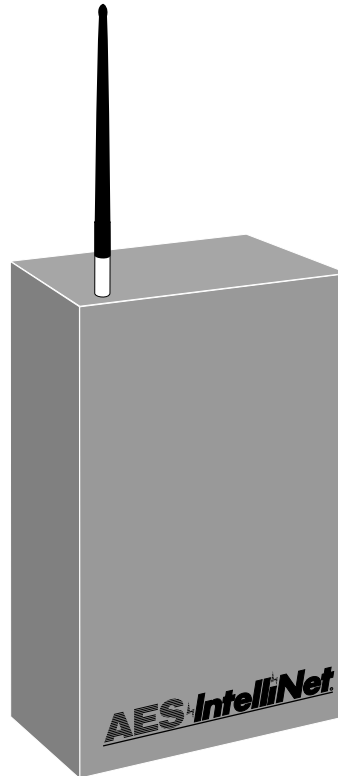# AES•7750-*F*

Including 7750-F-<u>4x4</u> and 7750-<u>F-8</u>
RF Subscriber Unit Version 2
INSTALLATION & OPERATION MANUAL

AES•IntelliNet

c (UL) us
LISTED

1 1   1 0   0 3

AES•IntelliNet®

Table of Contents

Model Number 7750-F-8 Series Subscriber Unit
Electrical Rating: 12VDC nominal

Current Draw:	Standby	Transmit
Subscriber Unit Only	584ma	1.55A
Subscriber Unit & 7068 'Tap	660ma	2.00A

Onboard Fuse: Self Resetting / Not User Serviceable

In-Line Battery Fuse: 3 Ampere
12V Rechargeable Battery*: 7AH (24 Hr); 14AH (60 Hr)
*If battery(s) are housed in separate enclosure see page 8.
 Low battery condition is reported to the central station.
All Circuits Power Limited.

Model Number 7750-F-4X4 Series Subscriber Unit
Electrical Rating: 12VDC nominal

Current Draw:	Standby	Transmit
Subscriber Unit Only	230ma	1.2A
Subscriber Unit & 7068 'Tap	295ma	1.3A

Onboard Fuse: Self Resetting / Not User Serviceable

In-Line Battery Fuse: 3 Ampere
12V Rechargeable Battery*: 7AH (24 Hr); 14AH (60 Hr)
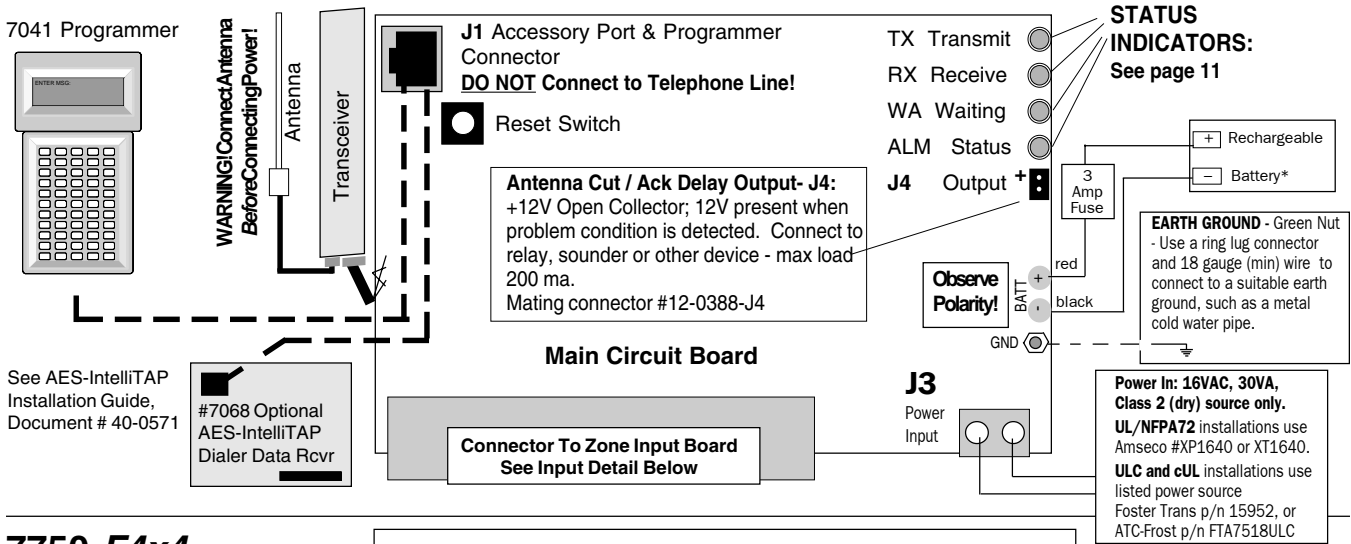*If battery(s) are housed in separate enclosure see page 8.
 Low battery condition is reported to the central station.
All Circuits Power Limited.

Wiring and Parts Location Diagram
AES 7750-*F* Series Radio Subscriber Unit

WARNING: For Continued Protection Against Fire, Replace Only With Same Type and Rating of Fuse
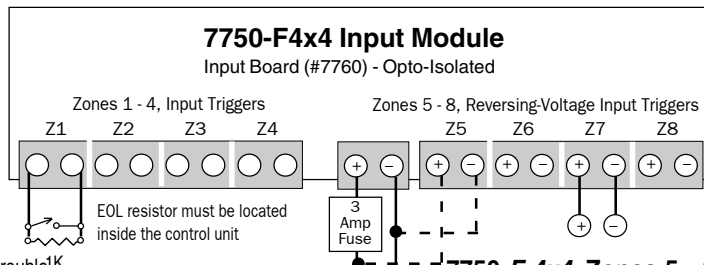
7041 Programmer

WARNING! Connect Antenna Before Connecting Power!

Antenna

Transceiver

J1 Accessory Port & Programmer Connector
DO NOT Connect to Telephone Line!

Reset Switch

Antenna Cut / Ack Delay Output- J4:
+12V Open Collector; 12V present when problem condition is detected. Connect to relay, sounder or other device - max load 200 ma.
Mating connector #12-0388-J4

Main Circuit Board

See AES-IntelliTAP Installation Guide, Document # 40-0571

#7068 Optional AES-IntelliTAP Dialer Data Rcvr

Connector To Zone Input Board See Input Detail Below

TX   Transmit
RX   Receive
WA   Waiting
ALM   Status

STATUS INDICATORS: See page 11

J4   Output   **+**   3 Amp Fuse

+ Rechargeable
− Battery*

Observe Polarity!   BATT   + red   − black

GND

EARTH GROUND - Green Nut - Use a ring lug connector and 18 gauge (min) wire to connect to a suitable earth ground, such as a metal cold water pipe.

J3 Power Input

Power In: 16VAC, 30VA, Class 2 (dry) source only.
UL/NFPA72 installations use Amseco #XP1640 or XT1640.
ULC and cUL installations use listed power source Foster Trans p/n 15952, or ATC-Frost p/n FTA7518ULC

7750-*F4x4* Zone Inputs

7750-*F4x4* Zones 1 - 4

Typical Input: Dry Contact
EOL Programmable Options:
Supervised, Fire, Bypass; Restorals

Shown Wired for Fire / EOL:
1K resistor = Normal / Close = Alarm / Open=Trouble!
Max Line Impedance = 100 ohms plus EOL resistor.

Power must be provided to input board for Zones 1 - 4.
Requires 8-28VDC to terminals (J4) at center of input board. Internal battery may be used, but earth ground will be tied to common terminals. This may affect connection to other panels. If earth ground cannot be used, supply the input board with power from the alarm panel.

Zones 1-4, To monitor power on Input Board when powered by an alarm panel: For all Commercial Fire, UL burglar and Canadian UL burglar alarm installations, use one of the Z5-Z8 as a power fail report. Bridge power to one of the Z5-Z8 inputs. Program the zone for "F". If power fails, the zone reports "Trouble". Flag this at the central station in automation software as a power fail.

7750-F4x4 Input Module
Input Board (#7760) - Opto-Isolated

Zones 1 - 4, Input Triggers
Z1   Z2   Z3   Z4

Zones 5 - 8, Reversing-Voltage Input Triggers
Z5   Z6   Z7   Z8

EOL resistor must be located inside the control unit

1K

3 Amp Fuse

Power for Zones 1-4 12VDC nominal
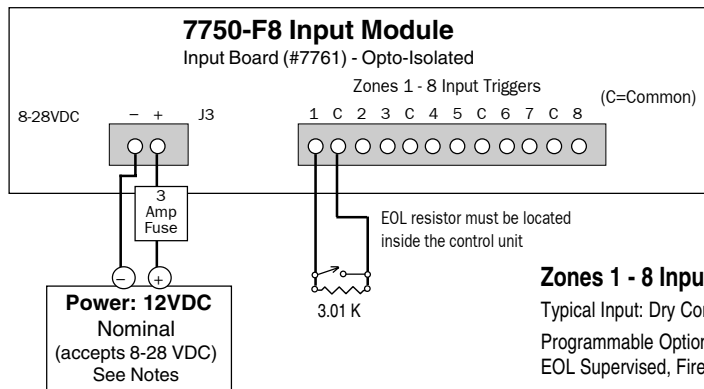(accepts 8-28 VDC)
See Notes

7750-*F-4x4*, Zones 5 - 8, Reversing-Voltage Input from Fire Panel,
• **Input Range: 10 to 30VDC filtered;**
   +/− Voltage as Shown = Normal
   −/+ Reversed Voltage = Alarm
   Low / No Voltage = Trouble
• Intended for Connection to a Polarity Reversal Circuit of a Control Unit having Compatible Ratings (example on zone 7).
• Also used to monitor power when a remote source is used to power isolated zones 1-4 (example on zone 5).
• Current Draw for Zones 5-8, at 10V=2.5 ma; at 30V=10 ma.
• The Reversing Voltage inputs are self powered.
• Program unused inputs for BYPASS, otherwise unused inputs report as "trouble".

7750-*F8* Zone Inputs

Power must be provided to 7761 "F-8" input board. Requires 8-28VDC to terminals (J3) at lower left of input board. Internal battery may be used, but earth ground will be tied to common terminals. This may affect connection to other panels. If earth ground cannot be used, supply the input board with power from the alarm panel.

7750-F8 Input Module
Input Board (#7761) - Opto-Isolated

Zones 1 - 8 Input Triggers   (C=Common)
1 C 2 3 C 4 5 C 6 7 C 8

8-28VDC   − +   J3

3 Amp Fuse

EOL resistor must be located inside the control unit

Power: 12VDC Nominal
(accepts 8-28 VDC)
See Notes

3.01 K

Zones 1 - 8 Input Triggers

Typical Input: Dry Contact

Programmable Options:
EOL Supervised, Fire, Bypass; Restorals

Shown Wired for Fire / EOL:
3.01K resistor = Normal / Close = Alarm / Open=Trouble.
Max Line Impedance = 300 ohms plus EOL resistor.

To monitor power on Input Board when powered by an alarm panel: For all Commercial Fire, UL burglar and Canadian UL burglar alarm installations, use one of the zones as a power fail report. Install a 3.01K resistor on the designated zone terminals. Program the zone for F / Fire. When power to the input board is lost, zone will report a "Trouble". Flag this as a power failure at the central station / automation software.

Commercial Fire Alarm Installation and UL Compliance

UL Burglar Installations Tamper Protection: A UL Listed tamper switch that protects the cover against removal is required on the 7750-F Additionally, when the 7750-F is used on a Safe or Vault UL burglar alarm installation, a rear pry-off tamper and a shock sensor UL Listed for protection of sheet metal enclosures is also required to be mounted on the inside of the 7750-F unit.

Canadian Burglar Alarm Installations: A tamper switch listed for use in Canada is required for protection of the 7750-F's cover. Additionally, when the 7750-F is used on a Safe or Vault burglar alarm installation in Canada, a rear pry-off tamper and a shock sensor Listed for protection of sheet metal enclosures is also required to be mounted on the inside of the 7750-F unit. The rear pry-off tamper and shock sensor must be Listed for use in Canada.

Power Requirements: 16 VAC, 30VA;
• For UL certified burglar installations, use the Listed AMSECO transformer p/n XP-1640 or XT-1640,
• For commercial fire alarm installations in the U.S., use the Listed AMSECO transformer p/n XP-1640 or XT-1640.

• For commercial fire alarm installations in Canada, use the Listed Foster Model 15952 transformer or ATC-Frost model FTA7518ULC.

• Do Not Connect To A Receptacle Controlled By A Switch

Back Up Battery Requirement, Commercial Fire

• Central Station Fire Signalling (24hr): use a 12V, 7 AH battery

• Remote Station Fire Signalling (60hr): use a 12V, 14 AH battery pack (see page 8)

 **UL 681, CAN/ULC-304-M88 and CAN/ULC-S303-M91:**

• Commercial Burglar Alarm Installation (4hr) use 12V, 7 AH battery

• Replace battery(s) every 3 years

7750-*F* EOL Inputs / Zones: EOL Alarm Inputs must be programmed for <u>S</u>upervised or <u>F</u>ire.

• **Type of signaling service;** manual fire alarm, automatic fire alarm, sprinkler supervisory and water flow alarm.

• **For a UL and ULC certified system,** maintenance contracts must be in force between the central station issuing the certificate and the subscriber with the certificated system.

• **For Central Station Burglar Alarm Systems that Require Two Methods of Signal Transmission** (see chart pg 6) - connect the J4 output of the 7750-F Subscriber Unit main circuit board (see page 3) to a relay module that will cause the alarm panel to generate a local audible and visual annunciation when the antenna is cut.
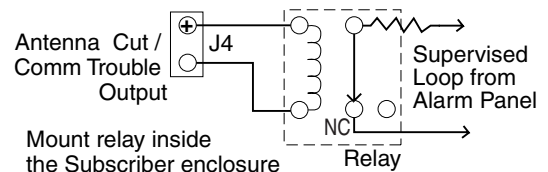
• For U.S. fire alarm installations, the relay module must be UL Listed for commercial fire alarm service.

• For Canadian fire alarm installations, the relay module must be Listed for commercial fire alarm service in Canada.

• For UL burglar alarm installations the relay module must be UL Listed for commercial burglar alarm service.

• For commercial burglar alarm installations in Canada the relay module must be Listed for commercial burglar alarm use in Canada.

When used for fire or burglar alarm installations, the relay module must be located inside the 7750-F subscriber unit. The wire connections between the control panel and the relay module must be supervised against opens, shorts and grounds.

• **For UL Grade A and AA Central Station Burglar Alarm** Installations, the 7750-F subscriber unit shall be connected to a UL Listed central station control panel such that:

a) Opening and closings signals are provided.

b) A means is provided for the central station operator to signal the subscriber that a normal closing signal has been received (i.e. a ringback signal).

c) The control panel and the AES radio Subscriber Unit must monitor each other's method of signal transmission. The operable method of signal transmission shall send a signal to the central station if the other method of signal transmission is unable to transmit. The signal shall identify the condition.

d) The time lapse between the occurrence of the above, such as the removal of the antenna, that can prevent the receipt of signals from the protection system and the annunciation and recording of that condition at the central station shall not exceed 200 seconds.

e) The time lapse between the occurrence of a status change in a protection system and the annunciation and recording of that change at the central station shall not exceed 90 seconds.

f) The cover to the 7750-F is protected with a UL Listed tamper switch.

• **For UL Grade B and BB Central Station Burglar Alarm** Installations, the 7750-F subscriber unit shall be connected to a UL Listed central station control panel such that:

a) Opening and closings signals are provided.

c) The control panel and the AES radio Subscriber Unit must monitor each other's method of signal transmission. The operable method of signal transmission shall send a signal to the central station if the other method of signal transmission is unable to transmit. The signal shall identify the condition.

d) The time lapse between the occurrence of the above, such as the removal of the antenna, that can prevent the receipt of signals from the protection system and the annunciation and recording of that condition at the central station shall not exceed 200 seconds.

e) The time lapse between the occurrence of a status change in a protection system and the annunciation and recording of that change at the central station shall not exceed 90 seconds.

f) The cover to the 7750-F is protected with a UL Listed tamper switch.

• **For UL Grade A and AA Police Station Connected Burglar Alarm** Installations, the 7750-F subscriber unit shall be connected to a UL Listed central station control panel such that:

a) The time lapse between the occurrence of a status change in a protection system and the annunciation and recording of that change at the central station shall not exceed 90 seconds.

b) The control panel is connected in conduit to a UL Listed burglar alarm sounding device. Depending upon the particular installation an alarm sounding device housing may also be required.

c) A bell test on arming is also provided.

• **For UL Grade C and CC Central Station Burglar Alarm** Installations, the 7750-F subscriber unit shall be connected to a UL Listed central station control panel such that:

a) The control panel and the AES radio Subscriber Unit must monitor each other's method of signal transmission. The operable method of signal transmission shall send a signal to the central station if the other method of signal transmission is unable to transmit. The signal shall identify the condition.

b) The time lapse between the occurrence of the above, such as the removal of the antenna, that can prevent the receipt of signals from the protection system and the annunciation and recording of that condition at the central station shall not exceed 200 seconds.

c) The time lapse between the occurrence of a status change in a protection system and the annunciation and recording of that change at the central station shall not exceed 90 seconds.

For Safe and Vault Burglar Alarm Installations for any Grade, the 7750-F must also be protected with a UL Listed rear pry-off tamper and a shock sensor Listed for the protection of sheet metal enclosures.

Compliance Chart - AES 7750-F SUBSCRIBER UNIT

For All Commercial Fire Alarm Installations (NFPA72), UL Commercial Burglar Alarm Installations (UL 681 * 827), and Commercial Burglar Alarm installations in Canada CAN/ULC-S304-M88 & CAN/ULC-S303-M91.

UL 864 / NFPA-72 Standard for Control Units for Fire Protective Signaling Systems (UOJZ and UOXX, UOJZ when installed as part of the AES-IntelliNet Receiving System and UOXX when used as an accessory unit with other Listed Receiving System equipment. Includes 4, 5, 6 and 7.

UL 1610, Standard for Central Station Burglar Alarm Units (AMCX).

UL 365, Standard for Police Station connected Burglar Alarm Units and Systems (APAW).

UL 609, Standard for Local Burglar Alarm Units (AOTX) when remote signaling is required.

UL 1076, Standard for Proprietary Burglar Alarm Units and Systems

	Battery Requirement 4/24/60	Accessory Battery Case Req.	Tamper Protection - Case	Supervision -Inputs	Req'd # Paths to Central	Check-In Interval (#/See Notes)	Shock Sensor Required	Rear Pry Off Sensor Required	More Than One Method of Signal Transmission Req (ie DACT, Der Ch, Mpx Line)
A) Proprietary Fire (UL 864 / NFPA72, UOJZ, UOJZ7, IPXX7)	24	No	No	Yes	T6-2 T7-2	24 hr 24 hr	No	No	No
B) Central Station Fire (UL 864 / NFPA72, UOJZ, UOJZ7, IPXX7)	24	No	No	Yes	T6-2 T7-2	24 hr 24 hr	No	No	No
C) Remote Station Fire UOJZ, UOJZ7, UOXX, UOXX7)	60	Yes	No	Yes	T6-2 T7-2	24 hr 24 hr	No	No	No
Central Station Burglar Alarm (UL 1610, CAN/ULC-S304-M88, AMCX, AMCX7	4	No (opt)	Yes	Yes	1	AA-(1,2) A(2,3) B(3) BB (1) C (3) CC (1)	On S+V only (5)	On S+V only (5)	Yes No, No Yes No Yes
Police Station Connected Burglar Alarm (UL 365, CAN/ULC-S303-M91, CAN/ULC-S301-M88	4	No (opt)	Yes	Yes	1	AA (1) A (3,5)	On S+V (5)	On S+V (5)	Yes No
Local Burglar Alarm - when remote monitoring is required (UL609, CAN/ULS-S303-M91, AOTX, AOTX7)	4	No (opt)	Yes	Yes	1	A (4,5)	A(4)	A(4)	Opt
Type 6 Fire	24 or 60	Yes for 60	No	Yes	2	24 hr	NA	NA	No
Type 7 Fire	24 or 60	Yes for 60	No	Yes	2	24 hr	NA	NA	No

Type 4, 5 Fire Available; Contact AES for details

See Notes, next page

FOOTNOTES for Compliance Chart on page 6:

1. Since opening/closing and ringback signals are provided by a second communications method (DACT), the minimum check in time for Grade AA, BB, or CC Central Station Burglar Alarm installation is a least once every 6 minutes.

2. Check-in signals do not apply to Grade A.

3. Grade B and C central station and Police Station Connected Burglar alarm installations require a 24 hour check in.

4. Grade A Local Burglar Alarm installation only refers to equipment of the protected premise. When remote alarm monitoring is required, the 7750 or 7750-F is suitable.

5. For Safe and Vault (S&V) installations, a rear pry-off tamper switch and a shock sensor, Listed for protection of sheet metal enclosures, is required on the subscriber unit, in addition to a cover tamper switch. (This also applies to any burglar alarm installation where the subscriber unit has to be mounted outside the protected area.)

6. UL Local Burglar- and Police Station Connected- burglar alarm installations are roughly the same as ULC's Local Burglar Alarm installation except there is no recognition for line security. Thus, Canada's Local Burglar Alarm installation would be Grade A with or without the connection of remote monitoring.

7. Grade A is a rough equivalent to Level I line security in Canada. Grade AA is roughly equivalent to Level II line security in Canada.

For UL installations, the wire linking alarm panel to 7750-F must use electrically supervised inputs (program the subscriber unit for Supervised or Fire Supervised accordingly). If inputs are not supervised, the 7750-F Subscriber Unit must be mounted a) no more than 3 feet away from the control panel, b) within the same room as the control panel with no intervening barriers between the two units and c) all interconnecting wiring from the control panel to the subscriber unit must be run in conduit or the equivalent. Supervision of the zone inputs must be in compliance with the requirements of NFPA 72 for the type of initiating device and initiating device circuit being monitored.
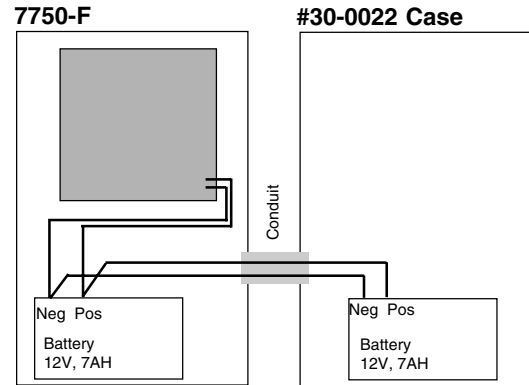
Commercial Fire and Other Applications Requiring 60 Hour Backup Power

Use two (2) 12V / 7AH batteries. A second case is required, linked by conduit. Use a listed case, such as AES # 30-0022.
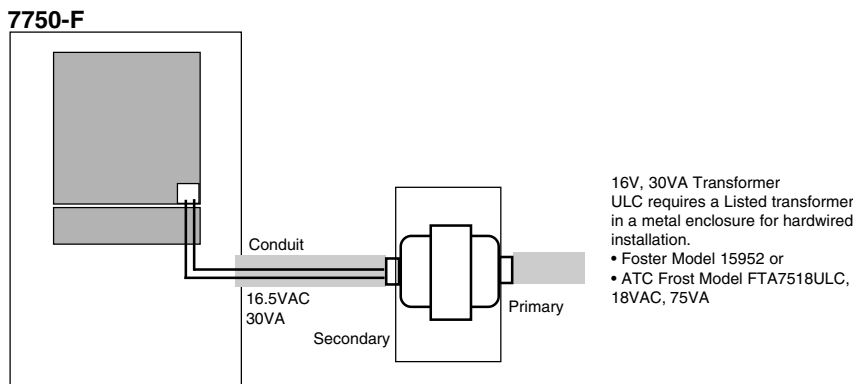
When required for UL Burglar alarm systems, use a UL Listed tamper switch on the cover of the battery enclosure.

*If battery(s) are housed in separate enclosure, the enclosure must be connected by conduit to the subscriber unit. For burglar alarm installations in the U. S. the enclosure and the tamper switch for protection of the cover must be UL Listed. For Canadian burglar alarm installation the enclosure and cover tamper switch must be Listed for use in Canada.

Suggested accessory: AES box p/n 30-0022 (red box p/n 30-0022-RED).

7750-F   **#30-0022 Case**

Conduit

Neg Pos   Neg Pos

Battery
12V, 7AH   Battery
12V, 7AH

Notes for <u>Canadian Commercial Fire </u>Alarm Installations

7750-F

Conduit

16.5VAC
30VA

Secondary   Primary

16V, 30VA Transformer
ULC requires a Listed transformer in a metal enclosure for hardwired installation.
• Foster Model 15952 or
• ATC Frost Model FTA7518ULC, 18VAC, 75VA

For cUL or ULC listed installations, the transformer must be permanently wired to its electrical outlet, or main power connection. It must be housed in a suitable metal enclosure, Listed for use in Canada, and that is provided with conduit connections. Suggested Transformers: Foster Transformer model 15952, or ATC Frost model FTA7518ULC. **The transformer may be mounted inside the case of the 7750-F, if space allows.**

Signal Channel Security Levels: The 7750-F is good for Level I and Level II Signal Channel Security.
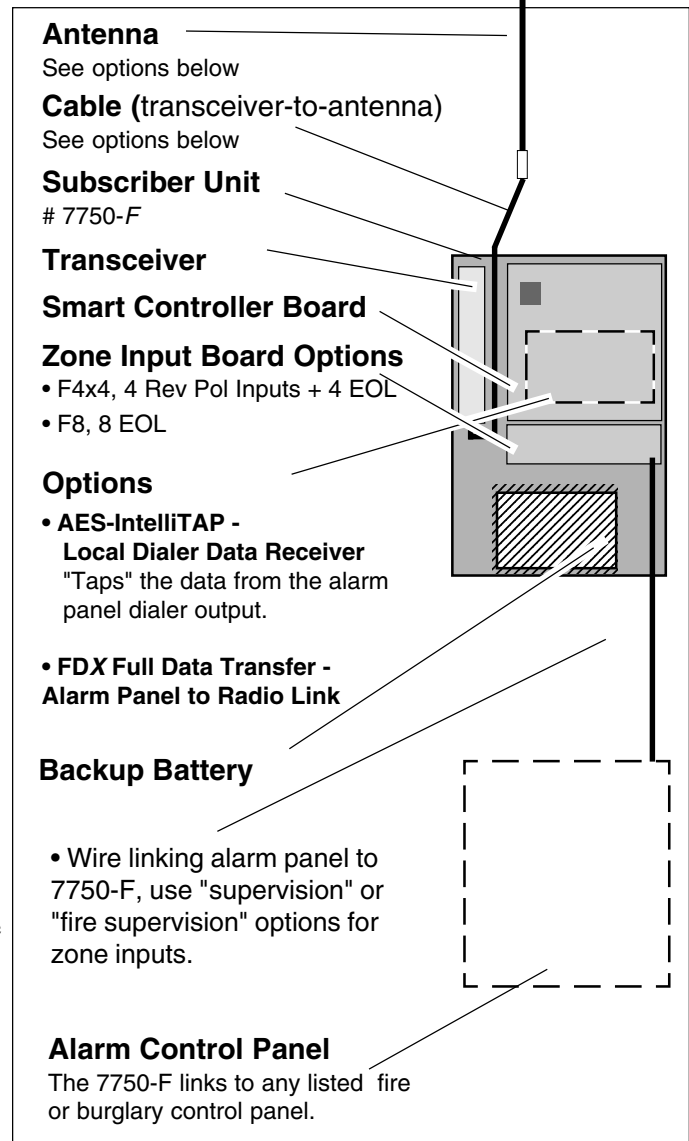
PHYSICAL INSTALLATION

SUBSCRIBER UNIT

Choose a secure, dry location for the subscriber unit. The unit must be in a climate controlled area, avoiding extremes of heat or cold. Attach to a suitable, strong surface using proper fasteners. Pre-cut "knockout" holes are provided on the back and sides of the case for wiring access - After the subscriber unit is mounted, install the radio transceiver. For burglar applications, the unit should be located away from the alarm control panel - hidden if possible - and must be within the protected area. If an intruder attacks the control panel, the transceiver will still be able to send a signal.

ANTENNA

The antenna should be mounted in a location near the transceiver to minimize signal loss due to cable length. Also, it should be located as high as possible, on or in the structure, with attics and rooftops locations preferred (Subscriber Unit must <u>not</u> be located in the attic as extremes of temperature can affect performance.) The antenna must be grounded properly to prevent lightning damage in accordance with building codes. To protect against attack for burglary applications, the antenna and cable must be within the secured area.

Antenna Location is Important - In many cases, the 2.5db case-mounted antenna (#7210-3-UR/C, below) is adequate. Otherwise, use a separate antenna positioned as high as possible and away from metal: some structures are insulated or sided with metal foil-backed materials, or may contain a lot of metal reinforcement inside the walls. This causes significant radio signal loss. In such cases, choose a location outdoors (inaccessible to intruders for burglary uses), in the attic (assuming that the roof has no foil) or near a window. Position the antenna away from metallic surfaces of any kind. Antenna must be mounted in a <u>vertical</u> position for best performance.

Antenna
See options below

Cable (transceiver-to-antenna)
See options below

Subscriber Unit
7750-*F*

Transceiver

Smart Controller Board

Zone Input Board Options
• F4x4, 4 Rev Pol Inputs + 4 EOL
• F8, 8 EOL

Options
• **AES-IntelliTAP -**
  Local Dialer Data Receiver
  "Taps" the data from the alarm
  panel dialer output.

• **FD*X* Full Data Transfer -**
  Alarm Panel to Radio Link

Backup Battery

• Wire linking alarm panel to
7750-F, use "supervision" or
"fire supervision" options for
zone inputs.

Alarm Control Panel
The 7750-F links to any listed fire
or burglary control panel.

ANTENNA OPTIONS (460-470 MHz)

• **2.5 db Antenna & Cable** - mounts on Sub-scriber Unit case, **order p/n 7210-3-UR/C**

• **3 db Stealth Antenna & Cable** - mounts in attics, vents, walls, behind drapes **order p/n 7211**

• **5 db Antenna*** - steel mast, in/outdoor, with mount, 3 ft, **p/n 7210-5-UM**

• **6 db High Gain*** - fiberglass mast, in/outdoor, with mount, 4.5 ft, **p/n 7210-6-UC**

• **7 db High Gain*** - fiberglass mast, in/outdoor, with mount, 6 ft, **p/n 7210-7-US**

• **9 db High Gain*** - fiberglass mast, in/outdoor, with mount, 8 ft, **p/n 7210-9-UC**

*=requires cable, see below:

CABLES, BNC/N, for all AES Subscriber Units, hi performance, low loss for -UM, -UC and -US antennas. Cables and connectors are pre-as-sembled and tested.

• **10 Ft Cable, p/n 7220-10-N**

• **25 Ft Cable, p/n 7220-25-N**

Power Up, Initial Programming

NOTE: When a subscriber unit is powered up, it immediately enrolls itself on the network, generating signals to the central station. Central station operators must be forewarned of activity on this account to avoid the chance of false alarm.

Connect handheld programmer to the controller board (see diagram, page 3). Note that all AES subscriber units use the same programmer, but there are two types of connector/cable assemblies. The 7750-F uses the type with the 6 pin modular telephone type plug at both ends (available from AES).

Connect power to the unit: 12V, 7AH (or larger) battery to battery terminals. Then, with the transformer NOT plugged in, connect the output of a 16-18VAC, 30-40 VA class II transformer to the power input terminals. Plug in power to the power input (see page 3). Be certain that the transformer is connected to an outlet that is NOT controlled by a switch. (See also UL and cUL Compliance notes on pages 4-8.)

After power is connected, **push Reset Button for a fresh reset.**

> The controller runs a "self test". After a few seconds, a message will appear on the handheld programmer:

```
SELFTEST-PASS
SUB [rev#]  7750F
ID#: [4 digit ID number] (C)[YEAR] AES
```

> If the message reads SELFTEST - PASS, you may proceed to the "Programming the Subscriber Unit" section. Note that the current ID# for this unit is displayed, as well as the software version and date.

> If the messages reads SELFTEST - FAIL [Error Code], retry the procedure by pushing the controller RESET button (see diagram). Errors reported during the self test may be the result of transient conditions caused during a cold power up or by power interruptions during a programming procedure. Pushing the RESET button clears many of these problems.

> If the Fail message persists, see the list of error messages on following page.

> Repeat the procedure several times if necessary. If the unit consistently fails the self test, it must be serviced.

SELF TEST ERROR MESSAGES: An [Error Code] is listed when the unit fails the self test. Some may be correctable on site. Check that all IC's are seated properly in their sockets - on rare occasions chips may come loose in shipment.

Message: **01   Battery / power input is low.**
Procedure: Push RESET button, see if unit will pass self test; If the unit fails
and reports the same message, replace battery and/or check main power voltage.

Message: **02   Random Access Memory (RAM) Checksum failure;** may be caused by
initial power up, or by power interruption during a programming procedure.
Procedure: Push RESET button, check if unit will pass self test; If unit passes,
please note that it must now be reprogrammed (see next section). If unit
fails, memory may be damaged and require service.

Message: **03   Self test detects both problems 01 and 02 above.**
Procedure: Follow procedures described in 01 and 02 above.

Message: **04 or 06,   EEPROM Failure**
Procedure: Push RESET button. If the unit fails and reports the same message, EEPROM
chip may be bad. Push RESET button: if unit passes, <u>please note that it must now
be reprogrammed</u> (see next section). If unit fails, memory may be damaged and
require service.

Message: **08,   Analog Digital Converter / ADC Failure**
Procedure: Same as 04 / 06 failure, see above

Message: **80   Loopback Test Failure,** common on initial power up
Procedure: Push RESET button, unit will likely pass self test; If the unit fails repeatedly and
consistently reports the same message, contact factory for service.

Message: **100   AC Not Present**
Procedure: Check AC power input, transformer

Other Messages: Unit requires AES authorized servicing. Report error code to AES service rep.

IMPORTANT! STATUS INDICATORS - A Key Source of Information
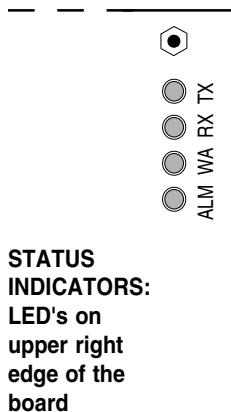
TX - indicates radio transmit
RX - indicates radio receive (includes any radio on activity on this frequency)
WA - Steady On = Waiting for acknowledgment of last transmission;
  - Steady Blinking = Not on Network;
  - Off = Normal

AL - Alert / troubleshooting indicator, "blink" codes as follows:
"•" = short, " − " = long

•	•	•	steady blink - system OK;
• •	• •	• •	short-short blink - low battery;
• −	• −	• −	short-long blink - an input zone is in alarm or trouble;
• • −	• • −	• • −	short-short-long blink, low batt & zone in alarm/trouble;
• • •	• • •	• • •	short-pause-short-short, AC Fault
• • • •	• • • •	• • • •	short-short-pause-short-short, AC fault & low batt
		────────	steady / no blink - Selftest failure (excl low batt)

STATUS INDICATORS: LED's on upper right edge of the board

ALM WA RX TX

PROGRAMMING THE SUBSCRIBER UNIT

Having passed the SELFTEST procedure, you are now ready to program the subscriber unit. Previously programmed information is stored in nonvolatile memory, so the settings are not lost during a power down or failure condition.

Overview of Programming Items:

• **THE ID NUMBER** selected for this subscriber unit must be unique, different from all other ID numbers in the system.

• **THE CIPHER** must be the same for all subscriber units and the central station on the network. The cipher serves as a password for units monitored by a specific central station. Thus if more than one AES-IntelliNet network is operating on the same radio frequency, the networks are kept separate by this code.

• **ENABLE REPEATING** function is used to enable or disable the subscriber units ability to relay messages. In general, enter Y/yes for all standard subscriber unit installations. However, mobile units must never use repeating - enter N/no for these applications.

• **CHECK-IN TIME*:** is the interval between supervisory signals to the central station. The allowable range is 1 minute to 24 hours. Use short check-in times ONLY for those installations that require it. Short check-in times create traffic that may slow the network speed.

• **THE REPORT DELAY*:** defines how often a unit can report an additional alarm. This allows the subscriber unit to accumulate multiple alarm events for each report, and assures the orderly flow of information through the network. The range is 0-330 seconds, the default is 10 seconds.

• **ZONE PROGRAMMING*:** The 7750F offers 2 zone input board options:
• The "F-8", with 8 - EOL zone inputs,
• The "F-4x4" with 4 - EOL inputs and 4 - reversing polarity inputs.
Zones can be individually programmed. For the EOL inputs, choose from Supervised, Fire Supervised or Bypass. Other options include reporting of zone input Trouble** and Restoral. Use Restorals ONLY for those installations that require it. Restorals create traffic that may slow the network speed.

• **ESCAPE/ ABORT FEATURE:** press the ESC escape key on the programmer to abort an operation at any time. NOTE: If you started to enter data and then press Escape, you may lose the data that was stored there. In this event, repeat the programming procedure.

• **TIMEOUT/SAFEGUARD FEATURE:** During programming, you have one minute to complete a function procedure. After one minute passes, the procedure is aborted. The message appears: TIMEOUT.

> ***NOTE:** Functions noted by a * may be programmed using either the handheld programmer or the AES Net software supplied with the AES 7100/7700 Central Station Controller. It is much easier to use the Net software to program the subscriber units. **If the AES Net7K or Net77 software is used in the system, it is recommended that these functions be programmed using the Net software to enable it's powerful, centralized database capability.**

> ****NOTE:** Reporting of "Trouble" packets messages requires a version 1.70 or newer receiver. PRE-VERSION 1.70 RECEIVERS WILL NOT RECEIVE TROUBLE MESSAGES.

> Check with the central station manager. If the receiver is pre-1.70, it should be upgraded to the current version. Contact AES Corporation or details.

Procedure: SETUP UNIT - CTRL+F1

The initial unit setup must be done with the handheld programmer.

> NOTE: Entering new data with this function will overwrite (erase) any previously stored information on ID# and the Cipher Code. Pushing the ENTER key without entering new data saves the previously stored information. The programmer should be connected and the power should be on (as in self test).

To start, push Programmer keys **(CTRL)+F1** (hold down the Control key <u>and</u> then the F1 key). The following message appears:

```
SETUP UNIT -OLD:  NEW                    Previously stored "old" data;
ENTER ID#- (1234)  ____    ←             Enter new data here
```

> To keep previously stored ID#, simply push ENTER. To change the ID#, enter the 4 digit identification number for this unit using any of the 16 hex numerals, and then push ENTER. **The ID number must be unique, different from all other ID numbers in your system.**

> After entering the ID number, the following message appears:

```
                                         For security, stored data not shown;
CPHR CODE-- (XXXX:) ____   ←             Enter the correct code here
```

> Unit must be programmed with the cipher code chosen for your network. Enter the 4 digit dealer code as assigned by the system administrator, then push enter.

> **NOTE:** The code must match that of the central station - If the wrong code is used, the unit cannot log on and will not work.

> **NOTE:**   DO NOT USE ZERO (0) AS A Cipher CODE. Zero is used at the factory for test and burn in purposes and should not be used in a live installation.

> After entering the dealer code, the following message appears:

```
OK
```

NOTE: The "SETUP UNIT" functions - Unit ID and Cipher - are the *only* functions that must be performed using the handheld programmer. You may complete the programming with the handheld programmer, but it is recommended that you program the remaining functions (timing, zone programming) using the AES Net software. Refer to the Net77/7K manual to complete the programming procedures.

Procedure: Set CHECK-IN TIME and REPORTING DELAY PERIOD - CTRL+F2

The Check-In Time is the interval at which the subscriber unit sends it's "Check-in" messages to the central station. The range for this feature is 1 minute to 24 hours. For most applications, a check-in interval between 12 and 24 hours is used. More frequent check-ins are used for high security users. Note that shorter intervals create more network traffic.
• **Set Check in as required for UL Listed installations; set automation software accordingly.**
• See pages 4-8 for UL and Commercial Fire compliance notes.

The Reporting Interval is the time period after the initial alarm (which transmits instantly) and before the next transmission. The default value is 10 seconds, the range is 0 to 330 seconds. This function allows the unit accumulate alarm data between transmissions for optimum system performance.
• **For all Commercial Fire Alarm, UL Burglar Alarm, and Canadian Burglar Alarm installations, the Reporting Interval must not exceed 10 seconds.**

The programmer should be connected to J1 programmer port and the power should be on.

To start, push Programmer keys (CTRL)+(F2)

Press programmer keys CTRL + F2 (hold down the Control <u>and</u> the F2 keys at the same time). The following message appears:

```
CHKIN TIME--OLD: NEW
ENTER HRS----HH: __     [0-24]
```
(HH = Previously programmed hours)

Enter a number between 0 and 24, and push ENTER.
Next, the minutes field appears

```
ENTER MINS---MM: __     [1-59]
```
(MM = Previously programmed hours)

Enter the number of minutes, a number between 0 and 59, and push ENTER.

```
NTR RPT DLY-NNN: ___     [0-330]
```
[seconds] (NNN= previously programmed delay)

Enter a number of seconds to allow between reporting of alarms; the range is 0 to 330; the default is 10 seconds.

If data has been entered correctly, the following message appears:

```
OK
```

NOTES ON SELECTING A CHECK IN TIME:
• **Choose a check-in time in accordance with the security requirements of the installation**
• Except for high security applications, a check in time of 24 hours is typical.
  The more frequent the check in times are set, the more traffic there is on the network.
  Excessive traffic can cause delays in communications, and thus frequent check in times should be
  used only for highest security applications.
• Do not use a check in time of greater than 24 hours, 00 minutes.
• Also see UL and Fire Compliance section on pages 4-8.

ZONE INPUT PROGRAMMING - OVERVIEW

The 7750-F zone inputs are connected to a special isolated circuit board. It is linked to the 7750-F processor board through optical couplers to keep unwanted energy from entering the main circuits.

The 7750F offers 2 zone input board options:
• The "F-8", with 8 - EOL zone inputs,
• The "F-4x4" with 4 - EOL inputs and 4 - reversing polarity inputs.

7750F-8
Zones 1-8 are E.O.L. input triggers which can be programmed for:
> **• E.O.L. / <u>S</u>upervised, using 3.01K end-of-line resistors , alarm on open or closed**
> **• E.O.L. / <u>F</u>ire Supervised, reporting trouble for open circuits, alarm on closed**
> **• <u>B</u>ypass, where the zone input is ignored.**

7750F-4x4
Zones 1-4 are E.O.L. input triggers which can be programmed for:
> **• E.O.L. / <u>S</u>upervised, using 1K end-of-line resistors , alarm on open or closed**
> **• E.O.L. / <u>F</u>ire Supervised, reporting trouble for open circuits, alarm on closed**
> **• <u>B</u>ypass, where the zone input is ignored.**

Zones 5-8 are reversing voltage inputs which are used to monitor reversing polarity output used on fire alarm and other equipment. , Zones 5-8 Programming Options:
> **• <u>S</u>upervised, reports alarm when input polarity reverses or if there is low or no**
> **voltage on the input**
> **• <u>F</u>ire programming, Reports Alarms when input polarity reverses, and reports a**
> **Trouble if there is low or no voltage on the input.**
> **• <u>B</u>ypass, where the zone input is ignored.**

For UL installations, the wire linking alarm panel to 7750-F must use EOL / electrically supervised inputs (program the subscriber unit with "<u>S</u>" or "<u>F</u>"). If inputs are not supervised, the 7750-F Subscriber Unit must be mounted a) no more than 3 feet away from the control panel, b) within the same room as the control panel with no intervening barriers between the two units and c) all interconnecting wiring from the control panel to the subscriber unit must be run in conduit or the equivalent. Supervision of the zone inputs must be in compliance with the requirements of NFPA 72 for the type of initiating device and initiating device circuit being monitored.

The zone inputs can be programmed to match the output of the equipment being monitored by the 7750-F subscriber unit. The default setting is <u>S</u>upervised.

See diagrams in the next several pages for further details.

ZONE RESTORALS: Each zone can be programmed to report "restoral" to a normal status. Restoral reporting is usually reserved for higher security users, as it adds radio traffic to the system. Enable the zone restorals only when needed. The default setting is for "No" restorals.

NOTE: For systems using AES Net software in the central station, zone inputs can be programmed using that software. Zones can be set up using the handheld programmer, but it is easier to use the AES software for this task. Further, the subscriber data programmed using Net software is stored in the central station database.

Zone Reporting Chart

Zone Program:	**B**ypass	**S**upervised	**F**ire*
	B	**S**	**F**
Zone Electrical State:			
7750-F-8 Zones 1-8 Open	B	**A**	**T***
Resistor - 3.01K	B	**N**	**N**
Closed/Short	B	**A**	**A**
7750-F-4x4 Zones 1-4 Open	B	**A**	**T***
Resistor - 1K	B	**N**	**N**
Closed/Short	B	**A**	**A**
7750-F-4x4 Zones 5-8 Normal Polarity	B	**N**	**N**
Reverse Polarity	B	**A**	**A**
Low/No Voltage	B	**A**	**T***

Zone Report:
N=Normal
A=Alarm
T=Trouble*
B=Bypassed zone - no reports

Programming for 7750F-8, Zones 1-8(E.O.L.):
S = **S**upervised - 3.01K-EOL Resistor; 3.01K ohm = Normal / Open = Alarm / Short = Alarm
F = **F**ire - 3.01K-EOL Resistor; 3.01K ohm = Normal / Open = Trouble / Short = Alarm
B = **B**ypass - No Report

Programming for 7750F-4x4, Zones 1-4 (E.O.L.):
S = **S**upervised - 1K-EOL Resistor; 1K ohm = Normal / Open = Alarm / Short = Alarm
F = **F**ire - 1K-EOL Resistor; 1K ohm = Normal / Open = Trouble / Short = Alarm
B = **B**ypass - No Report

Programming for 7750F-4x4, Zones 5-8 (Reversing Polarity):
S = **S**upervised - Normal Polarity = Normal **/** Reverse Polarity = Alarm **/** Low-or-No Voltage = Alarm
F = **F**ire - Normal Polarity = Normal **/** Reverse Polarity = Alarm **/** Low-or-No Voltage = Trouble
B = **B**ypass - No Report

*NOTE: Reporting of "Trouble" packets messages requires a version 1.70 or newer receiver.
PRE-VERSION 1.70 RECEIVERS WILL NOT RECEIVE TROUBLE MESSAGES.

Check with the central station manager. If the receiver is pre-1.70, it should be upgraded to the current version. Contact AES Corporation or details.

Procedure: Zone Programming using the handheld programmer - CTRL+F3

Press programmer keys CTRL + F3 (hold down the Control <u>and</u> the F3 keys at the same time). The following message appears:

```
          FIRE/   ----OLD: NEW
          TROUBLE PKT- Y:  .
```

The programming sequence first asks if any "Fire" inputs are to be used. Answer Y/yes if you wish to have the unit report "Trouble"* conditions. Otherwise answer N/no (refer to chart on preceding page). The current programming is shown under the "OLD:" If you wish to change the setting, press Y or N, and push ENTER. To leave unchanged, simply push ENTER. Next appears:

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

Individual zones can now be programmed. The valid programming options are shown in parentheses. The options that appear are determined by your input to the Fire/Trouble question above. The current programming is shown next to the word OLD, Zones 1-8 in order left to right. Your new entries will appear directly below, next to the word NEW. You must enter a valid letter for each of the 8 zones.

EOL Zone Inputs (Triggers) can be set for:
B - Bypass - No signals sent - all alarm, trouble conditions ignored;
S - Supervised/E.O.L. (alarm on open or short);
F - Fire Supervised E.O.L. (alarm on short; trouble* on open)

Zones 5-8 Reversing Voltage *(7750-F-4x4 ONLY)* inputs can be set for:
B - Bypass - No signals sent - all alarm, trouble conditions ignored;
S - Supervised (alarm on reverse polarity of input; alarm on loss of voltage);
F - Fire (alarm on reverse polarity; trouble* on loss of voltage)

Press ENTER after entering selections. Next appears:

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

You can program individual zones to report restorals - ie return to normal status. X= Restorals Not Reported; R=Restorals Reported. The existing or OLD programming is shown for each zone. Your new entries will appear directly below, next to the word NEW. You must enter a valid letter X or R for each zone. Press ENTER after entering selections. When all is complete, the OK message appears.

```
          OK
```

*Important Note: Reporting of "Trouble" packets messages requires a version 1.70 or newer receiver. PRE-VERSION 1.70 RECEIVERS WILL NOT RECEIVE TROUBLE MESSAGES.

Check with the central station manager. If the receiver is pre-1.70, it should be upgraded to the current version. Contact AES Corporation or details.
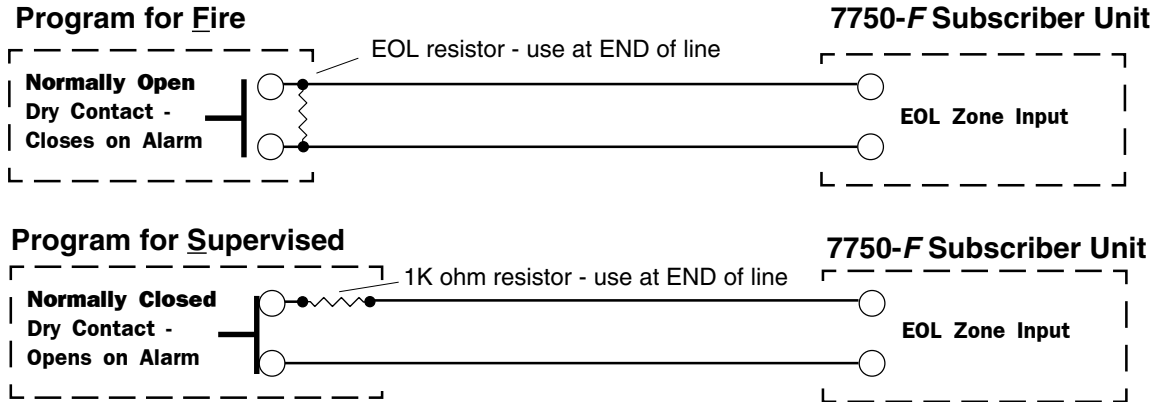

Wiring EOL Zone Input Triggers for Subscriber Unit

Each zone trigger in the 7750-_F_ area used with an E.O.L. resistive loop, using an end-of-line resistor. See preceding pages for zone programming.

Unused zones may be bypassed.

> **IMPORTANT NOTE: Isolated input board requires power, 8-28VDC. Refer to section below.**

E.O.L. INPUT TYPE: **SUPERVISED or FIRE** (also, see chart on page 16)

Program for Fire   **7750-**_F_ **Subscriber Unit**

EOL resistor - use at END of line

**Normally Open
Dry Contact -
Closes on Alarm**   **EOL Zone Input**

Program for Supervised   **7750-**_F_ **Subscriber Unit**

1K ohm resistor - use at END of line

**Normally Closed
Dry Contact -
Opens on Alarm**   **EOL Zone Input**

7750-F-4x4 NOTE: Maximum resistance of E.O.L. input, including wire and EOL resistor, is 1100 ohms. Thus, when using the 1K ohm resistor supplied, wire resistance must not exceed 100 ohms.

7750-F-8 NOTE: Maximum resistance of E.O.L. input, including wire and EOL resistor, is 3301 ohms. Thus, when using the 3.01K ohm resistor supplied, wire resistance must not exceed 300 ohms.

7750-F-4x4 _only:_
Wiring Reversing Polarity Inputs, Zones 5-8

INPUT TYPE: REVERSING POLARITY - **Alarm occurs input voltage when polarity is reversed.**
• Input Voltage range is 10-30V
• These inputs are self powered
• Program 7750-_F_ zone for Fire (see section on Zone Programming)

7750-_F_ **Subscriber Unit**

**Reversing
Polarity
Output from FACP (−)**   **(+)**   **Zone Input 5-8 (+)**

(−)
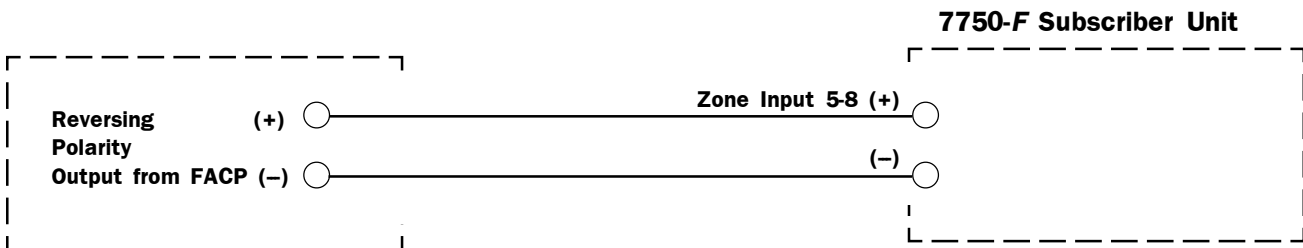
Providing Power for Input Board
## Model 7750-F-4x4 (Zones 1-4 only)

IMPORTANT NOTE: Zone 1-4 of the isolated input board requires power, 8-28VDC (see page 3).

To power this input board, choose one of the following:

A: Use the battery of the Subscriber unit. NOTE: this introduces earth ground to the inputs, which may cause a trouble condition on the inputting device.

**or, B:** Use the power from the alarm panel (thus avoiding the earth ground).

To monitor power on the input board, connect the power to one of zones 5 - 8, and program that zone for "Fire" (see zone programming). If power is lost, this zone will report a "trouble" condition, indicating a power loss at the input board. (This is not necessary if the input board is powered by the subscriber unit battery.)
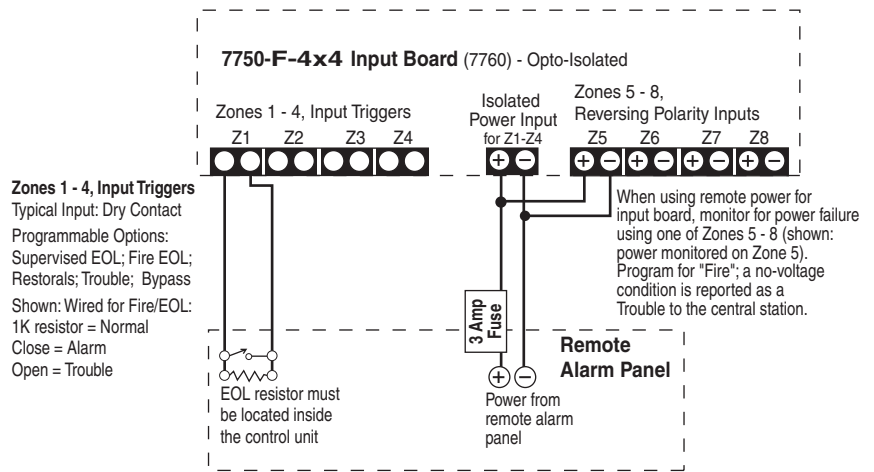
Providing Power for Input Board
Model 7750-F-8

Power must be provided to 7761 "F-8" input board. Requires 8-28VDC to terminals (J3) at lower left of input board. Internal battery may be used, but earth ground will be tied to common terminals. This may affect connection to other panels. If earth ground cannot be used, supply the input board with power from the alarm panel.

To monitor power on Input Board when powered by an alarm panel: For all Commercial Fire, UL burglar and Canadian UL burglar alarm installations, use one of the zones as a power fail report. Install a 3.01K resistor on the designated zone terminals. Program the zone for F / Fire. When power to the input board is lost, zone will report a "Trouble". Flag this as a power failure at the central station / automation software.
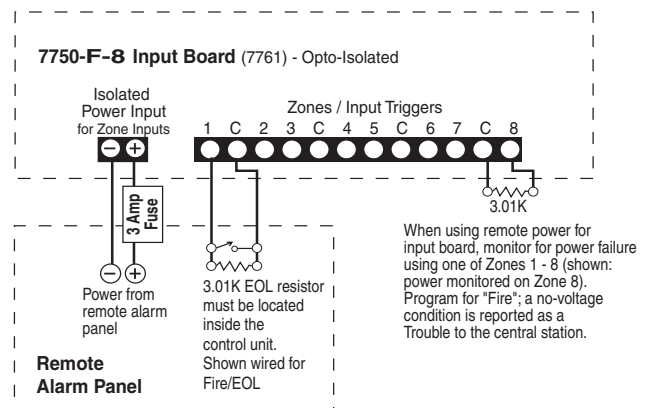
CONFIRM PROGRAMMING - RESET

To confirm this procedure, press the RESET button on the controller to check the program. The reset function runs the Selftest, which prints out the ID number:

```
SELFTEST - PASS
SUB [rev#] 7750F
ID#:NNNN (C)[date] AES
```

(If "FAIL" messages appears, push RESET again; If Fail persists, go to page 11 to troubleshoot.)
Proceed to "Initializing the Subscriber Unit", next page.

INITIALIZING THE SUBSCRIBER UNIT

Having passed the self test and programmed the unit, you are now ready to introduce it to the radio network. It is assumed that an AES•_IntelliNet_ central station is actively monitoring the network and can respond to the new subscriber unit as it comes on line.

Power down the subscriber unit by disconnecting both the battery and power input. Connect programmer to subscriber unit (if you have not already done so).

Connect the antenna to the transceiver (if you have not already done so). Do not operate transceiver without the antenna connected!

Connect the controller-to-transceiver cable with 9 pin connector to the radio transceiver.

Connect the battery first, and then the AC primary power. The controller power indicator should be on. The Programmer should be connected as described earlier.

Push the Reset button on the controller board (see diagram page 3).

> At this point, the message on the programmer should read:

```
SELFTEST - PASS
SUB [rev#]    7750F
ID#:NNNN (C)[date] AES
```

(If a "Fail" error message is displayed, push the reset button. If an error message continues to appear, see page 11 for possible solutions.)

When the reset button is pushed, the subscriber unit goes on the air to query the other subscriber units to set up the best route(s) to link with the central station. The status lights indicate the process:

• RX, TX and WA lights will all come on briefly, testing the LED's.
• RX comes on during loop back test (a self test);
• TX comes on sending a "Receiver Not in Service" message - a standard power up event;
• AL + WA will blink at different but steady rates
• TX comes on again as unit transmits a "Request for Reply" from other subscriber units
• WA stops flashing after about 30 seconds **IF** one or more other subscriber units reply to the "Request",
     (otherwise the WA continues to flash, indicating the unit is not on the network);
• TX comes on again (if WA stops flashing) to send first "Check-In";
• AL blinks at a steady rate, indicating a normal condition.

When the unit receives a valid acknowledgment, the WA light will turn off. This indicates that the subscriber unit is now connected to the network.

IMPORTANT NOTE: A flashing WA light (blinking at a steady rate) indicates that the subscriber has NOT linked itself into the network. Check antenna and all cables; be sure that correct system cipher has been programmed in to the unit.

> The next step is to perform a status check.

Procedure: STATUS CHECK - SHIFT +F4

Performs a quick diagnostic check at any time.

Connect the programmer to J1 programmer port. Be sure that radio and antenna are connected, and power is on.

Press programmer keys SHIFT+F4 (hold down the Shift key and then press the F4 key). The following message appears:

```
SUB [rev#]    7750F
ID#:[NNNN]  (C)YYYY AES
RT1:NNNN LEVEL: NNN
STAT:NNN NETCON: N
```

EXPLANATION OF STATUS CHECK TERMS

ID#: 4 digit ID number programmed into this unit.

LEVEL: refers to the subscriber unit "level" or "link layer", which tells you how many "hops" the message packet must make to get to the central station. In general, if the number is 1, then this unit is communicating directly with the central station. If the number is 2, the unit relays its message through one other subscriber unit to reach the central station. If the number is 3, the message goes through 2 other subscribers ... and so on. Also, the level number of subscriber with a weak signal to the unit on the top of its routing list will be incremented. by 1. A unit level = 255 indicates that unit is not on network.

RT1: refers to the "first route" or primary route in the routing table. The 4 digit number is the subscriber unit ID of the next hop to the central station. If the unit is communicating directly with the central station , the 1ST RT is 0000 - the central station ID number. If the subscriber is using intermediate units to communicate, the RT1 number is the ID number of first subscriber on the message route. If XXXX appears, the unit is not on the network.

Dynamic Routing Table: Each subscriber unit maintains a list of up to 7 alternate routes. Routes are prioritized according to signal strength and NETCON ratings. This function is dynamic, and is updated constantly.

STAT: Status - shows self-test results (see page 11 for codes).

NETCON: "NETwork CONnectivity". This is an internal rating function used by the subscriber units to align themselves in the network. The scale is 0 to 7, 0 being best. Readings of 5 or 6 are common. Units at the end of the path may show a 7.

Minimum criteria for a "good" repeater are as follows:
         1. RF signal exceeds marginal threshold
         2. No faults indicated in status (such as low battery)
         3. Level/Link Layer of repeater is less than or equal to this unit's
         4. Signal received from unit a least once every 6 hours
         5. NETCON of repeater is less than 7

OTHER PROGRAMMING FUNCTIONS

DEFAULT RESET　　CTRL+F5

The Default (Master) Reset function can be used to reset programmed values to their default settings. **The ID# and Cipher are not changed. Use this function only if you wish to reset all parameters.** Power must be on. Connect the programmer to J1 / programmer port.

Press programmer keys CTRL+F5 (hold down the Control key and then press F5 key).
The following message appears:

```
RESET RAM?  <Your Response:>
         (Y) (Enter) for YES, or
         (N) (Enter) for NO
```

If you answer (Y) Yes, all program parameters will be restored to their default values. The subscriber then goes through its normal "reset" routine. The following message appears:

```
SELFTEST - PASS
SUB  [rev#]  7750F
ID# : [4 digit ID number] (C)[date] AES
```

The default reset restores program parameters to their default values:

CHECK IN TIME:	24 Hours 00 Minutes
ZONE INPUT PROGRAMMING:	Supervised, All Zones;
	NO Restorals Reported, All Zones;
REPORT INTERVAL (DELAY):	10 Seconds
UNIT ID #:	NOT Changed by Default Reset
CIPHER	NOT Changed by Default Reset
REPEATING	Enabled
TIME TO LIVE (TTL)	Enabled for Check-Ins only, 30 minutes
	(All other packets - TTL disabled)

OTHER FUNCTIONS, continued

MONITORING Using the Handheld Programmer

Installers can view network data "traffic" on the handheld programmer at a remote site. It is not a practical way to "read" data (it scrolls off the screen quickly), but it can be useful to see that data is being sent or received. Three monitor functions can be enabled:

RECEIVE MONITOR ON/OFF

PROCEDURE: Push programmer keys **(SHFT)+(F1)**

MESSAGE: RX MONITOR ON (OFF)

> Hold down the Shift key and then press the F1 key to enable or disable (toggle) the display of data addressed to <u>this</u> unit.

TRANSMIT MONITOR ON/OFF

PROCEDURE: Push programmer keys **(SHFT)+(F2)**

MESSAGE: TX MONITOR ON (OFF)

> Hold down the Shift key and then press the F2 key to enable or disable (toggle) the display of messages transmitted by <u>this</u> unit.

MONITOR ALL ON/OFF

NOTE: Requires that Receive Monitor must be on - Enter (SHFT)+(F1)

PROCEDURE: Push programmer keys **(SHFT)+(F3)**

MESSAGE: MONITOR ALL ON (OFF)

> Hold down the Shift key and then press the F3 key to enable or disable (toggle) the display of all network messages within range of this unit.

> The monitor functions should be disabled when installation and testing is complete.

NOTE: Text messages <u>cannot</u> be received when any of the monitoring functions are in use. Use these functions only for test purposes. Toggle the functions OFF when testing is complete, or press Reset Switch (see page 3).

KEY TRANSMITTER - SHFT+F5

This function activates the transmitter for 6 seconds. This allows the installer to use external test equipment (SWR, power meter, etc.) to test the radio power, cables connections, antenna tuning and other radio parameters. It is assumed that the programmer is connected to the subscriber, the transceiver is connected to the subscriber circuit board, power is on <u>and the antenna is connected.</u>

PROCEDURE: Push programmer keys **(SHFT)+(F5)**

MESSAGE: KEYING TX..

Activating this function causes the transmitter to go on the air for 6 seconds, and then shut off automatically. Press the ENTER key to cancel the transmit test.

SENDING ASCII TEXT MESSAGE (F5)

Text messages can be sent from the subscriber unit to the central station.

PROCEDURE: Push programmer key **(F5)**

MESSAGE: ENTER MSG:
          _   [Enter your text message, up to 200 characters. Push ENTER to send.]

   If not data is entered within approximately 60 seconds, the unit will exit the text message mode.
   Note that the unit is unable to transmit or receive while in this mode

RECEIVING ASCII TEXT MESSAGES

Messages can be sent from the central station to any subscriber unit. If the handheld programmer is connected to the unit, the message will be displayed on the screen and a beep will sound. This is a handy feature for communications between installers and central stations.

NOTE: Text messages <u>cannot</u> be received when a monitor function is in use.

ENABLE REPEATING - CTRL+F4

To start, push Programmer keys **(CTRL)+F4** (hold down the Control key <u>and</u> then the F4 key. The following message appears:

          ENABLE RPTNG Y: _ ⟵   previously stored data
                                                         enter new data (Y/N) here

   For most installations, enter a "Y" for YES, and then push ENTER.

   NOTE: This enables the repeating function which is critical to the proper operation of the
              AES network. In general, repeating is disabled *only* for mobile units.

   To disable this unit from forwarding messages, enter "N" for NO, and then push ENTER. <u>Mobile units such as the 7050MMP or the 7550VLS must not be used for repeater functions.</u>

          OK

PACKET TIME-TO-LIVE PROGRAMMING - F2

7750-F Ver 2 subscribers include the new "Time-To-Live" or "TTL" function. The TTL function ensures a smooth, continuous flow of data through the AES-IntelliNet system.

Like the Internet, AES-Intellinet is a packet-based technology. The Time-to-Live concept in the Internet is based on the fact that all data has a useful life. This is also true in the security industry. Statistics show that 95+% of all data sent through the AES-Intellinet system are check-in/test timer packets. These messages can be burdensome to both the network and the alarm automation software attached.

The benefits of TTL are best exhibited when the central station goes off line due to a lightning hit or some other unlikely, catastrophic event. While the receiver is off line, messages traveling through the system are stored in the individual subscriber units for later delivery. Under the default TTL settings, unimportant test timer messages are deleted from the subscriber unit memory after 30 minutes of being delayed in the network. Thus, the system will not have to handle the message when the central receiver comes back on line. All other messages, such as alarms, etc. speed there way to the central station as they normally do.

NOTES:

· Even when a check-in packet is deleted due to a delay, the objective of that message has already served: the late or missing signal has been flagged at the central station.

· Under the default (factory) settings, only test timer messages are subject to the TTL function. If you want TTL for other message types, YOU must activate it when you program the subscriber unit (F4 on the handheld programmer).

· The TTL feature works best when the majority of subscribers, or the subscribers that are most heavily used, have the feature in the firmware. Call your AES representative for upgrade information.

To start, push Programmer key **F2**. The following message appears:

```
        PACKET TIME TO LIVE
        CHECK IN----OLD:NEW ——————————— Previously stored data
        ENTER HRS---(00):..  ←——————————— Enter new data here
```

Enter new data Hours 0-24, or push ENTER to accept old data. Next appears:
```
        ENTER MINS---30:..
```
Enter new data Minutes 0-59, or push ENTER to accept old data.
Default time for Check-In Packets is 00 hours, 30 minutes. DO NOT enter a greater than 24 hrs 00 mins.
Entering a time of 00 hours and 00 minutes deactivates the time-to-live function for that packet type.
The shortest allowed TTL time is 00 hours, 10 minutes.
Next appears
```
        STATUS------OLD:NEW                The sequence repeats for
        ENTER HRS----00:..                 other packet types
```

The sequence now repeats for:

• Status Packets   • Alarm Packets   • Trouble / Trouble-Restoral Packets

• Zone Restoral Packets   • AES-_IntelliTAP_ Packets   • Special Packets (Vending, etc.)

The default time for the 6 packet types above is 00, i.e. the time-to-live function is deactivated for these packets. Entering anything greater than 00 HRS and 10 MINS will enable the Time-to-Live function.

Press ENTER to accept existing "old" data.

PROGRAMMING THE SUBSCRIBER UNIT FROM A PC
In place of a handheld terminal

An cable adapter kit #7043 may be ordered from AES to link the 7750-*F* to your computer serial port.

Communications Parameters: 4800 baud, NO parity, 8 data bits, 1 stop bit,
                          RTS/CTS Flow control OFF

Handheld (HH) Programmer Key equivalents to PC Keyboard:

HH	PC	HH	PC	HH	PC
F1 = CTRL-Q		SHIFT F1 = a		CTRL-F1 = f	
F2 = CTRL-R		SHIFT F2 = b		CTRL-F2 = g	
F3 = CTRL-S		SHIFT F3 = c		CTRL-F3 = h	
F4 = CTRL-T		SHIFT F4 = d		CTRL-F4 = i	
F5 = CTRL-U		SHIFT F5 = e		CTRL-F5 = j	

REMARKS:

- When entering Hex numbers, use uppercase, i.e.. "9A" not "9a"

- If possible, set terminal program for "destructive backspace" so that backspace will erase the deleted character from the screen.

- If nothing is sent or received by the 7750-*F,* make sure the program is set to the correct COM port.

- If characters are received by the 7750-*F*, but nothing can be sent, make sure the CTS/RTS flow control is OFF, and that the cable is OK.

Antenna Disconnect / Acknowledgment Delay Output (Terminal J4)

The 7750-*F* monitors radio traffic on its frequency. If the channel is "quiet" for more than 4 minutes (as would be the case if the antenna was disconnected) the 7750-*F* subscriber tests the channel by sending a test message to a unit within its routing table. If that message is not acknowledged within the programmed acknowledgment delay period (default is 2 minutes*), a fault condition exists. This fault is annunciated by a voltage (12V) at the pins on J4 (see diagram, page 3). The voltage can be used to drive a relay, sounder or other device to notify someone of the condition. Maximum load is 200 ma.

Mating Output Connectors: Order part number 12-0388-J4 for a package of 10 mating connectors for the J4 output pins.

*programmed through Net7K or Net77 Central Station Controller Software

7750-F—Series SUBSCRIBER UNIT SPECIFICATIONS

SIZE: 13.25"h x 8.5"w x 4.3"d
                34 cm x 21.5 cm x 11 cm

WEIGHT: 6.4 pounds (2.9 kilograms) (exc battery)

RADIO: Standard Frequency Ranges (others available) 450-470 MHz.

                   Standard Radio Output Power: 2 Watts (others available) *All radio systems require FCC licensing;*

POWER INPUT: 16VAC, 30VA

ZONE BOARD POWER INPUT: 8-28VDC (not required for Reverse Polarity inputs)

VOLTAGE: 12VDC nominal

CURRENT:

	7750-F-4X4		7750-F-8	
	Standby	**Transmit**	**Standby**	**Transmit**
Subscriber Unit Only	**230ma**	**1.2A**	**584ma**	**1.55A**
Subscriber Unit & 7068 'Tap	**295ma**	**1.3A**	**660ma**	**2.00A**

INPUTS:
   7750-F-4x4   8 zones: 4 zone triggers - EOL (1K); 4 Reversing Polarity inputs
   7750-F-8   8 zones, zone triggers, EOL (3.01K)
   Input Option: AES 7068 IntelliTap Dialer Output / Radio Interface

OPERATING TEMPERATURE RANGE: 0° to 50° C (32° to 122°F)

STORAGE TEMPERATURE RANGE: -10° to 60° C (14° to 140°F)

RELATIVE HUMIDITY RANGE: 0 to 85% RHC, Non Condensing

BACK-UP BATTERY: 12V, 7 AH (min), lead acid gel type; required for all installations

LOW BATTERY REPORTING: 22.5 Minute Test Cycle (approx)

AC FAILURE REPORTING: Reports to central station after approximately 4 minutes without AC power; reports AC power restoral after approximately 4 minutes of restored power.

ANTENNA DISCONNECT/ LOCAL REPORTING: Fault is annunciated by a ground (+12V open collector) at pins on J4 on the main circuit board; 200ma max load.

• FCC COMPLIANCE

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

     Reorient or relocate the receiving antenna;
     Increase the separation between the equipment and the receiver;
     Connect the equipment into an outlet on a circuit different from that to which the receiver is connected;
     Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications to this equipment not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

• CANADIAN COMPLIANCE

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of Industry Canada.

Cet appareil numérique respects les limites de bruits radio électriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numeriques", NMB-003 édictés par l'Industrie Canada.

WARNING:
• It is unlawful to operate this equipment without a valid FCC radio station license.
• If the antenna or cables connected to this equipment come in contact with electrical power lines, DEATH or SERIOUS INJURY may result.
• Never install the antenna where people may come in contact with it as SERIOUS INJURY may result.
• Test this system periodically for proper operation. AES assumes no responsibility for this 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.

OWNER WARRANTY - AES CORPORATION
LIMITED PRODUCT WARRANTY AND TECHNOLOGY LICENSE

LIMITED PRODUCT WARRANTY:

AES Corporation ("<u>AES</u>") warrants to the original purchaser that each AES Subscriber Product will be free from defects in material and workmanship for three (3) years from date of purchase and all other products purchased from AES including central station receivers and accessories will be warranted for one (1) year from the date of purchase. At no cost to the original purchaser for parts or labor, AES will repair or replace any AES Product or any, part or parts thereof which are judged defective under the terms of this Warranty.

Defective AES Products must be returned to AES directly, provided they are properly packed, postage prepaid. Or exchange may be made through any authorized direct factory representative for any AES Products that are judged defective under the terms of this Warranty. Improper or incorrectly performed maintenance or repair voids this Warranty. This Warranty does not cover replacement parts that are not approved by AES. This Warranty does not apply to any AES Product or any part thereof that has been altered in any way to affect its stability or reliability, or that has been subjected to abuse, misuse, negligence, accident or act of God, or that has had the serial number effaced or removed.

Certain AES *Products* are designed to operate and communicate with other specified AES Products and certain other specified products, systems or networks authorized or approved by AES, as identified in the applicable AES Product instructions. This Warranty does not apply to any AES Product that is used with any unauthorized or unapproved products, systems or networks, or that has been installed, applied or used in any manner, other than in strict accordance with AES instructions.

AES makes no warranty, express or implied, other than what is expressly stated in this Warranty. If the law of your state provides that an implied warranty of merchantability, or an implied warranty of fitness for particular purpose, or any other implied warranty, applies to AES, then any such implied warranty is limited to the duration of this Warranty.

AES cannot be aware of and is not responsible for the differing values of any property to be protected by its alarm reporting systems. This Warranty does not cover and AES shall not be liable for any defect, incidental or consequential, loss or damage arising out of the failure of any AES Product to operate.

Some states do not allow the exclusion or limitation of the durations of implied warranties or the limitation on incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This Warranty gives you specific legal rights and you may also have other rights that vary from state to state.

TECHNOLOGY LICENSE:

Certain AES Products include software, protocols and other proprietary and confidential technology and trade secrets of AES which are incorporated in or provided with AES Products solely for use in conjunction with and in order to operate AES Products ("Licensed Technology"). AES grants the original purchaser a non-exclusive license to use such Licensed Technology solely in connection with the use and operation of AES Products and for no other purpose or use whatsoever. No title or ownership in or to any such Licensed Technology is conveyed by the sale or delivery of any AES Products; all such rights are retained by AES.

AES SERVICE PROCEDURE: Contact AES by Phone (978) 535-7310, Fax (978) 535-7313 or Email RMA@aes-intellinet.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
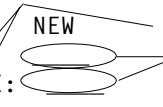(Contact AES for Return Material Authorization number)

June 2007

Quick Programming Guide for 7750-F Ver. 2 Subscriber

Complete details of these procedures are provided in the manual. This is a handy reference for technicians familiar with the AES•*IntelliNet* system who are using a handheld programmer to install or update the parameters of a subscriber unit.

NOTE: With the exception of the initial "Setup Unit" section, programming can be done from the AES Net central station software.

FUNCTION	PROGRAMMER SCREEN	NOTES

SETUP UNIT
(CTRL)+(F1)
	`SETUP UNIT -OLD: NEW`
	`ENTER ID#- 1234:`
	`CIPHER CODE XXXX:`
		Shows existing "old" ID#, but hides Cipher (Dealer) Code
		Enter new data, or push enter to keep old data;
		Caution: Cipher must match for all subscribers and central receiver
		(Legal characters are hex numerals 0123456789ABCDEF)

CHECK IN TIME
(CTRL)+(F2)
	`CHKIN TIME--OLD: NEW`
	`ENTER HRS----HH: __    [0-24]`
	`ENTER MINS---MM: __    [1-59]`
		Range = 00 Hrs, 01 Min to 24 Hrs, 00Mins
		(minutes field appears if digits are entered in hours field)

REPORT DELAY	`NTR RPT DLY-NNN: ___    [0-330]`	[seconds, default is 10]

ZONE SETUP **(CTRL)+(F3)**	`FIRE/ ----OLD:  NEW` `TROUBLE PKT Y:   .    [Y/N]`	**Programming Zones:** **1.** Answer Y/yes if you are using Fire inputs. This enables the unit to generate "Trouble" packets* (messages) for Fire type inputs. Otherwise, answer N/no. See definition below.

	`ZONE BANK 0`
	`SET ZONE (BSF) B0`
	`OLD SSSSSSSS LOW>HI`
	`NEW _____`
		2. "Set Zone" sets individual zone programming. The options [BSF] or [BS] are displayed in brackets; these vary according to your answers Y/N to zones part 1. above.
		
		There are 8 spaces, each representing one of the 8 zones, numbered Low>Hi, or 1 to 8, left to right.
		
		B=Bypass
		
		S=Supervised EOL, 2 Level Supervision
		   No trouble signals are sent
		   Zones 1-4, Supervised means: Alarm=Short, Normal=1K resistor, Alarm=Open
		   Zones 5-8, Fire means: Alarm=Reverse Polarity, Normal=Normal Polarity, Alarm=No/Low Voltage

	`SET RESTORALS (XR) B0`
	`OLD XXXXXXXX  LOW>HI`
	`NEW _____`
		F=Fire Supervised EOL, 3 Level Supervision, see above
		   Zones 1-4, Fire means: Alarm=Short, Normal=1K resistor, Trouble=Open
		   Zones 5-8, Fire means: Alarm=Reverse Polarity, Normal=Normal Polarity, Trouble=No/Low Voltage
		
		3. Restorals - All zones can be programmed to report restorals, i.e. when the zone returns to its normal state after an alarm condition
		
		There are 8 spaces, each representing one of the 8 zones, numbered Low>Hi, or 1 to 8, left to right.
		
		Enter "R" for Restoral, Enter "X" for no restoral

*Important Note: Reporting of "Trouble" packets messages requires a version 1.70 or newer receiver.
PRE-VERSION 1.70 RECEIVERS WILL NOT RECEIVE TROUBLE MESSAGES.

Check with the central station manager. If the receiver is pre-1.70, it should be upgraded to the current version.
Contact AES Corporation or details

Quick Programming Guide, *continued*

ENABLE REPEATING
(CTRL)+(F4)   `ENABLE RPTNG-Y:   _`   Enter Y to enable repeating capability (page 24)

MASTER RESET
(CTRL)+(F5)   `RESET RAM?              [Y/N]`

DISPLAY STATUS
(SHIFT)+(F4)   `SUB N.NN  7750F`   Version Number and Subscriber Type
                         `ID#:NNNN  (C)YYYY AES`   ID # and Copyright
                         `RT1:NNNN  LEVEL: NNN`   ID of #1 in 1st Route; Link Layer Number
                         `STAT:NNN  NETCON: N`   Status/Error Message (if any); Netcon Rating

KEY TRANSMITTER
(SHIFT)+(F5)   `KEYING TX..`   (6 second test)

SEND TEXT MESSAGE
(F5)   `ENTER MSG:`   Sends text message to central receiver

(SHIFT)+(F1)   `RECEIVE MONITOR ON/OFF`   (toggle)
(SHIFT)+(F2)   `TRANSMIT MONITOR ON/OFF`   (toggle)
(SHIFT)+(F3)   `MONITOR ALL ON/OFF`   (toggle)

F2   `PACKET TIME TO LIVE`
                         `CHECKIN-----OLD:NEW`
                         `ENTER HRS----00:..`
                         `ENTER MINS---30:..`
                         `[continues]`   See page 25

Addendum for AES RF Subscriber Units

This document contains information on features that may have been added to your AES RF Subscriber that are not described in its originally published manual.

This document also contains other information that may be useful in the installation and operation of your AES Subscriber.

TABLE OF CONTENTS

1 Installation

This section contains general information on the installation and wiring of an AES IntelliNet RF Subscriber Unit.

1.1   Overview

The AES RF Subscriber Unit combines the electronics of an AES Subscriber unit, battery, a radio transceiver and any accessories into its enclosure. It is typically used to communicate alarm and status conditions of an alarm panel to a centrally located alarm monitoring facility via radio transmissions. A properly powered and configured AES Subscriber will communicate with an AES Central Receiver via a locally provided AES IntelliNet Network.

1.2   Physical Installation Guidelines

Installation Guidelines. Refer to Diagrams in the original documentation.

- ♦ Choose a climate controlled, secure, and dry location for the subscriber unit.

- ♦ Avoid extremes of heat, cold, humidity, dust.

- ♦ Mount enclosure to a suitable, strong surface using appropriate fasteners for the weight of the unit and the surface on which it is being installed.

- ♦ Pre-cut "knockout" type holes are provided on the back and sides of the case for wiring access. Knockouts are sized for standard ½ inch conduit connectors.

- ♦ For burglar applications, the unit should be located away from the alarm panel – hidden if possible – and within the protected area. This will aid in the successful communication of the intrusion even if the alarm panel is compromised.

- ♦ The supplied case top tamper resistant Flexible 2.5db antenna can be mounted on the Subscriber's enclosure as shown in diagrams in original document.

- ♦ A remote external antenna can also be purchased separately and installed. Contact AES for additional information on our available antennas.

- ♦ A remote antenna should be mounted in a location near the transceiver to minimize inherent signal loss due to unnecessary cable length. Do not use longer coax than is needed to reach the antenna.

- ♦ Mount antenna as high as possible, on or in the structure, with attics and rooftop locations preferred. Height need not be higher than is required to overcome nearby obstructions to the signal path if any additional height would use a longer coax length.

♦ Avoid installing the antenna in close proximity to other metal surfaces, as this may severely impact the performance of the radio communications due to the effects of signal reflections or detuning the antenna.

  o Remember that pipes, conduit, wiring, ductwork and other metal are commonly installed within walls and could affect performance.

  o Take into account foil backed insulation and wallpaper.

  o Metal objects may also be located in adjacent rooms or above ceilings.

  o Metallic framing is in common use today. Antenna should not be mounted directly over or in close proximity to metal studding.

  o Metallic supports are in common use today. Antenna should not be mounted in ceilings constructed of metal beams and supports that may interfere with the RF signal.

♦ The antenna must be grounded properly to help reduce damage due to surges produced by lightning. Grounding must be done in accordance with local building codes as well as those in accordance with any other authority having jurisdiction.

♦ When needed, use higher gain antenna with rated cable and connectors. Mount antenna as high as possible - attics can be ideal.

♦ Antenna must be mounted in a vertical orientation.

♦ To help protect against attack for burglary applications, the antenna and cable must be either secured or installed within the secure area.

♦ Avoid tightly coiled or bunched coax as this could also affect RF performance. Use Coax length that best fits the installation.

NOTE: During installation, the subscriber unit attempts to enroll itself into an available AES-IntelliNet network and if successful generates signals at the central station. Central station operators must be forewarned to avoid a false alarm.

1.3   Affected Subscriber Models and Firmware Versions

To determine if your Subscriber unit has this new AC Reporting features, refer to the label on the large 40-pin chip on the main board of the Subscribers and compare to the chart below. Listed version and newer will have the new features.

7450 & 7450XL Chip Label	7050-E & 7750-F8 Chip Label	7750-F4X4 Chip Label
P/N 7450 SUBDN V2.41 © 2004 AES	7050E / F8 SUBEN V2.40 © 2004 AES	7750F-4X4 SUBFN V2.40 © 2004 AES

Note: 7750-F8 and 7050-E Subscriber units use the same firmware. They report the same firmware version and program is the same.

2 Programming

Instructions below are only listed for new features that may have been added or modified since the original Documentation was published.

2.1   Timing Parameters (Check-In Time and Reporting Delays)

This programming function is used to set the various timing parameters of the AES Subscriber. The factory defaults are set to 24 Hour Check-In, 10 second reporting Delay and Random (RM) AC Fail reporting delay.

Set Check-In Time: refer to your original documentation for instructions.

AC Reporting Delay sets the delay in minutes that a subscriber waits before AC Fail or AC Restore messages are actually transmitted. This feature helps network traffic congestion in the event of an area wide power outage, by dispersing the AC Fail/ Restore messages over a period of 1 hour rather than all Subscribers attempting to transmit at the same time. If AC reporting is not suppressed, this feature delays the reporting of and AC Fail message for a random or fixed delay.

A loss or restore of AC must exist for approximately 5 minutes in order to be detected as a fail or restore. Once either is detected a message is created to send to the central station. Then an AC Reporting Delay is selected based on this parameter and the setting of AC Fail Suppression mentioned later in Set Modes - Section 2.2. The default value is RM, which selects a random delay between 0 and 60 minutes.

The options are: RM for random or you can enter a fixed delay in minutes. 0 = no delay and results in operation similar to earlier versions of AES AC Reporting. The reporting of AC can be completely suppressed using a programming option in Set Modes Sec. 2.2.

To Start, press programmer keys **<CTRL>+<F2>** (hold down the Control and the F2 keys at the same time). The following message appears:

Refer to the provided documentation for programming timing parameters up to the AC RPT Time parameter described below.

> **AC RPT TIME-OLD:NEW**   [RM] Random or [00-60] [Minutes]
> **ENTER MINS---RM:..**
> (Report Delay, RM = existing programmed data)

Enter a number of minutes to delay AC Fail/Restore transmissions; the range is 0 to 60 or RM; the default is RM for Random.

Then press <ENTER>.

> **NTR RPT DLY-NNN:...**   [0-330] [seconds]
> (Report Delay, NNN = existing programmed data)

Enter a number of seconds to allow between transmissions; the range is 0 to 330; the default is 10 seconds. Then press <ENTER>.
If data has been entered correctly, the following message appears:

> **OK**

If the programming in this function is not completed within 65 seconds the function will time-out. The Programmer will beep and the following message will be displayed:

> **TIMEOUT**

2.2 Set Modes – Enable Repeating and Suppress AC Fail

There are several functions that can be programmed in the Set Modes programming area. Repeating can be disabled and AC Fail Reporting can be suppressed.

To Start, press programmer keys <**CTRL**> + <**F4**> (hold down the Control and the F4 keys at the same time). The following message appears:

```
SET MODES--OLD: NEW
ENABLE RPTNG-Y: .
```

Enter Y to enable repeating capability. Default is Y.
Press <ENTER> then the following appears:

```
SPRSS ACFAIL -N: .
```

Enter Y/yes to suppress the reporting of AC Fail messages, enter N/no (the default and setting required in UL installations) to disable the feature and allow normal reporting of AC Fail messages.
Default is N.
Press <ENTER>, If data has been entered correctly, the following message appears:

```
OK
```

If the programming in this function is not completed within 65 seconds the function will time-out. The Programmer will beep and the following message will be displayed:

```
TIMEOUT
```

Refer to Section 2.1 - Timing Parameters, for information on and programming the AC Reporting Delay that determines when the AC Fail is reported after it is detected. Reporting AC Fail is normally a very important message and should not be suppressed. UL installations require this setting to be set at "N".

3 Maintenance, Compliance, Warranty and Repair

Once installed and normal operation is confirmed, there is typically little maintenance required. Monitoring the automatic test messages will confirm proper RF operation. Batteries should be periodically tested to be certain they have sufficient capacity to operate the system as needed.

3.1 Troubleshooting

The most common causes of an RF failure or trouble are due to issues with the transmission line including but not limited to the antenna type, antenna location, coax, connectors, and transceiver. Antennas in close proximity to metal or with conductive material blocking or reflecting the transmitted signal would be at the top of the list. Observe the RX light on the main circuit board. If it is on steady or most of the time you may be receiving some RF or electrical interference. Try different locations for the antenna or use a remote long range RF antenna. Try replacing the transmission line components such as a new transceiver, coax and antenna.

Problems on the circuit boards usually require returning the defective unit to AES for service.

3.2 Warranty and Service Procedure

OWNER WARRANTY - AES CORPORATION
LIMITED PRODUCT WARRANTY AND TECHNOLOGY LICENSE

LIMITED PRODUCT WARRANTY:
AES Corporation ("AES") warrants to the original purchaser that each AES Subscriber Product will be free from defects in material and workmanship for three (3) years from date of purchase and all other products purchased from AES including central station receivers and accessories will be warranted for one (1) year from the date of purchase. At no cost to the original purchaser for parts or labor, AES will repair or replace any AES Product or any, part or parts thereof which are judged defective under the terms of this Warranty.

Defective AES Products must be returned to AES directly, provided they are properly packed, postage prepaid. Or exchange may be made through any authorized direct factory representative for any AES Products that are judged defective under the terms of this Warranty. Improper or incorrectly performed maintenance or repair voids this Warranty. This Warranty does not cover replacement parts that are not approved by AES. This Warranty does not apply to any AES Product or any part thereof that has been altered in any way to affect its stability or reliability, or that has been subjected to abuse, misuse, negligence, accident or act of God, or that has had the serial number effaced or removed.

Certain AES *Products* are designed to operate and communicate with other specified AES Products and certain other specified products, systems or networks authorized or approved by AES, as identified in the applicable AES Product instructions. This Warranty does not apply to any AES Product that is used with any unauthorized or unapproved products, systems or networks, or that has been installed, applied or used in any manner, other than in strict accordance with AES instructions.

AES makes no warranty, express or implied, other than what is expressly stated in this Warranty. If the law of your state provides that an implied warranty of merchantability, or an implied warranty of fitness for particular purpose, or any other implied warranty, applies to AES, then any such implied warranty is limited to the duration of this Warranty.

AES cannot be aware of and is not responsible for the differing values of any property to be protected by its alarm reporting systems. This Warranty does not cover and AES shall not be liable for any defect, incidental or consequential, loss or damage arising out of the failure of any AES Product to operate.

Some states do not allow the exclusion or limitation of the durations of implied warranties or the limitation on incidental or consequential damages, so the above limitations or exclusions may not apply to you.

This Warranty gives you specific legal rights and you may also have other rights that vary from state to state.

TECHNOLOGY LICENSE:
Certain AES Products include software, protocols and other proprietary and confidential technology and trade secrets of AES which are incorporated in or provided with AES Products solely for use in conjunction with and in order to operate AES Products ("Licensed Technology"). AES grants the original purchaser a non-exclusive license to use such Licensed Technology solely in connection with the use and operation of AES Products and for no other purpose or use whatsoever. No title or ownership in or to any such Licensed Technology is conveyed by the sale or delivery of any AES Products; all such rights are retained by AES.

AES SERVICE PROCEDURE: Contact AES by Phone (978) 535-7310, Fax (978) 535-7313 or Email RMA@aes-intellinet.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)

June 2007