NOTIFIER®
by Honeywell

Liquid Crystal Display
LCD2-80
Instruction Manual

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 panel 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 Guides for Proper Use of System Smoke Detectors, which are made available at no charge to all installing dealers. These documents can be found at http://www.systemsensor.com/html/applicat.html. 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 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, 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 panel. 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 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 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 (noncondensing) 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. Over-tightening 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.

Precau-D1-9-2005

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)
- Printed manual or online Help
- Topic Title (for online Help)
- Page number (for printed manual)
- Brief description of content you think should be improved or corrected
- 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: Product Overview

The LCD2-80 alphanumeric display module is an ancillary device used by Notifier fire alarm control panels including NCA-2, NFS-320, NFS2-640, and NFS2-3030. The product operates in Terminal mode, where it acts as a display interface and mimics the host control panel, or in ACS mode, where it can display custom messages.

NOTE: The LCD2-80 should not be used as a primary display in Canada.

NOTE: The LCD2-80 should not be used as a primary display for releasing service.

1.1 UL 864 Compliance

1.1.1 Products Subject to AHJ Approval

This product has been certified to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864 9th Edition.

The following products have not received UL 864 9th Edition certification and may only be used in retrofit applications. Operation of the LCD2-80 with products not tested for UL864 9th Edition has not been evaluated and may not comply with NFPA 72 and/or the latest edition of UL 864. These applications will require the approval of the local Authority Having Jurisdiction (AHJ).

- NCA
- NFS-640
- NFS-3030
- AFP-300/400
- AFP-200
- AFP-1010
- AM-2020

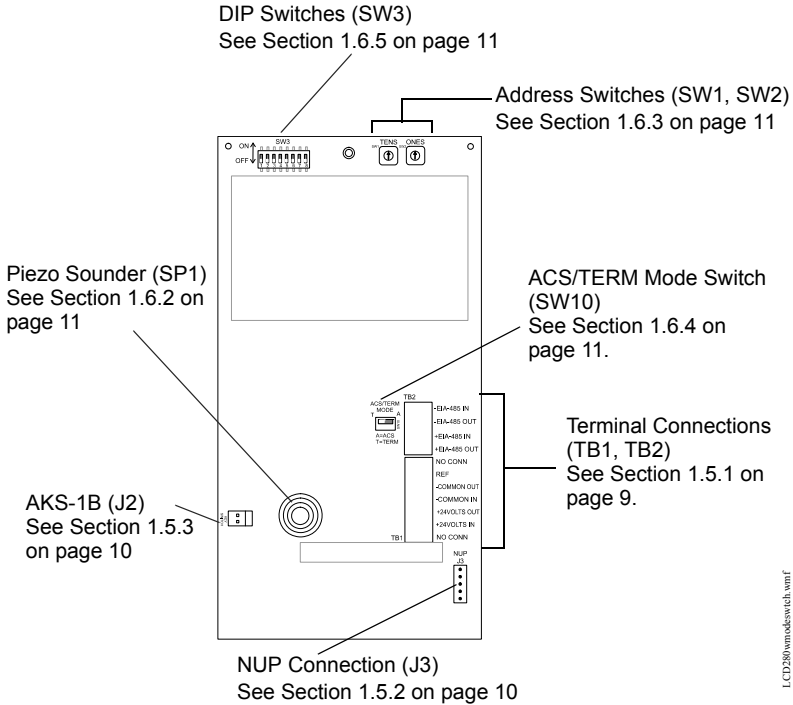### 1.1.2 Programming Features Subject to AHJ Approval

This product incorporates field-programmable software. The features and/or options listed below must be approved by the local AHJ.

This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control Units and Accessories for Fire Alarm Systems, UL 864, certain programming features or options must be limited to specific values or not used at all as indicated below.			
Program feature or option	**Permitted in UL 864 (Y/N)**	**Possible settings**	**Settings permitted in UL 864**
Piezo Enable/Disable	N	SW3-2 ON = Piezo Disabled SW3-2 OFF = Piezo Enabled	SW3-2 OFF = Piezo Enabled

1.2 Features

- 80-character backlit LCD display.
- Control switches for Acknowledge, Signal Silence, Drill System Reset, and Step Display/Lamp Test.
- ABF-1/B package with key switch option.
- Local piezo sounder with alarm/trouble resound.
- EIA-485 connects to control panel terminal port.

- In Terminal Mode:
    - The LCD2-80 is a simplified version of the display for NCA-2, NFS-320, NFS2-640, and NFS2-3030.
    - Mounts up to 6000 foot segments between units.
    - Up to 32 of these terminals can provide annunciation and control from remote locations.
    - Device type identifiers from control panel.
    - Device and zone custom labels from control panel.
    - Device address from control panel.
    - EIA-485 connects to control panel terminal port.
    - No programming necessary — mimics the host control panel.
- In ACS Mode:
    - The LCD2-80 supplies a means to display a subset of the panel message text, or to display custom messages programmed using VeriFire® Tools.
    - The power-limited EIA-485 interface provided by the control panel will support the installation of devices at up to 32 addresses.
    - Zone/point message display programming done in VeriFire® Tools.
    - European Mode display option ("Trouble" is called "Fault").
    - System trouble display option.

1.3 Board Layout

DIP Switches (SW3)
See Section 1.6.5 on page 11

Address Switches (SW1, SW2)
See Section 1.6.3 on page 11

Piezo Sounder (SP1)
See Section 1.6.2 on
page 11

ACS/TERM Mode Switch
(SW10)
See Section 1.6.4 on
page 11.

Terminal Connections
(TB1, TB2)
See Section 1.5.1 on
page 9.

AKS-1B (J2)
See Section 1.5.3
on page 10

NUP Connection (J3)
See Section 1.5.2 on page 10

Figure 1.1 LCD2-80 Board Layout

1.4 Power Specifications

Current Consumption @ 24 VDC

- Normal (no activity): 84 mA
- Lamp Test: 105 mA
- AC Fail (Piezo ON): 45 mA
- AC Fail (Piezo OFF): 28 mA
- Alarm (Piezo ON): 98 mA
- Alarm (Piezo OFF): 85 mA

Include these currents in your power supply loading and battery
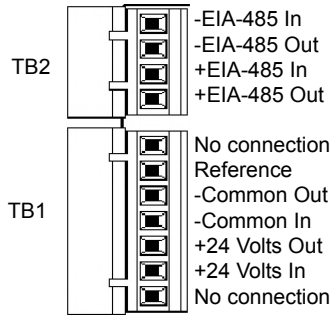calculations.

1.5 Connections

1.5.1 Terminal Connections - TB1 and TB2

These connections provide 24 VDC operating power (TB1) and EIA-485 connections (TB2) to the LCD2-80.

The connections must be power-limited.

Figure 1.2 TB1, TB2 Connections

Power connections are illustrated below. Refer to "Terminal Mode EIA-485 Connections" on page 13 and "ACS Mode EIA-485 Connections" on page 16 for TB2 connection illustrations.

Power Connections (TB1)

The LCD2-80 can be powered by a +24 VDC power supply listed for fire protective signalling use that is power limited and regulated with a voltage range of +17 VDC to +28 VDC. Power can also be provided by an FACP with an integral power supply as long as the LCD2-80 is listed for use with the FACP.

⚠ **CAUTION:Risk of Equipment Damage!**
Do not power the LCD2-80 from any unfiltered power source designed for powering NAC devices. This may damage the equipment.

The power run to the LCD2-80 must be power-limited but need not contain a Power Supervision Relay since loss of power is inherently supervised through communication loss.

▤ **NOTE:**If the LCD2-80 is powered from a separate supply from the control panels, the supplying commons should be tied together and ground fault detection should be disabled in all but the primary supply.
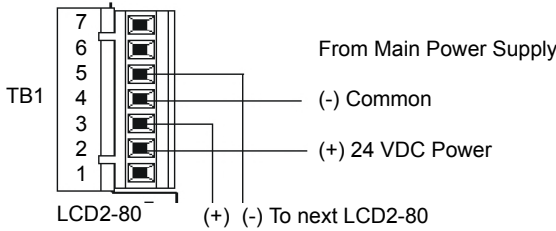
Figure 1.3 Supplying Power to the LCD2-80

	24 VDC (+)	Common (-)
FCPS-24S6/8	TB4-9	TB4-10
NFS-320, NFS2-640	TB10 Nonresettable 24VDC+	TB10 Nonresettable 24VDC-
NFS2-3030, NCA-2	TB6+	TB6-

1.5.2 NUP Connection - J3

Connection for standard NUP cable for VeriFire®Tools downloads.

1.5.3 AKS-1B Keyswitch - J2

Keyswitch connector for an optional AKS-1B keyswitch. When the two pins on this interface are shorted, all five keys on the membrane panel will be ignored by the LCD2-80.

1.6 Switches and Indicators

1.6.1 LED Indicators

LED	Color	Function
Alarm	Red	Indicates an Alarm condition on the FACP. This LED will remain lit until all alarm conditions have been cleared.
Supervisory	Yellow	Indicates a Supervisory condition on the FACP. This LED will remain lit until all supervisory conditions have been cleared.
System Trouble	Yellow	Indicates a Trouble condition on the FACP. This LED will remain lit until all trouble conditions have been cleared.
Point Disable	Yellow	Indicates that a point on the FACP has been disabled. This LED will remain lit until the point has been re-enabled.
Signal Silence	Yellow	Indicates that any or all silenceable outputs have been silenced. This LED will be lit until the outputs have resounded or a reset is performed on the FACP.
Other	Yellow	Indicates that an Other or Security event has occurred on the FACP. This LED will remain lit until all other and security events have been cleared.

Table 1.1 LED Functions

NOTE: The LEDs operate in Terminal mode only when used with the NFS-320, NFS2-640, and NFS2-3030/NCA-2. They do not activate for off-normal events from legacy panels in Terminal mode.

NOTE: The second and eighth LEDs are reserved for Future Use.

1.6.2 Piezo

The LCD2-80 sounder will be activated when any new alarm or trouble is received from the panel. It is silenced by the ACKNOWLEDGE switch.

1.6.3 Address Switches - SW1 and SW2

In ACS mode, these rotary switches must be set to the address of the LCD2-80 on the EIA-485 line. Set the TENS rotary switch (SW1) to the number in the tens position of the LCD2-80's address. Set the ONES rotary switch (SW2) to the ones position.

1.6.4 ACS/TERM Mode Switch - SW10

Set to A (ACS mode) or T (Terminal mode).

1.6.5 DIP Switches - SW3

| DIP Switch #	Setting	Description
3-1	ON	Control keys locked.
	OFF	Control keys unlocked.
3-2	ON	Piezo disabled.
	OFF	Piezo enabled.
3-3	ON	*ACS Mode*: Set ON to do a database download. *Terminal Mode*: Set ON for communication with panels release 15 and later that support the LCD2-80.
	OFF	<u>*ACS Mode*</u>: Set OFF for normal operation, when there is no download being performed. <u>*Terminal Mode*</u>: Set OFF if the LCD2-80 is used with a legacy panel.
3-4	ON	Set ON to connect to PC for updating LCD2-80 firmware.
	OFF	Set OFF when not connected to PC for updating LCD2-80 firmware.
3-5	ON	<u>*ACS Mode*</u>: When the LCD2-80 is set for ACS Mode (switch 3-6 is set to ON), and it will be used in receive-only mode, switch 3-5 must be set to ON. Otherwise, set to OFF. When in ACS receive-transmit mode the panel supervises the LCD2-80, but the LCD2-80 does not have control of the fire alarm control panel; it only annunciates fire alarm control panel events.
	OFF	<u>*Terminal Mode*</u>: When the LCD2-80 is set to Terminal Mode (switch 3-6 is set to OFF), the last LCD2-80 on the EIA-485 line should be set to ON. All others on the EIA-485 line should be set to OFF.
3-6	ON	Set ON for ACS Mode. *Note: This setting must be made before power-up*.
	OFF	Set OFF for Terminal Mode.
3-7	ON	EIA-485 Termination: <u>*ACS Mode*</u>: Set ON on last LCD2-80. <u>*Terminal Mode*</u>: Set ON.
	OFF	<u>*ACS Mode*</u>: Set OFF on all but last LCD2-80. <u>*Terminal Mode*</u>: Do not use. Always set to ON.
3-8	ON	EIA-485 Termination: <u>*ACS Mode*</u>: Set ON on last LCD2-80. <u>*Terminal Mode*</u>: Set ON.
	OFF	<u>*ACS Mode*</u>: Set OFF on all but last LCD2-80. <u>*Terminal Mode*</u>: Do not use. Always set to ON.

Table 1.2 SW3 DIP Settings

Section 2: Terminal Mode Configuration

When the LCD2-80 is set for Terminal Mode it operates like a CRT terminal without full keyboard capability, but with the advantages of 24 VDC power, wall mount, and multiple terminal location with Acknowledge, Signal Silence, Drill and Reset.

NOTE: When LCD2-80s are used on the same EIA-485 circuit as LCD-80s, the LCD2-80s must be at the furthest end of the circuit from the panel.
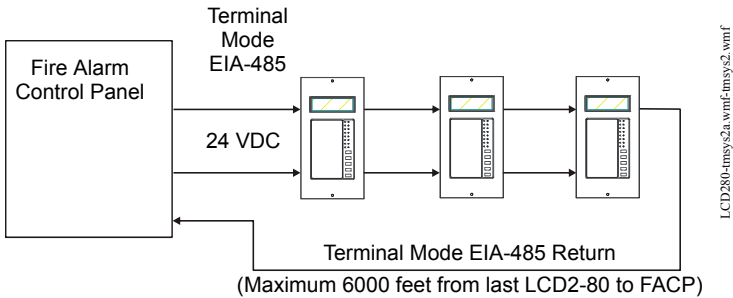
Figure 2.1 Block Diagram of LCD2-80s in Terminal Mode

Notes:

- EIA-485 circuits have a maximum of 6000 feet between units.
- Up to 32 LCD2-80s may be used on the EIA-485 circuit (consult control panel's battery calculations).
- Between each LCD2-80 are four wires: A twisted-shielded pair for data communications and an open pair for 24 VDC power. The return circuit only requires two wires for data communication.
- The EIA-485 interface used in Terminal Mode should not be confused with an EIA-485 circuit used in ACS Mode (annunciator interface).
- The EIA-485 terminal interface does not support the use of RPT-485 repeaters.

2.1 Switches

DIP switches at SW3 must be set for terminal mode, and SW10 (ACS/TERM Mode switch) must be set to TERM.

Setting the DIP switches:

Refer to "DIP Switches - SW3" on page 11 for a full explanation of all the switch settings. For switches 3-1, 3-2, and 3-4, set as necessary according to the explanations. For 3-3, 3-5, 3-6, 3-7 and 3-8, set as follows for Terminal Mode:

    3-3 - Set ON if this LCD2-80 is being used with an ONYX panel.
        Set OFF if it will be used with a legacy panel.
    3-5 - Set ON on last LCD2-80 on the EIA-485. Otherwise, set OFF.
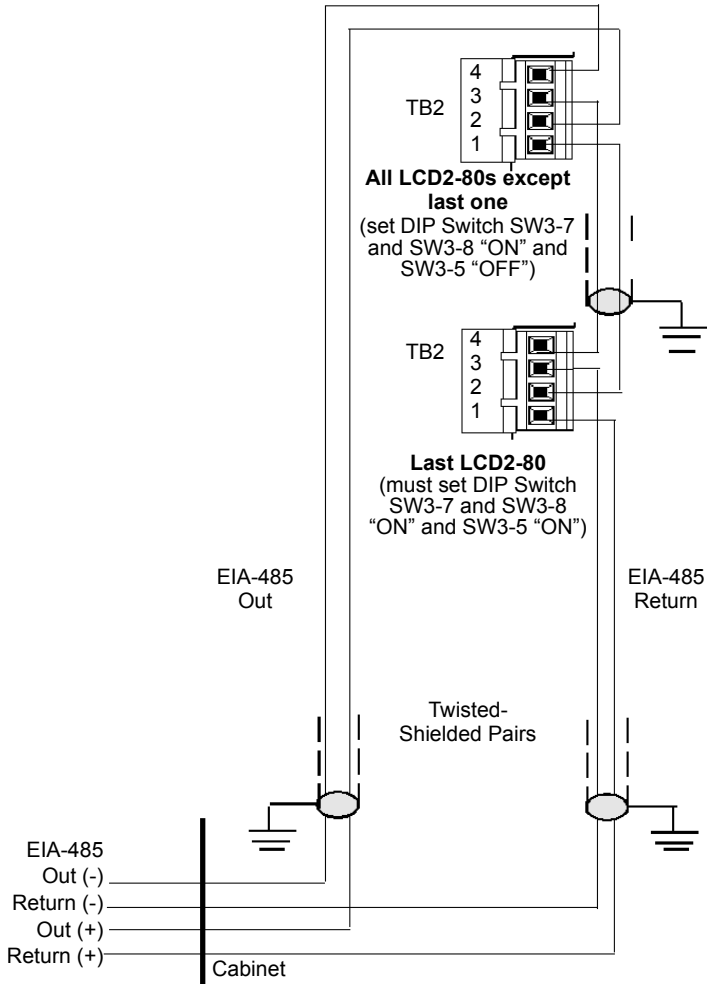
3-6 - Set OFF.

3-7 and 3-8 - Set ON.

Setting the ACS/TERM Mode switch:

Set this switch (SW10) to T (TERM).

2.2 Terminal Mode EIA-485 Connections

See Figure 2.2 for wiring diagram; the following requirements must be observed:

• Power-limited and supervised.

• Maximum of 32 LCD2-80s may be connected to this circuit.

• 6000 feet maximum distance (@ 16 AWG) between the control panel and the first or last LCD2-80 and between each LCD2-80.

• Use overall foil/braided-shield twisted pair cable suitable for EIA-485 applications, terminated to earth at one end.

• EIA-485 circuit rated 5.5 VDC max., 60 mA max.

• The LCD2-80s require connection of operating power. Connect 24 VDC power to the nonresettable power connections on the panel, or other appropriate power source as defined in "Power Connections (TB1)" on page 9.

TB2

All LCD2-80s except last one
(set DIP Switch SW3-7 and SW3-8 "ON" and SW3-5 "OFF")

TB2

Last LCD2-80
(must set DIP Switch SW3-7 and SW3-8 "ON" and SW3-5 "ON")

EIA-485 Out

EIA-485 Return

Twisted-Shielded Pairs

EIA-485
Out (-)
Return (-)
Out (+)
Return (+)
Cabinet

*See notes in preceding text.

Figure 2.2 Terminal Mode EIA-485 Connections

EIA-485 Connections on LCD2-80	OUT(-)	RET(-)	OUT(+)	RET(+)
NFS-320, NFS2-640	TB11-2	TB11-4	TB11-1	TB11-3
NFS2-3030, NCA-2	TB9-2	TB9-4	TB9-1	TB9-3

Table 2.1 EIA-485 Control Panel Connections (Terminal Mode)

Section 3: ACS Mode Configuration

The primary application for the LCD2-80 in ACS Mode is to display messages with text that is a subset of the panel message text, or custom messages programmed using VeriFire® Tools.
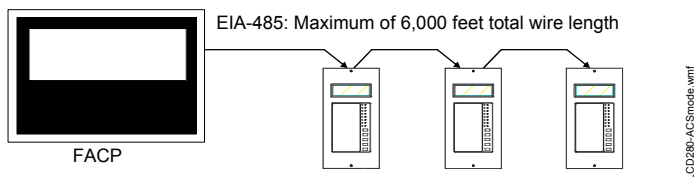
Figure 3.1 Block Diagram of LCD2-80s in ACS Mode

The power-limited EIA-485 interface provided by the control panels will support the installation of devices at up to 32 addresses. Devices other than the LCD2-80 that can be installed at one of the 32 addresses include the ACS, LDM, and SCS modules.

The LCD2-80 can be mounted in ABF-1B, ABS-1TB, or ABS-1B backbox (not the ABS-1) or can mount on one slot of the CHS-4 chassis. The ABF-1B may include an AKS-1B keyswitch and APJ-1B phone jack.

3.1 Switches

DIP switches at SW3 must be set for ACS mode, and SW10 (ACS/TERM Mode switch) must be set to ACS.

Setting the DIP switches:

Refer to "DIP Switches - SW3" on page 11 for a full explanation of all the switch settings. For switches 3-1, 3-2, and 3-4, set as necessary according to the explanations. DIP Switches 3-3, 3-5, 3-6, 3-7 and 3-8, are unique to ACS Mode configuration:

> 3-3 - Set ON to do a database download.
>   Set OFF when download is complete.
> 3-5 - Set ON if this LCD2-80 will be used in receive-only mode.
>   Otherwise, set OFF.
>   Note: Maximum receive-only mode shadow addresses for the
>   LCD2-80 in ACS mode is 4 (four).
> 3-6 - Set ON.
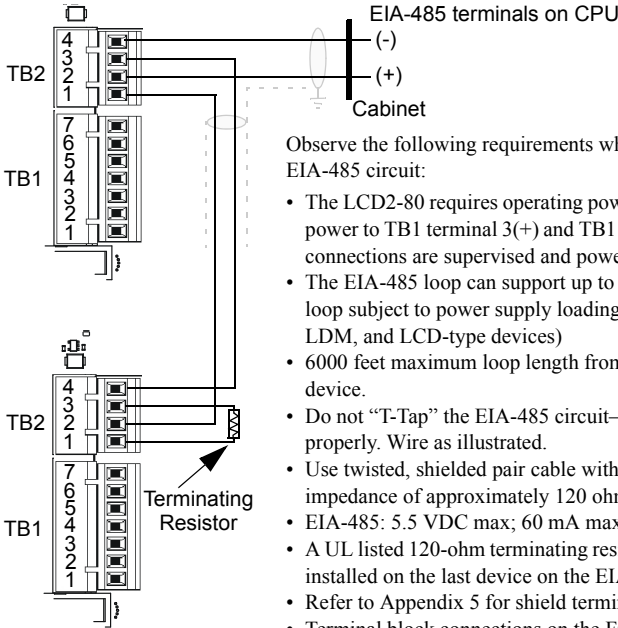> 3-7 and 3-8 - Set ON on last LCD2-80.

Setting the ACS/TERM Mode switch:

Set this switch (SW10) to A (ACS).

Setting the Address Switches:

Set the address rotary switches to the desired address. See "Address Switches - SW1 and SW2" on page 11.

3.2 ACS Mode EIA-485 Connections

Observe the following requirements when connecting the EIA-485 circuit:

- The LCD2-80 requires operating power. Connect 24 VDC power to TB1 terminal 3(+) and TB1 terminal 4 (-). Power connections are supervised and power-limited.
- The EIA-485 loop can support up to 32 devices on the loop subject to power supply loading limitations (ACS, LDM, and LCD-type devices)
- 6000 feet maximum loop length from the CPU to the last device.
- Do not "T-Tap" the EIA-485 circuit—it will not function properly. Wire as illustrated.
- Use twisted, shielded pair cable with a characteristic impedance of approximately 120 ohms.
- EIA-485: 5.5 VDC max; 60 mA max.
- A UL listed 120-ohm terminating resistor (R-120) must be installed on the last device on the EIA-485 circuit.
- Refer to Appendix 5 for shield termination instructions.
- Terminal block connections on the Fire Alarm Control Panel are listed in Table 3.1; for illustrations, refer to your FACP manual.
- A separate reference wire is required for NFS2-3030 applications using ACS annunciators which are not in the same backbox as the fire alarm control panel's CPU.

Figure 3.2 ACS Mode EIA-485 Connections

NCA-2, NFS2-3030	TB7 (+) TB7 (-)	EIA-485 (+) EIA-485 (-)
NFS-320, NFS2-640	TB11 (+) TB11(-)	EIA-485 (+) EIA-485 (-)

Table 3.1 EIA-485 Control Panel Connections (ACS Mode)

Refer to your control panel manual for illustrations of panel-side terminals.

3.3 Programming

The LCD2-80 is programmed using VeriFire®Tools. Downloads are performed with a PC, using a standard NUP cable connected to the NUP port (J3) on the board. In order to download, the database switch 3-3 must be set to ON. Refer to Table 1.2 on page 11.

3.3.1 General Tab

Figure 3.3 General Tab

Host Panel:

Node ID - Node ID of the host panel.

Panel Type - Select the host panel type from the drop-down menu.

ACS Addresses:

Start - Select the first annunciator address to be programmed.

End - Select the last annunciator address to be programmed.

Settings:

European Mode - Set European Mode to ON to have the word "fault" appear in the display.

Point Label Display Mode -

40 Characters: Select to display the 40 character point label in the second and third rows of the display for the first point/event that is active. (Pressing the Step Display key will scroll through any other active events.)

20 Characters: Select to display two 20 character point labels in the second and third rows of the display for the first and last point/events that are active.

Starting ACS Circuit Type -

SYS: The first eight points will be system points and are not programmable.

ACS: The full range of points are available for point programming.

System Trouble/Display Option - Set ON to have a general alarm or trouble message display in the system if there is no annunciator point mapped to the device.

ACS Circuit Size - 64 or 96 points.

System Messages -

Description: Fixed message titles. The message associated with the description will display on the LCD2-80 when called for by a panel command.

Message: These fields are populated with default messages that may be changed by the programmer.
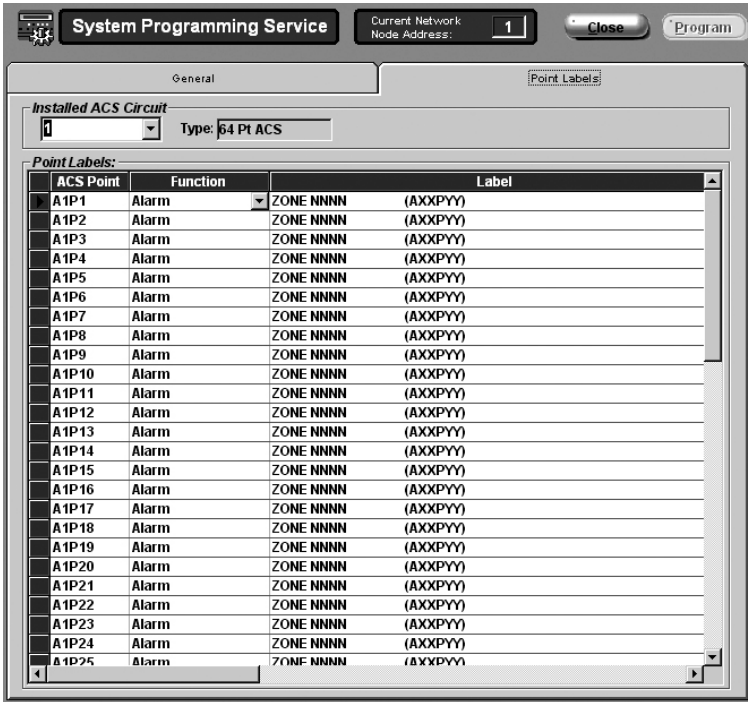
3.3.2 Point Labels Tab

Figure 3.4 General Tab

Installed ACS Circuit

The drop-down menu contains a list of all the ACS circuits programmed into the host panel. Select the desired circuit for programming. The type field and point grid will populate with the appropriate information.

Function: Default is Alarm. Select pull-down menu to change to another function. Function selections: Alarm, Supervisory, Security, Non-Fire, and Telephone.

Label: Default is to ZONE NNNN   (AXXPYY), which may be deleted and changed to user-composed text. If SYS has been chosen as the Starting ACS Circuit Type, the first 8 points will not be programmable.

Select the Program button at the top of the screen to write the above settings to the LCD2-80 database.

Section 4: Operating the LCD2-80
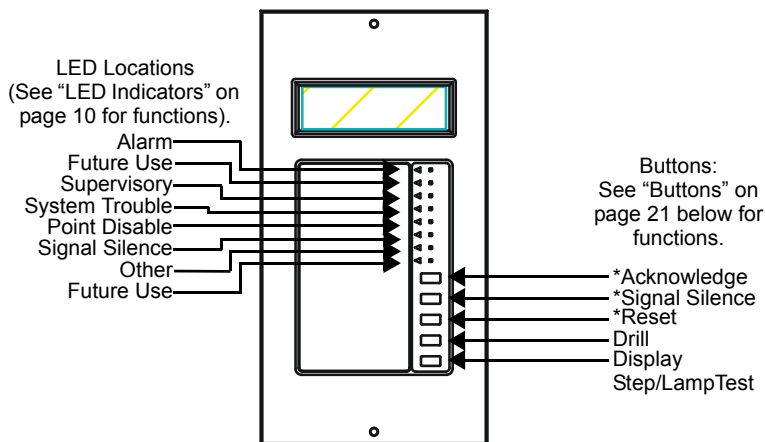
LED Locations
(See "LED Indicators" on
page 10 for functions).
Alarm
Future Use
Supervisory
System Trouble
Point Disable
Signal Silence
Other
Future Use

Buttons:
See "Buttons" on
page 21 below for
functions.

*Acknowledge
*Signal Silence
*Reset
Drill
Display
Step/LampTest

*Note: The LEDs operate in Terminal mode only when used with the NFS-320, NFS2-640, and NFS2-3030/NCA-2. They do not activate for off-normal events from legacy panels in Terminal mode.

*Note: If Acknowledge, Silence, and Reset switches are enabled for system control, access security must be provided by mounting the LCD2-80 in a locked fire alarm cabinet, or annunciator backbox model ABF-1B or ABS-1TB with AKS-1B key switch option.

Figure 4.1 LED and Button Designations

4.1 Displays

The display consists of four 20-space rows, 80 characters total. Following are formats for different message types.

4.1.1 Terminal Mode

In terminal mode, the LCD2-80 directly displays event information from the FACP terminal interface, without alteration.

4.1.2 ACS Mode

In ACS Mode, the LCD2-80 will display custom message labels from its database.

Normal Message

4 rows

ROSEWOOD HOSPITAL
NORTH HALL FLOOR 3

ALL SYSTEM NORMAL

40 character custom message 1
blank
system normal banner custom message 2

20 characters across

Displays when the system has no off-normal events.

40 Character Event Messages

```
FIRE ALARM
NORTH HALL FLOOR 3
NURSE STATION
001ALARM 000TROUBLE
```
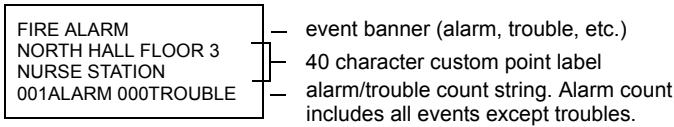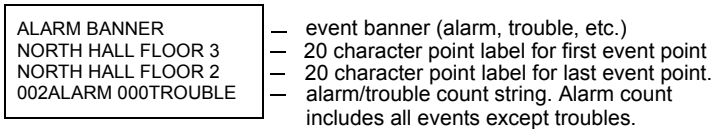— event banner (alarm, trouble, etc.)

— 40 character custom point label

— alarm/trouble count string. Alarm count includes all events except troubles.
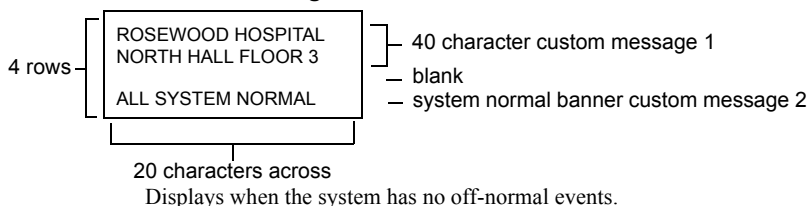
Displays when one or more events are active in the system. Rows two and three display the custom label for the first active point.

If there is more than one event, press the Display Step/Lamp Test key to step through a display of the custom point labels of subsequent events.

20-Character Event Messages

```
ALARM BANNER
NORTH HALL FLOOR 3
NORTH HALL FLOOR 2
002ALARM 000TROUBLE
```
— event banner (alarm, trouble, etc.)

— 20 character point label for first event point

— 20 character point label for last event point.

— alarm/trouble count string. Alarm count includes all events except troubles.

Displays when one or more events are active in the system. The second row displays the first event point; the third row displays the last event point. There is no step function for this display. Only the highest priority event type will display at one time.

Event priorities, in order of highest to lowest, are as follows: alarm, supervisory, security, non-fire with piezo, non-fire without piezo, trouble. A higher priority event that becomes active while a lower priority event is already active will cause the 20-character event message to change from displaying the lower-priority event to displaying the higher-priority event.

Display Illumination

If "SYS" is selected in programming as the Starting ACS Circuit Type:

When AC power is applied, the display backlight will turn on. When the panel sends an AC FAIL message, the backlight will turn on as follows:

• Alarm events - the backlight will turn on and stay on.

• Pressing "Step Display" will turn on the backlight for 60 seconds.

Note that an AC Fail message is sent from the panel only when a "Starting ACS Circuit Type" of "SYS" is entered in initial programming.

If "ACS" is selected in programming as the Starting ACS Circuit Type:

When AC power is applied, the display backlight will turn on. Trouble events from the panel will turn off the backlight. Other events will turn on the backlight, and it will stay on until the events are cleared. Pressing "Step/Display" will turn on the backlight for 60 seconds.

4.1.3 Communications Failure Reporting

If the LCD2-80 fails to receive communications from the panel for a period of over one minute, it will activate its local sounder and display the following message: COMMUNICATIONS FAIL

4.2 Buttons

The LCD2-80 emulates from one to 32 annunciators.

ACKNOWLEDGE	⬜
SIGNAL SILENCE	⬜
RESET	⬜
DRILL	⬜
DISPLAY STEP/LAMP TEST	⬜

Acknowledge

When the Acknowledge button is pressed on the front panel, the LCD2-80 sends an acknowledge command to the control panel, and silences the local sounder. In Terminal Mode, additional key punches will step through what the host panel shows for next events.

Silence

When the Silence button is pressed on the front panel, the LCD2-80 sends a signal silence command to the control panel.

System Reset

When the System Reset button is pressed on the front panel, the LCD2-80 sends a reset command to the control panel.
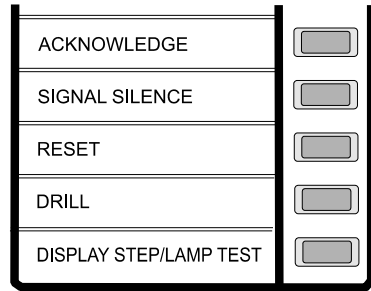
Drill

When the Drill button on the front panel is pressed and held for 2 seconds, the LCD2-80 sends a drill command to the control panel.

Display Step/Lamp Test

If the LCD display backlight has been turned off due to a trouble condition in the system, momentarily pressing this switch will illuminate the display for 60 seconds. If this switch is pressed and held in excess of 3 seconds, the LCD2-80 will go into Lamp Test mode. During Lamp Test, all LEDs will light, all segments of the display will turn on and the piezo will sound for the duration the switch is pressed. Upon release of the switch, the LCD2-80 software version number will briefly be displayed and then the LCD2-80 will return to normal operation.

When the LCD2-80 is set for ACS mode, this button may be used to step the display through multiple events. Events types are displayed in the following order; alarms, supervisories, security alarms, non-fire events, troubles, and outputs. This is a local function and does not send an acknowledge command to the control panel. If a trouble condition has turned off the backlighting, it also causes the backlit display to illuminate for about one minute, and while held, turns on all LCD segments (lamp test).

NOTE: The Acknowledge, Silence and Reset and Drill buttons will serve no function if the LCD2-80 has been set for Receive-Only operation (DIP switch SW1-1 has been set ON)

Appendix 5: EIA-485 Shield Terminations

The EIA-485 circuit must be wired using a twisted-shielded pair cable having a Characteristic Impedance of 120 ohms, +/- 20%. Do not run cable adjacent to, or in the same conduit as, 120-volt AC service, noisy electrical circuits that are powering mechanical bells or horns, audio circuits above 25 Vrms, motor control circuits, or SCR power circuits. *All enclosures, including the FACP backbox, must be connected to earth ground! Never use the shield for grounding purposes.*

Note on remote power supplies:

When the LCD2-80 is powered from a separate power supply, use a separate conductor to connect the main power supply common terminal to the remote power supply common terminal. Disable earth fault detection on the remote power supply.

When employing the LCD2-80 in Terminal Mode:

Terminate the EIA-485 shields at either the cabinet (when not in conduit) or at system common (when in conduit) as outlined below.

When the EIA-485 shield is not in conduit: At each respective LCD2-80 enclosure (except the first on the loop), terminate the shield coming in from the previous LCD2-80 at the outside of the cabinet backbox (earth ground). Let the outgoing (to next LCD2-80) shield float (no connection). Shield termination between LCD2-80s can only occur at the receiving end - the end connected to P1 Terminals 2 and 4.

When the EIA-485 shield is in conduit: At each respective LCD2-80 enclosure (except the first on the loop), terminate the shield coming in from the previous LCD2-80 at system common. Let the shield going out to next LCD2-80 shield float (no connection). Shield termination between LCD2-80s can only occur at the receiving end—the end connected to LCD2-80 P1 Terminals 2 and 4.

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