

# AHJ Field Inspector Guide For: *AES-IntelliNet* Private Radio Network Installation Sites

- Where to Find *AES-IntelliNet* in NFPA-72 Code
- Identifying UL Subscriber Model is UL 864, Ed 9 Listed for Fire Alarm Communications
- Validating That the Subscriber Meets Multiple Path Requirements
- UL Subscriber Programming Options Required for UL Compliance
- Subscriber AC Power Requirements and Trouble Supervision Requirements
- Remote Antenna Options – No UL Restrictions

**Safety Considerations: All equipment must be installed in accordance with National Electric Code, NFPA-70, NFPA-72 and local building codes.**

# NFPA-72 Compliance Sections

- Year 2002 – 8.5.3.5 Table on A.8.5.1
- Year 2007 – 8.6.3.5 Table on A.8.6.1
- Year 2010 – 26.6.3.2 Table on A.26.6.3.3.2

# **U.L. Listings**

## **AES Corp UL File # S5103**

- **UOJZ.S5103 – Control Units, System 7705i, 7170**
  - **CS RU – Central Station System (Receiving Unit)**
  - **P RU – Proprietary System Type (Receiving Unit)**
  - **RS RU – Remote Station System Type (Receiving Unit)**
  - **1W RF – Radio Frequency (one-way private radio)**

# U.L. Listings

## AES Corp UL File # S5103

- **UOXX.S5103 – Control Unit Accessories, System  
Dialer Interface Module – 7067 IntelliTap, 7794 IntelliPro, Fire 7770 FireTap  
One-Way RF Transceivers – 7744-F, and 7788-F**

Fire Transceivers are listed to provide primary alarm communications when connected to any FACP that is capable of providing dry contact outputs for alarm, trouble and supervisory conditions.

Product also serves as a repeater within the AES mesh network

## **UL Fire Installation Site Requires that either a 7788-F or 7744-F AES-IntelliNet Subscriber be connected to a UL listed FACP**

The following is a Hand Held Display of U.L. Fire Basic Requirements:

- Press Shift –F4 on Handheld Programmer
- Validation that AES Model # on Top Line of Handheld is 7788-F, or 7744-F

```
SUB 2.64Z5 7788F  
ID#: 0007 (C) 2009 AES  
RT1: FF52 LEVEL: 1  
STAT: 300 NETCON: 5
```

## ***AES-IntelliNet* Multi Path Concept**

Each protected premise outfitted with an AES subscriber is linked to the *AES-IntelliNet* network by this subscriber unit. The network allows distant subscribers to relay alarm messages to the network receiver hub. Signals follow options at that moment, ensuring fast, reliable alarm communications.

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# Multiple Path Validation

All fire alarm installations require 2 paths which is validated on *AES-IntelliNet* with a Netcon reading of 5. To validate that an AES subscriber has multiple paths of communications available, conduct the following with your handheld (HH) programmer:

- **Step 1 – Connect HH programmer to subscriber unit**
  - **Step 2 – Press F4, or CTRL T to view routing table**
  - **Step 3 – Netcon 5 confirms multiple paths are present**
- AES technician of installing company will be pleased to provide this data for your inspection.**

# In-Depth Netcon Explanation

- Understanding the Main display will help in confirming the transmission path that the unit is using to communicate
- The Term NETCON is used to describe the “NETWORK CONNECTIVITY”
- To satisfy NETCON the subscriber has establish a minimum of 2 unique paths from its installation location.

## **Below are examples that describe the differences:**

- NETCON 7 – The Subscriber has found no stable transmission route
- NETCON 6 – The Subscriber has only (1) established route
- NETCON 5 – The Subscriber has established (2) two separate routes thus satisfying UL requirements for 2 routes

# AES Reference Definitions

- **Link Layer** – “Level” on handheld programmer; indicates number of “hops” from protected premise to network receiving hub. Link layer 1 is directly connected, Link layer 2 connects through 1 subscriber unit, etc
- **NETCON** – “NETwork CONnectivity” is the internal rating function used by *AES-IntelliNet* radio units to maintain place in network. Rating of 5 indicates multiple paths are in place to the dispatch center
- **RT 1** – Refers to “first route, primary route in routing table
- **Dynamic Routing Table** – Provides real time “peer list” of network devices that this site communicates through to pass data to dispatch center

## Programming Options Required for UL 864 Compliance

**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:**

<b>Program Group</b>	<b>Permitted in Feature or Option</b>	<b>UL 864 (Y/N)</b>	<b>Settings permitted in UL 864</b>
Timing Parameters (24 – hour check-in)		Y	
	AC Fail Report Delay	Y	R (Random) or 0-60 (Minutes)
	Reporting Delay	Y	10 – 20 Seconds
Zone Programming			
	Fire/Trouble PKT	Y	Y
	Zone Programming	Y	If zone is in use F If not in use B
	Restoral	Y	R
Set Modes			
	Enable Repeating	Y	Y
	Suppress AC Fail	N	N
By Remote programming only			
	Acknowledge Delay *	Y	Not greater than 60 Seconds

\* Acknowledge delay is used in detecting the existence of a functional antenna and therefore affects antenna cut detection.

# UL - 24 hour Timer Confirmation

- Confirm 24 hour requirement using a Handheld programmer using the ( Control + F2)

```
CHKIN TIME—OLD: NEW  
ENTER HRS——24:  .  .  
  
ENTER MINS——00:  .  .
```

Hour Setting For Timer Test

The approved timer test interval is ( 24 hours Max)

## UL Points of Protection Set to “F” on the Subscriber

### Using the handheld programmer confirm zone types ( Control + F3)

- Confirm that all zones being used for fire are programmed in as ( F )

```
ZONE BANK 0  
SET ZONE (BSF) B0  
OLD FFFFBBBBB LOW>HI  
NEW . . . . .
```

All Zones being used for Fire system transmission must be defined as ( F )

- Confirm all zones used provide a restore signal as shown ( R )

```
SET RESTORAL (XR) B0  
OLD RRRRRRRRR LOW>HI  
NEW . . . . .
```

Zone set for restoral

# AC Power Requirements

**Note AC power wiring must be physically protected and have the following**

- Transformer Enclosure Part #AES 1640-ENCL
- With Transformer Power In: 16.5VAC, 40VA, Class 2 (dry) source only
- Use AES P/N 1640, or AMSECO P/N XF1640
- The transformer shall be secured with the attachment screw

## Local Supervision of Subscriber Trouble Conditions

- **For RF Type 6 Fire Alarm Systems, and Central Station Burglar Alarm Systems**
  - The J4 will change state when the AES unit has a trouble condition or loss of RF network connectivity may be present. The connection from the J4 must be electronically supervised by either a Piezo with instructions to call, or a trouble output to the FACP Annunciator.
  - The Form “C” relays are wired “Failed Secure” to ensure proper 24 hour supervision and immediate annunciation at the protected premise

## Remote Antennas

- Use of Remote Antennas With 7788-F are UL Approved
- There is no UL restriction on the type of antenna
- Antennas must be installed in accordance with National Electric Code and local building code.
- A protective surge arrestor, AES P/N 52-0054 must be installed with any type of Remote Antennas
- Coax Cable to Antenna Must Be Protected in Conduit (7788-F manual – see page #12 for conduit notation)

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**Thank You For Your Attention**

**Any Questions?**

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