OPERATIONS MANUAL
n.FORM HEADEND ENCLOSURE (RACK MOUNT)
table of contents

INTRODUCTION 1

FEATURES & CAPABILITIES 2

WIRING
General I/O 8
Functions 9
Defaults 10
Diagram (rear view) 11
Flow Diagram 12
Data, Audio & Ground Connections 13
Audio Inputs 14
Fire Alarm Connections 15
FACP Integration 16
Auxiliary A&B Relay Wiring 20
Auxiliary Serial Wiring/i.LON Console Connection 22

SYSTEM MANAGER SETUP 23
FACP INTEGRATION 24
CONFIGURING THE SYSTEM 25
USING THE SYSTEM 32
TEST PROCEDURE 37
MAINTENANCE PROCEDURE 38
NOTICE 39

In the event of trouble, please contact:

Name:

Address:

Phone Number:
IMPORTANT SAFETY INSTRUCTIONS

1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.
12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14) **WARNING** To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture and do not expose to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

An apparatus with Class I construction shall be connected to a mains socket outlet with a protective earthing connection.

The mains plug or appliance coupler shall remain readily operable.

The unit must be installed with an enclosed rack.
System: G8220 n.FORM Headend Rack Unit

- Autonomous Control Unit (ACU) G8220.
- Number or ACUs: Single Interface on the G8220.

- Class B wiring: EMERGENCY REQUEST IN, FAULT STATUS IN, EMERGENCY REQUEST OUT, FAULT STATUS OUT.

- At least one UPS and batteries should be used to provide secondary power supply for emergency purposes and be installed in the same rack as the G8220.
- The G8220 should be installed in the following locations:
  1) Within a key-locked cabinet or rack with physical security level 1 or higher
  2) In a controlled access room with a minimum access control security level 1. Front-mounted controls should only be changed by Authorized Personnel.
  3) Use four 10-32 pan-head machine screws to mount the unit to the rack rails.

- The system is provided with a Communication Security Level 0, which indicates no Security Level employed.

- The following wiring connections are intended to be protected against mechanical damage.
  EMERGENCY CONTROL IN and FAULT STATUS IN between G8220 and Fire Alarm Control Panel or Notification Appliance Circuits
  EMERGENCY REQUEST OUT AND FAULT STATUS OUT between G8220 and Fire Alarm Control Panel or Notification Appliance Circuits.

- The FACP and G8220 units need to be installed adjacent to each other.
- The system is not to be used in buildings providing Suppression Service (Systems using Halon, etc). Sprinkled systems are allowed.
- Use a listed Rack with the following minimum ventilation openings:

  Fully perforated Front and Back door that has a minimum 90% of the surface area provided with perforated openings.
  Top Enclosure of the rack shall be provided with a ventilation openings that cover a minimum surface area equal to 40% of the overall top enclosure surface area.
  The side enclosures of the rack shall be provided with minimum ventilation openings located at the upper 1/3 and lower 1/3 of each of the side enclosure, each set of ventilation openings shall cover a minimum surface area equal to 8% of the overall side enclosure surface area.

- Use UL 2572 listed NAC Extenders driven by a N.O. dry contact and includes a N.O. dry contact fault output.

- The UPS should be located in the same room as the equipment it is powering. The UPS must be hardwired to the branch circuit and hardwired to the MNS Rack and any other MNS Device if powered by the UPS. The connection between the UPS and MNS Rack and any other MNS Device shall in conduit and not exceed 20 ft. (6.1 m), or equivalently protected against mechanical damage.

- For Canadian Installations the NAC Extender provide 2 hours of alarm condition. If 2 hours loading exceeds the NAC Extended Battery capacity, the unit needs to be powered by the UPS.
Lencore’s n.FORM Head-End Rack unit replaces all the bulky headend equipment that is associated with music and paging systems. With the n.FORM Head-End Rack unit there is no need for amplifiers, separate equalizers, special switching equipment or matching vendors for compatible product interfaces. The n.FORM Head-End Rack unit’s technology is so sophisticated that it can allow zone additions, modifications, deletions and other changes to the paging system on the fly, without rewiring. This eliminates the need for running multiple home runs back to the electrical closet or through building risers to create separate or additional zones.

The n.FORM Head-End Rack unit allows the ability to use up to 255 individual zones for paging using standard DTMF tones through a POTS telephone line. The system is also programmed for all-call and emergency broadcast paging. The system’s easy to use full one octave band equalizer can be adjusted to either individual zones or all zones and provides exceptional fine tuning capabilities.

The creation, modification, addition and deletion of zones or groups for paging and masking can be easily controlled through the i.LON’s® or Protocessor web browser using the included Lencore System Manager or through the on-board keypad. No proprietary software needs to be installed on the client’s side, eliminating security and migration issues. The Lencore n.Form System is an open platform system. In addition, volume and equalizer settings for paging and music can be programmed through System Manager offering tremendous adjustment and control capabilities with unprecedented flexibility.
Features and Capabilities:

The n.FORM Rack Mount Head-End includes many built-in features that used to require separately purchased components.

- **Keypad.** The keypad allows the user to make a number of adjustments to the system without using a computer.
- **LCD display.** The front panel display is used for displaying a variety of information.
- **iLON SmartServer or Protocessor.** The i.LON® SmartServer or Protocessor is used to control the networked system. The LON® SmartServer or Protocessor offers exceptional features, plus the flexibility to monitor and control the sound masking from virtually anywhere.
- **SmartSwitch.** The SmartSwitch provides total data and audio redundancy to any n.FORM™ system.
- **Text-to-Speech capability.** The unit can convert text to a spoken page. Pre-configured messages can be recorded to the unit and played back as a page.
- **Pre-Recorded message pushbuttons.** The unit includes six pushbuttons for quick triggering of emergency pre-recorded messages.
- **Paging zone pushbuttons.** The unit has six paging zone pushbuttons for quick zone selecting for emergency paging.
- **Emergency control pushbutton.** The unit includes one emergency control pushbutton to override any current page for emergency paging.
- **Hand-held CB-MIC.** The hand-held CB-MIC is can be used for emergency paging and testing
- **Integral Global MPI.** The Global MPI allows paging to multiple buildings simultaneously.
- **MIC pre-amplifiers.** The internal MIC pre-amplifiers allows microphones to be connected directly to the unit.
- **Fire panel inputs.** The unit can be connected to a fire panel for control.
- **Internal auxiliary relays.** The internal auxiliary relays can be used to control external devices.
- **Audio inputs.** The unit includes six independent audio inputs for paging and music.
SmartSwitch
Lencore’s Smart Switch detects and reports any wire failure or data interruption when paging for mass notification. Should the transmission path fail, the switch automatically reroutes the data and voice so the system’s performance continuity is not affected. The Smart Switch also has complete reporting capabilities to let the user know when and where a break has occurred for ease of troubleshooting.

i.LON SmartServer (for units without a Protocessor)
The Lencore system uses the i.LON® SmartServer to control the networked system. The i.LON® SmartServer offers exceptional features, plus the flexibility to monitor and control the system from virtually anywhere.

Through the i.LON® SmartServer you can access the System from a local network, a virtual private network, through the internet, or directly through the i.LON® SmartServer user interface. The i.LON includes Lencore’s System Manager software allowing for control of sound masking volume and contour levels, as well as independent adjustment of music and paging volume and system muting, while moving throughout the building. See Lencore’s System Manager manual for more information.

Protocessor (for units without an iLON)
The Lencore system uses the Protocessor to control the networked system. The Protocessor is the network server and is pre-loaded with Lencore’s System Manager.

Through the Protocessor you can access the System from a local network, a virtual private network, through the internet, or directly through the Protocessor user interface. The Protocessor includes Lencore's System Manager software allowing for control of sound masking volume and contour levels, as well as independent adjustment of music and paging volume and system muting, while moving throughout the building. See Lencore’s System Manager manual for more information.

Global MPI
Utilizing a client’s existing telephone system (with open ports across multiple buildings), the Global MPI allows a user to send an all-call page to every connected building at once. This allows real time communication for company or campus wide announcements.

The unmatched capabilities of the Global/Local MPI combination allows for crystal clear broadcasts and emergency communications, regardless of whether the facilities are located across the street from each other, across the country or around the world.
1. **CB-MIC**
The CB-MIC can be used for emergency All-Call live voice paging.
(supervised)

2. **Emergency Control Button**
The emergency control button overrides the Fire Panel operation. If the FACP is already in Emergency mode, then this button is locked out.

3. **Pre-sets**
The Evacuation button activates a standard temporal-3 evacuation tone. The Alert button activates a typical Alert tone. The Reset/Stop button will Reset the Emergency Control button or stop a currently playing pre-recorded message.

4. **Zone page Buttons**
The Zone Page buttons allow for a temporary override of the zone number to be used by the CB MIC.

5. **Pre-Recorded Messages Buttons**
Pressing any of the pre-recorded message buttons will play one of 66 pre-recorded messages.

6. **LED Indicators**
The LED indicators display various conditions and functions such as network activity and relay status (See "Using the System" for detailed information).

7. **Protocontroller LEDs**
Indicate Protocontroller status.

8. **Audio Level LEDs**
Indicates the audio level for the six audio feed outputs (low, good, peak).

9. **Monitor**
An internal speaker to allow the user to listen to the audio on any of the six audio output feeds.

10. **LCD Display**
The LCD displays various diagnostic messages and configuration information about the system.

11. **Keypad**
The keypad is used to make a number of adjustments to the system without using a computer.

12. **Service Port**
The service port is used to load custom pre-recorded messages (See “Head-End Configurator” manual for detailed information).
(not supervised)

13. **Reset Button**
The reset button is used to make a hardware reset for servicing purposes.
14. **Power Input**  
   Power cord connector (IEC 60320).  
   100-240VAC.  
   (not supervised)

15. **Circuit Breaker**  
   Resettable circuit breaker.

16. **iLON SmartServer (if present)**  
   The iLON is the web server used to control the system through the installed System Manager (see the System Manager guide).

17. **UPS Terminal Block**  
   Connect an external DC UPS to this terminal block (See “Wiring” for detailed information).

18. **Expansion Port**  
   For future use.

19. **iLON Connector (or Protocessor)**  
   Connect an Ethernet cable to access the iLON or Protocessor.  
   (not supervised)

20. **Protocessor Connector**  
   Connect an Ethernet cable to access the Protocessor – For units without an iLON.

21. **Emergency/Control Status Connector (inputs) – J13**  
   Inputs from the Fire Panel for FACP Active, Fault status in, FACP PTT, Mute masking, and all External System Reset. Wire the dry contacts from the fire panel to this connector.  
   (supervised)

22. **Emergency/Control Status Connector (outputs) – J14**  
   Dry contact outputs for Emergency Status out and Fault Status out. Wire these dry contact relay outputs to the fire panel.  
   (supervised by FACP)

23. **AUX RELAYS ‘A’ Connector – J9**  
   This connector contains dry contact relays for PTT Output and Strobe output.  
   (supervised by FACP)

24. **AUX RELAYS ‘B’ Connector – J11**  
   Zone triggered relays. Connect external equipment to be triggered by a zone page.  
   (supervised by FACP)

25. **AUX Serial Connector – J1**  
   Serial connector for Creston, AMX, or any third-party RS232 control system.  
   (not supervised)

26. **AUX Inputs Connector – J10**  
   Auxiliary inputs. Triggered by N.O dry contacts. Their function depends on the system mode. Either Strobe and UPS faults or Play Message inputs (See “Wiring” for detailed information).  
   (not supervised)

27. **GND Connector – J5**  
   Connect a common audio ground wire from the GND connector to the first OP.
28. **AUX MIC Key Inputs Connector – J46**
   Connect external MIC PTT keys here to trigger pre-configured paging zones (All-Call or 251-255).
   (not supervised)

29. **Local MIC Connector – J44**
   Connect an external MIC here to make Local pages.
   (not supervised)

30. **Global MIC Connector – J57**
    Connect an external global MIC here to make Global pages.
    (not supervised)

31. **iLON Console Connector (if using an iLON)**
    Connect a null modem cable to connect to the iLON to change iLON settings such as the IP address.
    (not supervised)

32. **LOC Connector**
    For future use.

33. **Local/Global Phone Connectors**
    Connect a local and/or global phone using RJ12 connectors.
    (supervised)

34. **Data/Audio In/Out Connectors**
    Connect the Data/Audio OUT cables to the first OP using RJ45s. The Data/Audio IN connectors receive the Data and Audio cables from the last OP using RJ45s.
    (supervised)

35. **RCA Audio In 1-6**
    Connect external line level audio sources using RCA cables. Note: Audio input 6 is for an All-Call page only.
    (not supervised)
Wiring

Power and Network connections:

1. Plug the unit into a standard 115 or 208 VAC power outlet. The system will be usable in approximately 10 seconds. The pre-recorded messages and zone pushbuttons will turn from red to green indicating that the system is ready. It will take approximately another 8 minutes for the included iLON to boot-up.
2. Connect an Ethernet cable to the unit’s iLON (if unit has an iLON) or Protocessor (if the unit does not have an iLON) input. The iLON or Protocessor is the network server. The iLON and Protocessor is pre-loaded with Lencore’s System Manager. System Manager allows adjustment to the masking, paging, and music characteristics.

UPS connection:

The unit includes a rear panel terminal block for the connection of an optional UPS. The UPS output would connect to the terminal block: +24VDC to pin 2 and 24V COM to pin 3. When a UPS is not used, jumpers on pins 1-2 and 3-4 must be installed. Use a UL 864 listed power supply for the UPS. The UPS must be 24VDC regulated until the power supply batteries are exhausted. Lencore's PSM7A meets these requirements. Incorporate a safety margin into the calculated amp-hour rating of 20%. Maximum battery amp hour capacity supported by the charger to be 24 hours minimum. Normal and alarm standby load is 150mA. For US installations, the minimum alarm time period is 15 minutes and for Canadian installations, the minimum alarm time period is 2 hours.
## Defaults

<table>
<thead>
<tr>
<th>Feature</th>
<th>Factory Default Setting</th>
<th>Recommended Non-2572 Setting</th>
<th>Required 2572 setting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Push To Talk (Zone Trigger)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PTT All Call</td>
<td>Not Assigned</td>
<td>CB Mic</td>
<td>CB Mic</td>
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<td>Text To Speech/Prerecorded</td>
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<td>PTT Zone 253</td>
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<tr>
<td>PTT Zone 254</td>
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<td>PTT Zone 255</td>
<td>Disabled-Not Assigned</td>
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<td>Disabled-Not Assigned</td>
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<td><strong>Audio Feed Settings</strong></td>
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<td>Audio Feed 3</td>
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<td>Audio Feed 4</td>
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<td>Text to speech</td>
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<td>Audio Feed 5</td>
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<td>Audio Feed 6</td>
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<td><strong>Trim Pot Volumes</strong></td>
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<td>All</td>
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<td>-2dB</td>
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<td><strong>Auxiliary Inputs</strong></td>
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<tr>
<td>Use as message trigger?</td>
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<td>Yes</td>
<td>No if UPS present</td>
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<tr>
<td>All Message IDs</td>
<td>STOP</td>
<td>Desired messages</td>
<td>Any ID without ***</td>
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<tr>
<td><strong>System Settings</strong></td>
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<td>System Mode</td>
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<tr>
<td>Smart Switch Enabled</td>
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<td><strong>Supervised Input Settings</strong></td>
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<td>Inputs used as message trigger</td>
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<td>All Message IDs</td>
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<tr>
<td>Input 1 Supervised?</td>
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<td>Yes if used</td>
<td>Yes if used</td>
</tr>
<tr>
<td>Input 2 Supervised?</td>
<td>No</td>
<td>Yes if used</td>
<td>Yes if used</td>
</tr>
<tr>
<td>Input 3 Supervised?</td>
<td>No</td>
<td>Yes if used</td>
<td>Yes if used</td>
</tr>
<tr>
<td>Input 4 Supervised?</td>
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<td>Yes if used</td>
<td>Yes if used</td>
</tr>
<tr>
<td>Input 5 Supervised?</td>
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<tr>
<td>Audio Supervised?</td>
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<td>No</td>
<td>Yes</td>
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<tr>
<td>Audio Feeds Supervised</td>
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<td>All non-music sources</td>
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<td><strong>Preamp Settings</strong></td>
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<td>Threshold</td>
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<tr>
<td>Gain</td>
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<td>Attack Ratio</td>
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<td>Attack Time</td>
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<td><strong>Microphone Supervision</strong></td>
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<tr>
<td>CB Mic Supervised?</td>
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<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>External Local Mic Supervised?</td>
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<td>No</td>
<td>Yes if used</td>
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<td>External Global Mic Supervised?</td>
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<td>Yes if used</td>
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<td><strong>Zone Override Buttons</strong></td>
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<td>Buttons enabled</td>
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<td>Yes as needed</td>
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<tr>
<td>Zones assigned</td>
<td>1-6</td>
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<td><strong>Prerecorded Message Buttons</strong></td>
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<tr>
<td>Buttons enabled</td>
<td>None</td>
<td>Yes as needed</td>
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<tr>
<td>All Message IDs</td>
<td>STOP</td>
<td>Desired messages</td>
<td>Any ID without ***</td>
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<tr>
<td><strong>Emergency Buttons</strong></td>
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<td>Emergency Button Enabled?</td>
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<td>Evac Button Enabled?</td>
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<td>Evac Message ID</td>
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<td>Alert Button Enabled?</td>
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<td>Alert Message ID</td>
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<td>Reset Button Enabled</td>
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<td><strong>Phone Triggers</strong></td>
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<td>Zone 201-210 Message IDs</td>
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<td><strong>OP Faults</strong></td>
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<tr>
<td>Monitoring Enabled?</td>
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</table>
Note 1: if the unit includes an iLON, use the iLON connection for the network. If the unit uses the Processor, use the Processor connection for the network.

REAR VIEW - n.FORM Rack Mounted Head End
V4 - 3/7/18
Note 1: if the unit includes an iLON, use the iLON connection for the network. If the unit uses the Protocessor, use the Protocessor connection for the network.
Data, Audio, and Ground connections:

1. Wire the Data Out and Audio Out cables to the first OP's Data In and Audio In. See the installation and operations manual for the nFORM Rack OP for further wiring of OPs.
2. Wire a ground wire from the head-end “GND” to the first OP.
3. Wire the Data Out and Audio Out from the last OP to the head-end Data In and Audio In. This will complete the Data and Audio loop for the included SmartSwitch to operate.

Local and Global Microphone and Phone Connections:

1. Wire the Local and Global MICs to the rear panel's Local and Global MIC inputs.
2. Connect the Local and Global phone lines to the rear panel Local and Phone inputs. Note that a POTS appearance line is required for both the Local and Global phone inputs. A 26 AWG line cord should be used for connection to the phone input.
Audio Inputs:

1. Connect line-level audio sources to the Audio Inputs. Up to six audio sources can be used – five are stereo inputs (Audio In 1-5) and one is mono (Audio In6). The mono input (Audio In6) is for paging only and requires a MIC Pre-Amp and one Aux MIC Key Input if the source is a microphone.

The AUX MIC KEY INPUTS are used to select the paging zone for Audio Input 6.

- Input 1: All-Call
- Input 2: Page Zone 251
- Input 3: Page Zone 252
- Input 4: Page Zone 253
- Input 5: Page Zone 254
- Input 6: Page Zone 255 (Do not use if receiving audio from FACP)
Fire Alarm Connections

n.FORM System

**USE CASE 3**
(UL2572 MODE)
- MUTE MASKING
- AUDIO TO FACP
- PTT TO FACP
- PTT FROM FACP
- EMERGENCY REQUEST IN/OUT
- FAULT STATUS IN/OUT
- RESET OVERRIDE BUTTON

**USE CASE 2**
(AUDIO REINFORCEMENT)
- AUDIO TO FACP
- PTT TO FACP

**USE CASE 1**
- MUTE MASKING

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V10 - 3/2/18

* - END OF LINE RESISTORS DEPENDANT ON FACP.
FACP Integration details

Signal definition: “In” and “Out” are as seen by the MNS system

UL2572 Control signals:

FACP Active In- This signal is asserted by the FACP when it wants to control the MNS system. If the MNS is idle, the MNS will be controlled by the FACP. If the MNS is in emergency mode, the MNS will relinquish control when it sees this signal.

Emergency Status Out- This signal is asserted by the MNS system when it wants to control the FACP system. If the FACP is idle, the FACP will be controlled by the MNS system. If the FACP is already in emergency mode, it will not relinquish control when it sees this signal.

Fault Status In- This signal is asserted by the FACP to indicate that there are faults in the FACP panel that could affect the function of the combined FACP/MNS system.

Fault Status Out- This signal is asserted by the MNS to indicate that there are faults in the MNS system that could affect the function of the combined FACP/MNS system.

Reset Override- This signal is asserted by either the FACP or a push button. It will stop the MNS system from doing whatever it is doing and also take the MNS out of emergency mode.

Audio Reinforcement Signals:

MNS Audio Out- Line level audio from MNS

MNS PTT Out- Push To Talk signal asserted by MNS when MNS Audio signal is active. FACP should ignore this PTT signal unless it is in a mode where MNS audio is desired to be sent through the FACP controlled system.

FACP Audio IN- Line level audio from FACP (transformer isolated). This audio will be actual FACP generated audio when the FACP is in control. It should be redirected MNS input Audio when not in control, in order to facilitate supervision (refer to audio loop back graphic on next page for signal flow).

FACP PTT In- Push To Talk signal asserted by FACP when FACP Audio signal is active. MNS will ignore this PTT signal unless it is in a mode where FACP audio is desired to be sent through the MNS controlled system.
**Masking Control Signals:**

Mute Masking - This signal is asserted by the FACP when it is in a mode where it wants the MNS system to mute any sound masking that could interfere with intelligibility of the FACP audio signal.

**Supervision:**

All dry contacts for the UL2572 control signals are terminated with an End of Line resistor set that matches the system receiving the signal. For signals that are going to the MNS system, a double EOL resistor design is incorporated to provide for a finer granularity on fault detection. The EOL Resistor is a combination of a 2.2k and 6.8k resistor, as shown below.

Supervision must be enabled/disabled, as desired in the Headend Configurator application as well, to prevent false triggering of the fault system.

EOL (end of line) Resistors.
Use 2.2K and 6.8K resistors as shown below at the FACP side (Lencore p/n LN10900).
Lencore p/N LN10900 has a pair of Orange Leads and a pair of White Leads. The orange leads go towards the Head end. The white leads go towards the FACP.

Use EOL resistors on the MNS side as specified by the FACP documentation.
This table shows the different states of the FACP and MNS systems.

<table>
<thead>
<tr>
<th>State</th>
<th>Assigned Priority</th>
<th>FACP Active IN</th>
<th>Emergency Status OUT</th>
<th>Emergency Button State</th>
<th>Emergency Button</th>
<th>Button Panel</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDLE</td>
<td>FACP</td>
<td>OFF</td>
<td>OFF</td>
<td>OFF</td>
<td>Solid Green</td>
<td>Active</td>
</tr>
<tr>
<td>Only FACP Goes into EVAC</td>
<td>FACP</td>
<td>ON</td>
<td>OFF</td>
<td>OFF</td>
<td>Flashing Red</td>
<td>Locked out</td>
</tr>
<tr>
<td>MNS Goes to Emergency when FACP is already Active</td>
<td>FACP</td>
<td>ON</td>
<td>No Change</td>
<td>REQUESTED but locked out</td>
<td>Flashing Red</td>
<td>Locked out</td>
</tr>
<tr>
<td>Only MNS Goes into Emergency</td>
<td>FACP</td>
<td>OFF</td>
<td>ON</td>
<td>REQUESTED</td>
<td>Flashing Green</td>
<td>Active</td>
</tr>
<tr>
<td>FACP goes into Evac when MNS is already in Emergency</td>
<td>FACP</td>
<td>OFF Initially then ON</td>
<td>ON initially then OFF</td>
<td>ON</td>
<td>Flashing red</td>
<td>Locked out</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>State</th>
<th>FACP Strobes</th>
<th>FACP Audible Notification</th>
<th>FACP Audio Source</th>
<th>MNS Audio</th>
<th>MNS Strobes</th>
<th>MNS Audio Source</th>
<th>Emergency Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>IDLE</td>
<td>OFF</td>
<td>OFF</td>
<td>FACP</td>
<td>Normal</td>
<td>OFF</td>
<td>MNS</td>
<td>IDLE</td>
</tr>
<tr>
<td>Only FACP Goes into EVAC</td>
<td>ON</td>
<td>EVAC</td>
<td>FACP</td>
<td>OFF</td>
<td>OFF</td>
<td>FACP(if Desired)</td>
<td>FACP Emergency</td>
</tr>
<tr>
<td>MNS Goes to Emergency when FACP is already Active</td>
<td>ON</td>
<td>EVAC</td>
<td>FACP</td>
<td>OFF</td>
<td>OFF</td>
<td>FACP(if Desired)</td>
<td>FACP Emergency</td>
</tr>
<tr>
<td>Only MNS Goes into Emergency</td>
<td>OFF</td>
<td>OFF</td>
<td>MNS(if desired)</td>
<td>EMERGENCY</td>
<td>ON</td>
<td>MNS</td>
<td>MNS Emergency</td>
</tr>
<tr>
<td>FACP goes into Evac when MNS is already in Emergency</td>
<td>ON</td>
<td>EVAC</td>
<td>FACP</td>
<td>OFF</td>
<td>OFF</td>
<td>FACP(if Desired)</td>
<td>FACP Emergency</td>
</tr>
</tbody>
</table>

Normal = standard non-emergency paging, etc.  
Off = No messages other than emergency driven ones.
1. Connect the fire alarm panel normally open dry contacts and +/- 24VDC to the Emergency Control/Status inputs. The supervised 24V input is on pins 9 (+) and 10 (-). If the signal is inactive, the voltage on pins 9 & 10 will be +24VDC. If the signal is active, the voltage on pins 9 & 10 will be -24VDC.
Emergency Control/Status
Supervised Inputs Function (UL2572 Usage):

1 - FACP Emergency Request In
2 - FACP Fault Status In
3 – FACP PTT IN
4 – Mute Masking
24VDC – Supervised 24V- Reset In

Relay 3 – Emergency Request Out
Relay 4 – Fault Status Out

Emergency Control/Status
Supervised Inputs Function (Non-UL2572 Usage):
1 – Play message
2 – Play message
3 – Play message
4 – mute masking
24VDC - Supervised 24V - Future Use

Relay 3 – future use
Relay 4 – fault status out

**Auxiliary Relays ‘A’ Wiring (J9):**

The auxiliary relays ‘A’ allow control of external equipment.
The relays are rated for 2A.

Connect external equipment to be controlled by the relays to the AUX Relays A. The connectors include connections for normally open and normally closed contacts.
Relay 1A & 1B are configured for PTT out. The relays will change state when the MNS is actively paging. Relay 2N & 2B are configured for MNS strobe out. They can be used to activate external strobes.
**AUX INPUTS:**
The Aux inputs can be triggered by N.O. dry contacts. Their function depends on the system mode.

Aux Inputs (non-UL2572 Usage):
1 – Play pre-recorded Message
2 – Play pre-recorded Message
3 – Play pre-recorded Message
4 – Play pre-recorded Message

Aux Inputs (UL2572 Usage):
1 – UPS AC Fail
2 – UPS Battery Fault
3 – Strobe Fault
4 – future use

**Auxiliary Relays ‘B’ Wiring:**
The auxiliary relays ‘B’ allow automatic control of external equipment such as paging strobes. The relays are rated for 2A.

1. Connect external equipment to be controlled by the relays to the AUX Relays B. The connectors include connections for normally open and normally closed contacts.

Aux Relays B:
Relay 5 – Zone 101 Page
Relay 6 – Zone 102 Page
Relay 7 – Zone 103 Page
Relay 8 – Zone 104 Page
Auxiliary Serial RS-232 Wiring:

1. Connect external equipment via RS-232 to the AUX Serial connector. This interface would be used for integration of external serial based controllers.

Aux Serial:
Pin 6 – Transmit
Pin 7 – Receive
Pin 8 – Ground

iLON Console Connection (for units with an iLON):

Using a PC, access to the iLON can be obtained via the iLON Console port. Use this port and a terminal program to verify the iLON’s IP address.

1. Connect a PC’s serial port to the iLON Console port.
**System Manager Setup**

The OPs must be configured using System Manager before using them for FACP integration. The FACP will send audio to the Lencore system using paging zone 255 on source 1. The OP will send audio to the FACP using any free channel set for audio source 6.

1. OP Channels setup properly to receive FACP audio as per instructions in this document.
2. All ops that want to broadcast FACP content should be programmed for Paging Zone 255, on source 1.
3. All channels have “audio” set to something other than source 6.
4. The OP channel that is used for the FACP audio in, via n.Form Audio interface, has its Audio set to source 6 and must be assigned to any Paging zone that needs to go to FACP.
**FACP Integration Checklist**

Headend Configurator App Settings:
1. External PTT Key input 6-Zone **Not assigned** and not connected to anything external of the Headend.
2. Audio feed 1 set to RCA1 and connected to audio out on FACP.
3. **System Mode** set to UL2572.
4. If using an external UPS for the Headend, **Aux Input Enable** must be in the **Disabled** position.
5. Input supervision set to **YES** for all connected FACP control signals.
6. Audio Supervision set to **YES** and any audio feed used for paging audio set to **YES** for supervision. Music type audio feeds should be set to **NO**.
7. SmartSwitch should be **Enabled**.
8. Special Button A and B should have an appropriate message assigned to them and be **Enabled**.

System Manager Settings:
1. OP Channels setup properly to receive FACP audio as per instructions in this document.
2. All ops that want to broadcast FACP content should be programmed for Paging Zone 255, on source 1.
3. All channels have “audio” set to something other than source 6.
4. The OP channel that is used for the FACP audio in, via n.Form Audio interface, has its Audio set to source 6 and must be assigned to any Paging zone that needs to go to FACP.

Email Setup via Auxiliary Equipment Configuration web pages:
1. SmartSwitch email setup for both Normal and Broken Cable events.
2. Diagnostics enabled for OP speaker faults, OP Amp faults and OP Temperature Faults.
3. Diagnostic emails configured for OP speaker faults, OP Amp faults, OP Temperature Faults and Headend Faults.
4. Device Ping Enabled and Synced to current set op installed OPs.
5. Device Ping email setup.

Note: The system must be on the network to receive fault emails as well as time synchronization.
Configuring the System

The system must be configured before any paging or music functions are used. The keypad can be used to configure and adjust the system for many functions. System Manager must be used to create any zones or to make more detailed adjustments such as masking, paging, and music equalizer settings. See below for keypad usage and the System Manager manual for using System Manager.

In order to configure most of the settings on the Headend, you will need to download and install the “Headend Configurator”.

Register for the download here:
http://lencore.com/Products/Headend-Rack-Configurator-Registration

Front Panel Keypad:

The keypad allows the user to make a number of adjustments to the system without using a computer, although, a computer and System Manager are still required for full control of all functions. The keys are pressure sensitive. A selection can be made by continually pressing and releasing the key or holding the key down.

The display shows OP operational data:
The upper left part of the display displays the Mode. The upper right displays the current Function, within that mode. The lower left displays the Channel or Zone # that is related to the function. The lower right displays the value associated with that channel or zone.
The \( \text{MODE} \) button selects the operation.

The \( \text{FUNCTION} \) button selects the function to be changed within each mode.

The \( \uparrow \) and \( \downarrow \) increment and decrement the settings.

The \( \text{ENTER} \) key is used to execute select operations.

Note: The keypad’s \( \text{CHANNEL} \), \( \text{ZONE} \), \( \text{MUTE} \), and \( \leftarrow \) and \( \rightarrow \) have no function at this time.

To use the keypad, first choose the \( \text{MODE} \) of operation. After the mode has been selected, use the \( \text{FUNCTION} \) button to select the function. Finally, use the \( \uparrow \) and \( \downarrow \) to change the value for the function.

### Modes and Functions:

<table>
<thead>
<tr>
<th>Mode</th>
<th>Function</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Diagnostics</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Faults</td>
<td>View only</td>
</tr>
<tr>
<td></td>
<td>Voltages</td>
<td>View only</td>
</tr>
<tr>
<td></td>
<td>Temperature</td>
<td>View only</td>
</tr>
<tr>
<td></td>
<td>Audio Monitor</td>
<td>Select</td>
</tr>
<tr>
<td></td>
<td>Music Loop</td>
<td>Toggle</td>
</tr>
<tr>
<td></td>
<td>Manual All-Call</td>
<td>Select</td>
</tr>
</tbody>
</table>

|                               |                 |              |
| Front CB-MIC Settings        | AGC Threshold   | Select       |
| External Local MIC Settings  | AGC Gain        | Select       |
| External Global MIC Settings | AGC Attack Ratio| Select       |
|                             | AGC Attack Time | Select       |

|                               | External RCA    | View Only    |
| Audio Feed 1                 | TTS/Pre-Record  | View Only    |
| Audio Feed 2                 | Front CB-MIC    | View Only    |
| Audio Feed 3                 | External Local MIC | View Only |
| Audio Feed 4                 | Talk Back       | View Only    |
| Audio Feed 5                 | Volume          | View Only    |
| Audio Feed 6                 | External        | View Only    |

| Press-to-Talk 1              | External        | View Only    |
| Press-to-Talk 2              | TTS/Pre-Record  | View Only    |
| Press-to-Talk 3              | Front CB-MIC    | View Only    |
| Press-to-Talk 4              | External Local MIC | View Only |
| Press-to-Talk 5              |                |              |
| Press-to-Talk 6              |                |              |

Note: The Password must be entered before making any changes. The password is a series of keys. The default password is: Mode - Function - Channel - Zone.

### Operation Examples:

**Diagnostics:**

**Faults:**

Use the \( \uparrow \) and \( \downarrow \) to scroll through faults until "End of List" is displayed (see chart for fault codes).

The \( \text{MUTE} \) button will mute the fault alert tone for 24 hours. The \( \text{CLEAR} \) button will clear a selected fault.

Press the \( \text{MODE} \) until “Diagnostics” is displayed.
### Fault Codes

#### Keypad Neuron Related

<table>
<thead>
<tr>
<th>CPU</th>
<th>Detail</th>
<th>Heartbeat?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-1</td>
<td>Failure during variable initialization</td>
<td>No</td>
</tr>
<tr>
<td>1-2</td>
<td>Conflicting Multiplexer settings</td>
<td>No</td>
</tr>
<tr>
<td>1-3</td>
<td>I2C Failure writing to Aux relays, Keypad Neuron</td>
<td>No</td>
</tr>
<tr>
<td>1-4</td>
<td>I2C Failure writing to LCD Control</td>
<td>No</td>
</tr>
<tr>
<td>1-5</td>
<td>I2C Failure writing to Potentiometers</td>
<td>No</td>
</tr>
<tr>
<td>1-6</td>
<td>I2C Failure writing to Multiplexers</td>
<td>No</td>
</tr>
<tr>
<td>1-7</td>
<td>I2C Failure writing to I2C multiplexer switch</td>
<td>No</td>
</tr>
<tr>
<td>1-8</td>
<td>I2C Failure reading Voltage a2D</td>
<td>No</td>
</tr>
<tr>
<td>1-9</td>
<td>I2C Failure writing to Aux LEDs, Keypad Neuron</td>
<td>No</td>
</tr>
<tr>
<td>1-10</td>
<td>I2C Failure writing to LCD Data bus</td>
<td>No</td>
</tr>
<tr>
<td>1-11</td>
<td>I2C Failure writing to Audio FX Chip</td>
<td>No</td>
</tr>
<tr>
<td>1-12</td>
<td>I2C Failure reading Audio signal strength</td>
<td>No</td>
</tr>
<tr>
<td>1-13</td>
<td>Power supply Voltage Failure</td>
<td>Yes</td>
</tr>
</tbody>
</table>

#### MPI Neuron Related

<table>
<thead>
<tr>
<th>CPU</th>
<th>Detail</th>
<th>Heartbeat?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-1</td>
<td>Failure during variable initialization</td>
<td>No</td>
</tr>
<tr>
<td>2-2</td>
<td>I2C Failure writing to zone relays, MPI Neuron</td>
<td>No</td>
</tr>
<tr>
<td>2-3</td>
<td>I2C Failure writing to zone relay LEDs, MPI Neuron</td>
<td>No</td>
</tr>
<tr>
<td>2-4</td>
<td>I2C Failure reading Unsupervised inputs</td>
<td>No</td>
</tr>
<tr>
<td>2-5</td>
<td>I2C Failure reading supervised inputs</td>
<td>No</td>
</tr>
<tr>
<td>2-6</td>
<td>I2C Failure accessing UART Chip</td>
<td>No</td>
</tr>
<tr>
<td>2-7</td>
<td>No communication to DSP</td>
<td>No</td>
</tr>
<tr>
<td>2-8</td>
<td>No communication to Text to Speech</td>
<td></td>
</tr>
</tbody>
</table>

#### Master Smartswitch Neuron Related

<table>
<thead>
<tr>
<th>CPU</th>
<th>Detail</th>
<th>Heartbeat?</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-1</td>
<td>Failure during variable initialization</td>
<td>No</td>
</tr>
<tr>
<td>3-2</td>
<td>I2C Failure accessing front panel buttons</td>
<td>No</td>
</tr>
<tr>
<td>3-3</td>
<td>I2C Failure accessing front panel emergency button</td>
<td>No</td>
</tr>
<tr>
<td>3-4</td>
<td>I2C Failure writing LED Drivers</td>
<td>No</td>
</tr>
<tr>
<td>3-5</td>
<td>Comm Failure smart switch. Either bad slave or bad cable.</td>
<td>Yes</td>
</tr>
<tr>
<td>3-6</td>
<td>High Bus traffic</td>
<td>Yes</td>
</tr>
</tbody>
</table>
## Fault Codes

### Keypad Neuron Related

<table>
<thead>
<tr>
<th>GEN</th>
<th>Detail</th>
<th>Heartbeat?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-0</td>
<td>Failure on one or more OP Speaker channels</td>
<td>Yes</td>
</tr>
<tr>
<td>1-1</td>
<td>Failure on one or more OP Amplifiers</td>
<td>Yes</td>
</tr>
<tr>
<td>1-2</td>
<td>Failure on one or more OP temperatures</td>
<td>Yes</td>
</tr>
<tr>
<td>1-3</td>
<td>CB Mic Failure</td>
<td>Yes</td>
</tr>
<tr>
<td>1-4</td>
<td>External Local Mic Failure</td>
<td>Yes</td>
</tr>
<tr>
<td>1-5</td>
<td>External Global Mic Failure</td>
<td>Yes</td>
</tr>
<tr>
<td>1-6</td>
<td>MPI Neuron Comm failure - Or Data cable Short</td>
<td>Yes</td>
</tr>
<tr>
<td>1-7</td>
<td>Master Neuron Comm Failure - Or Data cable Short</td>
<td>Yes</td>
</tr>
<tr>
<td>1-8</td>
<td>Ping failure to one or more Ops</td>
<td></td>
</tr>
<tr>
<td>1-9-OP</td>
<td>OP UPS AC Fail 1</td>
<td>Yes</td>
</tr>
<tr>
<td>1-10-OP</td>
<td>OP UPS Batt Fail 1</td>
<td>Yes</td>
</tr>
<tr>
<td>1-11-OP</td>
<td>OP UPS AC Fail 2</td>
<td>Yes</td>
</tr>
<tr>
<td>1-12-OP</td>
<td>OP UPS Batt Fail 2</td>
<td>Yes</td>
</tr>
<tr>
<td>1-13-OP</td>
<td>OP Short across input on digital input 1</td>
<td>Yes</td>
</tr>
<tr>
<td>1-14-OP</td>
<td>OP Short from A to ground on digital input 1</td>
<td>Yes</td>
</tr>
<tr>
<td>1-15-OP</td>
<td>OP Short from B to ground on digital input 1</td>
<td>Yes</td>
</tr>
<tr>
<td>1-16-OP</td>
<td>OP Open circuit on digital input 1</td>
<td>Yes</td>
</tr>
<tr>
<td>1-17-OP</td>
<td>OP Unknown fault on digital input 1</td>
<td>Yes</td>
</tr>
<tr>
<td>1-18-OP</td>
<td>FACP Audio In/Out Fault - Loop back from FACP via source 6</td>
<td></td>
</tr>
</tbody>
</table>

**Note**: OP is the last OP that sent in this fault.

### MPI Neuron Related

<table>
<thead>
<tr>
<th>GEN</th>
<th>Detail</th>
<th>Heartbeat?</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-0</td>
<td>Short across input on digital input 1- FACP Active</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-1</td>
<td>Short from A to ground on digital input 1- FACP Active</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-2</td>
<td>Short from B to ground on digital input 1- FACP Active</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-3</td>
<td>Open circuit on digital input 1- FACP Active</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-4</td>
<td>Unknown fault on digital input 1- FACP Active</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-5</td>
<td>Short across input on digital input 2- FACP Fault Status In</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-6</td>
<td>Short from A to ground on digital input 2- FACP Fault Status In</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-7</td>
<td>Short from B to ground on digital input 2- FACP Fault Status In</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-8</td>
<td>Open circuit on digital input 2- FACP Fault Status In</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-9</td>
<td>Unknown fault on digital input 2- FACP Fault Status In</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-10</td>
<td>Short across input on digital input 3- FACP Reset Override</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-11</td>
<td>Short from A to ground on digital input 3- FACP Reset Override</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-12</td>
<td>Short from B to ground on digital input 3- FACP Reset Override</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-13</td>
<td>Open circuit on digital input 3- FACP Reset Override</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-14</td>
<td>Unknown fault on digital input 3- FACP Reset Override</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-15</td>
<td>Short across input on digital input 4- FACP Mute Masking</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-16</td>
<td>Short from A to ground on digital input 4- FACP Mute Masking</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-17</td>
<td>Short from B to ground on digital input 4- FACP Mute Masking</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-18</td>
<td>Open circuit on digital input 4- FACP Mute Masking</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-19</td>
<td>Unknown fault on digital input 4- FACP Mute Masking</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-20</td>
<td>Unknown fault on 24V toggle input- FACP PTT In</td>
<td>Yes-500ms</td>
</tr>
<tr>
<td>2-21</td>
<td>UPS AC Fail</td>
<td>Yes</td>
</tr>
<tr>
<td>2-22</td>
<td>UPS Batt Fail</td>
<td>Yes</td>
</tr>
<tr>
<td>2-23</td>
<td>Strobe Fail</td>
<td>Yes</td>
</tr>
<tr>
<td>2-24</td>
<td>FACP Fault (Does not generate RELAY OUT)</td>
<td>Yes</td>
</tr>
<tr>
<td>2-25</td>
<td>Audio path Test no response</td>
<td></td>
</tr>
<tr>
<td>2-26</td>
<td>Audio Feed 1 Fail</td>
<td></td>
</tr>
<tr>
<td>2-27</td>
<td>Audio Feed 2 Fail</td>
<td></td>
</tr>
<tr>
<td>2-28</td>
<td>Audio Feed 3 Fail</td>
<td></td>
</tr>
<tr>
<td>2-29</td>
<td>Audio Feed 4 Fail</td>
<td></td>
</tr>
<tr>
<td>2-30</td>
<td>Audio Feed 5 Fail</td>
<td></td>
</tr>
<tr>
<td>2-31</td>
<td>Audio Feed 6 Fail</td>
<td></td>
</tr>
<tr>
<td>2-32</td>
<td>Audio Test Unsupported</td>
<td></td>
</tr>
<tr>
<td>2-33</td>
<td>Audio Test Fail Other</td>
<td></td>
</tr>
</tbody>
</table>
**Votages:**

This will display the various voltage levels within the unit.

Press the \text{FUNCTION} until “Votages” is displayed.

Use the \text{ and } to scroll through the various internal voltage levels.

**Internal temperature:**

This will display the internal temperature of the unit.

Press the \text{FUNCTION} until “Temperature” is displayed.

**Audio Monitor (Internal speaker):**

This will allow the audio to be heard through the internal speaker. This will be helpful when troubleshooting any audio issues.

Press the \text{FUNCTION} until “Audio” is displayed.

Use the \text{ and } to scroll through the audio sources.

**Music Loop:**

This will play the pre-recorded music loop over the paging lines. Press \text{FUNCTION} until “Music the Loop” is displayed. Use \text{ENTER} to turn the music loop on and off.

**Manual All-Call:**

This will engage an all-call page from Audio Input 6. Use the \text{ and } to select “on” or “off.”

Note: Audio source 6 must be configured as the paging source.

**Front CB-MIC Settings, External Local MIC Settings, External Global MIC Settings:**

Press the \text{MODE} until the desired mode is displayed.

**AGC Threshold:**

This will display the various AGC Threshold levels within the unit. Press the \text{FUNCTION} until “AGC Threshold” is displayed. Use the \text{ and } to scroll through the various internal AGC Threshold levels.

**AGC Gain:**

This will display the various AGC Gain levels within the unit.

Press the \text{FUNCTION} until “AGC Threshold” is displayed.

Use the \text{ and } to scroll through the various internal AGC Gains.
AGC Attack Ratio:

This will display the various AGC Attack Ratios within the unit.

Press the $FUNCTION$ until “AGC Attack Ratio” is displayed.

Use the $\uparrow \downarrow$ to scroll through the various internal AGC Attack Ratios.

AGC Attack Time:

This will display the various AGC Attack Times within the unit.

Press the $FUNCTION$ until “AGC Attack Time” is displayed.

Use the $\uparrow \downarrow$ to scroll through the various internal AGC Attack Times.

Audio Feed Settings:

Audio Feed 1, Audio Feed 2, Audio Feed 3, Audio Feed 4, Audio Feed 5, Audio Feed 6:

Press the $MODE$ the desired audio feed is displayed.

External RCA:

This will select an external RCA input as the audio source. Press the $FUNCTION$ until the desired source is displayed. The assignment status will be shown.

Text to Speech/PreRecord:

This will select the Text to Speech/PreRecord. Press the $FUNCTION$ until “Text to Speech/PreRecord” is displayed. The assignment status will be shown.

Front CB-MIC:

This will select the Front CB-MIC.

Press the $FUNCTION$, “Front CB-MIC” is displayed. The assignment status will be shown.

External Local MIC:

This will select the External Local Mic. Press the $FUNCTION$ until “External Local Mic” is displayed. The assignment status will be shown.
Talk Back:
This will select the Talk Back.
Press the \[\text{Function}\] until “Talk Back” is displayed. The assignment status will be shown.

Volume:
This will select the volume for the audio source.
Press the \[\text{Function}\] until “Volume” is displayed. The assignment status will be shown.

**Push to Talk (PTT) Settings:**
*Push to Talk 1,*
*Push to Talk 2,*
*Push to Talk 3,*
*Push to Talk 4,*
*Push to Talk 5,*
*Push to Talk 6:*

Press the \[\text{Mode}\] until the desired push to talk mode is displayed.
The push-to-talk selects the desired paging zone for each function:

*Push to Talk 1: All-Call*
*Push to Talk 2: Page Zone 251*
*Push to Talk 3: Page Zone 252*
*Push to Talk 4: Page Zone 253*
*Push to Talk 5: Page Zone 254*
*Push to Talk 6: Page Zone 255*

**External:**
This will select the External push to talk trigger. Press the \[\text{Function}\] until “External” is displayed. The assignment status will be shown.

**Text to Speech/PreRecord:**
This will select the Text to Speech/PreRecord. Press the \[\text{Function}\] until “Text to Speech/PreRecord” is displayed. The assignment status will be shown.

**Front CB-MIC:**
This will select the Front CB-MIC. Press the \[\text{Function}\] until “Front CB-MIC” is displayed.
The assignment status will be shown.

**External Local MIC:**
This will select the External Local MIC. Press the \[\text{Function}\] until “Front CB-MIC” is displayed. The assignment status will be shown.
Using the System

Paging

CB-MIC Page

Remove the CB-MIC from its bracket and press the key switch to begin paging. The page is an all-call by default. Alternatively, one of the pre-configured zone-override buttons on the front panel can be pressed. This will temporarily override the all-call page. The button will flash yellow while active. The CB-MIC will page to the zone associated with the button that was pressed. The page zone can be changed by pressing another zone override button. The Reset/Stop button can be pressed to cancel the zone page and reinstate an all-call. When the CB-MIC key is released, the page zone automatically switches back to an all-call. The zone override buttons only override the page zone of the CB mic which is by default AllCall.

CB-MIC Emergency Page

In 'Normal' mode, the system cannot make an emergency page. The "Emergency Control" button will be solid red.
If the system is in an FACP activated emergency, a CB-MIC emergency page cannot be made. The "Emergency Control" button will be flashing red.
A CB-MIC emergency page can only be made with the system in UL2572 mode. When the unit is in UL2572 mode, the "Emergency Control" button will be green.
To make an emergency CB-MIC page, pressing the Emergency Control button on the front panel (shown below) will make a priority all-call emergency page. The Emergency Control button will flash green. The emergency page will mute all other existing pages and music.

Local and Global MIC Paging

To make a Local or Global microphone page, simply press the key switch on the microphone and begin the page. The page will be heard in the page zones created for the microphones. Note that the Global MIC has priority over the Local MIC. A Global MIC page will mute a Local MIC page and music that are part of the same zone.
Pre-Recorded Messages

Pre-recorded messages are messages that were recorded and stored in the unit. To play a pre-recorded message, press one of the pre-recorded message buttons on the front panel (see below). The "Evacuate" button defaults to a temporal 3-tone alarm. The "Evacuate" and "Alert" alarms can be changed in the Configuration Utility.

Pressing one button will play a pre-recorded message. The button will flash yellow while the message is playing. To cancel a pre-recorded message at any time, press the Stop/Reset button once. Note: If the system is in an emergency state, pressing the "Stop/Reset" button a second time releases the system from the emergency state. (Stop/Reset button means the square button under the Alert, shown above)

Service Port

The service port is used to load messages from a PC. See the Headend Configurator User Manual for detailed information.

System Reset

Hardware Reset - pressing the Reset button will cause the unit to re-boot for servicing purposes only.
Front Panel Indicators

Neuron activity

The Neuron is a specialized internal microprocessor. The LEDs labeled N1 (MPI Neuron) and N2 (Keypad Neuron) indicate Neuron activity. These LEDs will be flickering under normal operation.

```
N1      N2
TX      TX
   ○   ○
RX      RX
   ○   ○
```

Smart SW

The Smart SW LEDs are associated with the built-in SmartSwitch. The SmartSwitch will allow communication with the external OPs if a data cable should break. The M and S LEDs should be flickering to indicate that the SmartSwitch is operational. The HLTH LED indicates that the SmartSwitch is testing itself. This LED will turn green every 20-30 seconds under normal operation. A red RLY LED indicates that the SmartSwitch has detected an open Data cable and is re-routing the data path so communication with the OPs can continue.

```
SMART SW
M    S
TX   TX   RLY
   ○   ○   ○
RX   RX   HLTH
   ○   ○   ○
```

Audio Level

The Audio Level LEDs indicate the audio level input for the six RCA audio inputs. Low (yellow) indicates an audio signal that is too low, Good (green) indicates a good audio level, and Peak (red) indicates a signal that is too high and clipping will occur.

```
AUDIO LEVEL
1       2       3       4       5       6
PEAK    GOOD    LOW
   ○       ○       ○       ○       ○       ○
```
**Aux Relays**

The Aux Relays LEDs indicate the status of the eight aux relays. R1 through R4 are the rear panel Aux Relays A, R5 through R8 are the rear panel Aux Relays B. A red LED indicates that the relay is activated.

<table>
<thead>
<tr>
<th>LED Label</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>R1</td>
<td>PTT Out to FACP</td>
</tr>
<tr>
<td>R2</td>
<td>MNS Strobe Out</td>
</tr>
<tr>
<td>R3</td>
<td>Emergency Status Out to FACP</td>
</tr>
<tr>
<td>R4</td>
<td>Fault Status Out to FACP</td>
</tr>
<tr>
<td>R5</td>
<td>Zone 101 Page</td>
</tr>
<tr>
<td>R6</td>
<td>Zone 102 Page</td>
</tr>
<tr>
<td>R7</td>
<td>Zone 103 page</td>
</tr>
<tr>
<td>R8</td>
<td>Not Used</td>
</tr>
</tbody>
</table>

**FLT**

The FLT LEDs are indicators for system faults. The CPU LED indicates that the internal CPU (microprocessor) is in a fault condition. The GEN LED indicates a general fault condition. When either of these LEDs is on, a system fault has occurred.

**PWR/STS**

A green PWR (Power) LED indicates that the internal power supplies are operating.
**Protocessor**
The Protocessor LEDs indicate the state of the Protocessor.
The ERR LED will go on solid 15 seconds after power up. It will turn off after 5 seconds. A steady red light will indicate there is a system error on the unit. The RUN LED will start flashing 20 seconds after power indicating normal operation. The SPL LED will be off for normal operation.

![Protocessor LED Diagram](image)

**LOC**
The LOC LEDs are for future use.
Testing Procedure

Equipment should only be tested by qualified trained personnel. These instructions are meant as a guide to what testing should take place; it is not an instruction on how to complete the testing. Refer to the Operations, System Manager, and Configurator manuals for detailed information.

Testing should be performed monthly or more frequently if necessary.

1. Test all connected microphones including the CB-MIC for proper paging, clarity, and volume.
2. Test all connected paging phone lines for proper function and clarity and volume of the page.
3. Test all pre-recorded messages. All messages must be clear and at the proper volume.
4. Test all zone overrides for proper function.
5. Test the emergency page operation for clarity and proper volume.
6. Test any output relays that are being used.
7. Using System Manager, assure all OPs are on-line, speaker counts are correct, and there are no amplifier or temperature faults.
8. Assure that audio sent to the FACP is clear and at the proper volume.
9. Assure that audio sent from the FACP is clear and at the proper volume.
10. Test the internal SmartSwitch for proper operation.
11. Verify that MNS override controls of FACP work properly.
12. Verify that FACP override controls of MNS work properly.
13. Verify that Page priorities are working as expected.
14. Verify Faults in MNS trigger a fault in FACP, and vice versa, by tripping faults on each side.
15. Confirm that faults are logged on both sides and notifications area properly sent.
**Maintenance Procedure**

Equipment should only be inspected and maintained by qualified trained personnel. These instructions are meant as a guide to what actions should take place; it is not an instruction on how to complete the activities.

Maintenance should be performed monthly or more frequently if necessary.

1. Inspect and clean if necessary all air vent openings.
2. Inspect and replace if necessary the AC power cord for exposed wires, torn or worn insulation, or a broken cord retaining clamp.
3. Ensure that the circuit breaker on the rear panel did not trip. If the circuit breaker tripped, call Lencore customer service.
4. Ensure that all cables and wires are properly seated in their respective connectors.
This product incorporates field-programmable software. In order for the product to comply with the requirements in the Standard for Control and Communication Units for Mass Notification Systems, UL2572, certain programming features or options must be limited to specific values or not used at all as indicated below.

<table>
<thead>
<tr>
<th>Program feature or option</th>
<th>Permitted in UL2572? (Y/N)</th>
<th>Possible settings</th>
<th>Settings permitted in UL2572</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Revision Level</td>
<td>Revision Date</td>
<td>Description of Revision</td>
<td>Revision Author</td>
</tr>
<tr>
<td>----------------</td>
<td>---------------</td>
<td>------------------------------------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>A</td>
<td>6/10/18</td>
<td>Initial Release</td>
<td>M. Cook</td>
</tr>
<tr>
<td>B</td>
<td>8/30/18</td>
<td>Added various notes per ETL</td>
<td>M. Cook</td>
</tr>
<tr>
<td>M</td>
<td>9/10/18</td>
<td>Added various text for UL864</td>
<td>M. Cook</td>
</tr>
<tr>
<td>N</td>
<td>11/4/19</td>
<td></td>
<td>M. Cook</td>
</tr>
</tbody>
</table>