



7350 Integrated Transceiver Kit

Installation and Operation Manual



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1 AES 7350 Integrated Transceiver Kit

1.1 Description

The 7350 Integrated Transceiver Kit (ITK) is primarily an AES-IntelliNet network PCB and radio integrated into a single component case. It is designed to be housed as an add-in communications component to a customer's alarm panel rather than to be deployed in a separate enclosure with a separate power source. The small footprint and component-type design offer a very cost effective solution to deploying and expanding an AES-IntelliNet network for those who can install them into existing alarm panels.

1.2 Easy Installation

The 7350 transceiver is installed by mounting it into a customer's alarm panel. From there, the alarm panel's alarm outputs and power are connected to the 7350 transceiver. The AES-IntelliNet antenna can be secured to the alarm panel enclosure and connected to the 7350 transceiver, or use a remotely installed antenna, purchased separately. The 7350 Transceiver self-enrolls into the AES-IntelliNet wireless network, receives signals from the alarm panel and transmits them via wireless mesh radio to the AES-IntelliNet central receiver.

1.3 Power Requirements

The 7350 Transceiver, installed into an alarm control panel, can draw its power from the alarm panel's power supply, thereby eliminating the need for a separate power supply. The steady state current draw is only 150mA. The peak current draw of 1000mA to 1500mA for RF power output levels of 2W-5W respectively, are only for a very short transmit duration of less than 1/3 second thereby allowing it to use the standard power supply of most alarm panels.

Note: Power Source must be capable of supplying sufficient current to operate the 7350 during the transmit state which can be 1.5 Amps (5W) 1 Amp (2W) for short duration, as well as the 150 mA standby current.

Use direct fuse protected connection to the battery or a separate power supply, as most alarm panel's accessory outputs cannot support this.

1.4 Modular Kit

Each 7350 ITK comes with the integrated AES PCB and radio along with a standard omni-directional antenna. The ITK also includes a 26 pin interface board for connecting to the alarm panel's power and outputs. The antenna supplied is a 2.5 dB antenna with a TNC male to BNC male assembly specified for the customer's frequency range. The radios are programmable for frequencies in various versions in selected UHF and VHF frequency ranges including 410-440MHz, 440-470MHz, 470-512MHz and 150-174MHz.

1.5 Optional Accessories

- 7085 – RF Programmer
- 7041 – Subscriber Hand Held Programmer
- 7067 – IntelliTap II

1.6 Safety Considerations

- ◆ It is unlawful to operate this equipment in the USA 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.
- ◆ 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.
- ◆ Exposure to extreme cold below 0°C or extreme hot above 50°C could damage any Gel battery used in the installation of this product and cause unexpected operation of electronics.
- ◆ Exposure of the 7350 to excessive water or moisture (such as a shower, bath, pool, sauna, etc) could cause damage and unexpected operation of the electronics.
- ◆ Avoid dropping or other physical impact to the 7350, which could damage the enclosure or internal components of the unit.
- ◆ There are no serviceable parts of the 7350 unit.

1.7 Technical Specifications

- ◆ PLL RADIO:
 - Standard UHF Frequency Ranges (410-440MHz, 440-470MHz, 470-512MHz)
 - Standard VHF Frequency Range (150-174 MHz)
- ◆ STANDARD OUTPUT POWER: 2 or 5 watts
- ◆ SIZE: 2.25"W x 1.25" D x 4.75"L (5.7cmW x 3.2cmD x 12cmL)
- ◆ WEIGHT: 8.9 oz. (276 grams)
- ◆ VOLTAGE: 12VDC nominal
- ◆ POWER INPUT: 12-13.8VDC Maximum
- ◆ CURRENT: 150mA standby; 1A transmit (2W), 1.5A transmit (5W)
- ◆ 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
- ◆ ALARM SIGNAL INPUTS: 4 individually programmable Zones: NO/NC/Supervised EOL/Fire EOL Trouble Restore
- ◆ LOW BATTERY REPORTING: Below 11V. 22.5 Minute Test Cycle (approx)
- ◆ ANTENNA CUT / LOCAL REPORTING: 12V open collector output at Trbl, ground on activation; 200ma max load.
- ◆ PHONE LINE CUT MONITOR: Reports telephone line cut to central station as Zone 5 Trouble.
- ◆ RESET BUTTON: Located at end opposite RF connection.
- ◆ UHF ANTENNA OPTIONS (450-480 MHz; contact factory for other frequencies):

Antenna db	Construction		Length	P/N
2.5 db Flex Tamper Resistant ⁽¹⁾	Vinyl Clad	Indoor	10 in	7214
3 db Stealth ⁽²⁾	Vinyl Clad	Indoor	1.5 ft	7211
5 db High Gain ⁽³⁾	Steel Mast	In/Outdoor	3 ft	7210-5-UM
6 db High Gain ⁽³⁾	Fiberglass Mast	In/Outdoor	4.5 ft	7210-6-UC
7 db High Gain ⁽³⁾	Fiberglass Mast	In/Outdoor	6 ft	7210-7-US
9 db High Gain ⁽³⁾	Fiberglass Mast	In/Outdoor	8 ft	7210-9-UC

Notes:

1. Included standard Tamper Resistant antenna, mounts on Alarm Unit's enclosure. Includes cable.
 2. Mounts in attics, vents, walls, behind drapes, etc. Includes integrated 10-foot cable.
 3. Requires cable, see below, and possibly user supplied mounting hardware.
- ◆ CABLES w/CONNECTORS, BNC<->N, for all AES Subscriber Units, high performance, low loss cables for all -UM, -UC and -US antennas above.
 - 10 Ft Cable, p/n 7220-10-N
 - 25 Ft Cable, p/n 7220-25-N (Avoid using 25 ft. length if a 10 ft. will be sufficient)

1.8 Illustration

AES 7350 Integrated Transceiver Kit

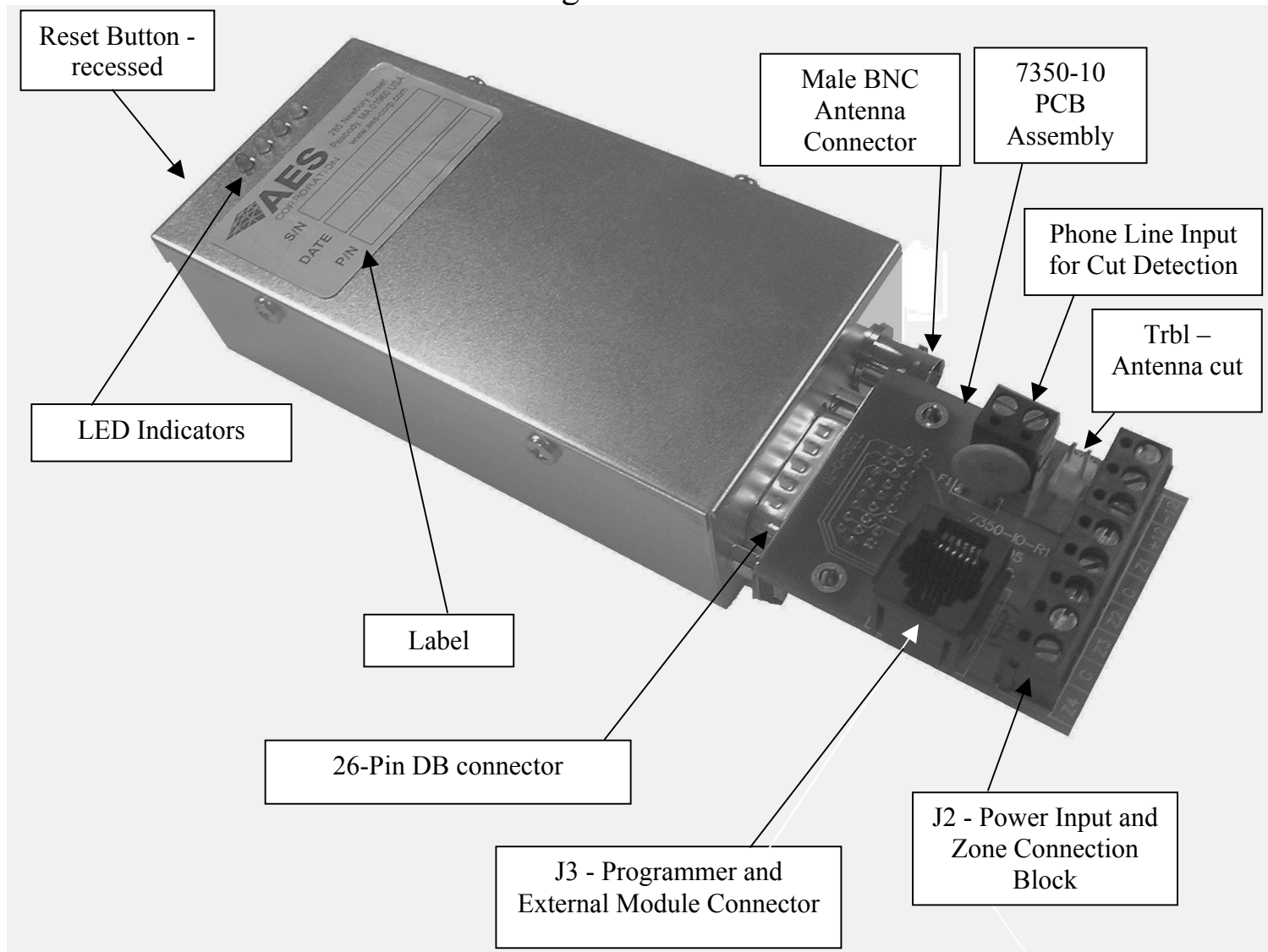


Diagram 1 – Transceiver and Interface Board

2 Installation and Operation

This section contains information on the installation and wiring of the 7350 Integrated Transceiver Kit.

2.1 Overview

The AES 7350 Integrated Transceiver Kit combines the electronics of an AES subscriber unit and a radio transceiver into one enclosure sized similar to a stand alone AES 7080 Transceiver. A properly powered and configured AES 7350 will communicate with an AES Central Receiver via a locally provided AES IntelliNet Network.

Power and battery backup are provided externally. The alarm / control panel or separate power supply can be used. Confirm that the power supply to be used has the capacity to power this unit in conjunction with any other devices attached including the control itself.

2.2 Installation

Installation Guidelines. Refer to Diagram 2 on next page for typical component installation locations/

- ◆ The Integrated Transceiver Unit should be mounted inside the enclosure of an alarm panel or other similar control.
- ◆ Avoid extremes of heat, cold, humidity, dust.
- ◆ The supplied tamper resistant Flexible 2.5db antenna can be mounted on the alarm panel enclosure as shown in diagram 2 in this document. A remote external antenna can also be purchased separately and installed.
- ◆ Carefully drill or punch a ½” diameter hole into the top surface so that the antenna will be vertically orientated after installation.
- ◆ Avoid installing the antenna in very close proximity to other metal surfaces, as they may severely impact the performance of the radio communications.
- ◆ Secure control panel’s enclosure unit to wall or other appropriate surface, using suitable screws/anchors.
- ◆ Use provided Velcro strip or other method to secure Transceiver to inside of enclosure at the desired location.
- ◆ When needed, use higher gain antenna with rated cable and connectors. Mount antenna as high as possible - attics are ideal. (See “UHF ANTENNA OPTIONS” listed in section 1.7.)
- ◆ Avoid tightly coiled or bunched coax as this could 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.

Illustration Below Shows a Typical Installation

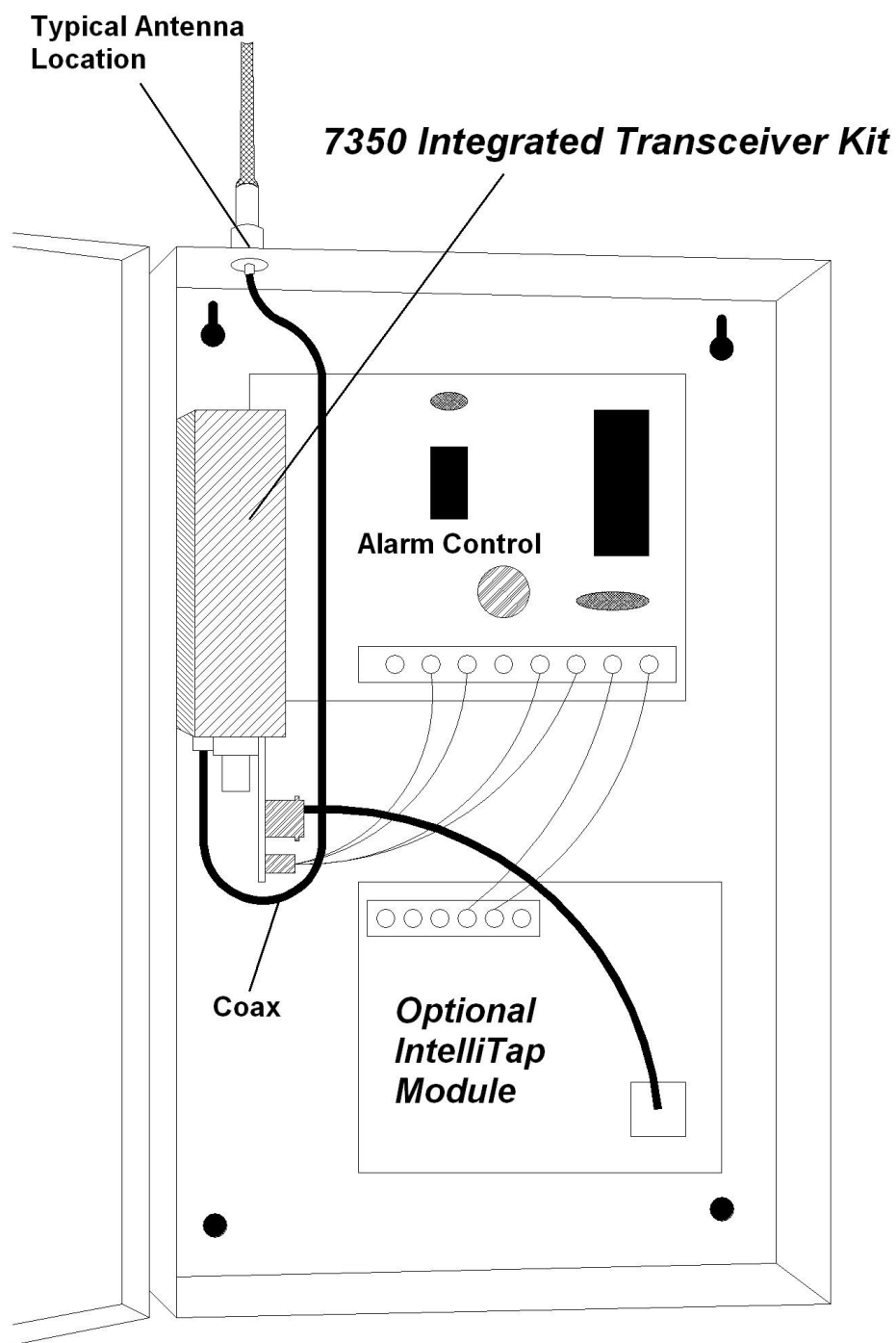


Diagram 2 – Example Control Panel Installation

2.3 Wiring - General

Diagram 3 below shows details of the 7350-10 interface board which is provided to allow the ease of connections to the alarm panel. User wiring is terminated to the connectors on this board.

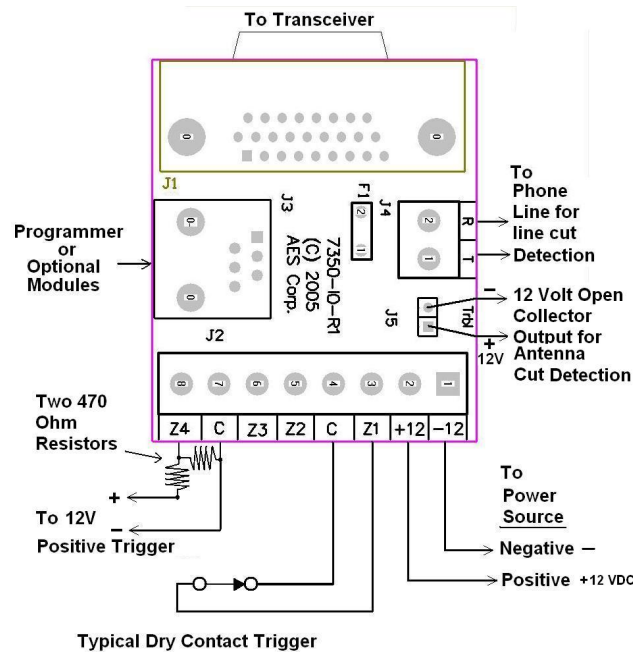


Diagram 3 - User Interface Board Connections

- **J1 – (Not labeled on the board)** is the 26-pin Db connector at the edge and is used to attach and connect to the Transceiver.
- **J2 - Power Input and Zone Connection Block.** Connect power and zone wiring to this terminal block. Zone wiring examples follow. Attach external 12 VDC source to the +12 and – 12 terminals carefully observing polarity. See Section 1.3 Power requirements.
- **J3 – Programmer and External Module connector.** Plug programmer's cable into this jack to perform programming functions. 7350 and programmer will be powered by the supply voltage attached to terminals +12 and – 12. The AES IntelliTap or other supported accessories are connected and powered by this jack. Any attached module must be disconnected to connect the programmer and the programmer must be disconnected to use an accessory.
- **J4 – Telephone line cut.** Connect the phone line to be monitored to this terminal. Terminals are labeled R for Ring and T for Tip.
- **J5 (Trbl) – Antenna Cut / Trouble output Local.** This is for local reporting or annunciating of antenna cut or communication troubles. It is 12V open collector output that grounds on activation; 200ma max. Use AES part number 7210 (12-0388-J4 internal p/n) for mating connector.

2.4 Wiring – Antenna Cut / Acknowledge Delay Output (J5)

Antenna Cut / Acknowledge Delay Output

If the radio channel is "quiet" for more than 4 minutes (as would be the case if the antenna was cut) the 7350 subscriber attempts to send a test message to another subscriber. If that message is not acknowledged within the programmed acknowledgment delay period (default is 2 minutes), a fault condition exists. This fault condition is annunciated by a ground (+12V open collector) at the (–) pins on J5 (see diagram 3). The voltage can be used to drive a relay, sounder or other device to notify someone of the condition. Maximum load is 200ma.

An “Acknowledge Delay” (T903 or E356 C903) message is also added to the transmit queue to be sent when the unit re-connects to the network.

Mating Output Connectors: Order part number 12-0388-J4 for a package of 10 mating connectors for the J5 output pins.

The (+) pin of J5 is internally connected directly to the 12 Volt supply.

The (–) pin is switched to ground by an internal transistor.

Maximum load is 200 ma.

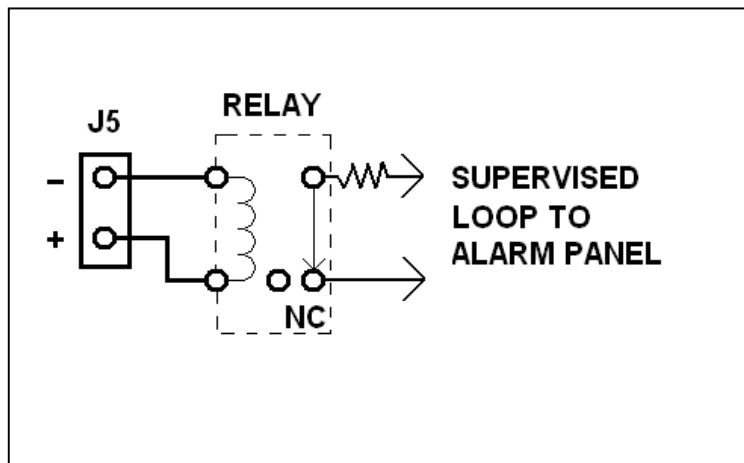


Diagram 4 – Relay to J5

2.5 Wiring - Zone Inputs

- Refer to illustration on previous page for location of Zone terminals.
- Zone inputs may be programmed for use with various types of outputs in alarm panels. Options are:

Normally Open / Normally Closed
E.O.L. / "Supervised" with 2.2K resistor
Open Collector; Voltage Output

Zone Reporting Chart	Zone Program:						
	○ Normally Open	○ Normally Closed	⊗ Supervised E.O.L.	⊞ Fire E.O.L.**	⊥ Inverted Fire E.O.L.	⊞ Bypassed	

Input State/Condition:	Zone Status:					
Open	N	A	A	T	A	B
EOL Resistor - 2.2K	X	X	N	N	N	B
Closed/Short	A	N	A	A	T	B

B=Bypassed
N=Normal
A=Alarm
T=Trouble**
X=Don't Use

See section 3 for Zone Programming Instructions.

B = Bypassed - Zone status is ignored

C = Normally Closed - Closed=Normal / Open=Alarm

O = Normally Open - Open=Normal / Closed=Alarm

S = Supervised - EOL Resistor; 2.2K ohm = Normal / Open = Alarm / Short = Alarm

F = Fire - Open - EOL Resistor; 2.2K ohm = Normal / Open = Trouble** / Short = Alarm

I = Inverted Fire - EOL Resistor; 2.2K ohm = Normal / Open = Alarm / Short = Trouble**

** NOTES:

~ Reporting of "Trouble" messages requires version 1.70 or newer receiver.

See Central Station Compatibility notes.

Notes on Central Receiver Compatibility

The 7350 Subscriber Unit is fully compatible with AES Version 1.70 Central Receiver and up. **A receiver manufactured or updated after July 1997 usually complies with this requirement.** Contact AES if your receiver is pre-1.70 for upgrade options. When "Fire" or "Inverted Fire" is enabled, the unit generates a specific packet type for reporting "Trouble". "Trouble" data within this packet can only be received on version 1.70 and newer receivers. Line cuts are reported as a Trouble on Zone 5. You must answer Y to Fire or Inverted Fire under Zone Programming for "Trouble" messages to be properly processed.

Zone Wiring diagrams

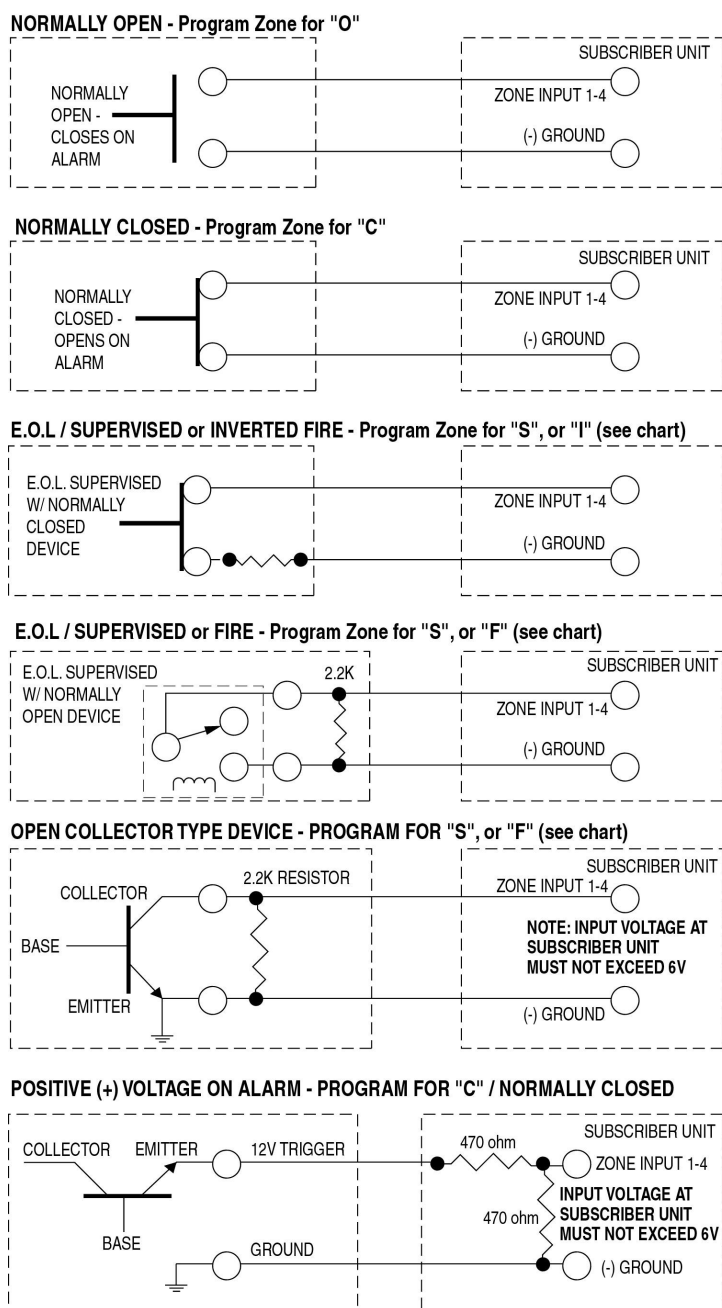


Diagram 5 – Wiring Examples

IMPORTANT: FOR ALARM PANELS WITH VOLTAGE OUTPUTS: Resistors must be added so that the voltage at the subscriber unit input terminals DOES NOT EXCEED 6V. Excess voltage on any zone may cause false alarms in all zones. As an alternative, use a relay as an interface.

For more details, see the Dealer Support website at www.aes-corp.com

2.6 Power Up

With the external power supply de-powered, connect the output of a 12VDC to the terminals labeled +12 and -12 of the 7350-10 board. Connect programmer to J3 on the 7350-10 interface board. (See Diagram 3) Connect the battery leads to the battery terminals while observing polarity. Energize power supply. Be certain that the power supply power source is connected to an outlet or circuit that is NOT controlled by a switch. After power is connected, push RESET button on the 7350 for a fresh reset. The controller runs a “self test”.

After a few seconds, a message will appear on the handheld programmer:

```
SELFTEST-PASS (or FAIL ###)
SUB [rev#] 7350
ID#: [4 digit ID number] (C)YYYY AES
```

If the message reads SELFTEST - PASS, you may proceed with programming the unit. Note that the current ID# for this unit is displayed, as well as the firmware version and date. If the message reads SELFTEST - FAIL [Error Code], retry the procedure by pushing the controller RESET button. If the Fail message persists, refer fail message list for explanation and resolution.

Note: 01 is low battery. If the message reads SELFTEST – FAIL 01, you may proceed with programming the unit if you expect that the battery is low and know it is charging or has sufficient capacity to complete programming. Also note that the current ID# for this unit is displayed, as well as the software version and date.

SELF-TEST/ STATUS ERROR CODES: An [Error Code] is listed when the unit fails the self-test. Push the reset switch to see if the problem clears. If not, check these procedures.

Message: **01 Battery power is low**

Procedure: Check battery; Push RESET button,

Message: **02 RAM Checksum failure**

Procedure: Push RESET button. If unit passes, it must now be reprogrammed (see next section). If unit fails service is required.

Message: **03 Problems 01 and 02 above.**

Message: **04, 06 EEPROM Failure**

Procedure: Push RESET button. If unit passes, it must now be reprogrammed (see next section). If unit fails service is required.

Message: **08 Analog Digital Converter / ADC Failure**

Procedure: Same as 04 / 06 failure, see above

Message: **80 Loopback Test Failure**

Procedure: Push RESET button, unit will likely pass self test; If the unit consistently reports the same message service is required

Other Messages: Multiple errors are added. For example a Fail message of 84 indicates Loopback Failure and EEPROM fail (80+04).

Except for the low battery fault, most other persistent fault messages may indicate that the unit requires AES authorized servicing. Report the error code to AES service rep.

2.7 Status (LED) Indicators

There are 4 LED indicators protruding through the cover of the 7350 transceiver. The function of each is described below.

STATUS INDICATORS: LED's on cover at opposite end from RF.

- ALM** – (Red) Status / troubleshooting indicator, “See Diagram 7 blink patterns”
- WA** – (Yellow) Steady On = Waiting for acknowledgment of last transmission;
– Steady Blinking = Not on Network; Off = Normal
- TX** – (Green) indicates radio transmit
- RX** – (Yellow) Indicates radio receive (includes any radio activity on this frequency strong enough to break squelch)

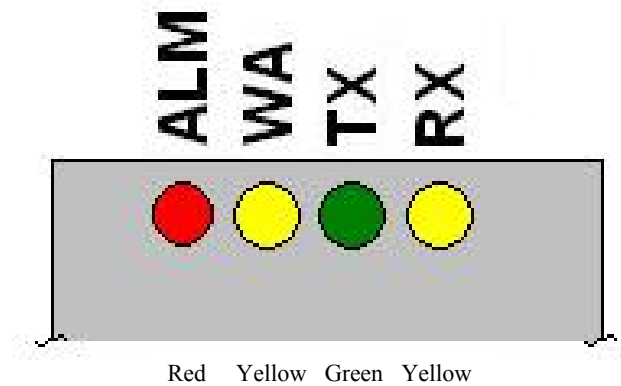


Diagram 6 – LED Indicators

Codes as follows: "•" = short, "—" = long. Period between patterns is about 1 second with diagram showing pattern repeated 3 times.

| 1sec |

- | | |
|-----------------|--|
| • • • | 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; |
| _____ | steady / no blink - Self-test failure (excl low batt) |

Diagram 7 – Red ALM LED, Blink Patterns

3 Programming

Programming is accomplished by attaching a compatible programmer to the J3 connector of the 7350-10 Interface board. Following are programming instructions using the AES 7041 Hand Held Programmer. Software at the AES central receiver can also be used to program some of the functions listed in this section. Refer to AES software documentation. A conversion chart for using a PC terminal program as a programmer can be found later in this manual.

3.1 Program ID# and System Cipher Code

The unit ID# and the system cipher can only be entered with a programmer, directly attached to J3.

NOTE: Entering new data overwrites (erases) any previously stored 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.

To start, press programmer keys (CTRL+F1). The following message appears:

```
SETUP UNIT-OLD: NEW      (Existing stored "old" data.)
ENTER ID#-1234: . . . .  (New data shown 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 (0-9, A-F), and then push <ENTER>. **The ID number must be unique, different from all other ID numbers in your system.** After successfully entering the ID number, the following message appears:

```
CPHR CODE-XXXX: . . . .  (Existing data is not shown.)
```

Enter the 4-digit cipher as assigned by the system administrator, and then press <ENTER>. The code must match that of the central station receiver - If the wrong code is used, the unit cannot log on and will not communicate. After entering the cipher code, or pressing <Enter> alone the following message appears:

```
OK
```

3.2 Set Check-In Time and Reporting Delay Period

The factory default is set to 24 Hour Check-In. If this is appropriate you can skip to the next section. All other timing parameters typically should remain at factory defaults.

The Check-In Time is the interval at which the subscriber unit sends it's "Check-In" messages to the central station. The default is 24 hours (recommended). The range for this feature is 5 minutes to 24 hours.

Important Note: Short check-in times (less than 6 hours) can impede system performance by creating heavy radio traffic in larger AES IntelliNet network systems. The standard setting is between 12 and 24 hours.

Use shorter check-in times for highest security applications only.
DO NOT enter a time of 00 hours, 00 minutes.

The Reporting Delay sets the rate at which a subscriber's own signals are transmitted. The default value is 10 seconds; transmissions are sent at least 10 seconds apart (this helps to meter traffic on the system). The range is 0 (no delay, not recommended) to 330 seconds. During this delay, Zone activations will be accumulated and included in one packet, reducing the amount of radio traffic.

To start, press programmer keys (**CTRL + F2**)

(hold down CTRL and then press F2). The following message appears:

CHKIN TIME--OLD:NEW

ENTER HRS----HH: . . [0-24] (HH = existing data)

Enter a number of hours between 0 and 24 (default = 24) and push <ENTER>.

ENTER MINS---MM: . . [0-59] (MM = existing data)

Enter the number of minutes between 0 and 59, then push <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. If data has been entered correctly, the following message appears:

OK

3.3 Set Packet "Time-To-Live" Function

In most cases the default settings will be appropriate. If so skip to the next section.

The Time to Live Function aborts old messages to ensure the efficient flow of data through the network. The old messages have typically been buffered, due to a network problem, but not yet sent.

The default setting is recommended. In the default setting, test timer packets are assigned a 30-minute time to live. Any subscriber in possession of the packet that includes time to live data will be decrementing the timer. Any timer that reaches 0 will cause that packet to be removed from the transmit queue effectively aborting it. (Note: any 30-minute-old test timer message has already served its purpose. The central station should have recognized a missed check-in by then and flagged the event as a "failure to test"). For more information, contact AES technical support.

Adding STATUS can also help because there could be a large number of Acknowledge Delay messages created if a significant network communication issue exists. This way the packets can be aborted after the programmed period freeing up the airwaves for other more critical packet communication.

To start, press programmer key (F2). The following message appears:

PACKET TIME TO LIVE

CHECK IN----OLD:NEW

ENTER HRS----HH: .. [0-24] (HH = existing data)

Press <ENTER> then the following appears:

ENTER MINS---MM: .. [0-59] (MM = existing data)

Press <ENTER> then the following appears:

STATUS-----OLD:NEW

ENTER HRS----HH: .. [0-24] (HH = existing data)

Press <ENTER> then the following appears:

ENTER MINS---MM: .. [0-59] (MM = existing data)

Press <ENTER> then the following appears:

ALARM-----OLD:NEW

ENTER HRS----HH: .. [0-24] (HH = existing data)

Press <ENTER> then the following appears:

ENTER MINS---MM: .. [0-59] (MM = existing data)

Press <ENTER> then the following appears:

TROUBLE/RST-OLD:NEW

ENTER HRS----HH: .. [0-24] (HH = existing data)

Press <ENTER> then the following appears:

ENTER MINS---MM: .. [0-59] (MM = existing data)

Press <ENTER> then the following appears:

RESTORAL----OLD:NEW

ENTER HRS----HH: .. [0-24] (HH = existing data)

Press <ENTER> then the following appears:

ENTER MINS---MM: .. [0-59] (MM = existing data)

Press <ENTER> then the following appears:

INTELLITAP--OLD:NEW

ENTER HRS----HH: .. [0-24] (HH = existing data)

Press <ENTER> then the following appears:

ENTER MINS---MM: .. [0-59] (MM = existing data)

Press <ENTER> then the following appears:

SPECIAL-----OLD:NEW

ENTER HRS----HH: .. [0-24] (HH = existing data)

Press <ENTER> then the following appears:

ENTER MINS---MM: .. [0-59] (MM = existing data)

Press <ENTER> If data has been entered correctly, the following message appears:

OK

3.4 Zone Programming

Factory default zone programming is set to EOL Supervision (**S**) without restore (**X**). If this is satisfactory skip to the next section.

To start, press programmer keys (**CTRL + F3**) (hold CTRL and then press F3). The following message appears:

```
SUPERVISE-OLD:NEW
FIRE-----Y: .      [Y/N] (Y = existing data)
```

The sequence first asks if any "Fire" programming is used. Answer Y/yes if you wish to have the subscriber report "Trouble" conditions. Also, **enter Y/yes if you using the line cut monitor****. Otherwise answer N/no (refer to chart below). The existing programming is shown under the "OLD:". If you wish to change the setting, enter Y or N. To leave unchanged, simply push <ENTER>. Next appears:

```
INVERT-FIRE-N: .      [Y/N] (N = existing data)
```

Here you can choose to reverse the logic for the fire input (refer to chart below). The existing setting is displayed. To change the setting enter Y or N. To leave unchanged, push <ENTER> alone.

The most versatile option is to select Y for Fire and N for Inverted Fire. This provides the best choice of zone programming options available (BOCSF).

After pressing <ENTER>, the following appears:

```
ZONE BANK 0 .
SET ZONE (BOCSFI) B0      (available options)
OLD SSSS LOW>HI          (S = existing data)
NEW . . . .              (Must enter exactly 4 values)
```

Having chosen the Fire parameters, each zone can now be programmed. The valid programming options are shown in parentheses. The options that appear are determined by your input to the Fire/ Inverted Fire Section above. The current programming is shown next to the word OLD, Zones 1-4 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 4 zones. Zones Triggers 1-4 can be set for:

B - Bypassed

O - Normally Open;

C - Normally Closed;

S - Supervised/E.O.L. (alarm on open or short);

F - Fire Supervised E.O.L. (alarm on short, trouble on open) or

I - Inverted Fire E.O.L. (alarm on open, trouble on short).

After successfully entering data, the following appears:

```
SET RESTORAL (XR) B0      (available options)
OLD RRRR LOW>HI          (R = existing data)
NEW . . . .              (Must enter exactly 4 values)
```

You can program individual zones to report restorals - i.e. send a report that the zone has returned 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.

When restore data entry is complete, Press <ENTER>.

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

OK

The zones are now programmed.

3.5 Set Modes – Line Cut Monitor and Enable Repeating

There are several functions that can be programmed in the Set Modes programming area. Repeating can be disabled and Telephone Line Cut can be enabled.

To start, press programmer keys (**CTRL + F4**)

(hold down CTRL and then press F4). The following message appears:

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

Enter Y to enable the 7450 repeating capability. Default is Y.

Press <ENTER> then the following appears:

TEST LINECUT-N: .

The 7350 can monitor an attached phone line for line cut. Connect the phone line to terminals at J4 (see diagram 3). The 7350 senses the voltage on the line. If the line voltage drops below 3V for at least 2 minutes, the 7350 transmits a “Trouble” on “Zone 5” to the central receiver.

NOTES: ~ Line Cut Reporting requires version 1.70 or newer receiver. See Central Station compatibility notes in section 2. **To enable full trouble reporting, answer Yes to zone programming for Fire and/or Inverted Fire (Ctrl+F3).** See section 3.4.

Refer to diagram 3 for connection detail.

Enter Y/yes to enable the phone line cut monitor, enter N/no to disable the feature. Default is N.

Press <ENTER>, If data has been entered correctly, the following message appears:

OK

3.6 Reset RAM

Use the Reset RAM function to return the 7350 to the factory default settings. All parameters except the Unit ID (also referred to as the account number or code) and Cipher code (also known as the system ID) are returned to default values.

This is a great first step to ensure that you are always starting from the same configuration. This should not be used as a starting point if you are simply modifying a few settings and most of the units programming is already configured.

It is good practice to perform this function on a new factory unit to ensure that you are always starting from the same configuration. Also perform this function if you are unsure of the configuration or if you are having other problems with the unit.

Press <CTRL> + <F5> then Y then <ENTER> to complete this operation.

3.7 Initializing the Subscriber Unit

Having programmed the unit, you are now ready for a final check. Plug in the handheld programmer if available. Push the Reset button on the controller board (See Diagram 3). At this point, the message on the programmer should read:

```
SELFTEST - PASS
SUB [rev#] 7350
ID#:NNNN (C) [date] AES
```

If a "Fail" error message other than 01 is displayed, push the reset button. If the error persists, refer to section 2.5, which contains a list of error codes.

The status lights indicate the progression as the subscriber unit goes on the air and attempts to enroll into the network,

Network log on process after a reset:

- STATUS INDICATOR LED's RX, TX and WA lights 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 - AL + WA blink at different but steady rates.
- TX comes on as unit transmits a "Request for Reply".
- WA stops flashing after about 15-30 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 turns off. This indicates that the reset subscriber unit is now on the network.

IMPORTANT NOTE: A flashing WA light (blinking at a steady rate) indicates that the subscriber has NOT linked itself into the network.

If enrollment fails, check antenna and all cables; be sure that correct system cipher has been programmed in to the unit.

Once enrolled you can continue with additional testing.

3.8 Local Status Check

This function performs a quick diagnostic check at any time. Use the handheld programmer: press SHIFT+F4. The following message appears:

```
SUB [rev#] 7350
ID#: [NNNN] (C)YYYY AES
RT1:NNNN LEVEL: NNN
STAT:NNN NETCON: N
```

EXPLANATION OF STATUS CHECK TERMS

Top Line: Indicates Subscriber model and firmware revision information.

ID#: 4 digit ID number programmed into this unit.1

YYYY: Indicates Copyright year.

RT1: Route #1, the ID of the next subscriber in the “best” route to the central station. If RT1 is 0000, the unit is communicating directly with the central station. If XXXX appears, the unit is not on the network. Any other 4 digit ID indicates the unit at the top of the routing table.

LEVEL: Subscriber unit “level” or “link layer”, which indicates how many expected “hops” to the central station. A unit level = 255 indicates that unit is not on network.

STAT: Status shows the self-test data. (Refer to section 2.5 for explanation.)

NETCON: Internal rating used in the automatic positioning of this unit in the network. The normal range is from 0-7, 0 being best. Note that while a low number is better, any NetCon from 0 to 6 is OK. 7 may indicate a problem with this unit or a unit in its path to the central receiver.

A NetCon of 5 guarantees at least 2 unique paths to the central.

3.9 Handheld Programmer – Quick Command Guide

Handheld Programmer Commands

CTRL+F1	SETUP UNIT - ID#, Cipher
CTRL+F2	SET TIMERS - Check-In Interval
CTRL+F3	SET ZONES - NO/NC/Supervised/Fire
CTRL+F4	SET MODES - Repeating; Line Cut
CTRL+F5	RESET RAM - Y/N, resets factory defaults, except ID# and Cipher
SHFT+F1	RX MONITOR ON / OFF (toggle)*
SHFT+F2	TX MONITOR ON / OFF (toggle)*
SHFT+F3	MONITOR ALL ON / OFF (toggle)*
SHFT+F4	TEST STATUS
SHFT+F5	KEY TRANSMITTER (5 seconds)
F2	SET TIME-TO-LIVE
F5	SEND TEXT MESSAGE

** Turn off monitor functions when done*

3.10 Reconnect Cables after Programming

After programming is complete, reconnect any cable (such as the cable to the AES IntelliTap), disconnected from J2 of the 7350-10 Interface Board.

3.11 Programming the Subscriber Unit from a PC

In place of a handheld terminal, a cable adapter kit #7043 may be ordered from AES to link the 7350 to your computer serial port. Use a terminal program like HyperTerminal or Telix to send keystrokes to and display output from the programming port of the 7350.

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

Key output on a PC differs from that of the Hand-Held Programmer. See chart below

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	

- 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 subscriber, make sure the program is set to the correct COM port.
- If the subscriber receives characters, but nothing can be sent, make sure the CTS/RTS flow control is OFF, and that the cable is OK.

4 Testing

Before leaving the installation site, you want to test that the expected signals are properly getting to the monitoring system. Perform at least the tests below and confirm that the monitoring system and personnel properly received the correct messages and understand what they mean.

4.1 Installation Site Checks

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

- Have a knowledgeable person Request Status and other test functions available in the AES Net7000 or IPCtrl program to confirm that they are satisfied the 7350 is communicating properly.
- Trigger alarm conditions and confirm that the proper message is received at the Central Station.
- Cause fault conditions and confirm that the proper message is received at the Central Station.

4.2 Central Receiver Status Checks

Perform testing from the central station using the AES Net7000 or IPCtrl software to determine adequate signal strength, quick reception of messages and acceptable routing. Refer to separate software manuals for use of testing functions.

5 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.

5.1 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 7350. 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. These include things such as the transceiver, coaxial connectors, coaxial cable, surge protectors, bandpass cavities and the antenna.

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

5.2 Parts List

- The standard 7350 Integrated Transceiver Kit includes the following items.
- 7350 Integrated Transceiver
- 7350-10 Interface board
- Set of adhesive Velcro strips.
- Antenna Assembly
- 40-7350-S Instruction manual

5.3 Regulatory Compliance

The AES Model 7350 product has not been submitted for either Canadian or USA identification or compliance and so is not intended for use in the USA and Canada.

Warranty and Service Procedure

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.

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AES SERVICE PROCEDURE: Contact AES at (978) 535-7310, [fax (978) 535-7313] to receive a Return 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 authorized RA items freight-prepaid to:

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

(call for Return Authorization number)



Warranty review date 5/08/06