GO HYBRID

AES 7177 Hybrid RF Subscriber

Installation, Operation and Programming Manual







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1. Safety Considerations

Warning! Hybrid antenna or other cables that come in contact with electrical power lines may result in **DEATH** or **SERIOUS INJURY**.

Warning! Do NOT install the Hybrid unit or antenna during a lightning storm.

- Equipment must be installed in accordance with National Electric Code, NFPA 70, NFPA 72, local building codes, and any specific requirements of the Authority Having Jurisdiction (AHJ). Equipment in Canada must be installed in accordance with CAN/ULC-S524, all other applicable sections of the Canadian Electrical Code, and any specific requirements of the AHJ (Authority Having Jurisdiction).
- Ground the antenna, the 7177 Hybrid enclosure, and any surge protector devices to help dissipate surges away from equipment and personnel. Antenna grounding and surge protectors should not be neglected; they are for your safety and the safety of your equipment.
- Periodically test the system for proper operation. AES assumes no responsibility for the equipment's failure to operate. AES's sole responsibility is to repair or replace any AES device found to be defective during the warranty period.
- Exposing the Hybrid electronics to water or moisture environments, such as rain, shower, bath, pool, sauna, etc., can cause damage and unexpected operation.
- Avoid dropping or exposing the unit to physical impact that could damage the enclosure or internal components.
- Equipment used with the IP path must be installed according to NFPA 72 and must be listed to either UL 60950-1 Information Technology Equipment (ITE) Safety, or to UL Fire.
- ITE equipment requires backup/secondary power such as a building generator backup, UPS, or other power supply with battery backup.

2. Technical Specifications

Power Supply			
Source	Requirements		
External Class 2 AC Transformer and Rechargeable Backup Battery in 7177	Transformer Voltage/Frequency: 120 V AC 60 Hz Input Current: 1.4 A max. current (40 VA min.) [Transmitting, Charging, Normal] Input Voltage: 16.5 V AC 12 V DC – Lead Acid Gel Cell – size is configuration dependent. See <u>Table</u> <u>1</u> – <u>Battery Size Requirements</u> for details.		
24 V DC from External Regulated, Limited Power Output, Power Supply 12 V DC Rechargeable Backup Battery in 7177	UL Listed for Fire, 24 V DC Regulated Power Supply with 12 V DC Rechargeable Backup Battery in Hybrid Input Voltage: 24 V DC Input Current: 1.4 A Maximum		
24 V DC Regulated Power Supply from FACP AUX Power (Limited Power Output) Rechargeable Backup Battery in FACP	UL Listed FACP with Rechargeable Backup Battery Input Voltage: 24 V DC Input Current: 1.4 A Maximum		

Note: All circuits are power limited except for battery leads.

Current Consumption

7177 - Standby w/o backup battery: 200 mA (1.4 A Transmitting)

7177 – Standby w/ charged backup battery: 200 mA (1.4 A Transmitting)

7177 - Standby + charging backup battery: 900 mA (1.4 A Transmitting - Maximum)

Maximum battery charging current: 700 mA

Environmental Specifications

Operating Temperature:	32°F to 120°F (0°C to 49°C)
Storage Temperature:	$14^{\circ}F$ to $140^{\circ}F$ (-10°C to $60^{\circ}C$)
Relative Humidity:	0 to 93% RHC, non-condensing

Mechanical Specifications

Dimensions: 13 in. H \times 8 ½ in. W \times 4 ½ in. D (33 cm \times 21.5 cm \times 11.4 cm)

Weight: 5.8 pounds (2.6 kilograms) without battery 13 pounds (5.9 kilograms) with 10 Ah battery

Enclosure Material: Steel with paint finish Finish Color: Red

Inputs

Alarm Signal Inputs:

7177 + 7711 Input Card (eight (8) each EOL type)

7177 + 7712 Input Card 7 (four (4) each EOL type and four (4) each reverse polarity)

Internal mount Tamper Switch

All inputs supervised with trouble and restore

Alarm Panel Phone Line Input: 7794A IntelliPro Fire Module

Reporting

AC Failure (low primary AC voltage limit: 96 V AC) Low Battery (low battery voltage limit: 11.6 V DC) Zone Input Ground Fault (impedance to earth ground is less than 50k ohm) Antenna Cut Battery Charger Failure

Note: Ethernet (J10 ENET) works at 0 ohm ground fault.

Transceiver

Output Power: 2 Watts Frequency Range: 450–470 MHz standard (Contact AES for other UHF and VHF frequencies.)

Signaling Type/Class

1-Way RF Type 6 RF pathway: Class A

Conduit Knockouts

Trade (Nominal) Sizes:

1/2 2 ea.

3/4 2 ea.

Full (Actual) Size:

2 in. 1 ea. (rear of enclosure)

3. Pre-Installation

3.1 Equipment List

The following materials are available out of the box:

- Enclosure with key lock and two keys
- 7177 Hybrid Main Circuit Board Assembly
- 7085-UE5 Transceiver set to authorized frequency
- Antenna Supervision Module
- 7214 Case Top Flexible Tamper Resistant Antenna with cable assembly
- 40-7177-QSG Model 7177 Quick Start Guide
- 02-0029-4L 2.2 k Ω E.O.L. Resistors (quantity is variable depending on zone input card(s) supplied)
- Internal Tamper Switch
- 56-7177 WLAN USB Wi-Fi Adapter, case mount antenna, and antenna cable

Configuration dependent:

- 7711 8 Zone EOL Input Card
- 7712 4 Zone EOL and 4 Zone Reverse Polarity Input Card
- 7794A IntelliPro Fire Module

3.2 Mounting

Hybrid Location

Important! A fire alarm installation that complies with UL 864 or ULC-S559 using the 7177 Hybrid must be located where a NetCon of 5 is present. Refer to <u>Link Layer and NetCon</u> on page 39 for additional details on how to view NetCon. It is important to verify that a location is suitable before deciding on the antenna used and mounting the Hybrid enclosure. A check of the location can be done with the AES Network Connectivity Tool (NCT). The AES NCT provides a quick means for verifying NetCon or finding suitable locations for Hybrid installation.

Antenna Selection and Location

The Case Top Flex Tamper Resistant Antenna is part of the standard package for the 7177 System and mounts on top of the steel cabinet.

Depending on cabinet mounting, Hybrid physical location, and mesh network connectivity, a remote mount antenna may be required.

A separately purchased remote antenna may be used with the 7177 unit in UL installations. See **External Antenna** on page 18 for information on antennas available from AES. The frequency range is 450–470 MHz. Contact the factory at (800) 237-6387 or info@aes-corp.com for other frequencies.

3.3 Requirements

Environmental

Select an installation location that meets the Environmental Specifications described in the <u>Technical Specifications</u> section on page 8.

Exposing the Hybrid to temperatures below 32°F (0°C) or above 122°F (49°C) can damage the backup Gel-Cell battery. Exposure to extreme temperatures can cause unexpected operation of the Hybrid electronics.

Exposing the Hybrid electronics to water or moisture environments (rain, shower, bath, pool, sauna, etc.) can cause damage and unexpected operation.

Electrical Supply

For power supplied to the Hybrid from an outlet, connect to an outlet on a dedicated branch circuit that is *not* controlled by a switch. Refer to the **Power Options** section.

Wiring Specifications

The plug-in transformer must be placed in Transformer Enclosure AES P/N 1640-ENCL (available separately).

The wiring from the low-voltage output of the plug-in transformer enclosure to the Hybrid enclosure must be enclosed in conduit.

Power Options

The following diagram shows three options to supply the Hybrid with power. The <u>Flexible Power Option</u> section on page 30 provides instructions on how to configure the Hybrid software for the power option used.



Battery Size

Battery size requirements are listed in the following table:

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Table 1. Battery Size Requirements			
System Configuration Description	Current (mA)	Battery Size (12 V)	Backup Time (hr)
7177 7711 (8 zone input card)	See Current Consumption under <u>Technical Specifications</u> on page 8 and 7711 Installation and Operation Manual	12 Ah	24
7177 7712 (8 zone input card - 4 ea. EOL and 4 ea. reverse polarity)	See Current Consumption under <u>Technical Specifications</u> on page 8 and 7712 Installation and Operation Manual	12 Ah	24
7177 7794A (IntelliPro Fire Module) 7711 (8 zone input card)	See Current Consumption under <u>Technical Specifications</u> on page 8, 7794A Installation and Operation Manual, and 7711 Installation and Operation Manual	12 Ah	24
71777794A (IntelliPro Fire Module)7712 (8 zone input card - 4 ea.EOL and 4 ea. reverse polarity)	See Current Consumption under <u>Technical Specifications</u> on page 8, 7794A Installation and Operation Manual and 7712 Installation and Operation Manual	12 Ah	24
7177 7794A (IntelliPro Fire Module)	See Current Consumption under <u>Technical Specifications</u> on page 8 and 7794A Installation and Operation Manual	12 Ah	24

UL Listed fo Fire Servic Regulated Limited

Power Supply 24V DC OR

ł

FACP Regulated Limited 24V DC Output

4. Installation

Warning! Do **NOT** install the Hybrid unit during a lightning storm.

4.1 7177 Installation

Table 2 lists tasks to perform when installing the AES 7177 Hybrid. Use the list to verify that installation tasks have been identified and completed. Tasks do not have to be performed in the order listed unless specifically identified.

Important! Verify AES mesh network connectivity for the Hybrid before installing the Hybrid enclosure.

Table 2. Installation Tasks		
	Page Reference	
Out of the Box	<u>9</u>	
Subscriber Location/Network Connectivity	<u>10</u>	
Antenna Selection and Location	<u>10</u>	
Antenna Installation	<u>19</u>	
Requirements		
Environmental	<u>10</u>	
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Enclosure Installation		
Water Damage Prevention	<u>14</u>	
Mounting the Enclosure	<u>14</u>	
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Removing the Zone Input Board	<u>15</u>	
Removing the 7794A IntelliPro	<u>14</u>	
Primary Power Wiring		
Plug-In Transformer	<u>15</u>	
Secondary Power Wiring		
Battery Connection	<u>17</u>	
Zone Input Wiring		
7711 Zone Input (eight EOL resistor input)	<u>20</u>	
7712 Zone Input (four EOL resistor and four reverse polarity inputs)	<u>20</u>	
DACT Wiring		

Table 2. Installation Tasks		
	Page Reference	
7794A IntelliPro	<u>20</u>	
Configuration		
Programming Options (UL Notice to Users)	<u>24</u>	
Setup		
Unit ID #	<u>28</u>	
System Cipher Code (dealer code)		
Timers		
Check-In Time	<u>24</u>	
AC Fail Report Delay Communication Timeout	<u>24</u> 24	
Zone Inputs		
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Zone Restoral message	36	
Ground Fault Report	<u>34</u>	
Secondary Alarm Delay		
TTL		
Subscriber IP Address	<u>45</u>	
Subscriber Subnet Mask, Gateway, DNS		
Saving Configuration Changes	27	
System Operation		
LCD Front Panel Display System Messages	<u>38</u>	
Display Operation		
System Status Display and 7177 Version Number	<u>38</u>	
Unit ID and Serial Number	<u>38</u>	
Link Layer and NetCon	<u>38</u>	
Route Table	<u>39</u>	
Zone Input Configuration	<u>40</u>	
Network (IP) Connectivity Status	<u>40</u>	
Battery and AC Power Status	<u>40</u>	
Ground Fault and Battery Charger Status	<u>40</u>	
Testing and Troubleshooting		
Testing	47	
Troubleshooting	47	

4.2 Enclosure Installation

Water Damage Prevention

To prevent water damage, take the following precautions when mounting the unit:

- Avoid mounting directly on exterior walls, especially masonry walls (condensation).
 - Avoid mounting directly on exterior walls below grade (condensation).
 Important!
 Protect unit from plumbing leaks.
 Protect unit from splash caused by sprinkler system inspection ports.
- Avoid mounting in areas with humidity-generating equipment (such as dryers or production machinery).
 Important! Route conduit to prevent moisture in the conduit from entering the Hybrid.

Mounting the Enclosure

Check the <u>Environmental Requirements</u> on page 10 before starting. Mount in an area that is secure, as well as accessible for service and testing. When mounting on an interior wall, use anchors and fasteners appropriate for the wall material and total weight of Hybrid and battery.

When mounting on a concrete wall, the unit must be placed to prevent moisture or water from entering the enclosure. Use standoff material attached to the concrete surface to mount the enclosure. Two keyhole and two circular mounting holes are available. Refer to the diagram below for location and sizes of mounting hole.



Figure 1. Enclosure Mounting – Hole Location and Sizes

Important! Use knockout plugs to close any unused conduit holes in the enclosure.

To remove electronic boards mounted in the enclosure, perform the following steps for boards installed.

Removing the 7794A IntelliPro

- 1. If the Hybrid is supplied with a 7794A IntelliPro, remove the cabling. Remove the hex nuts holding the board to the four standoffs.
- 2. Grasp the card and pull straight upward off the standoffs.
- 3. Remove the hex standoffs.

Removing the Zone Input Board

- 4. If the Hybrid is supplied with a zone input board, remove the hex nuts holding the board to the standoffs.
- 5. Grasp the board at each end by the standoff, and pull straight upward to unseat the card from the socket connector on the Hybrid mainboard.
- 6. Remove the hex standoffs.

Removing the Mainboard

- 7. With all mounted boards removed from the top of the mainboard, remove the remaining hex nuts or standoffs holding the mainboard to the enclosure.
- 8. Grasp the board on each side, and pull straight upward to lift the card off the mainboard support standoffs attached to the enclosure.

5. Wiring

5.1 Primary Power Wiring

Plug-In Transformer

Warning! Turn off or disconnect all power before attempting to connect the 7177 Hybrid. Do **NOT** apply power until all accessories are properly connected.

Manufacturer	Model	Rating
ELK	ELK-TRG1640	16.5 V AC, 45 VA
MG Electronic Sales	MGT1640	16.5 V AC, 40 VA
AES Corp.	1640	16.5 V AC, 40 VA

For U.S. installations, use only one of the Class 2 Direct Plug-in Transformers listed below:

For Canadian installations, use the CSA Listed Class 2 Direct Plug-in Transformer in the table below:

Manufacturer	Model	Rating
ATC-Frost Model	FPS4016	16.5 V AC, 40 VA

Important! All installations using plug-in transformers must use the AES Model 1640-ENCL Transformer Enclosure for mechanical protection of the transformer. Wiring from the Transformer to the Hybrid must be protected in conduit.

Refer to the wiring diagram (Figure 2 on page 16) for connection details, as well as for routing the battery, enclosure mounted antenna, and the transceiver control cable. Leave a minimum of ¹/₄ inch of spacing between non-power limited (battery wiring) and power limited wiring as shown in the bottom of the diagram (Figure 2).



Figure 2. Wire Separation Non-Power Limited – Power Limited

Earth Ground Connection

Earth ground and battery minus (-) are not separate connections in the 7177 Hybrid. Zone input terminals, including the "G" terminals on zone input cards, are isolated from earth ground. Connect a suitable gauge wire as specified in the applicable electrical code to the #8 ground stud as shown in the diagram below. Connect the wire to a suitable earth ground, which includes building steel, buried metallic cold-water pipe, driven grounding rod, and other electrical code approved grounding systems. Electrical noise present on the ground wire from an electrical panel may make it un-suitable for use. Testing of an electrical panel ground source may need to be conducted by a trained electrical technician.

Use a ring terminal to connect the ground wire to the ground stud on the enclosure back box. Assemble the connection as shown in the diagram below. Scrape paint from beneath the ring lug to ensure good metal contact.





DC-DC Isolated Power Converter Installation

The 77-FACPA provides isolated DC power when connected to a FACP or other DC power supply as shown under **Power Options** on Pg. 10. Refer to AES P/N 77-FACPA for wiring instructions.

Attach the 77-FACPA using the mounting holes on the right hand side of the enclosure as shown in the photo below:



Wired Ethernet Connection

Note: The Hybrid may use either the Wi-Fi or wired Ethernet connection, but not both together.

To use wired Ethernet, connect an Ethernet cable to the ENET J10 connector on the mainboard.

The connection to ENET J10 is supervised.

The Hybrid wired Ethernet connection supports data speeds of 10 or 100 Mb per second (minimum of 10/maximum of 100). The Hybrid automatically adjusts to the available supported data speed on the network.

The Hybrid Ethernet network installation (maximum cable length and cable data rate capacity) must comply with the 10 Mb /100 Mb standards of IEEE Standard 802.3.

5.2 Secondary Power Wiring

Battery Connection

Determine the correct Ah rating for the application using the **Battery Size** information on page 11.

Place the battery in the Hybrid enclosure with the battery quick-connect terminals located to the right side of the enclosure (refer to Figure 2, Wire Separation - Non-Power Limited and Power Limited Circuits on page 16).

The following steps and diagram below explain how to connect the backup battery.

- 1. Connect the BLACK wire from J2 to the negative (-) side of the battery.
- 2. Connect the RED wire from J2 to the positive (+) side of the battery.



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Figure 4. Connecting the Backup Battery

Battery Replacement

The battery should be replaced every 3 years or when testing indicates replacement is required. Replace with the same size and type installed. See <u>Battery Replacement Instructions</u> on page 47 for details.

Battery Only Restart

The 7177 Hybrid without AC power (for test or diagnostic purposes) will power up and self-test with only the battery connected.

Battery Supervision

When AC power is present, the battery is tested at approximately 30-second intervals.

When the battery voltage is below 11.6 V DC for two consecutive test intervals (approximately 60 seconds total time), a low-battery trouble message is transmitted.

When AC power is present and a low battery reaches a charge voltage above 12 V DC, a restoral message is transmitted.

Replacing a low-charge battery with a fully charged battery may result in the Hybrid not immediately detecting the charged battery. Due to the test cycle time, up to 60 seconds can pass before the fully charged battery is recognized.

Low Battery Voltage Cutoff

To prevent deep battery discharge damage, the 7177 Hybrid disconnects the battery when voltage is less than 10 V DC.

Discharge/Recharge

The 7177 Hybrid float charges the battery using a 40 VA transformer. The battery voltage level conditions are:

- Low Battery (Trouble message): Below 11.6 V DC
- Hybrid Battery Disconnect: Below 10 V DC
- Battery Reconnect (Restoral message): Above 12 V DC

6. External Antenna

6.1 Antenna Selection

A remotely mounted external antenna may be required for optimal performance on the mesh network, depending on installation location requirements or conditions. Contact AES Corporation for additional antennas that may be used with the 7177 Fire Hybrid unit.

6.2 Coaxial Cable and Connector Selection

- Use 50-ohm impedance coaxial cable only. RG-8, 9913, LMR-400, and LMR-600 are acceptable coaxial cables. RG-58 may be used for installations where cable is not more than 25 feet long.
- Always use the shortest possible length of coaxial cable. Long lengths of coaxial cable result in greater transmitted signal loss.
- Always use the most direct routing in any coaxial cable installation. Unnecessary and tight bends add to transmitted signal loss.
- Use the proper coaxial connectors and crimp tool for the cable selected. Incorrect or poorly installed connectors can cause transmitted signal power loss.

6.3 Antenna Location

When selecting an antenna location, keep the following in mind:

- The supplied tamper-resistant and flexible 2.5-dB antenna mounts on top of the enclosure.
- Remotely located antennas should be mounted as high as possible, either on top of or inside the building structure. Rooftops and attic spaces are preferable.
- The antenna needs to be high enough to overcome nearby obstructions to the RF signal path.

- A remote antenna should be mounted in a location near the transceiver to minimize coaxial cable signal loss. Do not use cable longer than needed to reach the antenna.
- Avoid installing the antenna in close proximity to metal surfaces. Nearby metal may degrade radio communications through signal reflections or antenna detuning.
- Remember that pipes, conduit, wiring, ductwork, and other metal commonly installed within building walls can affect antenna performance.
 - Take into account foil-backed insulation and wallpaper.
 - Metal objects can also be located in adjacent rooms or above ceilings.
 - Metallic framing and supports are commonly used in buildings. Do not mount the antenna directly over, or close to, metal studding, beams, or other supports that can interfere with the RF signal.

6.4 Antenna Installation

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Warning! Do NOT install Hybrid or antenna during a lightning storm.
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The following installation guidelines must be followed when installing the antenna:

- The remotely mounted antenna must be properly grounded to help reduce surge damage from lightning.
- Grounding must be done in accordance with local building codes and in accordance with other requirements from the Authority Having Jurisdiction (AHJ).
- Mount the remote antenna vertically.
- Do not coil or bunch coaxial cable.
- Install the remote antenna in accordance with National Electric Code and local electric code.

6.5 Antenna and Surge Suppressor Grounding

A protective surge suppressor (AES Model 7230) must be installed in line with any type of remotely installed antenna outside a building as shown in the diagram below. The surge suppressor and remote antenna must be earth-grounded. For U.S. installation, check National Electrical Code (NEC), state, or local electrical code requirements. For Canadian installations, check Canadian Electrical Code, province, or local electrical code requirements.



Figure 5. Antenna and Surge Suppressor Grounding

7. System Configuration

7.1 Compatible Device List

Zone Input

- 7711 8 zone conventional EOL input
- 7712 8 zone (four EOL input and four reverse polarity input)

The 7177 will accept a single zone input card mounted in the Mainboard socket or stacked zone input cards using the 7177 Mainboard Socket and Zone Input Card Socket. The table below shows input card and whether a Zone Input Card Socket is present on the card.

7177 Mainboard Socket	*Zone Input Card Socket Present
7711	No
7712	No



Digital Dialer Interface

• A single 7794A IntelliPro

WLAN – Wi-Fi USB Adapter

• AES qualified Wi-Fi adapter (AES P/N 56-7177-WIFI) including case mount Wi-Fi antenna and Wi-Fi antenna cable for wireless LAN connection.

Compatible IntelliNet Products

The Model 7177 is compatible with the following AES IntelliNet subscribers and IP-Link products: 7170 (IP-Link) 7170-C (IP-Link) 7707 7788F 7788F-C 7744F 7706-ULF (7788F equipped)

Compatible Device Installation and Field Wiring Connections

- 7711 8 zone conventional EOL input: Refer to 7711 Install Manual AES, Part No. 40-7711.
- 7712 8 zone input (four EOL input and four reverse polarity input): Refer to 7712 Install Manual AES, Part No. 40-7712.
- 7740 Remote Annunciator: Refer to page 48 of this document <u>AES Model 7740 Annunciator Installation</u> Instructions.

IMPORTANT! When **no** 7740 Remote Annunciator is installed, set DIPSW1 to "**ON**". The **ON** side switch position is shown in the photo below.



- Internal Tamper Switch: An internal tamper switch is supplied. If used, the switch can be wired to an EOL zone input of either a 7711 or 7712 zone input card.
- DC-DC Isolated Power Converter AES P/N 77-FACPA. The converter provides isolation for power from a FACP or DC other power supply. Refer to 77-FACPA Wiring Diagram shown in 40-FACPA-IM.
- WiFi USB Adapter Refer to the diagram showing adapter placement in Figure 6 Field Wire Connections – 7177 Hybrid Unit on page 23.

7.2 Hybrid Configuration

The diagram below shows the Hybrid connected to an alarm panel using the 7794A and alarm relay outputs connected to Hybrid zone inputs.



D71778058100



D71778050900

Hybrid Communication Configuration

Hybrid Subscriber Only Systems

Important! The subscriber must meet NetCon 5. For redundancy a Hybrid subscriber must have a minimum of one good Hybrid subscriber or IP Link on the routing table.



Partial IP-Link Access

Areas where certain subscribers can access an IP-Link may be expanded for additional subscriber coverage. A **single** Hybrid subscriber can be installed to provide this expansion coverage as shown in the diagram below.

Important! The subscriber must meet NetCon 5. For redundancy a Hybrid subscriber must have a minimum of one good Hybrid subscriber or IP Link on the routing table.



No IP Link Access

Systems that have IP-Links, but with areas having no IP-Link access. These areas can be served with 7177 Hybrid subscribers installed as shown in the diagram.

Important! The subscriber must meet NetCon 5. For redundancy a Hybrid subscriber must have a minimum of one good Hybrid subscriber or IP Link on the routing table.





Figure 6. Field Wire Connections – 7177 Hybrid Unit

7.3 Trouble Output

- J4 Trouble Relay a Common Trouble Relay. Contacts: 24 V DC 1A Max. Resistive Load. Unsupervised
- Annunciator AES Model 7740 Remote Annunciator 21 V DC 25 mA Typ. (50 mA max.) Supervised. Refer to the <u>Compatible Device Installation and Field Wiring Connections</u> section on page 20 for instructions on installing and connecting field wiring on the Model 7740.

8. Programming

8.1 Programming Options (UL Notice to Users)

NOTICE TO USERS, INSTALLERS, AUTHORITIES HAVING JURISDICTION, AND OTHER INVOLVED PARTIES

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.

	Table 3. Lir	nitations in Pi	rogramming Featu	res and Options	
Торіс	Feature or Option	Permitted in UL 864/ULC S559	Possible Settings	Setting(s) Permitted in UL 864/ULC S559	Comment
Padia	Secondary Alarm Delay	Y	1–330 seconds	1–10 seconds	
Configuration	Check-in Interval	Y	0–24 hours	0–24 hours	
	Communication Timeout	Y	1–300 seconds	UL: 1–120 sec ULC: 1-60 sec	
	Repeating	Y	Y or N	Y	
Zone Configuration	Zone Programming	Y	Supervised, Fire, or Bypass	Zone in use: Fire Zone not in use: Bypass	Supervised not to be used in fire applications.
	Fire Zones	Y	Y or N	Y	
Only if 7712 or 7711 is used	Consecutive AT Events	Y	Y or N	Y	Y for verbose zone input alarm and trouble message reporting. Refer to Pg. 31 for details.
	Restoral	Y	Y or N	Y	
	AC Fail/DC Fail Report Delay	Y	0–60, or R (0–60 minutes, or random time between 0–60 min.)	0-60 (minutes) R (random time from 0–60 minutes)	
System	Locally Announce AC Fault/DC Fault	Y	Y or N	Y	

	Table 3. Lir	nitations in Pr	ogramming Featu	res and Options	
Торіс	Feature or Option	Permitted in UL 864/ULC S559	Possible Settings	Setting(s) Permitted in UL 864/ULC S559	Comment
	Suppress AC Fault/DC Fault	N	Y or N	Ν	
	Suppress Charger Fault	N	Y or N	Ν	
	Suppress Battery Fault	N	Y or N	Ν	
Advanced Configuration	Suppress Ground Fault Reporting	N	Y or N	Ν	
Central Receiver Configuration	INET Check-In	Y	1 minute to 24 hours	6 hours maximum	
	HYBRID Timeout	Y	0 to 120 seconds	10 seconds maximum	
	Receiver IP/Domain and Port	Y	Primary /Secondary Receivers along with Receivers 3 to 8	At minimum a Primary Receiver Secondary Receiver IP/Domain and Port setting is required	

Important! UL and NFPA standards do not allow remote programming of an installed Model 7177 Hybrid unless an authorized person is present at the unit to enable temporary remote programming capability. **Note:** When any zone is configured as **Fire**, remote programming can be performed only up to 10 minutes after the Hybrid is reset or powered up.

8.2 Programming Interface

Important! Eliminate false alarms by notifying the central station operator ahead of time *before* the Hybrid is powered on. A false alarm/report and dispatch of services to the *previous* Hybrid location may occur if this is not done.

The Model 7177 is programmed using a graphical interface through a smartphone, a laptop/tablet, or other web browser capable device.

The Hybrid is connected to a LAN through the J10 Ethernet connector. The default network protocol is DHCP. The IP address obtained is shown on the LCD display during Hybrid power-up. An example display is shown below. The actual IP address will depend on the network a Hybrid is connected to.

LAN: 10.0.3.111

Note: If DHCP is not available, the IP address is set to 169.254.100.1.

8.3 Logging In

Connecting to the 7177 configuration page requires a login. Enter the IP address of the Hybrid in the web browser. Then enter your username (in the Username box) and password at the login screen. The default User Name and default Password is admin (lower case):



The following screen appears after a successful login:

Hybrid Subscriber	Status	Configuration	Accessories	System	Tools	
7177 HYBD Ver:						+
Routes 🗿						+
Receivers						+
Hardware						+

Note: A **Fault Details** control window automatically appears when the Hybrid has fault conditions. The **Fault Details** control window is not present when there are no Hybrid faults.

8.4 Configuration Interface

Navigation

Individual pages are listed in a tab bar:

To go to a page, select a tab by clicking on it. For example, the **Tools** page is accessed by pointing and clicking on **Tools**. Each page displays a set of controls as shown below:

Hybrid Subscriber	Status	Configuration	Accessories	System	Tools	
Text Messages						+
Alam Holory (NI)						+
RP Traffic (MI)						+
# Turk						+
RF Antonna Test						+
Peg						+
System Activity Log						+

Use the **t** control to expand the control window. In this example, expanding **Alarm History** allows view of messages similar to the example below:

Alarm History (All)	-
2007-01-01 03:15:10.900 D_STAT: Status: OK LL: 1 TNC Status: Netcon: 6 Faults: none Alarm; none Trouble: none 2007-01-01 22:50:55.520 D_CHKIN: Status: RESET LL: 1 TNC Status: Netcon: 5 Faults: none 2007-01-02 00:34:19.980 D_STAT: Status: OK LL: 1 TNC Status: LOWBAT Netcon: 5 Faults: LOWBAT 2007-01-02 00:35:45.475 D_STAT: Status: OK LL: 1 TNC Status: Netcon: 5 Faults: none 2007-01-02 00:36:21.260 D_STAT: Status: OK LL: 1 TNC Status: Netcon: 5 Faults: PCOMM	•

Use the **___** control to collapse the window.

The Log Out control ends the configuration session and returns to the Login screen.

Making Configuration Changes

Configuration settings are made and changed using either the dropdown or slider switch controls in the window. The dropdown provides a list to select from:



Saving Configuration Changes

Saving configuration changes requires the following steps:

- 1. When you are finished making changes, select and click the **Save Changes** button. The **Saved new settings!** acknowledgement appears:
- Saved new settings! Click "Update" from menu bar to confirm changes.
- 2. You may finish and save your changes immediately, or you can make additional changes and then save all changes at once afterward.
- 3. If done making changes, click the **Update** tab shown in the browser (highlighted in red in the figure below):

System	Tools	Update	
--------	-------	--------	--

4. The **Status** window is displayed after changes are saved as shown below:

Hybrid Subscriber	Status	Configuration	Accessories	System	Tools	Log Out
7177 HYBD Ver:						-
		Sub ID	CCDE			
	1					

8.5 View 7177 Hybrid Software Version

The 7177 software version is visible in the System tab window under System Firmware Upgrade.

• Select the System tab, as shown highlighted in the following figure:



• The version number is displayed in the System Firmware Update section.

8.6 View 7794A IntelliPro Software Version

The 7794A IntelliPro software version (when installed) is visible in the Status tab window under Hardware.

Hybrid Subscriber	Status	Configura	tion Accessories	System	Tools	Log Out
Hardware						-
	Ν	lodel Type	7177 HYBRID			
	Ser	ial Number	H000011			
	Zo	one Bank 1	FIRE8			
	Zo	one Bank 2	None			
	Pane	el Interface	7794A IntelliPro Ve	r		
	N	Vired MAC	3C:C1:2C:E0:00:64	4		
	Wired IPv4			10.0.13.59		
	Wifi Ac	cess Point	0.0.0.0			
		Wifi MAC	00:19:70:BC:98:79			
I.		Wifi IPv4	192.168.1.103			

8.7 Change Login Password

1. Select the **System** tab as shown highlighted in red below:



- 1. Place the cursor in the **Current Password** text box, then type the current password.
- 2. In the **New Password** text box, type the new password. Type the new password again into the **Confirm** box and click **Change Password**.

8.8 Configuration

Subscriber ID

Note: Remote programming of the Hybrid ID is not possible. The Hybrid ID must be unique from any other ID number in the system.

Enter a 4 character hex (0-9 and A-F) identification number for the **Sub ID**. Valid identification numbers are from **0001** to **FFFF**.

Radio Configuration

Cipher: Enter the four-character hex (0–9 and A–F) cipher code (dealer code) assigned by the system administrator. Valid values are 0000 to FFFF.

Important! UL-864 compliant Fire Alarm installations require **Check-In Interval** to be set from **0 to 24 hours**. See the <u>Programming Options (UL Notice to Users)</u> which starts on page 24 for software settings permitted.

Check-In Interval: Enter check-in interval in hours and minutes. The default is 23:45 (23 hours 45 minutes).

Note: Using short check-in intervals generates more traffic on the network.

Communication Timeout: Communication Timeout is the time the Hybrid waits for an ACK as a reply to a transmitted packet or when the Hybrid is at NetCon 7 and is waiting to join the mesh network. The range is 1–300 seconds. The default and maximum time allowed for this option is 120 seconds.

Important! UL-864 compliant Fire Alarm installations require **Communications Timeout** to be set from **1 to 120** seconds. See the <u>Programming Options (UL Notice to Users)</u> which starts on page 24 for software settings permitted.

Repeating: Set Repeating to Enabled/Disabled by clicking on the Repeating switch.

Important! UL-864 compliant Fire Alarm installations require **Repeating** to be set to **Yes**. See the **Programming Options (UL Notice to Users)** which starts on page 24 for software settings permitted.

Central Receiver Configuration

The Central Receiver panel contains Internet connection settings to the MultiNet receiver.

Note: Primary and Secondary Central Receiver Configuration must be set when using IP Reporting.

IP Group ID: Enter the assigned ID as found in Business Unit Settings.

Important! UL-864 compliant Fire Alarm installations require Receiver IP/Domain and Port to be set with a minimum of a Primary Receiver and Secondary Receiver IP/Domain and Port setting. See the Programming Options (UL Notice to Users) which starts on page 24 for software settings permitted.

Primary Receiver IP: Enter the Primary Receiver IP address.Primary Receiver Port: Enter the Primary Receiver Port number.Secondary Receiver IP: Enter the Secondary Receiver IP address.Secondary Receiver Port: Enter the Secondary Receiver Port number.

Receiver 3 IP: Enter Receiver 3 IP address.
Receiver 3 Port: Enter Receiver 3 Port number.
Receiver 4 IP: Enter Receiver 4 IP address.
Receiver 4 Port Enter Receiver 4 Port number.
Receiver 5 IP: Enter Receiver 5 IP address.
Receiver 6 IP: Enter Receiver 6 IP address.
Receiver 6 Port: Enter Receiver 6 Port number.
Receiver 7 IP: Enter Receiver 7 IP address.
Receiver 7 IP: Enter Receiver 7 IP address.
Receiver 7 Port: Enter Receiver 7 Port number.
Receiver 8 IP: Enter Receiver 8 IP address.
Receiver 8 Port: Enter Receiver 8 Port number.

Important! UL-864 compliant Fire Alarm installations require INET Check-In Interval to be set to no more than

6 hours maximum. See the <u>Programming Options (UL Notice to Users)</u> which starts on page 24 for software settings permitted for the following parameter.

INET Check-In Interval: Enter the check-in time interval for the Hybrid.

Important! UL-864 compliant Fire Alarm installations require **HYBRID Timeout** to be set to no more than **10** seconds maximum. See the <u>Programming Options (UL Notice to Users)</u> which starts on page 24 for software settings permitted for the following parameter.

HYBRID Timeout: Enter the Hybrid Timeout. The Hybrid Timeout sets the amount of time the Hybrid tries to send messages though one communication technology before giving up and switching to the other technology.

WiFi Network Settings

Note: The Hybrid may use either the Wi-Fi or wired Ethernet connection, but not both together.

If the WiFi adapter is used, then set **Use Wifi Network** to **Yes. SSID** – Enter the Set Service Identifier (SSID) of the WiFi network. **Passphrase** – Enter the WiFi passphrase.

Flexible Power Option

Hybrid power can be provided by several different types of power sources. This control configures the type of power source and the features associated with the power source. From the **Configuration** tab, select the **Flexible Power Option** panel.

Hybrid Subscriber	Status	Configuration	Accessories	System	Tools	Log Out

For power source details, see **Power Options** on page 10.

• Power From: 16.5 V AC Adapter and Battery

Flexible Power Option	-
Power From	16.5 VAC Adapter and Battery •
AC Report Delay (0 - 60)	R Min. (Use 'R' for a random delay) [16.5 VAC Adapter and Battery *]
Locally Announce AC Fault	Yes 24 VDC and Battery 24 VDC only
Suppress AC Fault	No 12 VDC only
Suppress Battery Fault	No
Suppress Charger Fault	No
Save	Change

Refer to the diagram shown in the <u>Power Options</u> section on page 10 for supply and connection requirements.

Important! When using this selection, **16.5 V AC** is the *primary* power source and the **battery** is the *secondary* power source.

Important! UL-864 compliant Fire Alarm installations require **AC Report Delay** to be set to **R(andom)** or **0 to 60 minutes** delay. See the <u>Programming Options (UL Notice to Users)</u> which starts on page 24 for software settings permitted for the following parameter.

• AC Report Delay: AC Report Delay is active when Suppress AC Fault is set to NO. The report delay is the time that must pass before the Model 7177 Hybrid will send an AC failure or AC restoral message. This

feature helps prevent mesh network congestion in an area where many Hybrids have an AC power outage at the same time. Messages can be set to transmit in a staggered fashion using the **Random** time setting.

Note: Primary (16.5 V AC) power failure fault reporting must be enabled for compliance with UL 864 standard in fire installations.

The combined AC Fail detection time delay of 100 minutes plus the random **AC Report Delay** between 0–60 minutes results in time that does not exceed 160 minutes. This is within the UL-864 requirement of reporting AC power failure within 180 minutes (3 hours) of loss.

Primary (16.5 V AC) power must be lost for 100 minutes in order to be reported as a failure. Primary (16.5 V AC) power must be restored for at least 100 minutes to be reported as a restore. Once either is detected, a message is created by the Hybrid to send to the central station. An AC Report Delay is selected based on both this parameter and the setting of **Suppress AC Fault Reporting**.

Available settings:

- Random Delay A random time ranging from 0–60 minutes after 100 minutes of primary (16.5 V AC) power loss. Enter R into the box to select this option.
- Fixed delay A specific time ranging from 1–60 minutes after 100 minutes of primary (16.5 V AC) power loss.
- No Delay Immediate transmission after 100 minutes of primary (16.5 V AC) power loss.

• Locally Announce AC Fault

Important! UL-864 compliant fire alarm installations require that **Locally Announce AC Fault** be set to **Yes**. See the **Programming Options (UL Notice to Users)** on page 24 for software settings permitted for the following parameter.

Set Locally Announce AC Fault to Yes/No by clicking the Locally Announce AC Fault switch.

• Suppress AC Fault Reporting

Important! UL-864 compliant fire alarm installations require that **Suppress AC Fault Reporting** be set to **No**. See the <u>Programming Options (UL Notice to Users)</u> on page 24 for software settings permitted for the following parameter.

Set AC Fault Reporting to Yes/No by clicking the AC Fault Reporting switch.

• Suppress Battery Fault Reporting

Important! UL-864 compliant fire alarm installations require that **Suppress Battery Fault Reporting** be set to **No**. See the <u>Programming Options (UL Notice to Users</u>) which starts on page 24 for software settings permitted for the following parameter.

Set **Suppress Battery Fault Reporting** to **Yes/No** by clicking the **Suppress Battery Fault Reporting** switch.

• Suppress Charger Fault Report

Important! UL-864 compliant fire alarm installations require that **Suppress Charger Fault Reporting** be set to **No**. See the <u>Programming Options (UL Notice to Users)</u> which starts on page 24 for software settings permitted for the following parameter.

Set Suppress Charger Fault Report to Yes/No by clicking the Suppress Charger Fault Report switch.

Power From: 24 V DC and Battery

Refer to the diagram shown in the <u>Power Options</u> section on page 10 for supply and connection requirements.

Important! When using this selection, **24 V DC** is the *primary* power source and the **battery** is the *secondary* power source.

	Power From	24 VDC and Battery
D	Report Delay (0 - 60)	R Min. (Use 'R' for a random delay)
Locally	Announce DC Fault	Yes
Supp	ress DC Power Fault	No
SU	ppress Battery Fault	No
Suj	press Charger Fault	No

• **DC Report Delay**: DC Report Delay is active when **Suppress DC Power Fault** is set to **No**. The report delay is the time that must pass before the Model 7177 Hybrid will send a primary power failure or primary restoral message. This feature helps prevent mesh network congestion in an area where many Hybrids have a power outage at the same time. Messages can be set to transmit in a staggered fashion using the **Random** time setting.

Note: *Primary* power (24 V DC) failure fault reporting must be enabled for compliance with UL-864 standard in fire installations.

The combined DC fail detection time delay of 100 minutes plus the random **DC Report Delay** between 0–60 minutes results in time that does not exceed 160 minutes. This is within the UL-864 requirement of reporting DC power failure within 180 minutes (3 hours) of loss.

Primary (24 V DC) power must be lost for 100 minutes in order to be reported as a failure. Primary (24 V DC) power must be restored for at least 100 minutes to be reported as a restore. Once either is detected, a message is created by the Hybrid to send to the central station. A DC Report Delay is selected based on this parameter and the setting of **Suppress DC Fault** reporting. Available settings:

- Random Delay A random time ranging from 0–60 minutes after 100 minutes of primary (24 V DC) power loss. Enter R in the box to select this option.
- Fixed Delay A specific time ranging from 1–60 minutes after 100 minutes of primary (24 V DC) power loss.
- No Delay Immediate transmission after 100 minutes of primary (24 V DC) power loss.

• Locally Announce DC Fault

Important! UL-864 compliant Fire Alarm installations require **Locally Announce DC Fault** to be set to **Yes**. See the <u>Programming Options (UL Notice to Users)</u> on page 24 for software settings permitted for the following parameter.

Set Locally Announce DC Fault to Yes/No by clicking the Locally Announce DC Fault switch.

• Suppress DC Power Fault

Important! UL-864 compliant Fire Alarm installations require **Suppress DC Power Fault** to be set to **No**. See the <u>Programming Options (UL Notice to Users)</u> which starts on page 24 for software settings permitted for the following parameter.

Set Suppress DC Power Fault to Yes/No by clicking the Suppress DC Power Fault switch.

• Suppress Battery Fault Reporting

Important! UL-864 compliant Fire Alarm installations require **Suppress Battery Fault Reporting** to be set to **No**. See the **Programming Options (UL Notice to Users)** which on page 24 for software settings

permitted for the following parameter.

• Suppress Charger Fault Reporting

Important! UL-864 compliant Fire Alarm installations require **Suppress Charger Fault Reporting** to be set to **No**. See the <u>**Programming Options (UL Notice to Users)**</u> which starts on page 24 for software settings permitted for the following parameter.

Set Suppress DC Power Fault to Yes/No by clicking the Suppress Charger Fault Reporting switch.

• Power From: 24 V DC Only

Refer to the diagram shown in the <u>Power Options</u> section on page 10 for supply and connection requirements.

Note: Selecting the **24 V DC only** option causes **Suppress Battery Fault** and **Suppress Charger Fault** to be grayed out in the interface. The two options cannot be changed.

Power From	24 VDC only
Suppress DC Power Fault	t No
Suppress Battery Fault	t Yes
Suppress Charger Fault	t Yes

• Suppress DC Power Fault

Important! UL-864 compliant Fire Alarm installations require **Suppress DC Power Fault** to be set to **No**. See the <u>**Programming Options (UL Notice to Users)**</u> which starts on page 24 for software settings permitted for the following parameter.

Set Suppress DC Power Fault to Yes/No by clicking the Suppress DC Power Fault switch.

• Power From: 12 V DC Only

Important! UL-864 compliant fire alarm installation prohibits use of 12 V DC Only setting. The setting is not allowed.

Note: Selecting the **12 V DC only** option causes **Suppress Battery Fault** and **Suppress Charger Fault** to be grayed out in the interface. The two options cannot be changed.

Note: Using the **12 V DC only** option causes the 7085 UE5 transceiver to operate at 50 - 60% of full radio power output.

Flexible Power Option	-
Power From	12 VDC only
Suppress DC Fault	No
Suppress Battery Fault	Yes
Suppress Charger Fault	Yes
Save C	hange

Advanced Configuration

From the Advanced Configurations menu, you can configure the ground fault reporting, Secondary Alarm Delay, TTL (Time to Live) and the Hybrid IP address. To configure these settings:

- 1. Select the **Configuration** tab.
- 2. Scroll to the **Advanced Configuration** panel.
 - Suppress Ground Fault Report

Important! UL-864 compliant Fire Alarm installations require **Suppress Ground Fault Reporting** to be set to **No**. See the <u>Programming Options (UL Notice to Users)</u> which starts on page 24 for software settings permitted for the following parameter.

Set **Suppress Ground Fault Report** to **Yes/No** by clicking the Suppress Ground Fault Report switch.

• Secondary Alarm Delay

Important! UL-864 compliant Fire Alarm installations require **Secondary Alarm Delay** to be set **at 1 to 10 sec.** See the <u>Programming Options (UL Notice to Users)</u> which starts on page 24 for software settings permitted for the following parameter.

• Enter the number of seconds allowed between data transmissions from the Hybrid. The range is 1–330 seconds. The default and maximum time allowed for this setting is 10 seconds.

Note: The first message is sent immediately without delay. Messages that follow are delayed.

• TTL (Time-To-Live) Configuration

Time-to-Live settings are for managing the performance of the AES mesh network. TTL is the length of time a packet message transmission for a specific setting is retried by a Hybrid in the AES mesh network. The Hybrid will stop attempting to transmit the packet when the TTL limit has expired. To set Time-to-Live:

- 1. Scroll to the **Configuration** tab.
- 2. Select the Advanced Configuration panel and configure the setting:

Message Type	TTL
CHECK-IN	10 minutes
STATUS	10 minutes
ALARM	3:00 hours
TROUBLE	3:00 hours
RESTORAL	3:00 hours
INTELLIPRO	3:00 hours
SPECIAL	10 minutes

Hybrid IP Address Information

To set Hybrid IP Address

- 1. Scroll to the **Configuration** tab.
- 2. Select the **Advanced Configuration** panel and configure the settings: Hybrid IP Address type: Select **STATIC** or **DHCP**

If **STATIC** address is selected, enter the following information:

IP Address – The IP address of the Hybrid

- Subnet Mask
- Gateway

DNS Server 1 (Optional)

DNS Server 2 (Optional)

8.9 Zone Input Configuration

Zone input cards and Model 7794A IntelliPro are configured under the Accessories tab in the browser.

You can verify that a zone input card for 7794A IntelliPro is installed by selecting the **Status** tab and checking the **Hardware** panel. In this example, a single 8 zone input card is installed in the first zone bank (Zone Bank 0) and nothing installed in the second zone bank:

Hardware		
	Model Type	7177 HYBRID
	Serial Number	H000011
	Zone Bank 1	FIRE8
	Zone Bank 2	None

To configure zone input cards for the 7794A IntelliPro:

Select the **Accessories** tab shown in red below:

Hybrid Subscriber Status Configura	n Accessories System Tools Lo	g Out
------------------------------------	-------------------------------	-------

A Bank Zone panel will appear when the Model 7177 has a zone input card installed.

If a 7794A IntelliPro is installed, the IntelliPro panel will appear as shown below:

Phone Line	No
AP Report Format	CID ·
AP Input Gain	20 • dB
Intercept on Blind Dial	No
AP Account Override	No
Advanced Options	No
Paulo C	bangos

A Model 7711 8 Zone Input Card menu appears as shown below:



The 7711 Zone Input Card for use with Fire Alarm Control Panels (FACP) can be programmed for:

- Fire The EOL 2.2k ohm resistor circuit reports trouble for open circuit and alarm for short circuit.
- **Bypassed** Zone input is ignored.
- Supervised
- Tamper for zone input using tamper switch. Refer to <u>Compatible Device Installation and Field Wiring</u> <u>Connections on page 20</u> for instructions.

Important! UL-864 compliant Fire Alarm installations require **Zone Programming** to set a **Zone in use** to **FIRE** and a **Zone not in use** to **BYPASS**. See the **Programming Options (UL Notice to Users)** which starts on page 24 for software settings permitted for the following parameter.

	Zone Programming	
Zone Input Condition	Fire	Bypass
2.2k ohm EOL resistor circuit	Normal	Input Ignored
Open circuit	Trouble	Input Ignored
Short/closed circuit	Alarm	Input Ignored

Important! UL-864 compliant Fire Alarm installations require **Fire Zones** to be set to **YES**. See the **Programming Options (UL Notice to Users)** which starts on page 24 for software settings permitted for the following parameter.

Set the **Fire Zones** switch to **Yes** to set the input type as fire.

Important! UL-864 compliant Fire Alarm installations require **Consecutive AT Events** to be set to **YES**. See the <u>Programming Options (UL Notice to Users)</u> which starts on page 24 for software settings permitted for the following parameter.

Set **Consecutive AT Events** (Consecutive Alarm/Trouble Events) to **Yes** for verbose reporting of alarm and trouble messages. When Consecutive AT Events is enabled and an event occurs, an alarm or trouble message will be sent regardless of the number events. One example is the sequence of messages "alarm – trouble – alarm – trouble …" Set to **No** for non-verbose reporting. When disabled, an alarm and a trouble will be sent once only, even when a zone might be continually changing state multiple times. Select the zone behavior (either **Bypassed** or **Fire**) for each zone using the dropdown box.

Important! Wiring of any FACP relay output to any 7177 zone input must use an EOL resistor supervised zone programmed as Fire (**F**). Zone inputs Z1 through Z8 on the Model 7711 meet this requirement.

Note: Set all unused zones to Bypassed. Do NOT install EOL resistors on Bypassed zones.

8.10 Restoral

Important! UL-864 compliant Fire Alarm installations require **Restoral** to be set to **YES**. See the **Programming Options (UL Notice to Users)** which starts on page 24 for software settings permitted for the following parameter.

Restoral messages are sent for the zone when the Restoral switch is set to **Yes**. When finished with Configuration, save the configuration by clicking **Save Changes**.

7794A IntelliPro Configuration

Note: You will need a copy of the *7794A IntelliPro Fire Installation Manual* (AES P/N 40-7794A) for IntelliPro configuration settings.

The IntelliPro panel will appear if a Model 7794A IntelliPro is installed in the Hybrid. The configuration menu will appear as shown below:

	Phone Line No
AP F	Report Format CID •
	AP Input Gain 20 V dB
Intercep	t on Blind Dial No
AP Acc	ount Override No
Adva	anced Options No

Refer to the 7794A IntelliPro Fire Installation Manual (AES P/N 40-7794A) for instructions on configuring the settings.

When done with changes, click the **Save Changes** button.

8.11 Status LED Indicators

The five LED indicators on the main circuit board of the Model 7177 show system status. The LEDs are located near the top edge of circuit board below the J7/APM connector and near the **RESET** button as shown below:



		Table 4. System Status LED Indicators
LED	Color	Function
ALM	Red	Status/troubleshooting indicator, "blink" (see ALM LED Blink Patterns table below)
WA	Yellow	Steady On = Waiting for acknowledgment of last transmission Steady Blinking = Not on Network Off = Normal
тх	Yellow	On = Radio transmit
RX	Green	On = Radio transceiver receiving RF signal NOTE: If RX is on steady for longer than 20 seconds, an interfering RF signal exists. Any RF signals that are on the same frequency as the Hybrid and which are strong enough to break the squelch will also cause the RX light to remain on.
Trbl	Red	Blinking Continuously = Trouble Condition. Refer to <u>Table 6</u> for trouble details.

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ALM LED Blink Pattern Chart

The chart below shows blink patterns utilized by the ALM LED, as well as possible meanings:

Table 5. ALM LED Blink Patterns		
Blink Type	Pattern	Possible Meaning(s)
Steady blink		Normal operation
Short-short blink		Low battery
Short-long		Zone input in alarm or trouble/off normal
Short-short-long		Low battery and zone in alarm/trouble
Short-short-pause-short		AC Fault
Short-short-pause-short-short		AC Fault and low battery
Steady/no blink		Self-test failure (excluding low battery and AC)

Symbols as follows: "■" = short blink, "■" = long blink

The period between patterns is about 1 second (the chart shows each pattern repeating three times).

8.12 LCD Front Panel Display System Messages

Display Operation

The 7177 Hybrid uses a combination LCD display and a **MENU** pushbutton switch to navigate through the system message screens.



Note: Pressing and releasing the **MENU** button allows you to advance in a loop through the display screens until returning the System Status display screen.

System Status Display and 7177 Version Number

When the Model 7177 is operating normally, the Normal System Status screen is shown in the LCD. The model number, software version number, and status message are displayed as shown below:

```
7177 HYBD VER:xxxxx
STATUS: NORMAL
```

Press the **MENU** button on the front of the enclosure once to advance to the Unit ID and Serial Number status display.

Note: Pressing and releasing the **MENU** button allows you to advance in a loop through the display screens until returning the System Status display screen.

Unit ID and Serial Number



Note: The Hybrid ID can be *viewed* but *cannot* be set through the System Messages display. Use the configuration web page to change the Hybrid ID.

Link Layer and NetCon

Press the **MENU** button once to advance to the Local Status Check screen, where Hybrid Link Layer and NetCon values are displayed.



Press the MENU button once to advance to the Routing Table Display screen:



A total of four display screens are available to show the routing table. Up to eight peers, subscribers, or IP Links may be listed in the table. Each screen displays two subscribers. The total number of display screens will vary depending on the total number of peers listed (a number from 1 to 8). Press the **MENU** button once to advance to the next routing table screen.

Routing Table ID#. A routing table lists up to eight other subscribers ID#'s or IP Links in a table. The purpose of the list is to select a peer for passing off data packets. The table is sorted with the best quality Subscriber placed at preference location 1. Quality is a measure of the neighbor Subscriber's ability to pass data packets.

- L: Link Layer as reported by last transmission from the peer ID# shown.
- N: NetCon (NETwork CONnectivity) An internal rating used in the automatic positioning of this unit in the network. A NetCon value of 5 is required for a Hybrid that is compliant with UL-864, 10th Edition.
- **Q:** Signal Quality The first digit is either an 8 or a 0 (zero). The second digit is a measure of how old the data is (a 3 is assigned to the newest data; a 1 is assigned to older data). Routing preference is given to strong, recently heard subscribers (03) versus weaker subscribers heard a long time ago (81).

Route Table

```
1.AA1A L:00 N:0 Q:03
2.A21A L:01 N:5 Q:03
```

Press the **MENU** button to view the next status message. Additional routing table screens may appear depending on the number of routes available.

Zone Input Configuration

The status of each zone input for a 7711 zone input card is shown. Values are F for Fire, S for Supervised, or B for Bypass.

ZONE:1-F 2-F 3-F 4-F ZONE:5-F 6-F 7-F 8-F

Press the **MENU** button to view the next status message.

Network Connectivity Status

The access point identification and IP address are shown:

ACC PT: AES2.0-011 IP: 192.168.100.1

Press the **MENU** button to view the next status message.

The IP address and IP connection (DHCP or Static Address) are shown along with WiFi address:

LAN: 10.0.3.111 WIFI: 192.168.1.199

When no IP network is available, the **No LAN IP** message appears as shown below:

LAN: No LAN IP

Press the **MENU** button to view the next status message.

Battery and AC Power Status

BATTERY OK AC POWER OK

Press the **MENU** button to view the next status message.

Battery Charger Status

CHARGER OK

Press the **MENU** button to view the next message.

Antenna Tamper and Enclosure Tamper Status

ANTENNA OK TAMPER OK

Press the **MENU** button to view the next message.

IP Connectivity Status

The IP connection for the Hybrid is shown.

```
IP Connectivity:
PRIMARY RECEIVER
```

Press the **MENU** button to view the next message.

Panel Interface Status

The alarm panel interface is shown.

```
Panel Interface:
None
```

Press the **MENU** button to view the next message.

7794A IntelliPro Software Version

If a 7794A IntelliPro is installed in the Hybrid, the software version will appear as shown below, where $x \cdot xxx$ is the version number:

Panel Interface: 7794A Ver X.XXX

When no 7794A is present, the display will show None as shown below:

```
Panel Interface:
None
```

Press the **MENU** button to return to the home screen, which is the System Status Display.

8.13 Off-Normal Operation

Faults and alarms that cause off-normal operation are shown with fault messages in the LCD display. See table below for more information.

Table 6.Faults and Alarms with Off-Normal Operation	
Off-Normal Condition	
Fault Message	Problem
AC POWER FAIL	AC power to Hybrid disconnected or below minimum voltage
DC POWER FAIL	DC power to Hybrid disconnected or below minimum voltage

Table 6. Faults and Alarms with Off-Normal Operation		
Off-Normal Condition Fault Message	Problem	
CHARGER	Battery charger failure	
NETCON	Hybrid NetCon value below minimum required	
GROUND FAIL	Resistance to earth ground below limit on zone input	
AP IFACE FAIL	7794A IntelliPro card failure	
RF COMM FAIL	Failure to communicate with another unit on mesh network	
ANNUNC FAIL	7740 Remote Annunciator failure	
BATTERY FAIL	Backup battery voltage below minimum	
Alarm/Trouble Messages		
ZONE 2 ALARM	Example of Alarm condition; Zone 2 input	
ZONE 7 TRBL	Example of Trouble condition; Zone 7 input	

Fault Display

Faults are shown on the LCD display on the enclosure. The following behavior occurs depending on whether single or multiple fault conditions exist.

• Single fault – A single fault condition is shown on the display, and the Hybrid buzzer sounds as shown below:

7177 VER:X.XXXX Status: AC FAIL



When the single fault condition clears, the cleared fault message no longer displays and the buzzer stops sounding.

• **Buzzer Silence** – Press the **MENU** button and *hold down* for at least 5 seconds. The status display will show the following, and the buzzer will be silenced.

7177	VER:X.XXXX
Status:	SILENCED

- Multiple faults Multiple faults are shown in the LCD display one fault at a time for approximately 2 seconds each. Faults appear in sequential order, and the Hybrid buzzer sounds as shown below:
- **Buzzer Silence** Press the **MENU** button and *hold down* for at least 5 seconds.

8.14 Disable On Board Buzzer

The front panel buzzer can be disabled through the configuration interface if a remote annunciator is used. To disable the onboard buzzer in the Hybrid:

- 1. Select the **System** tab.
- 2. Under the Buzzer panel, set the On Board Buzzer switch from Enabled to Disabled to silence the buzzer.
- 3. Click the Save Change button.
- 4. Click Update.

8.15 Hybrid Status Check

General

Information about the Model 7177 Hybrid is shown in the **Status** panel. The Hybrid model, firmware version, and status can be viewed by selecting the **Status** tab as shown in red below:

Hybrid Subscriber Status Configuration Accessories System Tools Log	g Out	
---	-------	--

The Hybrid model number and software version are displayed:



The **Status** page shows any faults, (Status) as well as the unit (Sub) ID, Link Layer, Hybrid Link Layer, NetCon and IP Connectivity values:

Status
Sub ID
Link Layer
Hybrid Reporting Link Layer
NetCon
IP Connectivity

Faults are displayed below the **Status** panel.

MESH Backup

Mesh backup displays the Link Layer and Netcon values for the RF mesh network.

Link Lay	er 2	
NetCo	n 5	

Routing Table

The Hybrid routing table is displayed in the **Routes** panel as shown below. Up to eight routes may be included:

Routes	-
1	AAAA L:00 N:0 Q: Good (03)
2	B003 L:01 N:6 Q: Good (03)

IP Receivers

Information about the IP Receiver the Hybrid subscriber is connected is displayed here.

Hardware

Information about the Hybrid type, serial number, zone input configuration, alarm panel type, and IP addresses are shown in the **Hardware** panel.

- Model type The Model 7177, a displays as type **7177 HYBRID**.
- Serial Number A unique serial number is assigned to each Model 7177 Hybrid at the factory.
- **Zone Bank details** A zone bank can have a zone input card connected, or it may be empty depending on how the Model 7177 is configured. When no zone input card is present, the zone bank displays **None**.
- Panel Interface Shows whether a 7794A IntelliPro is installed in the Hybrid.
- Wired MAC The Media Access Control (MAC) address (which is the physical address) is a unique network identifier assigned to the Model 7177 Hybrid.

- WiFi IPv4 The address of a USB WiFi adapter (used for wireless connection to the Hybrid during configuration is shown.
- WiFi Access Point The IP address of the point where the WiFi adapter connects to the network.
- WiFi IPv4 Network Shows whether the Hybrid is connected by the WiFi adapter to the network.

Tools

The **Tools** tab provides access to the following:

- Text Messages
- Alarm History
- RF Traffic
- IP Traffic
- RF Antenna Test
- Ping
- System Activity Log

To access these features, select the **Tools** tab as shown in red below:

Hybrid Subscriber	Status	Configuration	Accessories	System	Tools	Log Out
-------------------	--------	---------------	-------------	--------	-------	---------

Text Message

A text message can be sent from the 7177 Hybrid to the central monitoring station. Messages from the central station can also be received.

In the **Text Messages** panel, use the message line at the bottom of the panel to enter the message. Messages have a 200-character limit. Click the **Send** button to transmit the message.

Text Messages over Air	
	^
	Ŧ
Type message here (limited 200 characters)	
Type message here (limited 200 characters)	•

Alarm History

Messages sent from the Model 7177 Hybrid, or the alarm panel connected to the Model 7177 Hybrid, are displayed in the **Alarm History** user interface panel.

RF Traffic

Receive and transmit traffic to/from the Hybrid can be viewed using the **RF Traffic** panel. Traffic from other Hybrids can also be viewed.

IP Traffic

Messages that are sent to and from the Hybrid, and which are used for debugging purposes, are displayed in the **IP Traffic** panel.

RF Antenna Test

The RF Antenna Test turns the transceiver transmitter on for approximately 5 seconds and allows use of RF test equipment, such as a SWR meter or power meter. This function allows you to check transceiver RF power output, coaxial cable connections, antenna tuning, and other parameters.

Ping

The ping utility checks network connectivity of the Hybrid. Enter a network address on the form line and click **Submit** to verify the connection.

System Activity Log

The System Activity Log shows 7177 Hybrid information used for diagnostic purposes

8.16 IP Configuration

The IP address of the Hybrid is set in the **Configuration** tab under the **Advanced Configuration** panel. Fixed (static) or automatically assigned (DHCP) addresses may be used. DHCP addressing is the default setting.

IP Address – DHCP

The Hybrid is set to Dynamic Host Configuration Protocol (DHCP) by default. An address is automatically obtained when the Subscriber is connected to a network, or if already connected, when the Hybrid is powered on.

IP Address – Static

When **Static** is selected, the form expands to show:

- IP Address
- Subnet Mask
- Gateway
- DNS Server 1
- DNS Server 2 (Optional)

Obtain information for these settings from the network administrator or other individual who manages network services.

9. System Settings

The **System** tab provides access to system setting features.

9.1 Change Password

Change Password allows the logged in user to set another password for the login account. If the user is logged in with a default account password, a warning about changing the password appears in red letters.

The Login User line displays the current user logged into the Hybrid.

To change the password:

- 1. Enter the existing password into the "Current Password" field.
- 2. Enter a new password into the "New Password" field.
- 3. Re-enter the new password again into the "Confirm" field.

9.2 Add User

Add User allows you to add additional users to the system.

To add a user:

- 1. Enter the user name into the "Username" field.
- 2. Enter the password into the "Password" field.
- **3.** Re-enter the password again into the "Confirm" field.
- 4. When through, click the **Add User** button.

9.3 Buzzer – Onboard Hybrid

The buzzer control enables or silences the onboard Hybrid buzzer. The onboard buzzer can be silenced when a remote annunciator is used. The default setting is **Enabled**.

- 1. To disable, click the **Enable** control so that it changes to **Disabled**.
- 2. When through, click the **Save Change** button.

9.4 LCD Status

The LCD status control enables or disables the LCD for viewing. The default setting is Enabled.

Note: When **LCD Status** is set to **Disable**, hold the **Menu** button on the front panel down for at least **5 seconds** to view any messages.

9.5 Uploading/Downloading Settings

Download Current Settings

Setting information can be downloaded from the Hybrid. Click the **Download** button.

Upload Preconfigured Settings

To upload Hybrid settings to the Model 7177, click the **Choose File** button, select the file, and click the **Upload** button.

Reset to Default Configuration

Hybrid and IntelliPro settings can be set to factory defaults.

- 1. Set the Hybrid Config and/or IntelliPro Config switch to Yes.
- 2. Click the **Reset Configuration** button.

Note: Reset with **Subscriber Config** does not change the existing Hybrid ID and cipher code programmed into the unit.

9.6 System Firmware Update

Upgrading

To upgrade the Hybrid software, clicking the **Choose File** button, select the upgrade file, and click the **Update** button.

Download Support Files

To download system information files, select the file type from the **Select file type** dropdown box, then click the **Download** button.

Restart System

Clicking the **Restart** button causes the Hybrid to halt communication and any system software that may be running. The system software restarts and the Hybrid resumes communication. **Note:** Remote programming is enabled for 10 minutes after a **Restart/Reset**.

9.7 Statistics

The following statistics are available for diagnostic purposes: RF Transmit/Receive (Tx/Rx) Utilization Battery Voltage Primary Voltage Primary & Battery Voltage Click on one of the selections from the Statistics tab to view data.

Statistics -
RF Tx/Rx Utilization
Battery Voltage
Primary Voltage
Primary & Battery Voltage

10. Reporting

10.1 AES Mesh Network

The 7177 Hybrid can eliminate the need for POTS telephone lines by communicating with the 7705i MultiNet using the AES mesh radio network or through TCP/IP.

10.2 Compatible Receiver

The 7177 Hybrid is compatible with the AES Corp. Model 7705i and Model 7705ii MultiNet Receivers.

11. Testing

Some of the tests to be performed at the installation site require a response from a person at the central station.

- Trigger alarm conditions: Confirm that the proper message is received at the Central Station.
- Cause fault conditions: Confirm that the proper message is received at the Central Station.
- If any 7794A IntelliPro is installed, activate the alarm panel connected to the 7794A and confirm that the 7794A handles alarm panel messages.

12. Maintenance

Once installed and normal operation is confirmed, minimal maintenance is required. Monitoring the automatic check-in test messages will confirm proper RF operation. Batteries should be periodically tested to be certain they have sufficient capacity to operate the system.

13. Troubleshooting

The most common causes of an RF failure or trouble are due to:

- Antenna type
- Antenna location
- Coaxial cable
- Coaxial connectors
- Transceiver malfunction

Antennas close to metal or conductive material that block or reflect the transmitted signal are the most common problems.

Try different locations for the antenna or use a remotely mounted long-range RF antenna. Try replacing the transmission components, including the coaxial cable, coaxial connectors, or antenna.

Note: No user serviceable components are located on the circuit boards. Defective circuit board units must be returned to AES. For information on returning units, see the AES Service Procedure under the Warranty section.a

14. Repair Information

Other than the backup battery, no user serviceable parts are located in the 7177 Hybrid.

15. Battery Replacement Instructions

- 1. Remove the positive battery lead (red) from the battery.
- 2. Remove the negative battery lead (black) from the battery.
- 3. Verify that the POWER LED indicator is NOT illuminated.

- 4. Remove the battery from the enclosure.
- 5. Discard the battery in accordance with local disposal codes.
- 6. Install the new battery into the enclosure.

Note: Observe $\frac{1}{4}$ in. minimum separation between non-power limited wiring and power limited wiring.

- 7. Connect the negative battery lead (black) to the battery.
- 8. Connect the positive battery lead (red) to the battery.
- 9. Perform Hybrid power-up and self-test procedure.

16. AES Model 7740 Annunciator Installation Instructions

16.1 Out of the Box

- One Rocker Switch Annunciator with standard ring back
- One Faceplate (red)
- One Gang Back Box (red)

Assembly hardware is included. Wall mounting hardware is not included.

16.2 Installation Instructions

Utilize a standard single-gang mounting box. One gang space is required for each module to be installed. A standard cover plate is required to cover the assembly.

- 1. Label the legend sheet for the AES Model 7740.
- 2. Mount the box securely into the wall.
- 3. Connect conduit and/or pull wiring as required.
- 4. Remove the faceplate from the frame.

Note: Notice the routing of the Silence switch cable if applicable. In most cases, this cable need not be disconnected. Use the slack cable to allow the faceplate to be moved out of the way.

5. Terminate wires and connect the AES Model 7740 Local Annunciator, as shown in the following diagram. The 7740 is powered and supervised by the AES Model 7177 Hybrid.



Figure 7. 7740 Wiring Diagram

- 6. Attach the frame to the box using frame screws.
- 7. Reinsert the faceplate into the frame.
- 8. Single-gang installation only.
- 9. Review and confirm field wiring and setup.
- 10. Damage and/or malfunction can result from improper wiring and/or setup.
- 11. Place the cover over the faceplate and secure with cover screws.

12. Power up the system and test for proper operation of all zones and functions.



Figure 8. 7740 Wire Inputs

17. AES Corp. Contact Information

AES Corporation

285 Newbury Street Peabody, Massachusetts 01960 USA Website: https://www.aes-corp.com AES Corporate Headquarters Toll Free: (800) 237-6387 | (800) AES-NETS Main: USA (978) 535-7310 Fax: USA (978) 535-7313 Email: <u>info@aes-corp.com</u>

18. Combination Trasnceiver and ASM Mounting Bracket Intructions

The Hybrid ships from the factory with the transceiver mounting bracket as shown in the photo below. The ASM is shown connected to the flexible case top antenna.



18.1 Mounting the ASM with an external (non-case top) antenna:

- 1. Remove the case top antenna to ASM RF connector.
- 2. Remove the transceiver mounting bracket. The bracket is held by two screws that thread into the bracket.
- 3. Flip the bracket so it appears as shown in the photo below. The ASM mounting hole is toward the top and front of the case.



P717718090200

- 4. Re-mount the transceiver using the bracket with the two screws just removed.
- 5. Insert ASM into the bottom of the ASM bracket hole.
- 6. Thread the external antenna coax connector (*is not included*) on the ASM connector.

19. Warranty

LIMITED PRODUCT WARRANTY

AES warrants to the original purchaser that the AES Subscriber Unit will be free from defects in material and workmanship under normal use and service for three (3) years from the date of original purchaser's purchase. Except as required by law, this Limited Warranty is made only to the original purchaser and may not be transferred to any third party.

This Limited Product Warranty is made in lieu of any other warranties, expressed or implied, it being understood that all other warranties, expressed or implied, inclusive of merchantability or fitness for a particular purpose, are hereby expressly excluded.

AES assumes no liability for any personal injury, property damage, consequential damages, or any other loss or damage due, among other things, to this product's failure to operate or provide adequate warning. AES's sole responsibility is to repair or replace, at AES's sole option, the AES product that is judged defected by AES during the limited warranty period under the terms of its Limited Warranty.

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AES SERVICE PROCEDURE: Contact AES by Phone (978) 535-7310, Fax (978) 535-7313 or Email service@aes-corp.com, to receive a Return Material Authorization Number. Have the AES part number and serial number ready. Repack equipment in original or equivalent packaging. Inside the box, please include a contact name, telephone number, address and a brief description of the reason for return.

Ship items freight-prepaid to:

Repair Services, RMA#_____ AES Corporation, 285 Newbury Street Peabody, MA 01960 USA

(Contact AES for Return Material Authorization number.)