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 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 life saftety system installers only. Adequate written records of all inspections should be kept.

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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 manuals are read and understood.

CAUTION - System Re-acceptance Test after Software Changes: To ensure proper system operation, this product must be tested in accordance with NFPA 72 after any programming operation or change in site-specific software. Re-acceptance 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 0-49º C/32-120º F and at a relative humidity 93% ± 2% RH (non-condensing) at 32°C ± 2°C (90°F ± 3°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 its peripherals be installed in an environment with a normal room temperature of 15-27º C/60-80º 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 interference, 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, or printed circuit board location.

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

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.

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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 devices pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when devices are 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 or her 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.

Software Downloads

In order to supply the latest features and functionality in fire alarm and life safety technology to our customers, we make frequent upgrades to the embedded software in our products. To ensure that you are installing and programming the latest features, we strongly recommend that you download the most current version of software for each product prior to commissioning any system. Contact Technical Support with any questions about software and the appropriate version for a specific application.

Documentation Feedback

Your feedback helps us keep our documentation up-to-date and accurate. If you have any comments or suggestions about our online Help or printed manuals, you can email us.

Please include the following information:

- Product name and version number (if applicable)
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- Your suggestion for how to correct/improve documentation

Send email messages to:

FireSystems.TechPubs@honeywell.com

Please note this email address is for documentation feedback only. If you have any technical issues, please contact Technical Services.

Table of Contents

Section 1: Overview

1.1 Introduction

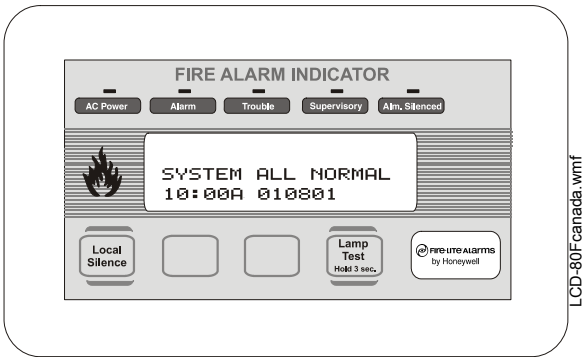
This document contains information for installing, programming, and operating the LCD-80FC Remote Fire Indicator.

1.2 Related Documentation

The following table provides a list of document sources (manuals) containing additional information regarding the fire alarm control panels and components that ACS annunciators can be connected to. The FireLite document (DOC-FIR) chart provides the current document revision.

Document Name	P/N
FireLite Device Compatibility Document	15384
MS-9200UDLS Instruction Manual	52750
MS-9600UDLSC Instruction Manual	52646
FCPS-24FS6/8 Instruction Manual	51883
MS-9200UD Instruction Manual (UL 8th)	51906
MS-9600 Instruction Manual (UL 8th)	51335

Section 2: The LCD-80FC Indicator



The LCD-80FC Indicator is a compact, 80-character, backlit LCD fire indicator designed for use with compatible FACPs (Fire Alarm Control Panels). *It should be noted that the LCD-80FC Indicator display will mimic the FACP display.*

The LCD-80FC is capable of displaying English-language text of system point status including device type, independent point alarm, trouble or supervisory, zone and custom alpha labels programmed into the control panel. The LCD-80FC also provides system status LEDs to display Power, Alarm, Trouble, Supervisory and Alarm Silenced conditions. The LCD-80FC is capable of performing local silence and local lamp test.

Communication between the FACP and the LCD-80FC is accomplished over a two-wire serial interface employing the EIA-485 communication standard. Up to 32 indicators may be connected to the two-wire EIA-485 circuit. The indicators may be powered from the host FACP or remote UL listed, filtered, power supplies.

2.1 Compatible Panels

- MS-9200UDLS
- MS-9600LS
- MS-9200UD
- MS-9600

2.2 Features of the LCD-80FC

- 80-character LCD display (20 characters x 4 lines) is backlit under normal and alarm conditions
- System Status LEDs for AC Power (green), Alarm (red), Trouble (yellow), Supervisory (yellow) and Alarm Silenced (yellow)
- No programming necessary — duplicates messages at control panel display.

NOTE: The FACP may require programming to function with the LCD-80FC. Refer to the specific FACP manual for programming information.

- Local piezo sounder with alarm and trouble resound
- Device type identifiers from the control panel
- Device & zone custom alpha labels from the control panel
- Time/date and device address from the control panel
- EIA-485 connects to control panel terminal port
- Plug-in terminal blocks for ease of installation and service

- DIP switches control piezo enable/disable, transmit/receive mode, FACP selection, function switches and key-switch enable/disable.
- Up to 32 LCD-80FC Indicators per FACP
- Mounting options:
  - Surface mounting in SBB-3 (2.75" depth) or three electrical boxes ganged together
  - Semi-flush mounting in three-gang electrical box (P/N 10103) with a minimum depth of 2.187" or three electrical boxes ganged together
  - Can be located up to 6,000 feet (1,829 m) from the panel
- Backlight turns off during AC loss to conserve battery power but will turn back on if an alarm condition occurs.
- Function switches for:
  - Local Silence
  - Local Lamp Test

2.3 Components

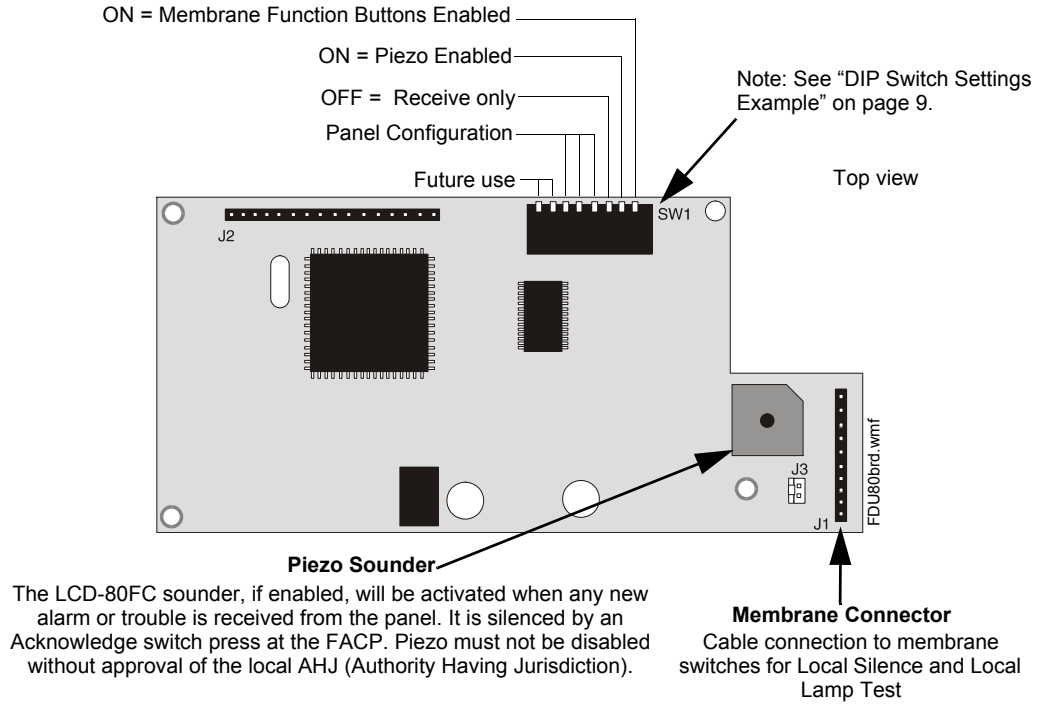


Figure 2.1 Components of the LCD-80FC

2.4 SW1 DIP Switch Settings

Refer to “DIP Switch Settings Example” on page 9, for an explanation of DIP switch positions. SW1 switch settings follow:

1 -ON = Function buttons enabled, **OFF** = Function buttons disabled.

2 -ON = Piezo sounder enabled, **OFF** = Piezo sounder disabled.

CAUTION: PIEZO SOUNDER DISABLE
THE PIEZO SOUNDER MUST NOT BE DISABLED WITHOUT PRIOR APPROVAL OF THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ).

3 -ON = Supervision Receive/Transmit, **OFF** = Supervision Receive Only.

- **One Indicator** - if a single LCD-80FC is the only indicator connected to the EIA-485 loop, Switch 3 must be set to the ON position to allow the FACP to supervise the indicator.
- **Multiple Indicators** - if multiple LCD-80FC indicators are connected to the EIA-485 loop, the indicator physically connected as the last device on the loop (farthest from the 'OUT' terminals on the FACP) must have Switch 3 set to the ON position in order to supervise all indicators on the loop. All remaining indicators must have Switch 3 set to the OFF position for proper supervision and operation.

It is important to note that the function switches on all LCD-80FC indicators will operate regardless of the setting of Switch 3.

A break (open circuit) in the power or EIA-485 connections creates an LCD-80FC Indicator fault at the control panel. All indicators before the break will continue to display information (*but the function switches on these LCD-80FCs will no longer operate*).

4 through 6 = Configuration for use with a particular FACP.

Switches 4, 5 and 6 are used to select the FACP (Fire Alarm Control Panel) which is being connected to the LCD-80FC. Refer to the following table for the appropriate switch settings.

Fire Alarm Control Panel	SW1-4	SW1-5	SW1-6
Use This Setting for: MS-9200UDLS, MS-9600LS, MS-9200UD, and MS-9600	OFF	OFF	OFF

Table 2.1 Dip Switch Settings

NOTE: Depending on the FACP which is connected to the LCD-80FC, it may be necessary to enable communication with the indicator in the FACP programming. Refer to the appropriate FACP manual for programming information.

7 and 8 = Future use.

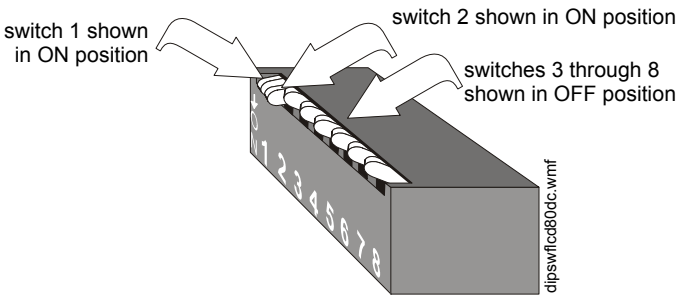


Figure 2.2 DIP Switch Settings Example

SW1 DIP switch settings as illustrated in Figure 2.2 are as follows:

1. DIP switch 1: ON = function buttons are enabled
2. DIP switch 2: ON = piezo sounder enabled
3. DIP switch 3: OFF = Receive Only. This setting is used for all indicators except the last or only LCD-80FC Indicator on the EIA-485 line
4. DIP switches 4 through 6: OFF = Configured correctly for operation with the available FACP (Refer to Table 2.1.)
5. DIP switches 7 and 8: OFF (these switches are not used)

2.5 Typical Configuration

The LCD-80FC Indicator mimics the FACP display, has full point-display capacity and requires no programming. *Note that the FACP may require programming to allow communication with the LCD-80FC. Refer to the appropriate FACP manual for programming information.*

The LCD-80FC offers multiple indicator locations with the capability of Local Silence and Local Lamp Test functions.

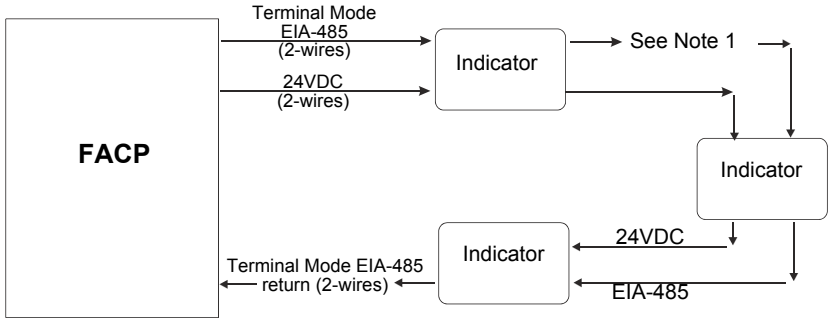


Figure 2.3 Typical Configuration

NOTE:
1. 6,000 feet (1,800 m) maximum distance @ 18 AWG (0.75 mm2) between the FACP and the first LCD-80FC, between each LCD-80FC and from the last LCD-80FC back to the FACP.
2. Up to 32 LCD-80FC Indicators may be used on the EIA-485 circuit. Refer to the specific FACP manual to determine the maximum current available for powering the LCD-80FC. If additional indicators are connected, the FCPS-24 may be used to supply additional power. Power supplies used for this purpose must have their negative terminals commoned together.
3. Between each LCD-80FC Indicator are four wires - a twisted shielded pair for data communications and a pair for 24 VDC power. The return circuit only requires two wires for data communication supervision, wired from the last or only indicator on the line.

Section 3: Mounting

3.1 Indicator Preparation

The LCD-80FC Indicator can be surface mounted in a three-gang electrical box such as the P/N SBB-3 (2.75" depth) or semi-flush mounted in a three-gang electrical box, P/N 10103 or equivalent, with a minimum depth of 2-3/16". The LCD-80FC Indicator can also be mounted in three gangable electrical switch boxes connected together. Select and remove the appropriate knockout(s), pull the necessary wires through the knockouts and mount the box in or on the wall depending on the type of installation desired. *Be certain that power is not applied to the wiring during the installation procedure.*

NOTE: To ensure static protection, all enclosures, including the LCD-80FC electrical box, must be connected to earth ground! Never use the shield for grounding purposes.

To mount the LCD-80FC Indicator in an electrical box, the trim ring must first be removed. The trim ring is held in place by two screws inserted through the top and bottom edge as illustrated in Figure 3.1. Removal of the trim ring will expose a metal flange with mounting holes. Refer to “Hardware and Backboxes” on page 12.

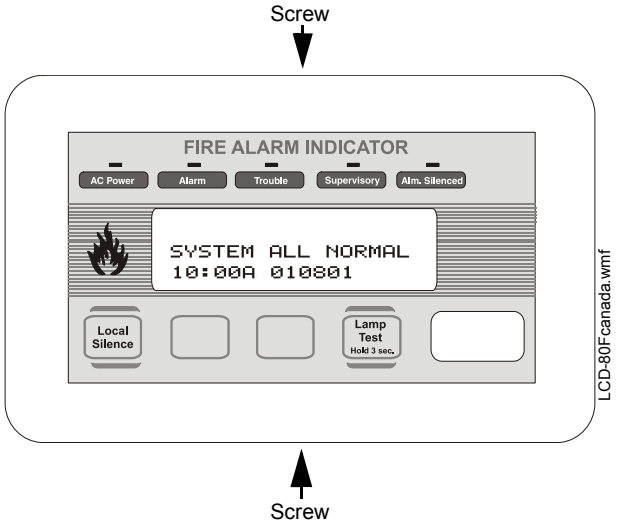
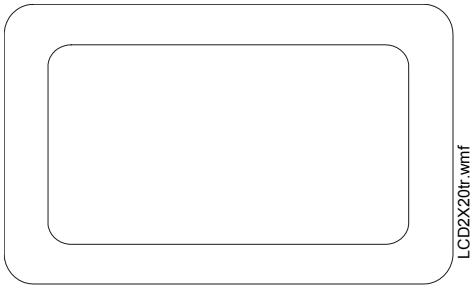
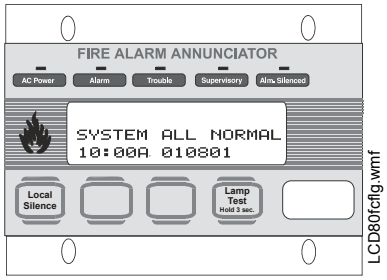


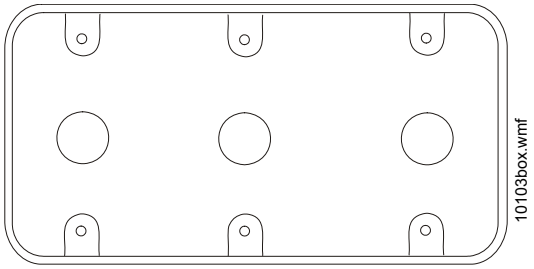
Figure 3.1 Trim Ring Removal



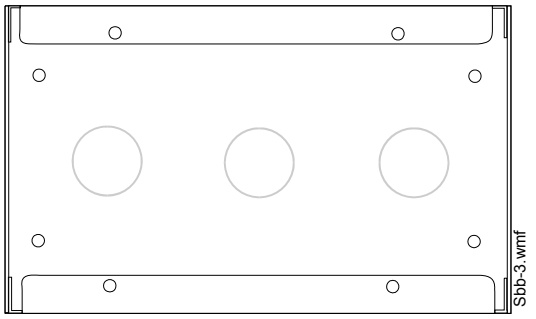
LCD-80FC Trim Ring
(replacement P/N 23165)



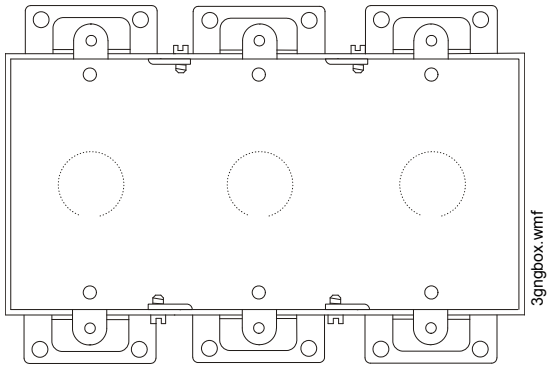
LCD-80FC flange



3-Gang Electrical Box P/N 10103
(semi-flush mount)



3-Gang Electrical Box P/N SBB-3
(surface mount)



Three Ganged Electrical Boxes

Figure 3.2 Hardware and Backboxes

3.2 Semi-flush Mount Backbox

3.2.1 Mounting in SBB-3 Three Gang Electrical Box

Remove the plug-in terminal blocks from the LCD-80FC circuit board. Connect the EIA-485 and power wiring into the terminal block positions illustrated in Sections 4.1 and Section 4.2. Plug the terminal blocks back into the P2 and P1 connectors on the back of the indicator. Set DIP switch SW1 for the desired options. Refer to Figure 2.2 on page 9.

Carefully insert the LCD-80FC into the three-gang electrical box P/N: 10103 or three electrical boxes ganged together and attach it using the four mounting holes on the LCD-80FC flange and the four screws provided for this purpose. Replace the trim ring and secure with the two screws which were previously loosened. Adjust the plastic trim ring to the surface of the wall before tightening the screws. *Do not overtighten.*

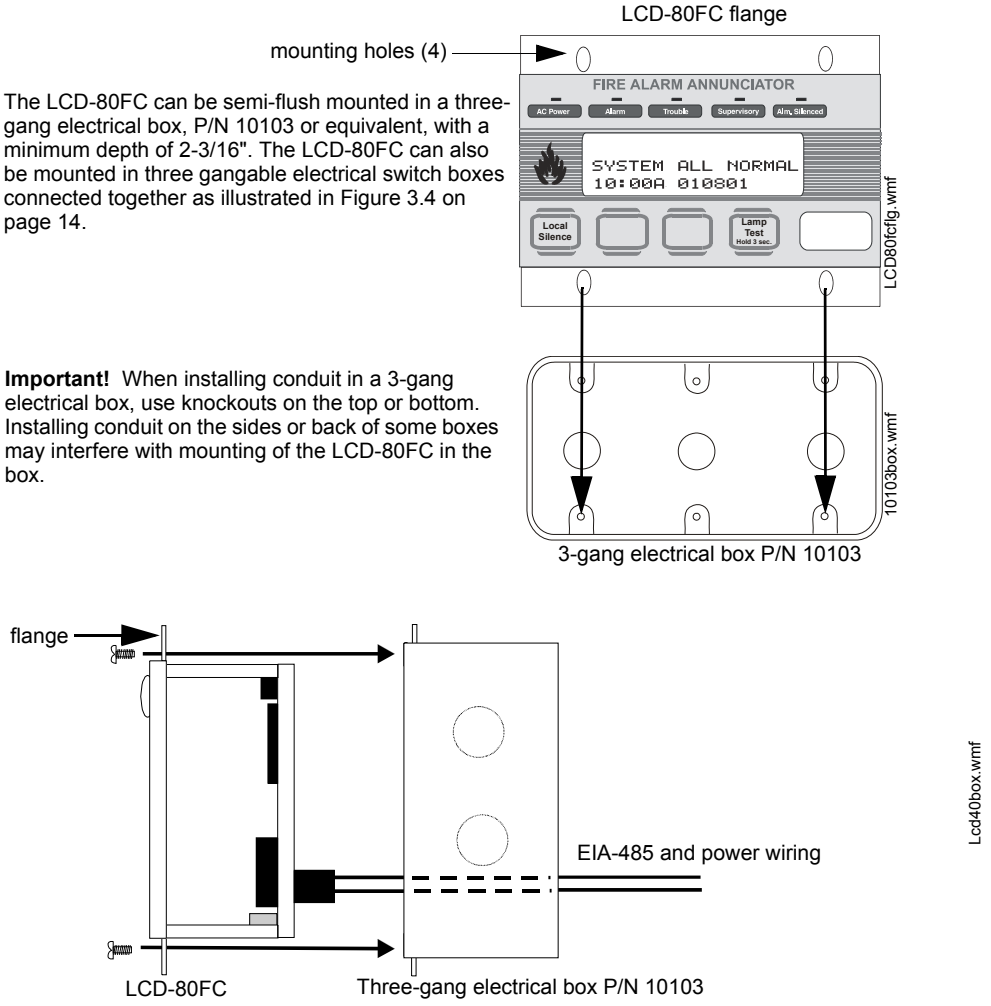


Figure 3.3 Mounting in SBB-3 Box

3.2.2 Mounting in Three Electrical Boxes Ganged Together

Remove the plug-in terminal blocks from the LCD-80FC circuit board. Connect the EIA-485 and power wiring into the terminal block positions illustrated in Sections 4.1 and 4.2. Plug the terminal blocks back into the P2 and P1 connectors on the back of the indicator. Set DIP switch SW1 for the desired options. Refer to Figure 2.2 on page 9.

Carefully insert the LCD-80FC into the three electrical boxes ganged together and attach it using the four mounting holes on the LCD-80FC flange and the four screws provided for this purpose. Replace the trim ring and secure with the two screws which were previously loosened. Adjust the plastic trim ring to the surface of the wall before tightening the screws. *Do not overtighten.*

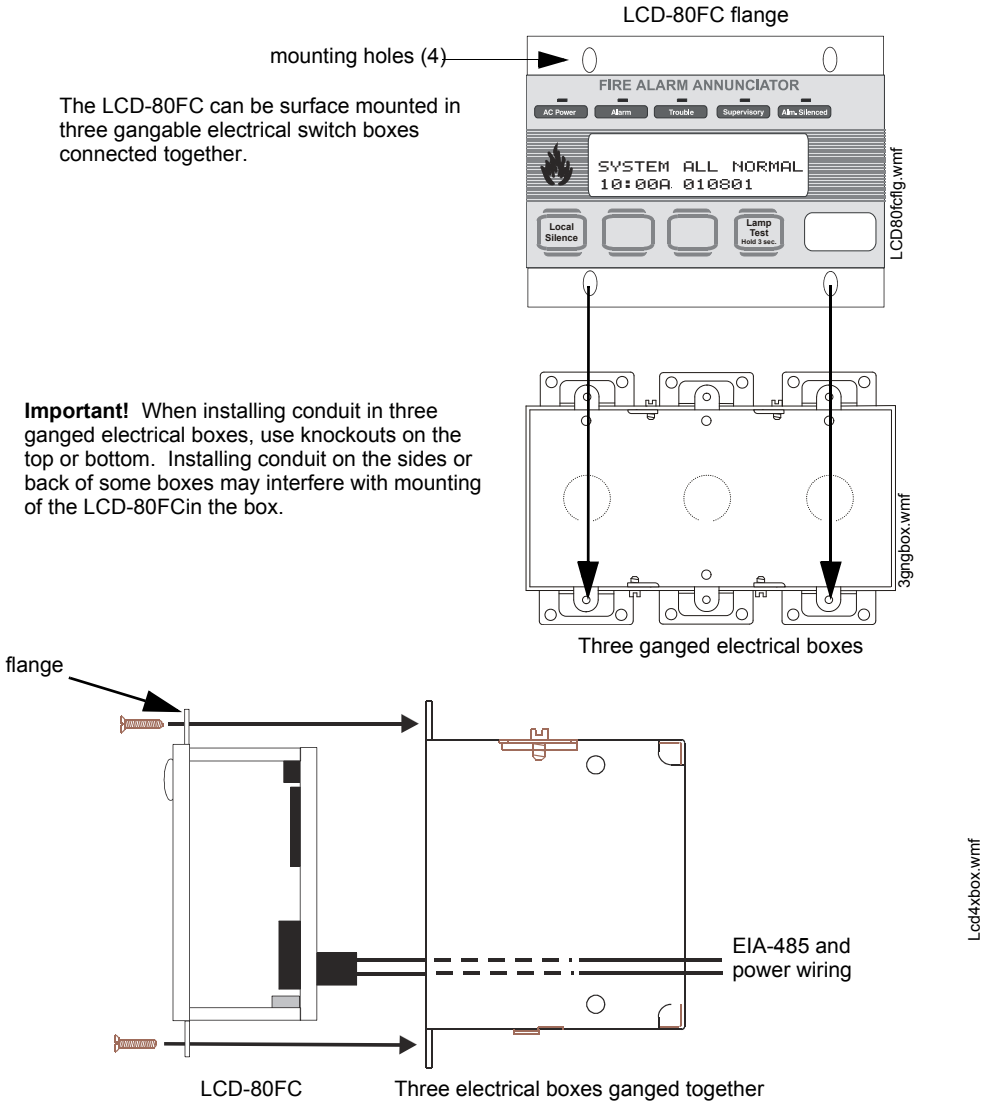


Figure 3.4 Mounting in 3 Ganged Electrical Boxes

3.3 Surface Mount Backbox

Remove the plug-in terminal blocks from the LCD-80FC circuit board. Connect the EIA-485 and power wiring into the terminal block positions illustrated in Sections 4.1 and 4.2. Plug the terminal blocks back into the P2 and P1 connectors on the back of the indicator circuit board. Set DIP switch SW1 for the desired options. Refer to Figure 2.2 on page 9.

Carefully insert the LCD-80FC into the three-gang electrical box and attach it using the four mounting holes on the LCD-80FC flange and the four screws provided for this purpose. Replace the trim ring and secure with the two screws which were previously loosened. *Do not overtighten.*

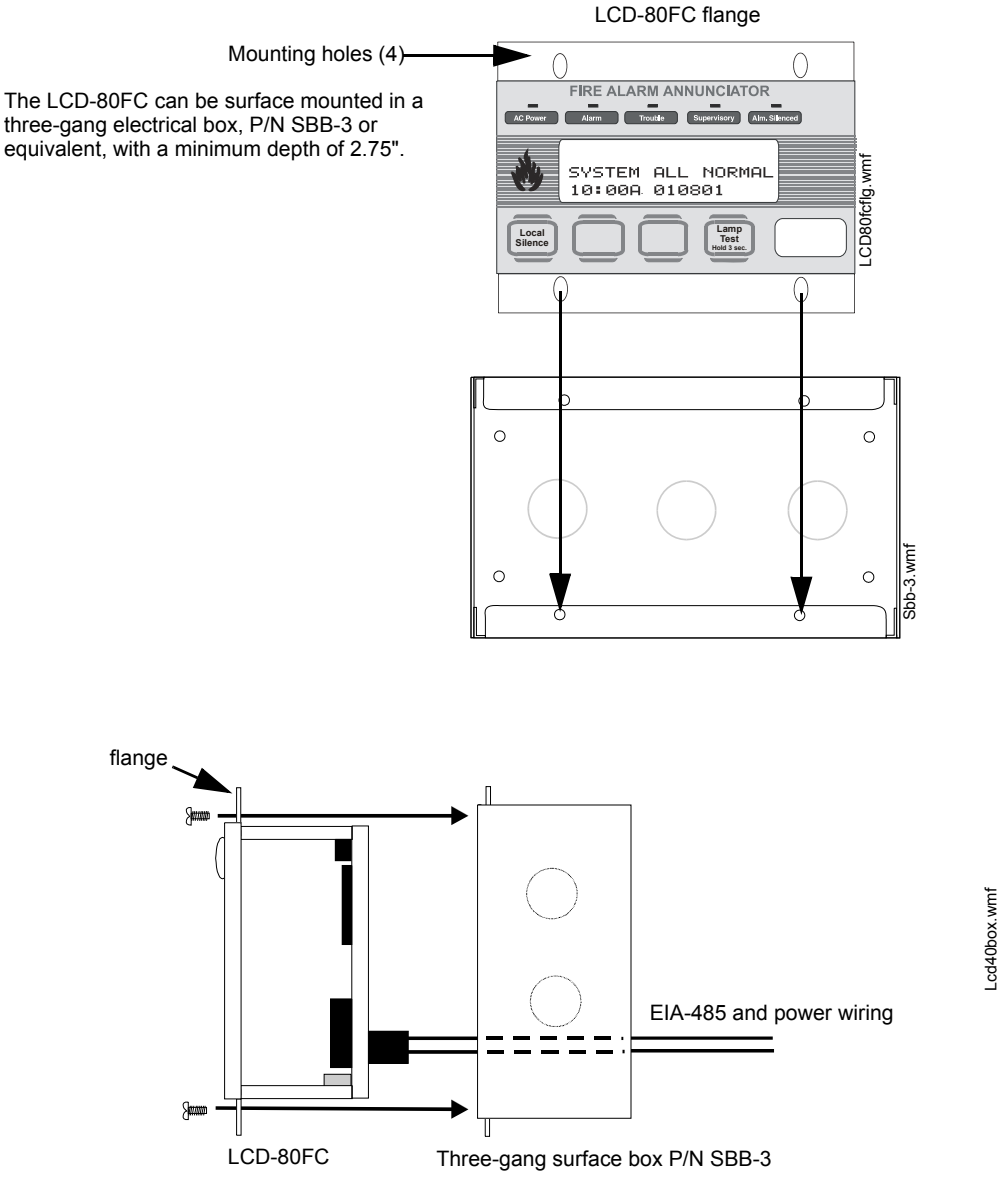


Figure 3.5 Surface Mounting

Section 4: Electrical Connections

4.1 Power Connections

The LCD-80FC Indicator can be powered by the FACP (refer to the specific technical manual for the proper connection of the LCD-80FC) or from a remote UL listed, filtered power supply such as the FCPS-24FS6/8C. The power run to the indicator must be power-limited but need not contain a power supervision relay since loss of power is inherently supervised through loss of communication with the indicator. Maximum LCD-80FC current draw from the power supply (under normal and alarm conditions) is 64.3 mA. Maximum current draw from the control panel's secondary power source (batteries) under loss of AC power is 25 mA, since the LCD backlight is turned off during AC loss. Backlighting is turned back on during AC loss only for alarm conditions in the system. 12 - 18 AWG (0.75 - 3.25 mm^2) wire for 24 VDC circuit is acceptable. Power wire distance limitation is set by 1.2 volt maximum line drop from source to end of circuit.

Specifications for the LCD-80FC

- Operating Voltage Range: 18 VDC to 28 VDC
- Current Consumption @ 24 VDC nominal (filtered and nonresettable):
- Normal/Standby (no activity): 64.3 mA
- Trouble Condition: 64.3 mA
- Alarm: 64.3 mA
- AC Fail (not backlit): 25 mA

Refer to the illustrations on the following pages for power connections from the LCD-80FC to the MS-9200UDLS, MS-9600LS, and FCPS-24FS6/8C

NOTE: These connections must be power-limited and the +24 VDC nominal power input must be filtered and nonresettable.

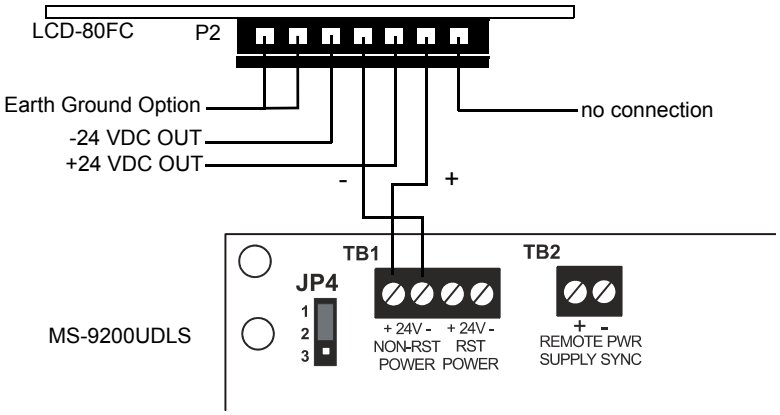


Figure 4.1 Power Wiring to the MS-9200UDLS

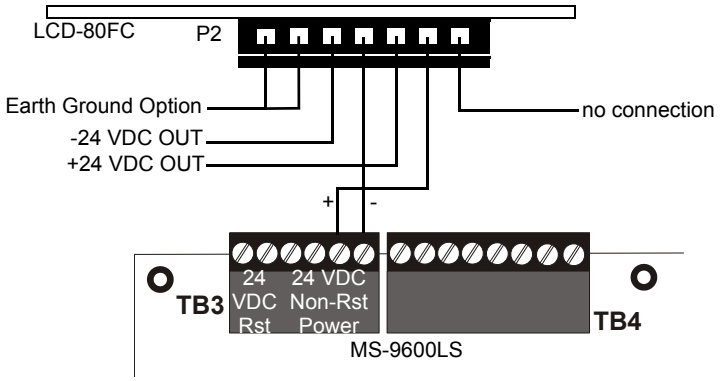


Figure 4.2 Power Wiring to the MS-9600LS

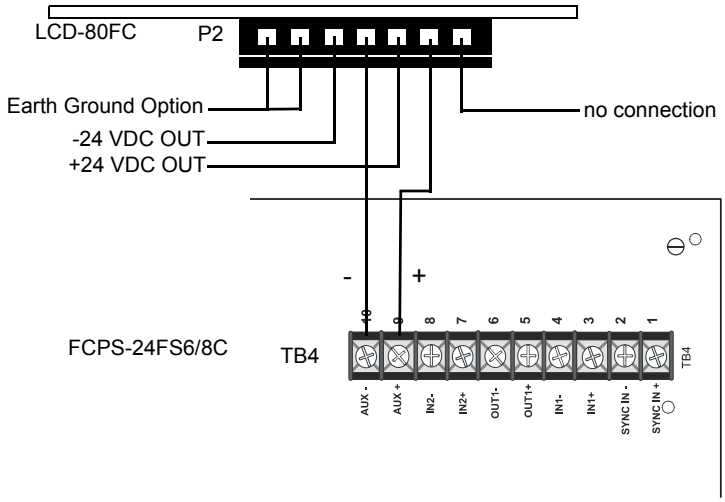


Figure 4.3 Power Wiring to the FCPS-24FS6/8C

NOTE:
1. All connections are power-limited and supervised
2. 12 - 18 AWG (0.75 - 3.25 mm2) wire for 24 VDC circuit is acceptable
3. Power wire distance limitation is set by 1.2 volt maximum line drop from source to end of circuit.

4.2 EIA-485 Connections

EIA-485 connections are made to P1 on the LCD-80FC. All connections must be power-limited and supervised. Enable FACP communication with the LCD-80FC in the FACP programming if appropriate (refer to FACP manual). A maximum of 32 LCD-80FC indicators may be connected to this circuit. A maximum distance of 6,000 feet (1,829 m) @ 18 AWG (0.75 mm2) is allowed between the FACP and first LCD-80FC, between each LCD-80FC and return to the FACP from last LCD-80FC. Use overall foil/braided-shielded twisted pair cable suitable for EIA-485 applications (refer to "EIA-485 Shield Termination" on page 20, for shield termination information). Six conductor overall shielded wire may be used for the four EIA-485 wires and the two power wires. It is, however, strongly recommended that the power and communication wires be separate whenever possible. A Ferrite Core P/N FBD-1 is required to meet FCC Part 15 requirements if the EIA-485 wiring is not in conduit. The EIA-485 circuit is rated at 5.5 VDC maximum and 60 mA maximum.

The LCD-80FC indicator has resistors built into the circuit board at the In (Terminals 2 & 4) and the Out (Terminals 1 & 3) for impedance matching. There is no need for the installer to add impedance matching resistors.

Refer to the following illustrations for EIA-485 connections from the LCD-80FC to the MS-9200UDLS and MS-9600LS.

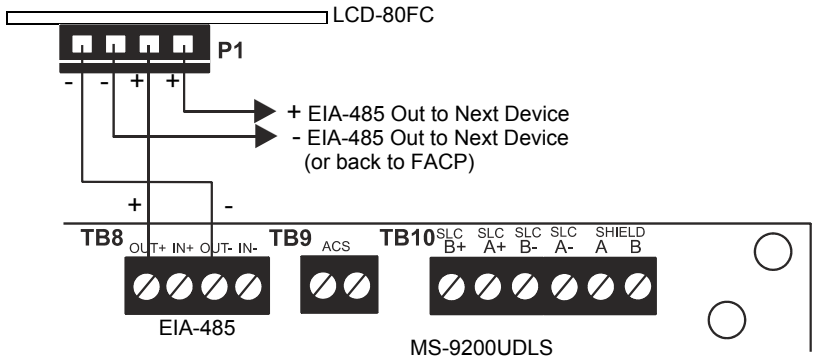


Figure 4.4 EIA-485 Wiring to the MS-9200UDLS

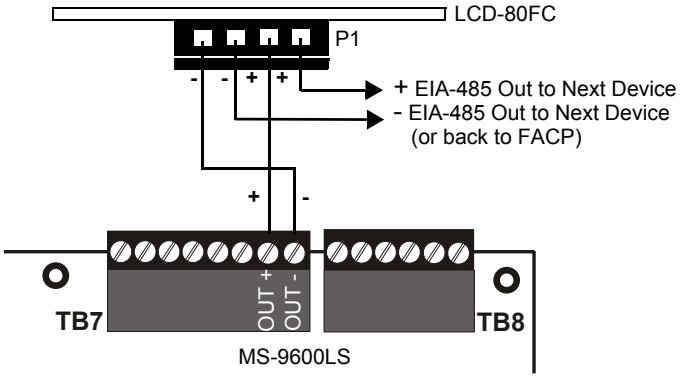


Figure 4.5 EIA-485 Wiring to the MS-9600LS

NOTE:
1. All connections are power-limited and supervised.
2. A maximum of 32 LCD-80FC indicators may be connected to this circuit.
3. 6,000 feet (1,800 m) maximum distance @ 18 AWG (0.75 mm2) between the FACP and first LCD-80FC, between each LCD-80FC and return to the FACP from the last LCD-80FC.
4. Use overall foil/braided-shielded twisted pair cable suitable for EIA-485 applications (refer to “EIA-485 Shield Termination” on page 20, for shield termination information). Six conductor overall shielded wire may be used for the four EIA-485 wires and the two power wires. It is, however, strongly recommended that the power and communication wires be separate whenever possible.
5. Ferrite Core P/N FBD-1 is required to meet FCC Part 15 requirements if the EIA-485 wiring is not in conduit.
6. The EIA-485 circuit is rated at 5.5 VDC maximum and 60 mA maximum.
7. The LCD-80FC indicator has resistors built into the circuit board at the In (Terminals 2 & 4) and the Out (Terminals 1 & 3) for impedance matching. There is no need for the installer to add impedance matching resistors.
8. Enable FACP communication with the LCD-80FC in the FACP programming if appropriate (refer to FACP manual).

Section 5: EIA-485 Shield Termination

The EIA-485 circuit must be wired using a twisted, shielded pair cable with a characteristic impedance of 120 ohms (+/- 20%). Do not run cable adjacent to or in the same conduit as 120 VAC service, noisy electrical circuits that are powering mechanical bells or horns, audio circuits above 25 V_{RMS}, motor control circuits or SCR power circuits.

NOTE: To ensure static (ESD - electrostatic discharge) protection, all enclosures, including the LCD-80FC electrical box, must be connected to earth ground! Never use the EIA-485 shield for this purpose. The EIA-485 shield is for radiated noise emission protection (RFI, EMI). Refer to the following figures for details on EIA-485 shield termination.

5.1 Shield Not in Conduit

The EIA-485 line allows the FACP to communicate with the LCD-80FC Indicator. The shield for the EIA-485 line must be connected to earth ground at the FACP but must be left floating (no connection) at the indicator if it is the first or only device on the EIA-485 line. If a second indicator is connected, the shield leaving the first indicator must be left floating. The shield entering the second indicator must be connected to the three-gang box or Earth Ground terminal (P2-7) on the second indicator. If additional indicators are connected, the shield leaving each enclosure must be left floating and the shield entering each must be connected to the three-gang box or the Earth Ground terminal (P2-7) on the indicator.

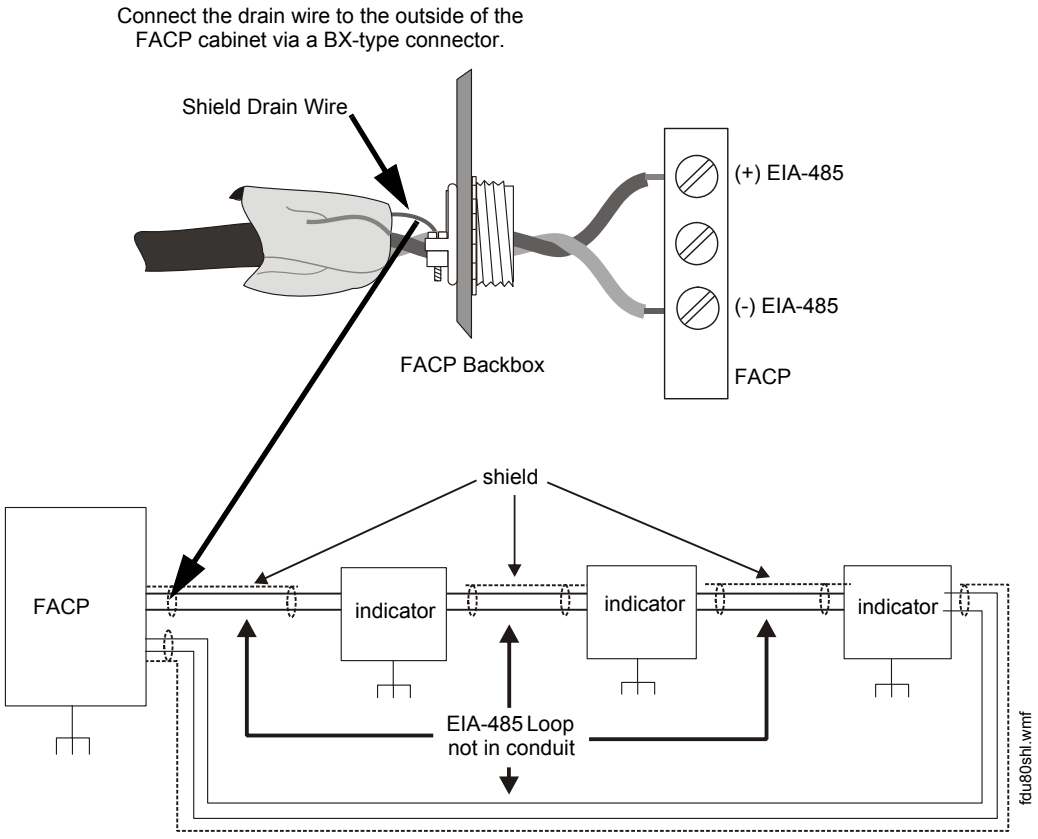


Figure 5.1 EIA-485 Without Conduit

5.2 Shield in Full Conduit

The EIA-485 line allows the FACP to communicate with the LCD-80FC Indicator. The shield for the EIA-485 line must be connected to earth ground at the FACP (both exiting and entering the FACP) but must be left floating (no connection) at the indicator if it is the first or only device on the EIA-485 line. If a second indicator is connected, the shield leaving the first indicator must be floating. The shield entering the second indicator must be connected to the Earth Ground terminal (P2-7) on the second indicator. If additional indicators are connected, the shield leaving each indicator must be left floating and the shield entering the following unit must be connected to the Earth Ground terminal (P2-7) on the indicator.

CAUTION: INSULATE FLOATING END
DO NOT ALLOW THE FLOATING SHIELD END (NO CONNECTION) TO CONTACT THE CONDUIT. THE FLOATING END SHOULD BE INSULATED FROM EARTH GROUND.

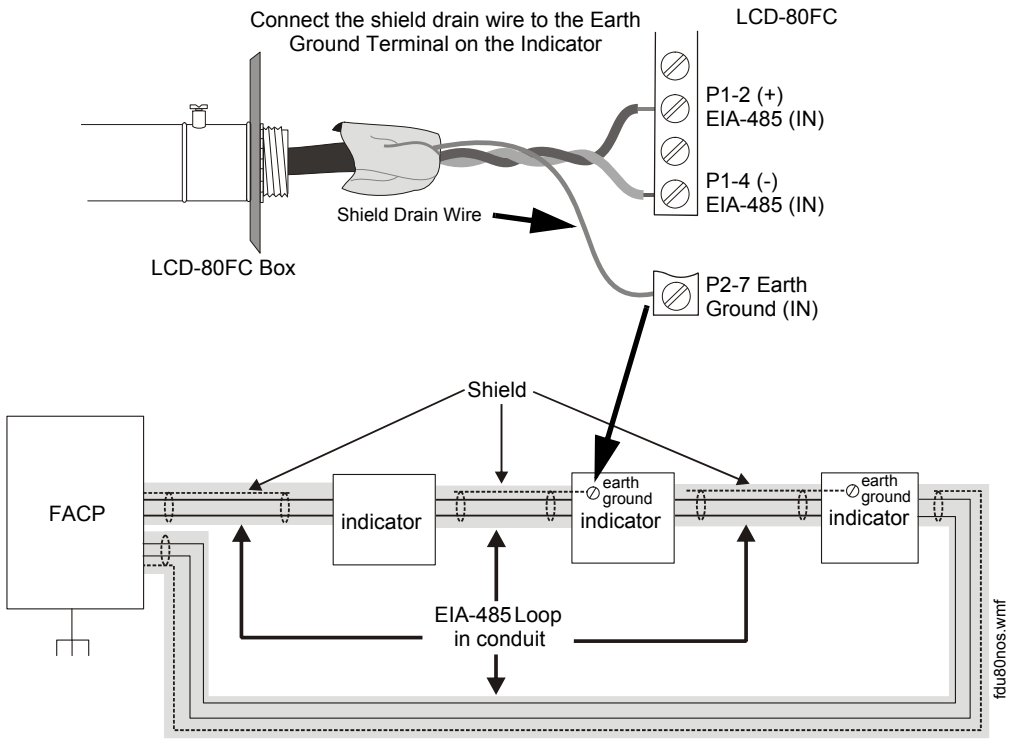


Figure 5.2 EIA-485 in Conduit

NOTE:
1. Power-limited 24 VDC power may be run in the same conduit as the EIA-485 wiring.
2. Twisted, shielded wire is recommended for the EIA-485 communications loop.
3. Each electrical backbox is connected to earth ground via the conduit.
4. Shield is connected to the FACP cabinet (earth ground) leaving and entering the FACP.

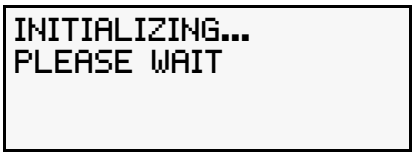
Notes

Section 6: Operation

6.1 Display Patterns

The LCD-80FC Indicator directly displays (mimics) the information on the FACP display with the following exceptions:

- Upon Power-up, the LCD-80FC may display the following message until a valid message is received from the FACP:



- If an LCD-80FC Indicator fails to receive communications from the panel for a period of over 30 seconds, it will activate its local sounder (if so programmed) and display the following message:

A Communication Fault may be due to one of the following conditions:

- ✓ FACP has not been programmed to communicate with the LCD-80FC. Refer to the appropriate FACP manual programming section.
- ✓ EIA-485 wiring between the LCD-80FC and FACP has an open.
- ✓ Polarity of the EIA-485 wiring between the LCD-80FC and FACP has been reversed. EIA-485 (-) on the LCD-80FC must be connected to EIA-485 (-) on the FACP and EIA-485 (+) on the LCD-80FC must be connected to EIA-485 (+) on the FACP.

6.2 Switch Functions

6.2.1 Local Silence

When the Local Silence switch is pressed, the piezo sounder at the LCD-80FC Indicator will be silenced.

6.2.2 Lamp Test

Pressing the Lamp Test switch will turn on all local Indicator LEDs, piezo sounders and LCD display segments as long as the Lamp Test switch is held.

6.3 LED Indicators

6.3.1 AC Power

This is a green LED which illuminates if AC power is applied to the host FACP. The green LED will turn off if AC power to the host FACP is lost.

6.3.2 Alarm

This is a red LED that turns on steady when one or more fire alarms occur. The Alarm LED turns off when the FACP Reset switch is pressed.

6.3.3 Supervisory

This is a yellow LED that turns on steady when one or more supervisory conditions occur, such as a sprinkler valve tamper condition. It turns off when the FACP Reset switch is pressed.

6.3.4 Trouble

This is a yellow LED that turns on steady when one or more trouble conditions occur. The LED turns off when all trouble conditions are cleared. This LED will also illuminate if the microprocessor watchdog circuit within the LCD-80FC is activated.

6.3.5 Alarm Silenced

This is a yellow LED that turns on when the FACP Silence switch is pressed to turn off the Notification Appliance Circuits. The LED turns off when the NACs turn back on or when the alarm condition is cleared and the FACP is reset back to a normal condition.

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