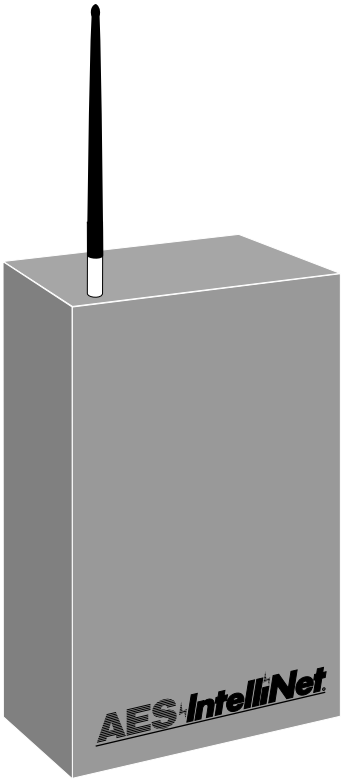
AES•7050

& AES•7750

2-WAY RF SUBSCRIBER UNIT

VERSION 1.62

INSTALLATION & OPERATION MANUAL



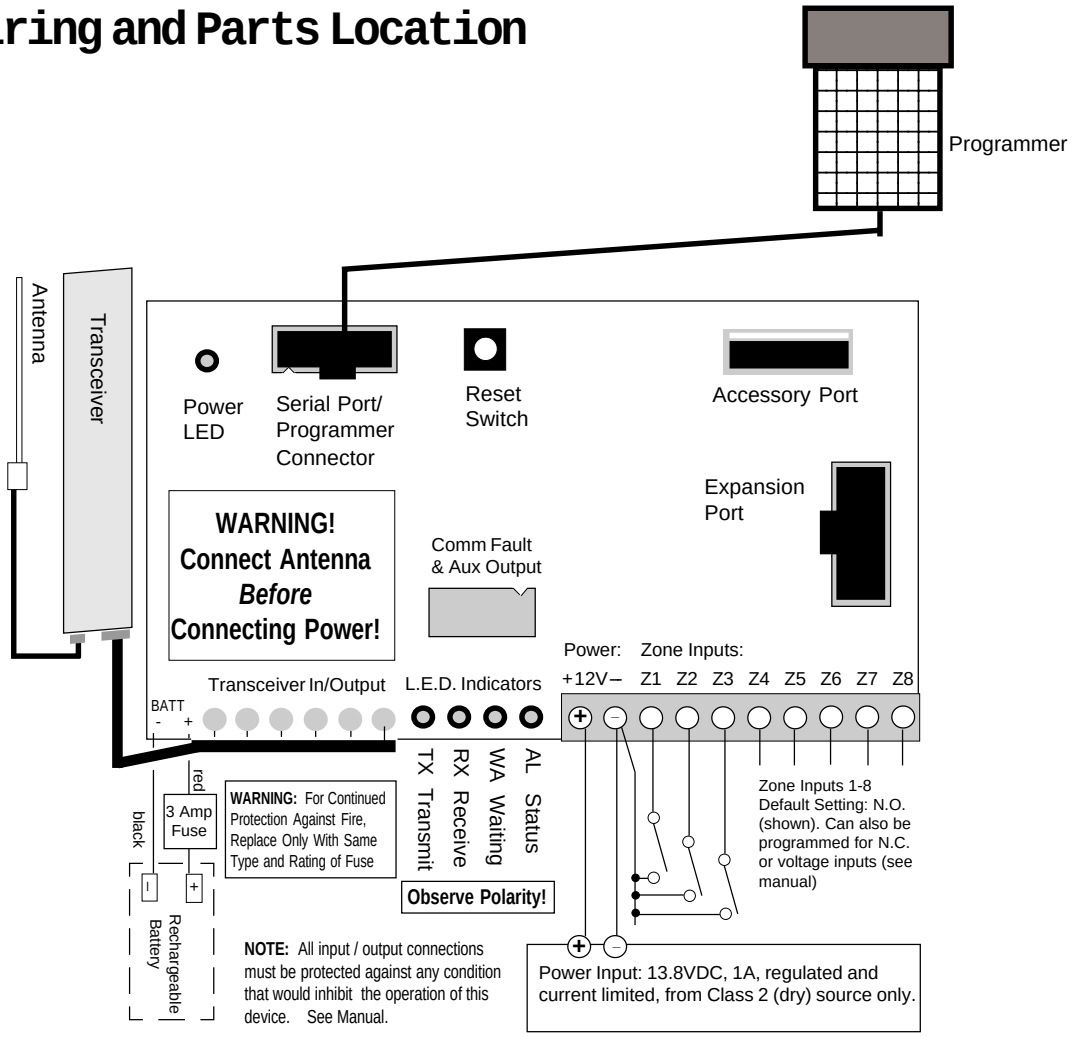
AES IntelliNet

AES Corporation
285 Newbury Street • Peabody, Massachusetts 01960-1315 USA
Tel 508-535-7310 • Fax 508-535-7313

40-0550 Document Rev E 6/12/96

Table of Contents

7050 Wiring and Parts Location



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.

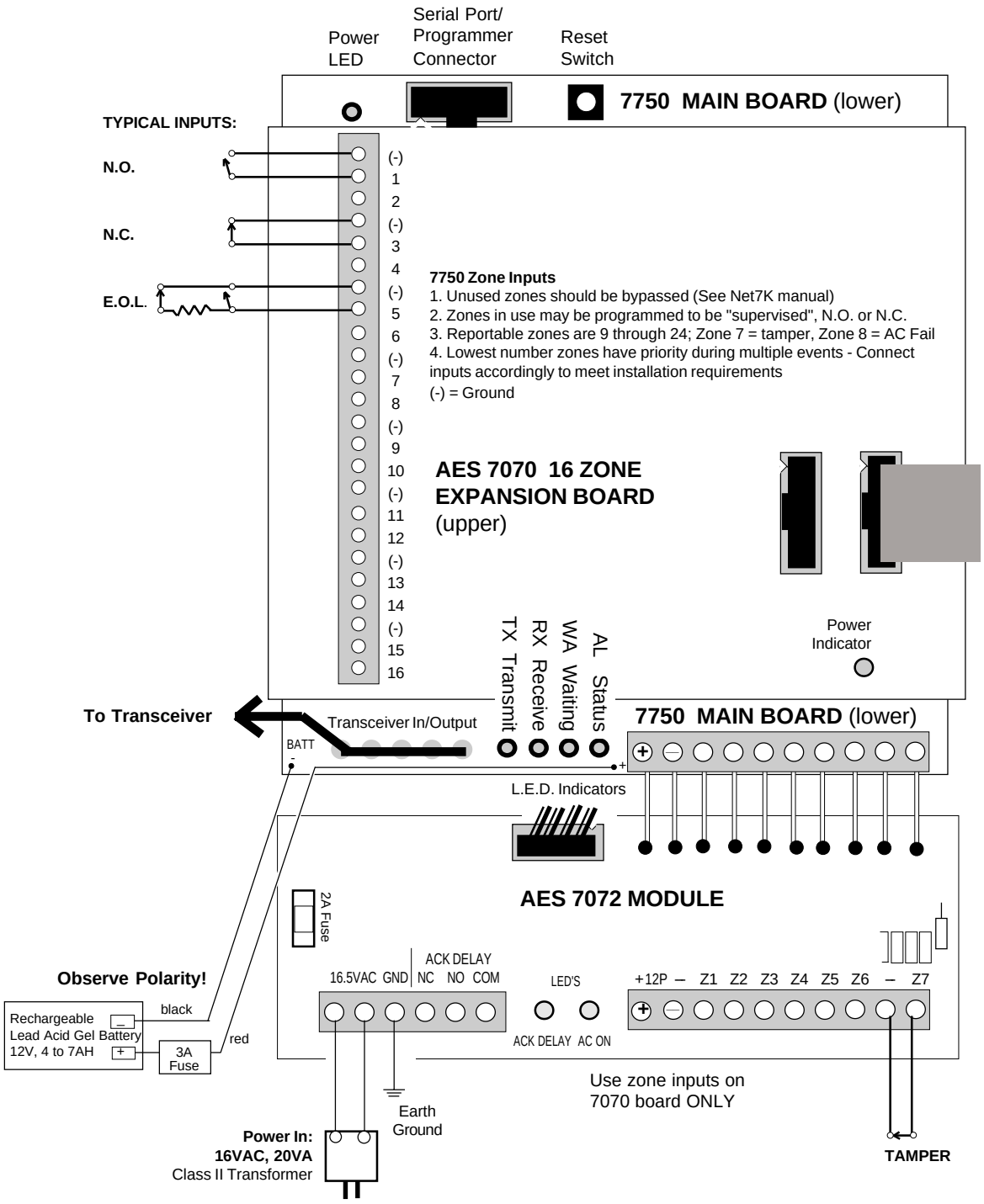
FCC COMPLIANCE:
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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.

Electrical Rating: 13.8VDC, 80ma standby, 1000ma transmit
Onboard Fuse: Self Resetting / Not User Serviceable
In-Line Battery Fuse: 3 Ampere
Rechargeable Battery Req: 12V, 4 to 7 AH;
Low battery condition is reported to the central station.

7750 Subscriber Unit; Typical Wiring Diagram



Model Number 7750 Subscriber Unit
Electrical Rating: 13.8VDC, 100ma standby, 1000ma transmit
Fuse: 2 Ampere - located on 7072 board
Onboard Fuse: Self Resetting / Not User Serviceable
In-Line Battery Fuse: 3 Ampere
Rechargeable Battery Req: 12V, 4 to 7 AH;
Low battery condition is reported to the central station.

Overview

AES 7050 / 7750 SUBSCRIBER UNITS

7050 Subscriber Unit The AES "smart" transceivers, with the basic 8 zone inputs.

7750 Subscriber Unit A "loaded" version of the 7050, with factory installed power supply and 16 supervised zone expansion board.

Power Requirements: **For 7050:** 13.8VDC, 0.5A continuous, 1.5A peak. A dedicated supply is recommended.

For 7750, and units are equipped with AES 7072 multi-function board with power supply; 16VAC, 0.7A Class II Plug in transformer required (120VAC primary), **Input must be fused.**

Back Up Battery: A backup battery is required; A 12V, 4 to 7 AH lead acid gel type is required.

Inputs / Zones: **7050:** 8 inputs, N.O., N.C. or voltage, individually programmable. When the input senses an alarm, the zone number and unit ID are reported to the central station. The default setting is N.O. inputs on all zones (see "Programming"). The zone trigger time is adjustable using the NET7000 central station software; default time is 100ms.

With 7072 Multi-Function Board: 6 inputs plus tamper (zone 7) and AC fail (zone 8). Also, relay for local output of Acknowledgment Fault.

7750: 16 inputs (zones 9-24) using 7070 zone expansion board (included), EOL supervised type, individually programmable. Also includes 7072 board with tamper (zone 7) and AC Fail (zone 8).

Lowest zones are reported first.

Zone Restorals: Specific zones can be programmed to report "restorals" - when a zone in alarm is restored to a non-alarm state. The default program does not report zone restorals, but this function can be programmed for individual zones

Installation and Programming Procedures

PHYSICAL INSTALLATION

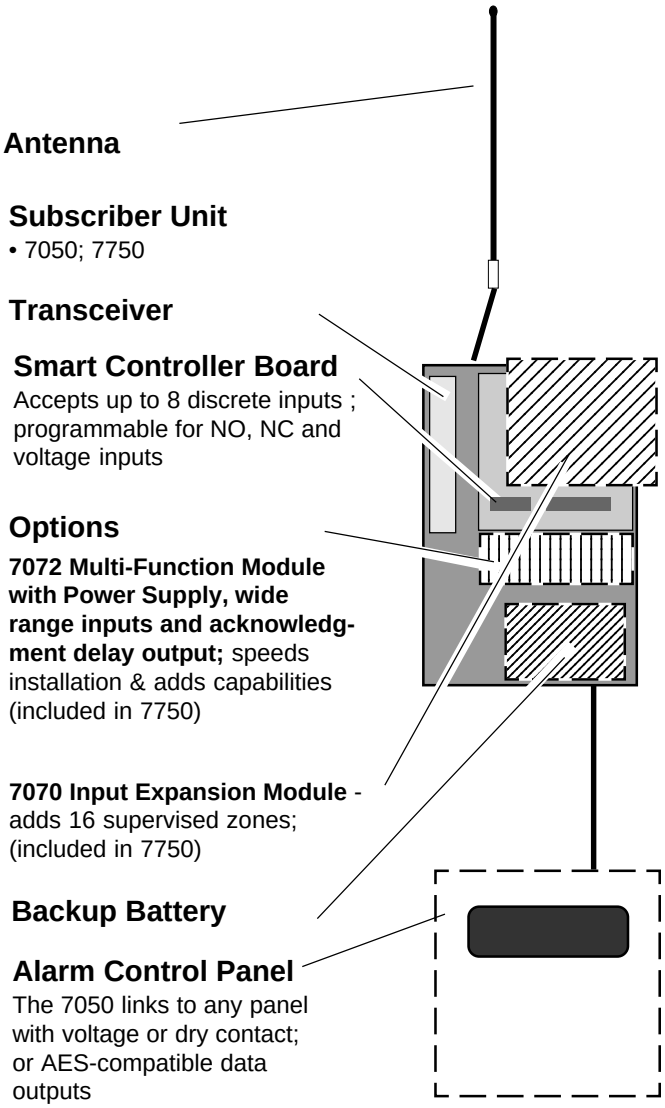
SUBSCRIBER UNIT

Choose a secure, dry location for the 7050 or 7750. 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 7050 will still be able to send a signal. 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. Once the subscriber unit is mounted, install the radio transceiver.

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 not 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, the antenna and cable must be within the secured area. The antenna can be mounted on the case using a TNC bulkhead connector mounted in the knockout hole on the case top.

Antenna Location is Important - It provides maximum range and signal strength. Position the antenna as high as possible 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 (but inaccessible to intruders), in the attic (assuming that the roof has no foil) or near a window. Position the antenna away from metallic surfaces of any kind.



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. (NOTE: To avoid "unknown" signals to be generated by a new or unprogrammed unit, use a non-matching Cypher (dealer) Code while performing the initial programming).

Connect handheld programmer to controller board at P2 (see diagrams, pages 3 and 4).

For 7050: Connect power to the unit: 12V, 4AH battery to battery terminals, and 12-14VDC power to main circuit board Power Zone Input Terminals (see page 3), terminals (-) and +12V. Observe polarity!

For 7750: Connect power to the unit: 12V, 4AH battery to battery terminals, and 16VAC power to 7072 power input (see page 4).

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#] (c)[date] AES
ID#: [4 digit ID number] ->
```

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.

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 they 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) data corrupt;** 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: **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.

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

STATUS INDICATORS: another source of information.

LED indicators located at the bottom edge of the controller board (refer to diagram on page 3):

RX, TX - indicate radio receive (RX) or transmit (TX)

WA - Steady On = Waiting for acknowledgment of last transmission;
Blinking = Not on Network; Steady Off = Normal

AL - Alert / troubleshooting indicator, "blink" codes as follows:

· · ·	steady blink - system OK;
·· ··	short-short blink - low battery;
·— ·—	short-long blink - an input zone is in alarm;
··— ··—	short-short-long blink, low battery and zone in alarm;
Steady	no blink - Selftest failure (other than low batt)

PWR - indicates unit has power

LED indicators on 7072 MultiFunction board (option; standard on 7750 units)

ACK FAULT- ON Indicates an acknowledgment fault.
AC - ON when AC power input is OK.
(refer to diagrams on pages 3, 4)

LED indicators on 7070 Zone Expander board (option; standard on 7750 units)

PWR - ON indicates power is present.
(refer to diagrams on pages 3, 4)

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 CYPHER (DEALER) CODE** used must be the same for all subscriber units and the central station on your network. The cypher code 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. Short check-in times offer more supervision, but create more radio traffic.

•**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*:** allows flexibility to interface with any alarm control panel or other input. Choose from Normally Open or Normally Closed function all or individual zones. Also choose to report Restorals (the resetting of an input to normal). Restorals are generally reserved for higher security users, and will create more "air traffic" on the network.

•**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. If more than 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 Central Station Processor. It is much easier to use the Net7K software to program the subscriber units. If the AES Net7K or Net77 software is used in the system, the functions MUST be programmed using the Net software to enable it's powerful, centralized database capability.

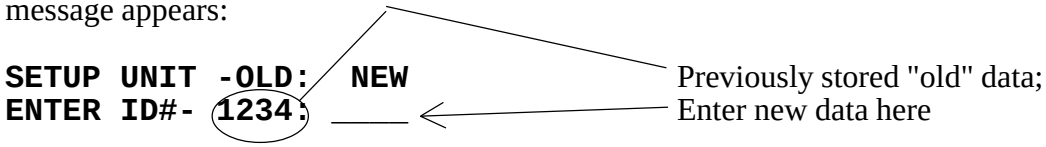
Procedure: SETUP UNIT

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#, Cypher (Dealer) Code and Repeating Enable. Pushing the ENTER key without entering new data saves the previously stored information. The programmer should be connected to P2 and the power should be on (as in self test).

To start, push Programmer keys **(CTRL)+(F1)**

Press programmer keys CTRL + F1 (hold down the Control key and then the F1 key. The following message appears:



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:

Unit must be programmed with the cypher (dealer) 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 CYPHER (dealer) 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:

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 Repeating: to disable this unit from forwarding messages, enter “N” for NO, and then push ENTER. Mobile units such as the 7050MMP or the 7550VLS must not be used for repeater functions.

Upon completing the “SETUP UNIT” procedure, the following message appears:

OK

NOTE: The "SETUP UNIT" functions is 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.

MUST be programmed through the central station for UL listed systems.

NOTE: The "SETUP UNIT" functions is 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

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 check-in and create more network traffic.

The Reporting Delay period limits the rate at which alarms are reported from this unit. 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.

The programmer should be connected to P2 and the power should be on.

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

Press programmer keys CTRL + F2 (hold down the Control and 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.
When data is entered in HRS field, then minutes field appears (otherwise MINS does not appear)

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:
· The minimum check in interval is 00 hours, 01 minute;
· The maximum check in time is 24 hours, 00 minutes.
· DO NOT enter a time of 00 hours, 00 minutes.
· For residential and typical security uses, a check in time between 12 to 24 hours is adequate. 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.

• Set Check-in as Required for UL Listed installations; set automation software accordingly

ZONE INPUT PROGRAMMING - OVERVIEW

Versions 1.52 and later of the 7050 subscriber unit support up to 72 zone inputs: the 8 inputs provided with the basic 7050 unit, and up to 64 more inputs added using model #7070 16-zone expansion boards. The "smart" 7050 or 7750 automatically senses the presence of the 7070 expansion boards on power up and adds them to the programming sequence. The zones are individually programmable. 7750 units are equipped with 7070 zone expansion boards.

For systems using AES Net software in the central station, zone inputs should be programmed using that software. Zones *can* be set up using the handheld programmer, but it is far easier to use the AES software for this task. Further, the subscriber data programmed using Net software is stored in the central station database. (Only Net77 software allows remote programming of supervised zones.)

Zones in 7750 Units MUST be programmed using Net77 software at the central station.

INPUT TYPES: **N.O., N.C. or TTL(5V)**
Normally Open, Normally Closed, or Voltage Input
Supervised / EOL (7070 Zone expansion board, V1.62 or higher)

The zone inputs can be programmed for N.O., N.C. or E.O.L. operation, to match the output of the equipment being monitored by the 7050 subscriber unit. The default setting is N.O.

TTL / Voltage Input: The 7050 has internal 10K ohm pull-ups to 5V on all zones. To use the 7050 with voltage inputs:

· For Open Collector, TTL/5V - Active High, program zone for N.C.

· For Open Collector, TTL/5V - Active Low, program zone for N.O.

NOTE: For TTL inputs, the 7050 and input device must share a common (-) ground.

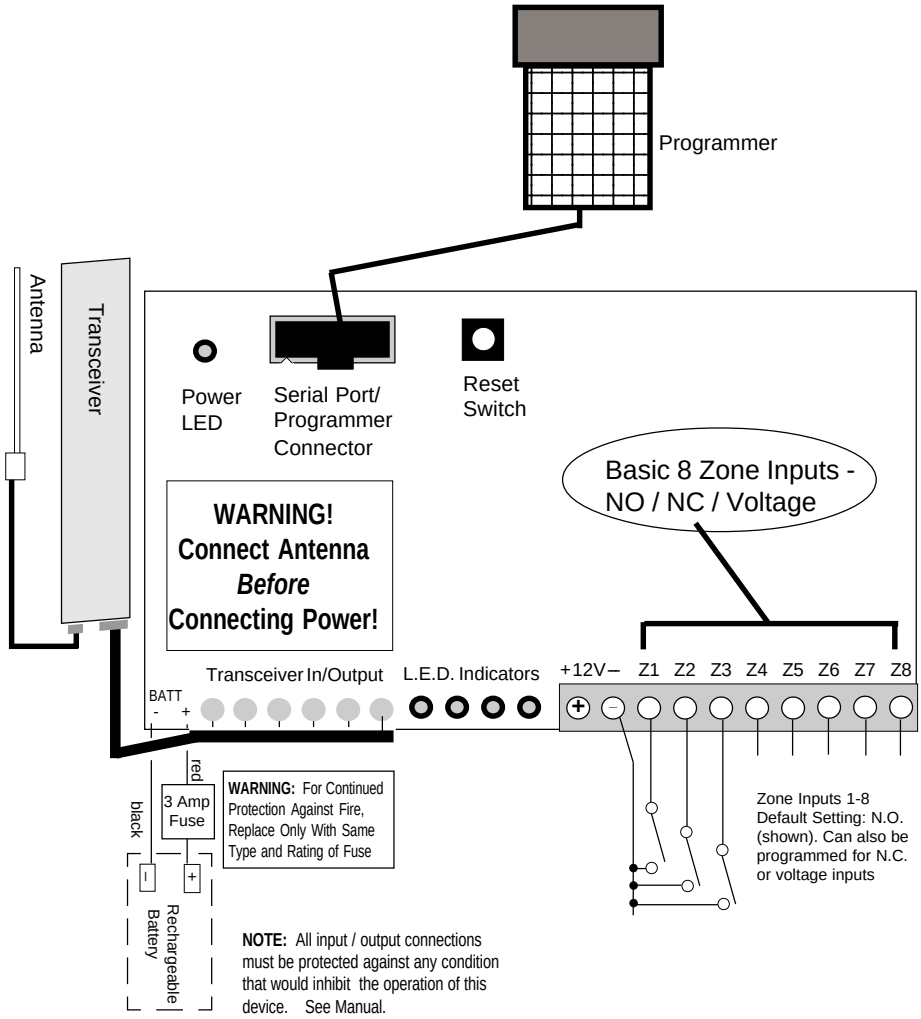
See diagrams in the next several pages for further details.

ZONE RESTORALS: Reported or Not Reported

Default = No Zone Restorals Reported

Each zone can be programmed to report "restoral" to a non-alarm 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.

Wiring Inputs for Basic Subscriber Unit, Zones 1-8



Keep wiring runs as short as possible. Locate relays inside enclosure if possible.

Wiring Inputs for Basic Subscriber Unit, Zones 1-8, *continued*

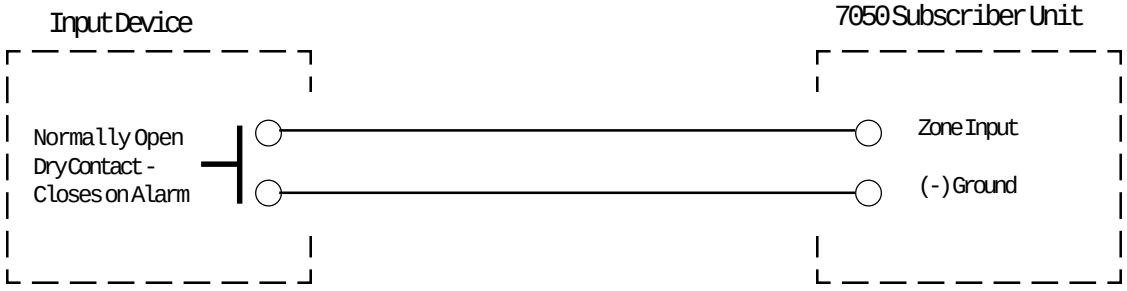
Each zone / channel in the 7050 basic subscriber unit may be individually programmed to take any one of a variety of inputs.

The types of inputs supported include:

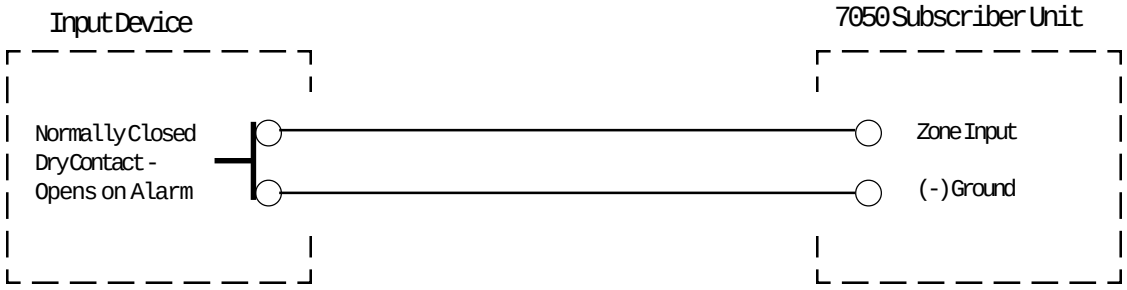
- Normally Open - closes on alarm (default program)
- Normally Closed - opens on alarm
- TTL - 0/5 V
- Open Collector - 0/5 V
- Voltage Input - no greater than 6 volts. **For inputs higher than 6 volts, use 7072 module.**

TYPICAL WIRING DIAGRAMS:

INPUT TYPE: NORMALLY OPEN (default program)



INPUT TYPE: NORMALLY CLOSED (program unit for normally closed operation - see "zone programming" in this manual.



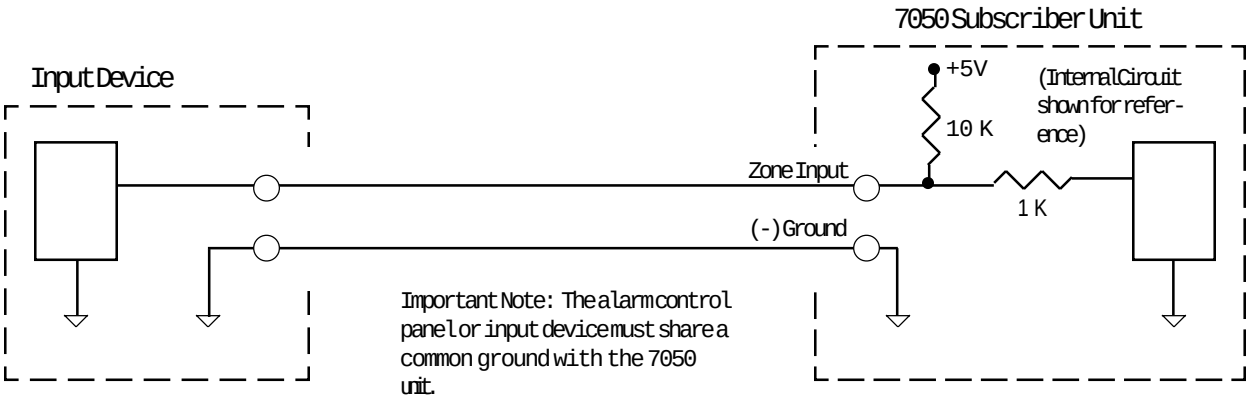
Wiring Inputs for Basic Subscriber Unit, Zones 1-8, *continued*

INPUT TYPE: TTL

Some devices go to 5 volts on alarm, others go to 0 volts on alarm. Program 7050 unit as follows:

If "5V = Alarm", program for N.C., or
If "0V = Alarm", program for N.O.

Common Applications: 1765 Interface for 1700B Alarm, program for N.C.
•See section on Zone Programming.

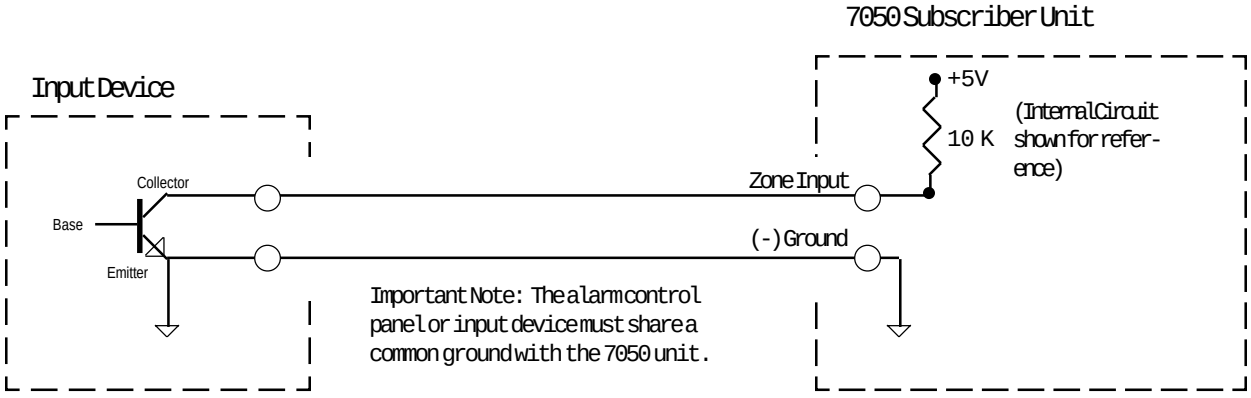


INPUT TYPE: OPEN COLLECTOR

Some devices go to "LOW" on alarm, others go to "HIGH" on alarm. Program 7050 unit follows:

If "Low = Alarm", program for N.O., or
If "High = Alarm", program for N.C.

Common Applications: Units with open collector outputs; program for N.O.
•See section on Zone Programming.



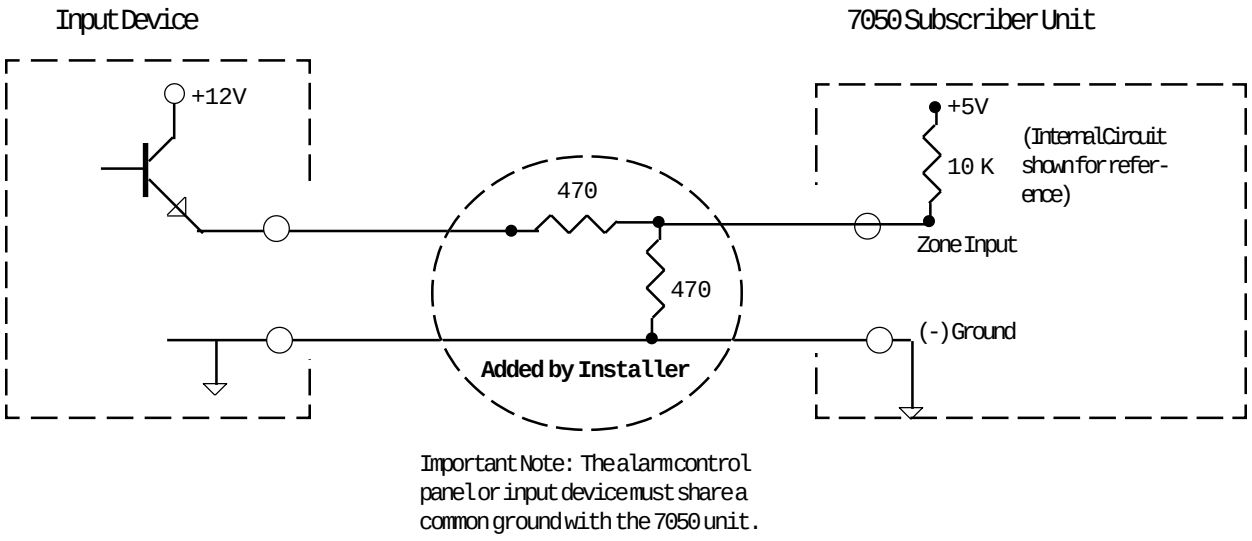
Wiring Inputs for Basic Subscriber Unit, Zones 1-8, *continued*

INPUT TYPE: VOLTAGE INPUT

Some devices put out a 12V signal on alarm. The 7050 can take these inputs, but an external resistor circuit must be added to drop the voltage below 6 volts.

IMPORTANT NOTE: VOLTAGE INPUTS GREATER THAN 6 VOLTS CAN DAMAGE THE 7050. PLEASE FOLLOW THIS WIRING DIAGRAM CAREFULLY.

Program the 7050 unit as follows:
If "High/Active = Alarm", program for N.C., or
If "Low/Off = Alarm", program for N.O.
•See section on Zone Programming.



Important Note: The alarm control panel or input device must share a common ground with the 7050 unit.

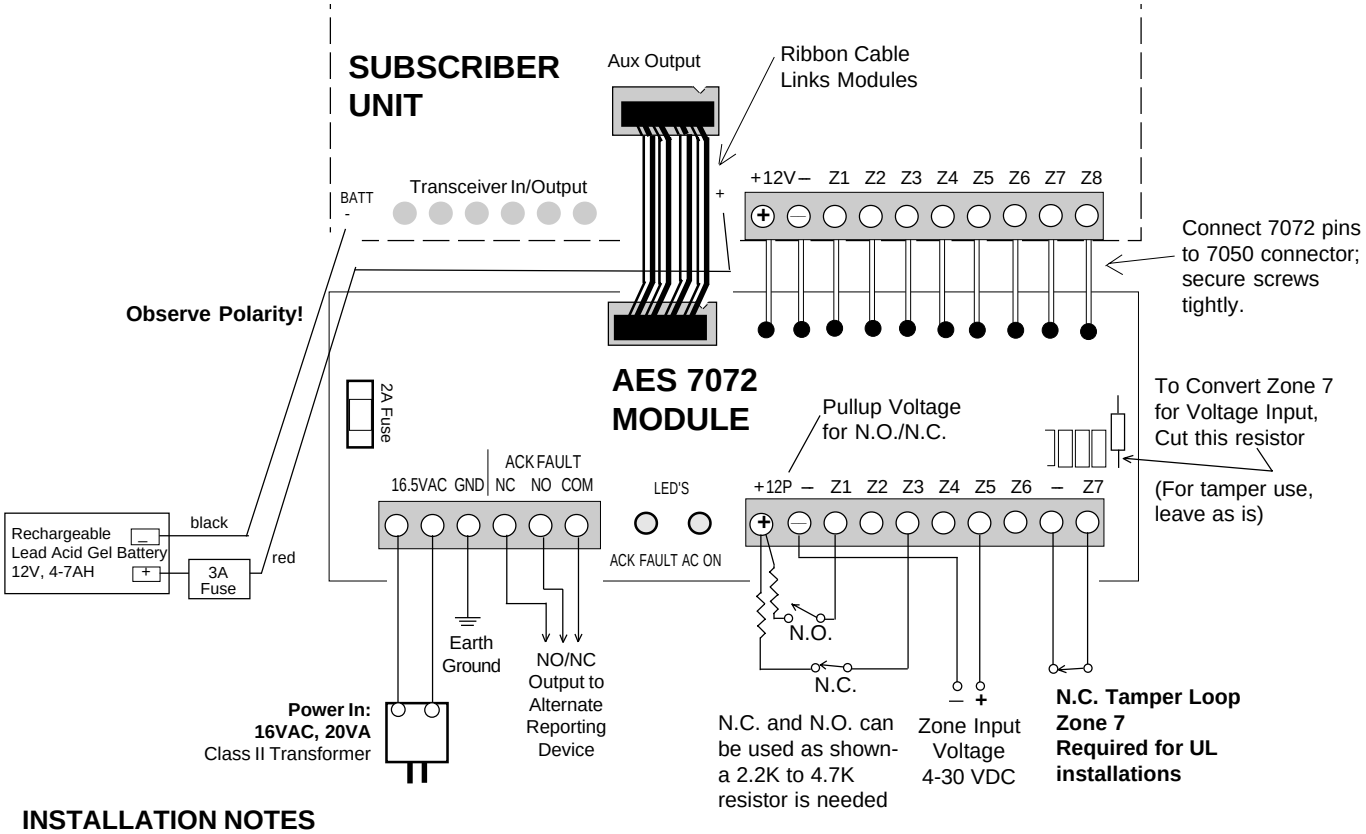
NOTE: FOR WIDER VOLTAGE RANGE INPUTS, 4 - 30 VOLTS, THE MODEL 7072 MULTI FUNCTION MODULE CAN BE USED.
The 7072 provides several functions: Power Supply, Wide Range Voltage Inputs, Dedicated Tamper Zone Acknowledgment Fault Output and more.
CONTACT YOUR AES DISTRIBUTOR FOR MORE INFORMATION.

NOTE: The 7072 Module is included in the 7750 Subscriber.

WIRING INPUTS-MULTI-FUNCTION BOARD - #7072

The 7072 Multi-Function Board provides for a wider range of voltage input (4-30 Volts). It also has a built-in power supply and an Acknowledgment Fault output relay which activates if the unit is unable to get an acknowledgment from any other unit in the network with the programmed time. Also, it provides AC Fail reporting on zone 8, and has a dedicated subscriber box tamper input on zone 7.

The 7750 includes the 7072 module - see diagram for 7750 wiring for further reference.



INSTALLATION NOTES

(7750 units have 7072 already installed)

1. De-power 7050; disconnect battery
2. Remove any existing cables from 7050 zone input block. Loosen screws in connector block.
3. Insert 7072 header pins into corresponding connector block of the 7050. Tighten all screws securely.
4. Install ribbon cable as shown. Note keyed connector slots.
5. Connect AC power from 16VAC, 20VA class II transformer (not included).
   DO NOT CONNECT TO 110VAC directly to board!
6. Connect Ground ("GND") terminal to a good earth ground.
7. Connect Acknowledgment Fault output to an alternate reporting device.
8. Control panel and 7050 must share a common ground.
9. Re-connect power.

ZONE PROGRAMMING of 7050 when using the 7072 (use 7041 programmer or Net7K software; see 7050 manual):

ZONE INPUT	PROGRAM 7050 ZONE FOR:	NOTES
Zone 1-6, Voltage Input	N.O. (default)	accepts voltages of 4 to 30 VDC
Zone 1-6, N.C.	N.C.	wire as shown, requires 2.2K to 4.7K resistor
Zone 1-6, N.O.	N.O. (default)	wire as shown, requires 2.2K to 4.7K resistor
Zone 7, N.C. tamper	N.O. (default)	tamper loop is N.C., but 7050 program is for N.O.
Zone 8, AC Failure	N.O. (default)	dedicated function, no wiring required

zone expansion board supplied with the 7750 subscriber unit.

WIRING INPUTS: ZONE EXPANSION BOARD - #7070/ SUPERVISED INPUTS

The 7070 zone expansion board provides 16 additional input zones for the subscriber unit. It is standard on the 7750 product.

Expansion zones can be individually programmed for N.O., N.C., or SUPERVISED operation, or they can be BYPASSED. Supervision is accomplished using a 3.01K ohm end-of-line resistor. Subscriber version 1.62 or higher is required to activate the supervised zones; AES Net central station software is required to activate the zone bypass feature.

Installation of Board:

For 7750 Subscriber Units: A 7070 board is standard, and is factory installed.

For 7050 Subscriber Units: The 7070 zone expansion board mounts directly above the main subscriber unit circuit board. Remove the 6 nuts securing the main board, and install the 6 threaded standoffs supplied with the 7070. Use the supplied jumper cable to connect 7070 connector P1 to subscriber board connector P1. Re-use the nuts from the main board to secure the 7070 expansion board.

NOTE: To program the subscriber unit, the programmer must be connected to P2 on the main board. This will be difficult - but possible - to reach when the 7070 is installed. However, you may not wish to tighten the 7070 in place until initial programming (Unit ID#, Dealer Code, and Repeater Enablement) is completed with the handheld programmer. Other programming (Zone and Timing functions) can be done through Net7K central station software after the 7070 is installed. Also note that the 7070 jumper cable MUST be connected when the unit is powered up (not just by reset) so that the expansion zones will be "recognized" for programming.

Up to four (4) additional 7070 boards may be added, although it may have to housed in a larger case. Connect them using ribbon cables between connector P2 on 7070 board X and P1 on 7070 board X+1.

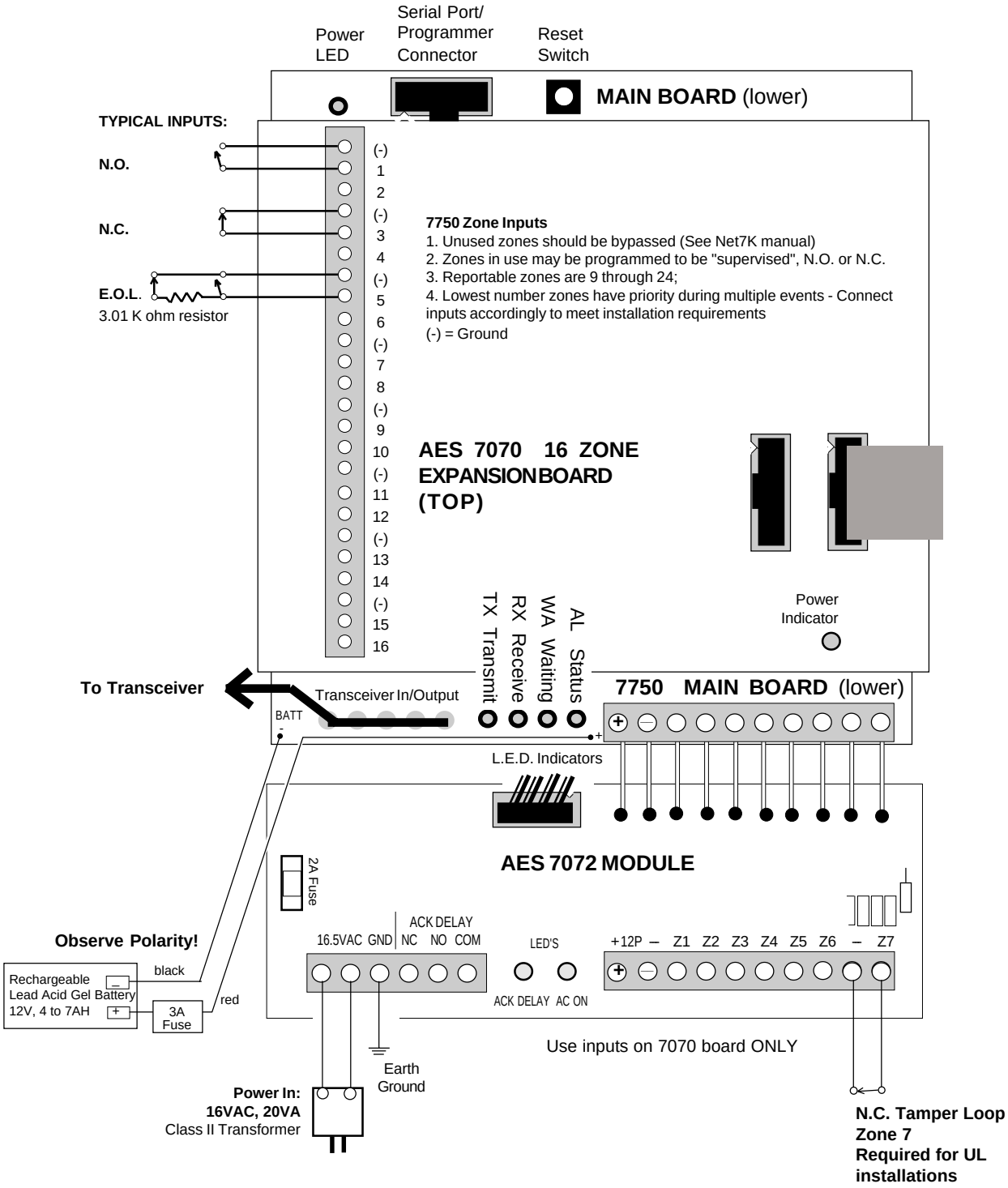
Zone / Banks Numbering

Programming for zones in the 7050 and 7750 is accomplished in banks (groups) of 8 (see Zone Programming). The basic 8 zones on the main board comprise Bank 0 (zero). The first 7070 expansion board added to the 7050/7750 uses zones 9 through 24, comprising banks 1 and 2. The second 7070 board uses zones 25 through 40, comprising banks 3 and 4, and so on. Set jumper on the 7070 board accordingly.

NOTE: Lowest number zones are reported first.

- **7070 Zone Expansion Board (Shown on 7750 Subscriber Unit) Typical Wiring Diagram**

- **Configuration of 7750 Unit**



Setting Up Zones with Programmer (use AES Net software if possible)

To start, push Programmer keys **(CTRL) + (F3)**

ZONE BANK N Zone Bank 0 = Basic 8 Zones;
Zone Banks 1-8 require use of 7070 zone expansion

The programming cycles through banks of 8 zones at a time, beginning with Bank 0 (zero) and then sequentially through each added bank. On power-up, the 7050 or 7750 automatically detects the presence of zone expansion boards. Bank 0 applies to the 8 zones on the main 7050 board; banks 1 and 2 apply to the 16 zones on the first 7070 expansion board; banks 3 and 4 to the second 7070 board - and so on.

SET ZONE NC/NO
ENTER CODE-NNN: ___ NNN= Existing "old" code

To program ALL zones in this bank to be N.O., enter 0 (zero)
To program ALL zones in this bank to be N.C., enter 255
For a mix of N.O. and N.C. zones, a value must be computed and entered at the code prompt. Use this chart: (Supervised zones are programmed at next prompt).

Write the corresponding value for each N.C. zone in the Add Up Column. Add all numbers in that column to get the Total Code Value. Enter this number at the "ENTER CODE: __" prompt (see example below).

ZONE #	VALUE FOR NC	ADD UP COLUMN
1	1	
2	2	
3	4	
4	8	
5	16	
6	32	
7	64	
8	128	
TOTAL CODE VALUE:		

EXAMPLE: Program zones 4, 5, and 6 for N.C. operation; all other zones will use N.O. inputs

ZONE #	VALUE FOR NC		ADD UP COLUMN
1	1		0
2	2		0
3	4		0
4	8	>>>>>>	8
5	16	>>>>>>	16
6	32	>>>>>>	32
7	64		0
8	128		0
TOTAL	**CODE VALUE:**		**56**

Enter the number 56: SET ZONE NC/NO
ENTER CODE: **56**

After entering a value, the **SET RESTORAL** prompt appears.

continued...

Zone Programming, continued (CTRL)-(F3)

SET RESTORALS

ENTER CODE-NNN: ____ NNN= Existing "old" code

- To have ALL zones in this bank NOT TO REPORT RESTORALS, enter zero
- To program ALL zones in this bank TO REPORT RESTORALS, enter 255 (only recommended for high security applications)
- To program specific zones TO REPORT RESTORALS, a value must be computed and entered at the code prompt. Use this chart:

Write the corresponding value for each zone that will report restorals in the Add Up Column. Add all numbers in that column to get the Total Code Value. Enter this number at the "Enter Code: __" prompt (see example below).

ZONE #	VALUE FOR RESTORAL	ADD UP COLUMN
1	1	
2	2	
3	4	
4	8	
5	16	
6	32	
7	64	
8	128	
TOTALCODE VALUE:		

EXAMPLE: Program zones 1, 2, and 8 to report restorals. All other zones will not report restorals.

ZONE #	VALUE FOR RESTORAL	ADD UP COLUMN
1	1 >>>>>	1
2	2 >>>>>	2
3	4	0
4	8	0
5	16	0
6	32	0
7	64	0
8	128 >>>>>	128
TOTALCODE VALUE:		**131**

Enter the Code Value:

SET RESTORALS
ENTER CODE: **131**

- After entering a value for Bank 0 basic zones group, the program cycles to the next **BANK #** (see previous page) - **or** - an **OK** message appears, indicating that all installed banks have been programmed, and the zone programming procedure has been completed.

- OR, when programming bank 1 or higher, the **SET SUPERVISED ZONE** prompt appears.

continued...

Zone Programming, continued (CTRL)-(F3)

SET SUPERVISED ZONE
ENTER CODE-NNN: ____

Appears on zone banks 1 - 8, but **not** on bank 0
Supervision avail only on 7070 expansion zones

- Supervised zones are available only on expansion banks 1 through 8 (zones 9 through 72)
- **Use only supervised zones for 7750 installations - program using AES central station software**
- To have ALL zones in this bank UNSUPERVISED, enter zero
- To program ALL zones in this bank SUPERVISED, enter 255
- To program specific zones to be SUPERVISED, a value must be computed and entered at the code prompt. Use this chart:

Write the corresponding value for each zone that will report restorals in the Add Up Column. Add all numbers in that column to get the Total Code Value. Enter this number at the "Enter Code: __" prompt (see example below).

ZONE #	VALUE FOR SUPERVISION	ADD UP COLUMN
1	1	
2	2	
3	4	
4	8	
5	16	
6	32	
7	64	
8	128	
TOTAL CODE VALUE:		

EXAMPLE: Program zones 1, 2, and 8 to be supervised (other zones retain program from NO/NC program function).

ZONE #	VALUE FOR SUPERVISION		ADD UP COLUMN
1	1	>>>>>	1
2	2	>>>>>	2
3	4		0
4	8		0
5	16		0
6	32		0
7	64		0
8	128	>>>>>	128
TOTAL CODE VALUE:			**131**

Enter the Code Value:
SET SUPERVISED ZONE
ENTER CODE - **131**

- After entering a value for Bank 0 basic zones group, the program cycles to the next **BANK #** (see previous page) - **or** - an **OK** message appears, indicating that all installed banks have been programmed, and the zone programming procedure has been completed.

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#] (C)[date] AES
ID# : [4 digit ID number you entered]
```

(If "FAIL" messages appears, push RESET again; If Fail persists, go to page 8 to troubleshoot.)

Proceed to "Initializing the Subscriber Unit", next page.

OTHER PROGRAMMING FUNCTIONS

DEFAULT RESET Push Programmer keys **(CTRL)+(F5)**

The Default (Master) Reset function can be used to reset programmed values to their default settings. **The ID# and Cypher (dealer) code are not changed. Use this function only if you wish to reset all parameters.** Power must be on, connect the programmer to P2.

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, the 7050 will restore all program parameters to their default values, and then goes through its normal "reset" routine. The following message appears:

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

The default reset restores program parameters to their default values:

CHECK IN TIME:	24 Hours 00 Minutes
ZONE INPUT PROGRAMMING:	Normally Open, All Zones; NO Restorals Reported, All Zones; NO Supervision, All Zones
REPORT DELAY:	10 Seconds
UNIT ID #:	NOT Changed by Default Reset
CYPHER (dealer) CODE:	NOT Changed by Default Reset

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 7000 central station is actively monitoring the network and can respond to the new subscriber unit as it comes on line.

Power down the unit by disconnecting both the battery and power inputs used during initial programming.

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.

Connect both battery and primary power. The controller power indicator should be on. The Programmer should be connected to P2 as described earlier.

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

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

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

(If an "Fail" error message is displayed, push the reset button. If an error message continues to appear, see page 8 for possible solutions.)

When the 7050 subscriber unit goes on the air, it queries the surrounding subscriber units to establish the best route(s) to link with the central station. The status lights indicate the network log on 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 units
- WA stops flashing after about 30 seconds **IF** one or more other 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 new subscriber unit is now connected to the network.

A flashing WA light (blinking at a steady rate) indicates that the subscriber has not established itself into the network. Check antenna and all cables; be sure that correct Cypher (dealer) code has been programmed in to the unit.

The next step is to perform a status check.

STATUS CHECK: Push Programmer keys **(SHIFT) + (F4)**

Performs a quick diagnostic check at any time.

Connect the programmer to P2. 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#] (C)[date] AES
ID#: [NNNN]  LEVEL: [ NNN]
RT1: [NNNN]  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.

Dynamic Routing Table: Each 7050 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.

NetCon: is a rating number that indicates the "NETwork CONnectivity" quality of a particular unit on a scale of 0 to 7, 0 being best. The number is dynamically calculated based on the routing list for that unit. For each available 7050 repeater unit that meets minimum criteria, that number is decremented by 1. If the central station (unit 0000) is first on the list, and meets the criteria, a NetCon of 0 is generated (unless there is a weak signal).

Minimum criteria for 7050 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

continued...

For UL installations, 2 paths are required; a NetCon of 5 or less assures that 2 paths are

NetCon Rating (continued)

"NetCon" is a rating of "Network Connectivity" for a subscriber unit in an AES-IntelliNet wireless data network. The rating is established by considering many factors: number of paths available; NetCon ratings of other units in each path; level/link layer (number of hops to the central station); signal strength; low battery conditions and other factors. NetCon indicates how good the link is between the subscriber unit and the central station, assigning a number between 0 and 7, 0 being best.

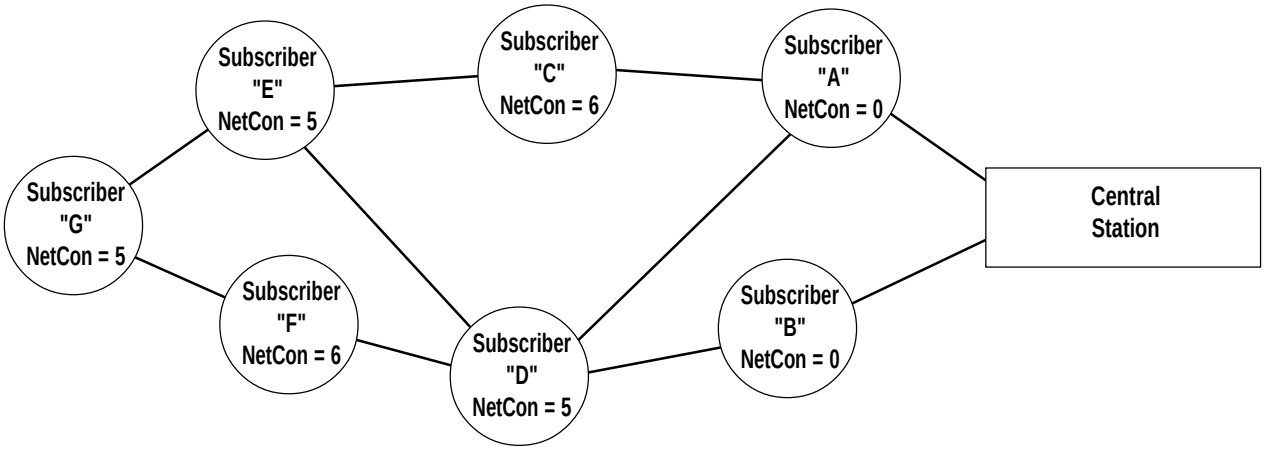
Explanation:

• If a subscriber is in direct communication with the central station (level/link layer = 1), with a good quality signal, then the unit's NetCon is 0 (zero).

• For subscriber units in link layers greater than 1, NetCon is calculated by adding up the number of subscribers in the routing table with a link layer lower than the calculating unit, and subtracting that number from 7.

• Note that if signal quality to all units in the routing table is poor, then a NetCon of 7 is assigned.

• Also note that a subscriber cannot have a better NetCon than that of the member on the top of it's routing list.



Proving Multiple Paths: A NetCon rating of 5 or less guarantees that a subscriber unit has at least 2 valid paths available, or communicates directly with the central station.

Examples: Refer to illustration above

• Subscribers A and B communicated directly with the central station; their NetCon is 0 (zero).

• Subscriber D has subscribers A and B in it's routing table, so it's NetCon is [7-(1+1)] = 5.

Note that even if subscriber C is in D's routing table, it has the same link layer number as D, and thus C does not improve D's NetCon.

• Subscriber C has a NetCon of 6 since the only lower link layer unit it can communicate with is subscriber A; [7-1] = 6.

• Subscriber E has a NetCon of 5; subscriber D is at the top of it's routing table, next is C; [7-(1+1)]=5.

• Subscriber F has a NetCon of 6; subscriber D is the only unit on it's routing list with a level/link layer less than itself; [7-1]=6.

• Subscriber G has a NetCon of 5; subscriber E is at the top of it's routing table, next is F; [7-(1+1)]=5.

The algorithm that generates and maintains the NETCON and Link Layer is AES proprietary: this information is disclosed in confidence to AES customers. This and all algorithms in the AES IntelliNet system are subject to change and improvements.

OTHER FUNCTIONS

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 this 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 this 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 cannot 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.

KEY TRANSMITTER Push programmer keys **(SHFT)+(F5)**

Using the handheld programmer an installer can key the transmitter to test output power, frequency and other radio parameters. It is assumed that the programmer is connected to P2, the transceiver is connected to the 7050 circuit board, power is on and the antenna/load is connected.

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 **Push programmer key (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 cannot be received when a monitor function is in use.

ERROR MESSAGES from Self Test

An error code is listed when the unit fails the self test.
Some may be correctable on site:

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

Message: **02 Random Access Memory (RAM) data corrupt;** 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 previous sections). If unit consistently fails after reset, memory may be damaged. Factory service is required.

Message: **03 Self test detects both problems 01 and 02 above.**
Procedure: Follow procedures described in 01 and 02 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 and reports the same message, contact factory for service.

Message: **Timeout**
Procedure:: More than one minute (approx) elapsed during a programmer procedure. Re-enter procedure and complete input in less than one minute.

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

7050 SUBSCRIBER UNIT FEATURES *Refer to Drawings, pages 3 and 32*

STATUS INDICATORS

RX, TX - indicate radio receive (RX) or transmit (TX)

WA - Steady On = Waiting for acknowledgment of last transmission;
Blinking = Not on Network; Steady Off = Normal

AL - Alert / troubleshooting indicator, "blink" codes as follows:

· · ·	steady blink - system OK;
·· ··	short-short blink - low battery;
·— ·—	short-long blink - an input zone is in alarm;
··— ··—	short-short-long blink, low battery and zone in alarm;
Steady	no blink - Selftest failure (other than low batt)

PWR - indicates unit has power

INPUT/OUTPUT CONNECTIONS

P1 Expansion Port - for relay outputs; zone expanders, etc.

P2 Serial Port - connects to programmer, optional serial printer and other accessories

P3 Auxiliary Port

P4 Auxiliary Output;
Includes "Acknowledgment Fault" output - should the unit not receive an acknowledgment to any message for a time longer than programmed period, the output activates a relay to signal a problem locally or to notify the central station via an alternate communicator. Use the 7072 Multi-function module, which includes an output relay, to access this capability.

TB1 Terminal Block 1 - Inputs:
Power +12V;
Ground (-);
8 zone inputs (N.O. = default)

TB2 Cable/Connector - Transceiver In/Output
1 Transmit Audio
2 Receive Audio
3 Push To Transmit / PTT
4 Ground
5 +12VDC Out (to power radio)
6 Carrier Detect

CONTROLS

SW1 Reset Switch - initializes controller

7050, 7750 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)
150-174 Mhz.
450-470 MHz.

Standard Radio Output Power:
2 Watts (others available)

All radio systems require FCC licensing;

VOLTAGE: 7050: 13.8VDC nominal; requires power supply, use AES #7072 or equivalent
7750 (with 7072 module): 16VAC, UL listed Class II transformer required

CURRENT: 7050: 80ma standby; 1.0A transmit (2W transmitter)
7750: 100ma standby; 1.0A transmit (2W transmitter)

OPERATING TEMPERATURE RANGE: 0° to 50° C

STORAGE TEMPERATURE RANGE: -10° to 60° C

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

BACK-UP BATTERY: 12V, 4 AH (min), lead acid gel type; required for 7750 installations

---

For 7750 and 7050 equipped with 7072 Multi-Function Board:

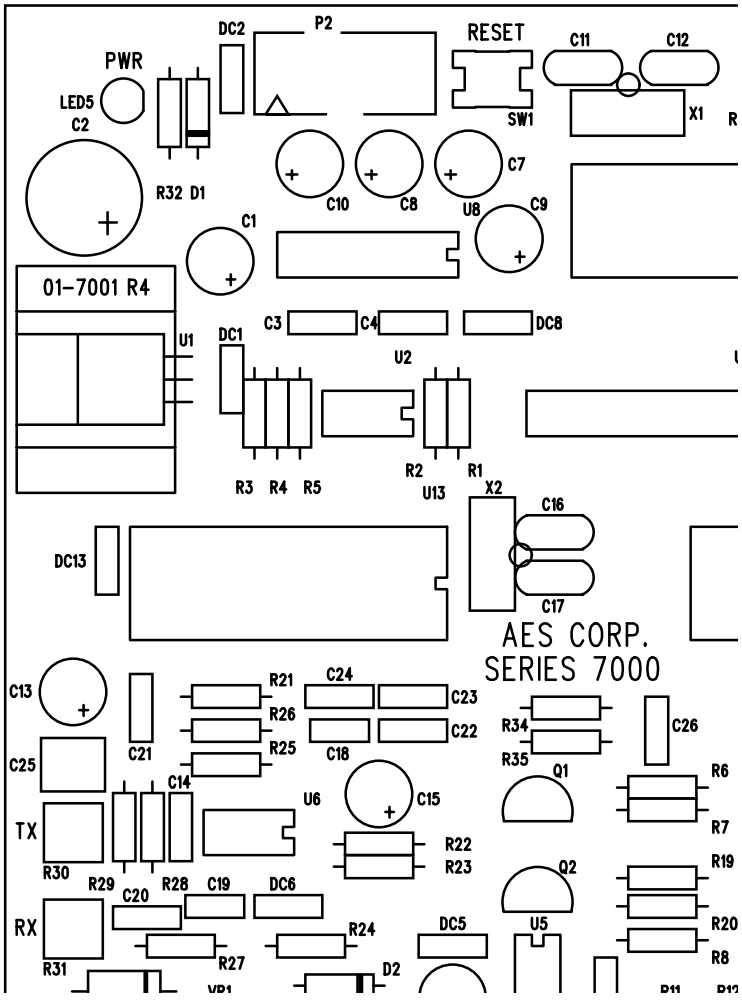
LOW BATTERY REPORTING: 22.5 Minute Test Cycle

AC FAILURE REPORTING: Reports on Zone 8 (units with 7072 board only); Reports after approximately 2 minutes without AC power; reports AC power restoral after approximately 1.5 minutes.

UPGRADABLE INTEGRATED CIRCUIT: BOARD LAYOUT

U9 Microprocessor / PROM, 40 Pin DIP; this chip is mounted in a socket, and may be replaced or upgraded for repairs or special applications.

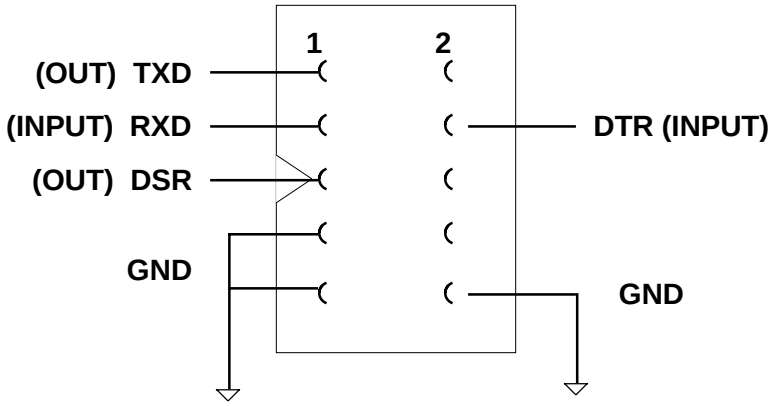
NOTE: DO NOT operate 7050 unit without this microprocessor installed.



RS-232 CONNECTOR - P2 - PINOUT DIAGRAM

NOTE: Control panel or input device must share common ground with the AES 7050 for the RS-232 link to work. Contact AES before attempting to use the RS-232 port as an input on the 7050.

The RS-232 port is located on the upper left edge of the PC board in the 7050 subscriber unit (see board layout diagram in the 7050 manual). The connector is marked "P2".



NOTE: Do NOT connect anything to unmarked pins

PROGRAMMING THE 7050 UNIT FROM A PC (in place of a handheld terminal)

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

Control (CTRL) keys on the programmer remain the same on the PC.

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 7050, make sure the program is set to the correct COM port.
- If characters are received by the 7050, but nothing can be sent, make sure the CTS/RTS flow control is OFF.

AES ONE YEAR OWNER WARRANTY

We warrant AES products to be free from defects in material and workmanship for one (1) full year from date of purchase.

At no cost to the original purchaser for parts or labor, AES will repair or replace any part or parts which are judged defective under the terms of this Warranty.

Defective 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 products which are judged defective under the terms of this Warranty.

This Warranty is in lieu of all other Warranties expressed or implied and of all other obligations or liabilities on the part of AES. This Warranty does not apply to any product or any part thereof which has been repaired or altered outside our factory in any way to affect its stability or reliability, or which has been subjected to misuse, negligence or accident, or which has had the serial number effaced or removed. Neither shall this Warranty apply to any product which has not been installed, applied or used in strict accordance with our instructions.

AES Corporation cannot be aware of, or responsible, for the differing values of property to be protected by its alarm reporting systems. The above Warranty is given in lieu of all other Warranties, either expressed or implied, including a Warranty of fitness for a particular purpose, and manufacturer shall not be liable for any defect, incidental or consequential, loss or damage arising out of the failure of the product to operate.

Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you.

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

AES IntelliNet

SERVICE PROCEDURE: Authorized repair service is furnished only by AES Corporation.

Contact AES Corporation at 508-535-7310 (fax 508-535-7313) 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 items freight-prepaid to:

Repair Services, RA# _____ (call for Return Authhorization number)
AES Corporation
285 Newbury St
Peabody, MA 01960 USA

• 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.

Programming Codes / *Quick* Reference for V 1.62 Subscriber

Complete details of these procedures are provided in the manual.

This page provides a handy reference sheet for technicians familiar with the AES•*IntelliNet* system who are using a handheld programmer to install or update the parameters of a 7050 or 7750 subscriber unit.

NOTE: With the exception of the initial "Setup Unit" section, it is recommended that all programming be done from the AES Net central station software listed in a separate section of this manual.

FUNCTION	PROGRAMMER SCREEN	NOTES
SETUP UNIT		
(CTRL)+(F1)	**SETUP UNIT -OLD: NEW** **ENTER ID#- 1234: ____** **DLR CODE-- XXXX: ____** **ENABLE RPTNG-Y: _**	Show existing ("old") programming data, **except** dealer code Enter new data, or push enter to keep old data; ID# and Dealer Code may use Hex numerals, ie 1-F
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]
ZONE SETUP		
(CTRL)+(F3)	**ZONE BANK N** **SET ZONE NC/NO** **ENTER CODE-NNN: ___**	Zone Bank 0 = Basic 8 Zones; Zone Banks 1-8 require use of 7070 zone expansion
	SET RESTORALS **ENTER CODE-NNN: ___**	
	SET SUPERVISED ZONE **ENTER CODE-NNN: ___**	Appears only on zone banks 1 - 8 Supervised zones available only on 7070 expansion [Repeats for each zone bank installed]
MASTER RESET		
(CTRL)+(F5)	**RESET RAM? [Y/N]**	
DISPLAY STATUS		
(SHIFT)+(F4)	**SUB 1.62 (C)1996 AES** **ID#: NNNN LEVEL: 255** **RT1: NNNN NETCON: 7**	
KEY TRANSMITTER		
(SHIFT)+(F5)	**KEYING TX..**	(6 second test)
SEND TEXT MESSAGE		
(F5)	**ENTER MSG:**	
(SHIFT)+(F1)	RECEIVE MONITOR ON/OFF	(toggle)
(SHIFT)+(F2)	TRANSMIT MONITOR ON/OFF	(toggle)
(SHIFT)+(F3)	MONITOR ALL ON/OFF	(toggle)