

# LCD-160

## Liquid Crystal Display



Annunciator Control Systems

### General

The LCD-160 is a 640-character Liquid Crystal Display (LCD) annunciator and remote control for the NOTIFIER NFS-3030/ NFS2-3030 Fire Alarm Control Panel (FACP). The LCD-160 will mimic the top portion (160 characters) of the NFS-3030/ NFS2-3030's 640-character display. This provides the event and preprogrammed custom messages as displayed on the main panel. The full screen contains soft key functions, and can display other panel information.

### LCD-160 Features

- 640-character Liquid Crystal Display with backlit control.
- On-board input, output, and status indicators to support diagnostics.
- Software upgrades and foreign-languages character sets via serial port from a panel or other device using the Remote Data Port (RDP) interface. Upgrades do not require the replacement of any programmable devices.
- Rubberized keypad.
- Input for AKS-1B key switch.
- Fits in two ACS annunciator module locations.
- Display and Control Center (DCC) participation/indication.

### RDP Interface

Any communication between the control panel and any RDP device, such as the LCD-160, occurs over an RDP interface.

- RDP interface communication is supervised by the FACP and the LCD-160.
- RDP bus can drive up to 32 RDP devices. The FACP must be at one end of the bus; the last RDP device on the circuit must have an enabled end-of-line resistor.
- Each LCD-160 on the bus requires a non-resettable 24 VDC power connection. The power circuit is inherently supervised and a loss of power registers as a communication failure at the control panel.
- The LCD-160 can be powered by a regulated remote power supply listed for fire-protective signaling use. If the 24 VDC power comes from a non-power-limited source, it must remain separate from the power-limited RDP bus.

### Specifications

**Input supply voltage (TB2):** Regulated, filtered 24 VDC via non-resettable power supply interface listed for fire-protective signaling use. Sources can be: panels with integrated power supplies, main power supplies (AMPS-24, etc.), auxiliary power supplies (APS2-6R, etc.); or a compatible accessories output. If RDP devices are to be powered by separate power supplies, a common reference connection must be established.

**Data communications port (TB1):** Power-limited RDP interface.



**Current draw:** **Standby current:** 0.300 A with backlight on, 0.075 A with backlight off. **Alarm current:** 0.325 A with backlight on, all LEDs active.

### RDP BUS WIRING SPECIFICATIONS

**Wiring distance:** 4000 feet (1219.2 m) at 18 AWG (0.78 mm<sup>2</sup>) between the panel and the last device on the RDP bus (subject to system's power restrictions).

**Wiring size:** 18 to 12 AWG (0.78 to 3.1 mm<sup>2</sup>) twisted-pair cable, with characteristic impedance of 120 ohms  $\pm$  20%.

**Wire resistance:** Limit total wire resistance to 100 ohms on the RDP bus, and 10 ohms on the RDP device power circuit. Unloaded resistance between RDP connectors must be greater than 1K ohm. A remote power supply is required if total power wiring resistance exceeds 10 ohms.

**NOTE: 1) 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 Vrms; motor control circuits; SCR power circuits; or non-power-limited circuits. 2) Refer to LCD-160 Manual, document no. 51850, if RDP devices are to be mounted in **SEPARATE CABINETS** or powered by **REMOTE POWER SUPPLIES**.

### PHYSICAL SPECIFICATIONS

**Temperature/humidity range:** This system meets NFPA requirements for operation at 0 – 49°C/32 – 120°F and at a relative humidity 93%  $\pm$  2% RH (noncondensing) at 32°C  $\pm$  2°C (90°F  $\pm$  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 – 27°C/60 – 80°F.

**Shipping weight:** 2.50 lb. (1.134 kg)

## LCD-160 Interface and Indicators

The liquid crystal display is 40 characters wide and 16 lines deep, and displays all programming screens and other information. The keypad is functional only when an entry is requested by the system. Enter or change fields and issue commands on the display by using the two types of keys on the keypad: fixed function and soft keys.

**Fixed function keys** are the ten keys labeled on the front of the LCD-160, operating at all times on all screens unless otherwise noted. With both an active command center and DCC enabled at the panel, Acknowledge, Signal Silence, System Reset, and Drill require permission before they can be processed.

**Acknowledge:** Press to respond to any event or trouble signal. If enabled, silences the LCD-160 piezo sounder. Sends an acknowledge message to the panel.

**Signal Silence:** Press to send a system silence command to the panel, with the particular silencing action information stored at the FACP. Verification screen appears on networked displays.

**System Reset:** Press to send a system reset command to the panel, with the particular reset action information stored at the FACP. Verification screen appears on networked displays.

**Drill:** Press (hold for two seconds) to activate all silenceable fire output circuits.

**Lamp Test:** Press to test the LED indicators and the piezo, or display firmware version numbers.

**Fire Alarm:** Scroll/display a list of associated events.

**Security:** Scroll/display a list of associated events.

**Supervisory:** Scroll/display a list of associated events.

**Trouble:** Scroll/display a list of associated events.

**Other Event:** Scroll between prealarm and disabled events.

For complete information on key functions and effects on different panels, refer to the **LCD-160 Manual** and panel manuals.

**Soft keys** are the six keys to the right and left of the display. Use them to select commands that appear on the display for each different screen. Refer to the screens in the **LCD-160 Manual** for descriptions of the applicable soft keys.

### STATUS LED INDICATORS

**Power (green)** illuminates when AC power is within normal operating limits.

**Fire Alarm (red)** illuminates when at least one fire alarm event exists. It will flash if any of these events are unacknowledged.

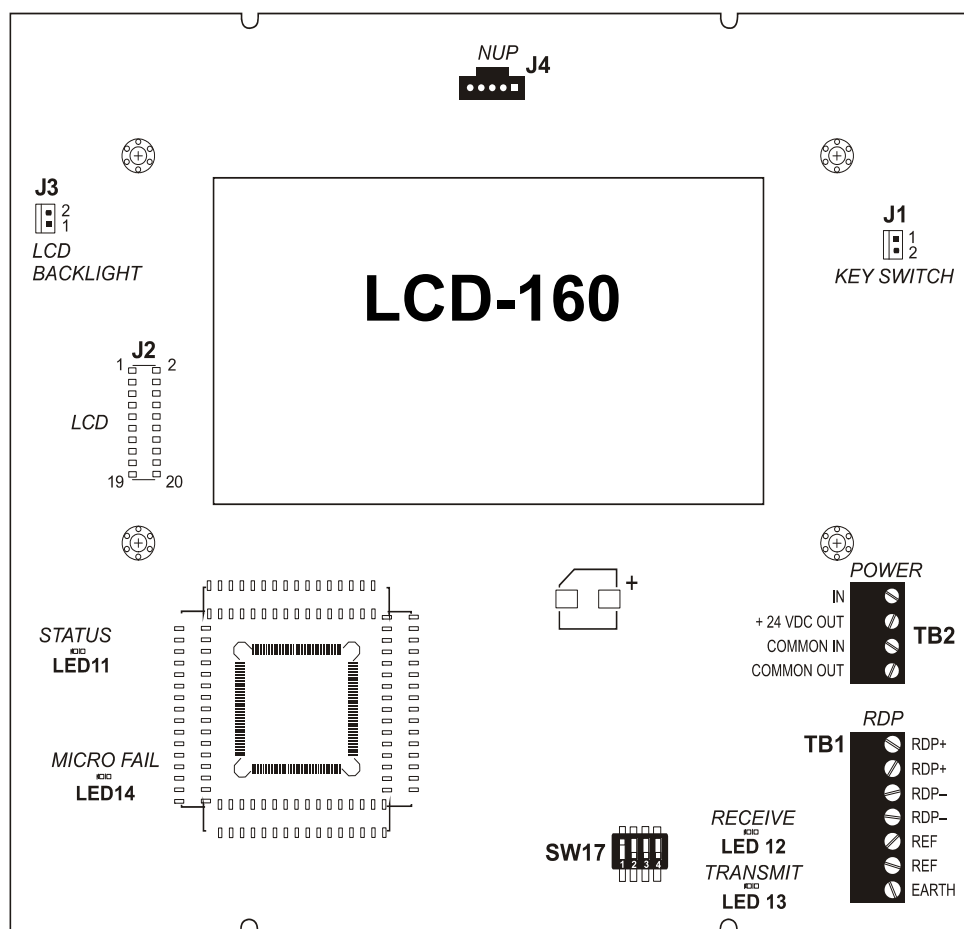
**Pre-Alarm (red)** illuminates when at least one pre-alarm event exists. It will flash if any of these events are unacknowledged.

**Security (blue)** illuminates when at least one security event exists. It will flash if any of these events are unacknowledged.

**Supervisory (yellow)** illuminates when at least one supervisory event exists. It will flash if any of these events are unacknowledged.

**System Trouble (yellow)** illuminates when at least one trouble event exists. It will flash if any of these events are unacknowledged.

**Other Event (yellow)** (future release).



**Signals Silenced (yellow)** illuminates if notification appliances have been silenced. It flashes if some, but not all, of the NACs have been silenced.

**Point Disabled (yellow)** illuminates when at least one device has been disabled. It will flash until all disabled points have been acknowledged.

**Controls Active (green)** illuminates when the LCD-160 assumes control of the node as a primary display.

#### DIAGNOSTIC LED INDICATORS

**Status**, LED11 (**green**), blinks when the LCD-160 is on. Visible to the installer/troubleshooter only.

**Receive**, LED12 (**green**), blinks when data is received from the panel. Visible to the installer/troubleshooter only.

**Transmit**, LED13 (**green**), blinks when data is transmitted to the panel. Visible to the installer/troubleshooter only.

**Microfail**, LED14 (**yellow**), illuminates if the microcontroller fails. Visible to the installer/troubleshooter only.

### Event Handling and the Display and Control Center

UL and ULC require that when multiple command and control centers are installed, only one operator at any location can be in control at any given time for functions such as acknowledge, silence, and reset. This is called the Display and Control Center (DCC). DCC operation provides a mechanism to pass net-

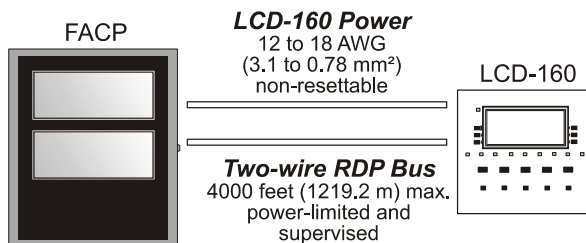
work control to alternate network control centers. This protocol allows for a “request for control” from another networked panel, which will be accepted or rejected from the current DCC. A 15-second time-out allowance provides for an automatic passing of control in the event there is no response from the original DCC. If the NFS-3030/NFS2-3030 panel associated with an LCD-160 has been programmed to participate in DCC, all remote displays with Local Control ON will automatically participate.

### Agency Listings and Approvals

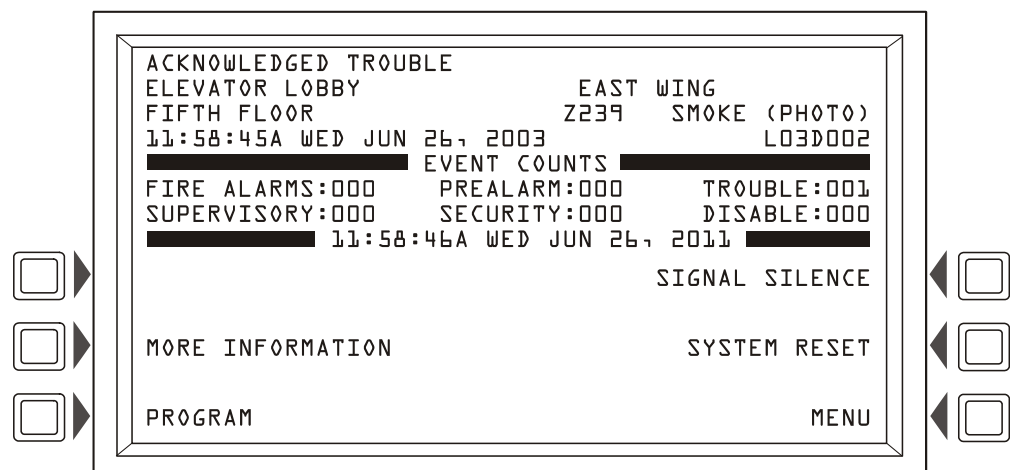
These listings and approvals apply to the LCD-160. In some cases, certain modules or applications may not be listed by certain approval agencies, or listing may be in process. Consult factory for latest listing status.

- **UL:** S635
- **ULC:** S527-11.
- **MEA:** 8-04-E (annunciator only)
- **FDNY:** COA#6211 (with NFS2-3030)
- **CSFM:** 7120-0028:0227, 7165-0028:0224
- **FM Approved**

### RDP Bus Wire Runs



### Sample Screen: Point Event Display



## Product Line Information

**LCD-160:** 640-character Liquid Crystal Display annunciator. LCD-160C for ULC applications.

### Backboxes

*"C" suffix indicates ULC-Listed model.*

The following backboxes can be surface- or semi-flush-mounted to provide an enclosure for remote mounting. Use with 1/2" (1.27 cm) conduit in the provided knockouts.

**ABS-2D(C) (black) and ABS-2DR (red):** Surface- or semi-flush enclosure for remote mounting. Mounts an LCD-160 directly to the enclosure's hinged dress plate. The ABS-2D and ABS-2DR do NOT support the installation of the AKS-1B key-switch. Not for use in Canadian applications. Optional trim ring **TR-ABS2D** for semi-flush mounting. **Dimensions, box:** 12.0" (30.480 cm) H x 12.0" (30.480 cm) W x 3.797" (9.644 cm) D (NOTE: The black ABS-2D is slightly deeper). **Dimensions, door:** 12.0" (30.480 cm) H x 12.0" (30.480 cm) W x 1.250" (3.175 cm) D.

**ABS-4D(C) (black) and ABS-4DR (red):** Surface- or semi-flush enclosure for remote mounting. Mounts an LCD-160 and two annunciators directly to the enclosure's hinged dress plate. The ABS-4D and ABS-4DR do NOT support the installation of the AKS-1B key-switch. **Dimensions, box:** 11.97" (30.40 cm) H x 19.87" (50.47 cm) W x 3.5" (8.89 cm) D. **Dimensions, door:** 11.97" (30.40 cm) H x 19.87" (50.47 cm) W x 1.250" (3.175 cm) D.

**ABF-2B:** Black flush enclosure for remote mounting. Mounts an LCD-160 directly to the enclosure's dress plate. Not for use in Canadian applications. Includes a painted black metal trim plate [11" (27.94 cm) high x 10.625" (26.99 cm) wide] and adhesive-backed annunciator label. 9.938" (25.24 cm) high x 9.188" (23.34 cm) wide x 3.75" (9.525 cm) deep.

**ABF-2DB(C):** Black flush enclosure for remote mounting. Mounts an LCD-160 directly to the enclosure's dress plate. Does not support the installation of AKS-1B. Box dimensions: 9.938" (25.24 cm) high x 9.188" (23.24 cm) wide x 3.75" (9.525 cm) deep. Door dimensions: 11" (29.94 cm) high x 10.375" (26.35 cm) wide x 0.75" (1.9 cm) deep.

**ABF-4B:** Black flush enclosure for remote mounting of one LCD-160 and two annunciator modules directly to the enclosure's dress plate. Knockouts are provided for use with 1/2" (1.27 cm) conduit. Includes a painted black metal trim plate [11" (27.94 cm) high x 19.375" (49.21 cm) wide] and an annunciator label. 9.938" (25.24 cm) high x 17.75" (45.09 cm) wide x 2.5" (6.35 cm) deep.

**ABF-1DB(C):** Semi-flush box with alternative smoked-glass door, any keylock.

**ABF-1B(C):** Annunciator flush box, 9.938" (25.24 cm) high, 4.625" (11.75 cm) wide, and 2.5" (6.35 cm) deep. Order AKS-1B key switch and APJ-1B phone jack if desired. Can also be mounted in ABF-2B or ABF-4B annunciator backboxes.

**ABS-1TB(C):** Deep surface backbox (mounts one LCD2-80).

**ABS-1B(C):** The Annunciator Surface Box-1B (black) provides for the remote mounting of one annunciator module in a surface-mount enclosure. Knockouts are provided for use with 1/2" (1.27 cm) conduit. The annunciator mounts directly to the ABS-1B/C without a dress plate. 8.5" (21.59 cm) high x 4.5"

(11.43 cm) wide x 2" (5.08 cm) deep. **NOTE:** The ABS-1B will not support the installation of the AKS-1B Annunciator Key Switch.

**CAB-4 Series cabinets:** Surface- or semi-flush-mounted, in sizes to accommodate one to four rows of equipment plus batteries (up to two 26 AH batteries). Four sizes are available. Doors are ordered separately, and feature reversible hinges to mount doors on the left or right side. Doors also open a full 180°. Keylocks are included. For dimensions and further information, see datasheet DN-6857.

### ACCESSORIES

**DP-DISP:** Dress Panel Display for cabinet mounting of an LCD-160. LCD-160 mounts directly to the dress panel, which hinge-mounts to the top tier of a CAB-4 Series backbox.

**ADP-4B:** Annunciator Dress Panel-4B (black) for cabinet mounting of an LCD-160. LCD-160 mounts directly to the dress panel, which hinge-mounts to the tier of a CAB-4 Series backbox.

**TR-ABS2D:** Optional trim ring for semi-flush mounting ABS-2D(R).

**VP-2B:** Vented Dress Panel for use with the ADP-4B dress panel installed in the top tier of a NOTIFIER cabinet. It covers the gap between the dress panel and top of the cabinet.

**AKS-1B:** Annunciator Key Switch provides access security for the control switches on the LCD-160. Key-switch kit includes key, hardware, and an annunciator label.

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For more information, contact Notifier. Phone: (203) 484-7161, FAX: (203) 484-7118.  
[www.notifier.com](http://www.notifier.com)