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7830R

SafetyNet
SUBSCRIBER RADIO

INSTALLATION INSTRUCTIONS

ADEMCO

N7640V1 6/96

Note to the Installer: Please read these Installation Instructions all the way through and become completely familiar with them before attempting to install a 7830R subscriber radio.

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SYSTEM FEATURES & OPERATION

Introduction

The 7830R self-contained subscriber radio is the subscriber end of a Long Range Radio alarm reporting system. As a communications link, the 7830R is comparable to a digital communicator connected by telephone line to a central monitoring station.

SafetyNet Service registration

Once a 7830R has been installed and tested, it must be registered with SafetyNet before it will be monitored.

Important: No alarm traffic will be routed to the monitoring central station until the 7830R completes the registration process.

In order to register, the 7830R will need to have it's CS#, City# and Subscriber ID# programmed (see "Programming The 7830R" section). If this is a new installation, the radio can be quickly registered by pressing the test button three times in a row. In the case of a radio replacement or if a more interactive registration is desired, the registration can be initiated from the 7720P Programming Tool.

System Features

Wireless Reporting

The 7830R provides Access to the SafetyNet wireless alarm service through the RAM Mobile Data Network, available in most major metropolitan areas nationwide. All alarm and status messages are transmitted to the SafetyNet network via radio signals, which are faster and more secure than phone lines. The network routes all alarms to SafetyNet Packet Data Switches. The SafetyNet switches log the traffic and route it to either a SafetyNet equipped central station or to an AlarmNet Equipped central station. Alarms can be sent from any place in the U.S. covered by SafetyNet to any central station in the U.S. covered by AlarmNet or SafetyNet.

Integrated Electronics

The entire radio link equipment, including interface, transmitter, power supply, battery and antenna, is housed in a single unit, requiring only AC power from a 16.5V 40VA wall transformer (model 1361), and alarm inputs from a compatible alarm panel.

Selection of Input Interfaces

The 7830R can monitor alarm inputs, discrete 4 zone contact closures, or their electrical equivalent.

Compatibility

The 7830R is compatible with existing installations using ADEMCO equipment or other control panels. The 7830R can be used in conjunction with digital communicators on the same system, both acting as backup to one another (use an ADEMCO 659-EN Line Monitor connected to a zone input to report a line cut to backup a digital dialer, while connecting the radio fault output to a zone on the dialer).

Built-in LED Indicators

Three LEDs are used to indicate message transmissions, low battery conditions and radio faults. A blinking amber LED indicates normal operation. (See LED Blinking Patterns section later in this manual). Two additional LEDs indicate radio modem status.

Built-in Tamper Protection

For added protection, built-in cover tamper switches will trigger an alarm whenever the chassis cover is removed, thus protecting against unauthorized access to the 7830R. The tamper zone number must be entered during programming to enable tamper reporting.

Antenna Included

The 7830R includes an omni-directional wire antenna. Optional Antennas are available and can be used in conjunction with the optional 7720ANT connector kit. The 7830R can use a 7625 omni-directional antenna (7625-3DB antenna if additional gain is required), or a 7825 outdoor antenna, or a 7674 or 7674-13 YAGI antenna (if a directional antenna is required). For wall mounting, an optional 7825DP can be used. The supplied antenna mounts directly to the 7830R. The other antennas can be mounted remotely, if desired, using the following pre-assembled coaxial cable, available from ADEMCO: 5ft coax (7626-5), 12ft coax (7626-12), 25ft coax (7626-25LL), and 50ft coax (7626-50LL).

Programming Features The 7830R utilizes EEROM (Electrically Erasable ROM) technology, which allows the 7830R to be programmed with a 7720P Programming Tool. The programming options include channel assignments for Telco fault input, inverted trigger inputs, delayed reporting channels (1-127 seconds delay, if selected), open/close/restore reporting channels, etc.

Self-Supervising Transceiver Malfunctions of the 7830R, including loss of contact with the network, loss of external power, and low battery voltage can be transmitted to SafetyNet, if the fault does not prevent such transmission. Faults can also trigger contact closures on a Form "C" relay to indicate radio faults.

Power Supply The 7830R is powered by 16.5VAC from a 40VA wall transformer. It may be equipped with it's own 7720BT 12 volt 0.8AH battery which will provide backup in the event of an AC outage.

Low Battery Monitor The 7830R will notify the central station of a low battery condition whenever the battery voltage drops below 10.8V (± 5%). Low battery restore messages are reported when the battery returns to a "good" condition. The battery is also taken off charge and tested once a day under load to monitor it's status.

Low Battery Shutdown If battery voltage drops below 9.0 volts and no AC voltage is present, the 7830R automatically shuts down. When the AC voltage is restored the 7830R will resume normal operation.

Future Enhancements The following future enhancements will be supported by future releases of the 7830R. Call your AlarmNet representative to determine the availability of these features.

ECP Serial Link: This feature will allow the 7830R to connect to selected Ademco alarm control panels via a 3-wire serial interface using "Contact ID" format.

Zone and I/O Expansion Option: This hardware option will allow the 7830R to monitor 8 additional zones and to provide several relay outputs for control.

General Operation

The 7830R receives alarm and restore signals from the alarm control panel and converts these signals to radio messages which are sent to SafetyNet, which in turn relays the messages to the central station. The 7830R can monitor 4 traditional zone inputs. The zones may be configured in groups of 2, by the use of a jumper, to activate on either 0 volts or 4.5-14.2VDC (Zones 1 & 2 and Zones 3 and 4). Zones 1 - 4 can also be programmed to invert their input signals.

Upon detecting an alarm or restoral (if restorals enabled), the 7830R sends the messages to SafetyNet. Since SafetyNet is a 2-way service, the 7830R is able to determine that the alarm, or other report, was received by SafetyNet.

The 7830R periodically transmits supervisory status messages to the SafetyNet network. The frequency of supervision is user programmable from standard service 24Hr supervision to supervision rates suitable for UL AA service. If the radio fails to receive signals from the network or communicate with the network for more than the user programmable time of 1 – 99 minutes, a fault condition occurs. The radio fault output can be programmed to indicate these conditions (programming the fault output is explained later in this chapter). If no messages are received during the supervisory window, SafetyNet will generate a communication failure signal to the central station.

A built-in contact closure can be used to locally indicate a radio fault. This can be either normally open or normally closed and can be set as "fail-safe" by programming the fault output to be inverted (i.e. the relay is powered unless there is a fault). The fault output is labeled TB1-11 and TB1-12 on the terminal strip. These terminals float with reference to the rest of the circuit.

The 7830R also provides status information via its Programming port, thus allowing radio status to be displayed on command, using either a 7720P Programming Tool or a computer terminal. Refer to the TESTING THE 7830R section for information regarding the "S" command and status messages.

Quick Start Checklist

1) Wire the power and panel interconnections to the 7830R per the wiring diagram and instructions.
2) Power Up the 7830R.
3) Program the 7830R.
4) Observe the LED's once the 7830R is in normal operating mode to determine optimal installation location.

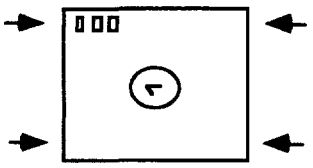
   Note: There should be no Red LED blinking for a viable installation.
5) Mount the 7830R per the mounting instructions.

   Note: Antenna must be vertical.
6) Double click the test switch or use the 7720P "E" command to perform a final installation check out. When the test is complete a blinking Green LED indicates a good install, a blinking amber LED indicates a good install with single site coverage, and a blinking Red LED indicates there is a problem. See the trouble shooting guide.
7) Register the 7830R by selecting the [↑] command on the 7720P, or by pressing the test switch 3 times in quick succession (triple click).
8) Once the 7830R has been registered with SafetyNet, alarms will be sent to the Central Station. The user may do end to end tests at this time.

INSTALLING THE RADIO

Removing The Cover

Remove the 7830R's cover by inserting a screwdriver into the 4 removal points at the bottom of the unit and gently releasing the locking tabs from the cover slots as shown.



Setting The Jumper Options (Set Before Installing)

(J1&J2) Zone Inputs Activate on High or Low

Refer to the wiring diagram on the next page when setting the jumpers.

- If using zone input connections 1 & 2, set the J1 jumper so that zone 1 & 2 inputs are activated either with a ground or with a positive voltage, whichever is required.
- If using zone input connections 3 & 4, set the J2 jumper so that zone 3 & 4 inputs are activated either with a ground or with a positive voltage, whichever is required.
- If the trigger level is set for positive voltage, +4.5 to +14.2 volts must be applied to the zones to trigger an alarm. If the zone is connected to a normally high voltage trigger (i.e. goes low on alarm), invert this zone when programming (questions 10, 11, 12, and/or 13).
- If ground is selected, zones are internally pulled up to 12 volts through a 10k ohm resistor. This voltage should normally be pulled down (closed contact to ground) and released for alarm (opening the contact). If a normally open contact is being used, invert this zone when programming (questions 10, 11, 12, and/or 13).

(J3) Fault Output Select

The radio fault output relay may be programmed for either FAIL-SAFE mode (relay always energized) or LOW CURRENT mode (relay normally de-energized) by selecting Yes or No to programming question 24: FLT REL ON (Y/N). In addition, the relay can be set for either N.O. or N.C. operation (in either fail-safe or low current modes) using the J3 jumper. When fail-safe mode is selected, the relay will change states (and trigger a dialer, if connected) in the event of power loss. Note that fail-safe mode increases the standby current by about 10mA, which results in lower battery backup time (about 15%) in the event of power loss. Set the J3 jumper to position A or position B, as follows:

Prog. Ques. 24 Fault Relay ON (energized)	J3 Jumper Setting (relay N.O. or N.C.) Pos. B	Pos. A
NO	N.C.	N.O.
YES	N.O.	N.C.

Wiring, Mounting & Powering

Wiring At The Control Panel

Run the alarm signal and common wires to the 7830R radio's location.

Wiring At AC Power Source

Run the AC power wires to the 7830R radio's location from the 16.5V 40VA wall transformer. Refer to the table below for gauge and distance information.

Maximum Wire Run Lengths

Gauge	Distance
18	125 feet
20	75 feet
22	50 feet

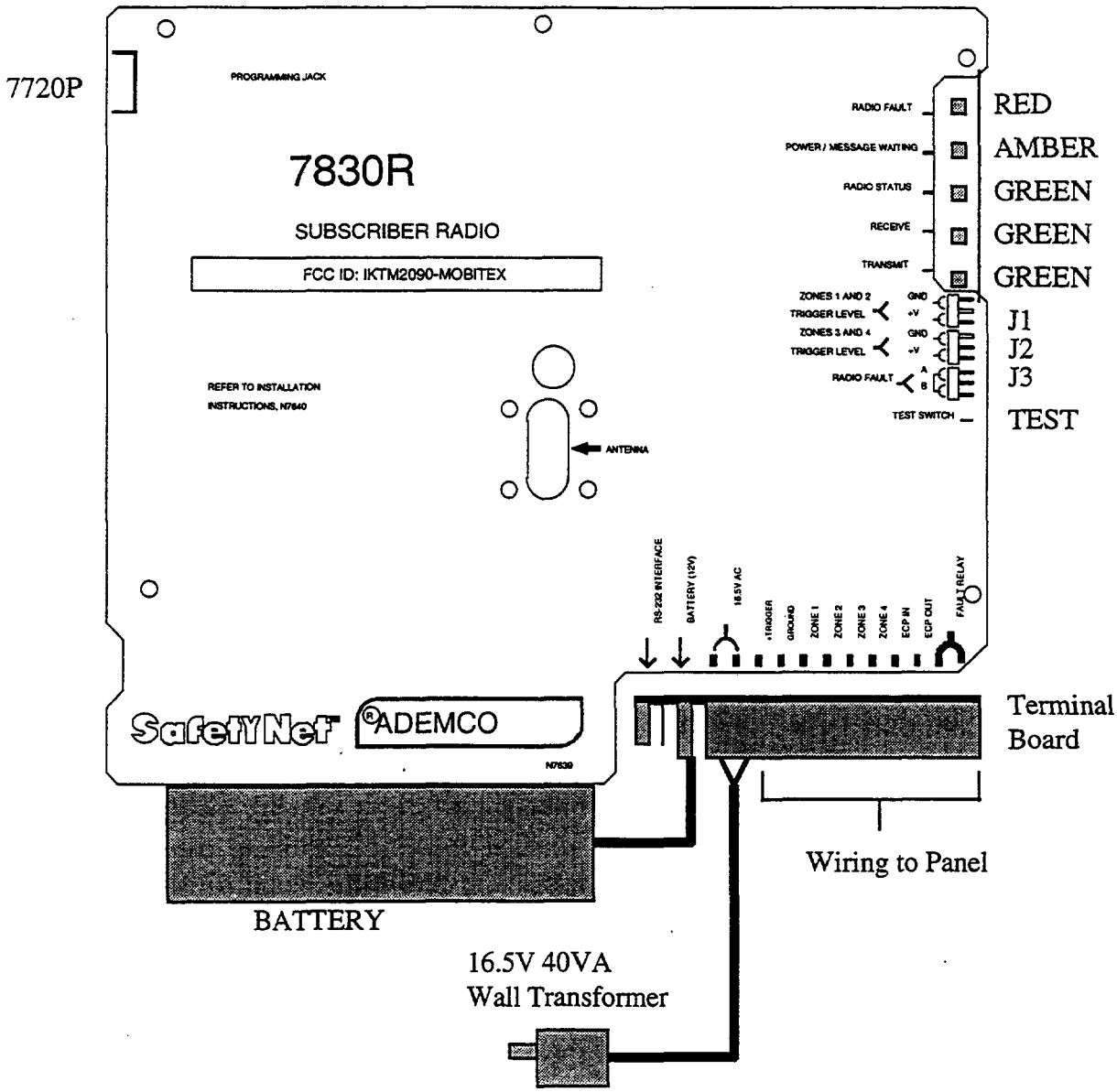
Recommended Wiring At The 7830R

The alarm and power wires can be brought into the transmitter through the base, or through the cover. If they are to be brought through the cover, cut out the optional wire entry port. Connect the AC power wires to the radio's terminals TB 1-1 and TB 1-2 respectively. Insert the battery into the battery holder, but do not plug in the battery cable yet.

Mounting

Determine the best antenna location for strong radio communication with the network using the built in diagnostics of the 7830R (See Antenna Mounting section). Mount the 7830R to a horizontal or vertical surface, depending on the antenna used. Be sure to allow access to the programming port when mounting.

The 7830R is intended to be mounted to a horizontal surface, preferably on a ceiling, or in an attic location on top of a joist when using the supplied wire antenna. If using the 7720ANT or 7825DP antenna kit, the 7830R can be mounted to a vertical surface such as a wall or beam.



Powering Up

1. After all wiring is complete and the unit is mounted, plug the AC wall transformer into the outlet.
2. Plug the 7830R's battery cable into the connector next to the terminal block. The LEDs will flash consecutively for a brief time to allow entry into programming mode.
3. If the 7830R has been programmed, the LEDs will begin to flash according to their functions. If the 7830R has not been programmed, the LEDs will flash in unison for a brief period and then flash according to their normal function.

LED Blinking Patterns

Power up or reset condition

LED	Condition	Meaning
Red, Amber, Green (Radio Status)	All blinking in slow sequence	7830R has been previously programmed
Red, Amber, Green (Radio Status)	All blinking in unison	7830R is not programmed
NOTE: Programming mode may be entered during either of these conditions.		

Normal Operating Mode with Cover Off or Enhanced LED Mode

LED	Condition	Meaning
Red (Radio Fault)	Blinking slowly with no Green (radio status) LED activity	Indicates there is no contact with the network
	Blinking briefly in conjunction with Green (radio status) LED	Indicates a low signal level received from the network
Amber Pwr/Msg Waiting	On steady	Indicates that a message is waiting to be delivered
	Blinking rapidly	A message has been delivered to the local base station but the unit is waiting for either an end-to-end acknowledgment* from SafetyNet, or waiting for the 1 min. implicit acknowledgment for non end-to-end* service
	Blinking once per second	Indicates that power is on and the microprocessor is running
	Double blinking once per second	Indicates that the radio may have an acceptable secondary base station
Green (Radio Status)	Blinking	Indicates contact with the network.. The number of blinks following a blink of the Amber LED indicates the received signal strength from the network primary base station. Three blinks in succession indicate an acceptable path. The blinking pattern indicates signal strength on a scale of 1 to 10.
Green (Receive)	On	Indicates that the RF modem and the 7830R CPU are communicating
Green (Transmit)	On	Indicates that the RF modem is transmitting

Normal Operating Mode with Cover On (7720 Mode)

LED	Condition	Meaning
Red (Radio Fault)	On	Indicates there is no contact with the network
	Off	Normal status
Amber Pwr/Msg Waiting	On steady	A message is waiting to be delivered
	Blinking rapidly	A message has been delivered to the local base station but the unit is waiting for either an end-to-end acknowledgment* from SafetyNet, or waiting for the 1 min. implicit acknowledgment for non end-to-end* service
	Blinking once per second	Indicates that power is on and the microprocessor is running
Green (Radio Status)	On for several seconds	Indicates an alarm is ready for transmission

*** Refer to page 11, question 5 for a description of end-to-end service.**

Antenna Mounting

Selecting A Site

1. **Determine an antenna location** that allows adequate RF communication with the Network. Locations can be found with either the built in LEDs, or by using FAST Mode ("F" command) in conjunction with a 7720P. FAST Mode displays the field strength of the 2 best received base stations on the 7720P in bar-graph form.

> **UL REQUIREMENTS**
> If this is a UL Grade "AA" "A" or Grade "B" installation, find an antenna location which has reliable communication to at least one SafetyNet Base Station, with a minimum signal strength reading of "3" or a "+" appears in the Fast display.

NOTES:

a. Optimum RF performance can usually be found at the highest point within a building, with the fewest number of walls between the radio and the outside of the premises.

b. Avoid mounting the antenna near other electronic devices. The following table provides minimum distances. Highest RF energy is in the direct, horizontal line of the antenna. Therefore, vertical separation (moving electronic devices either higher or lower on the wall) provides a higher level of isolation from the radio.

Equipment	Distance
Short range receiver	20 ft.
PIR	10 ft.
Control panel	25 ft.
FM radio or TV ant.	25 ft.
other devices	10 ft. minimum

2. **Determine the mounting of the 7830R Subscriber Radio** and select a suitable antenna equipment. The diagram below displays the 7830R mounting options and the appropriate antenna kits to be used in each of these situations.

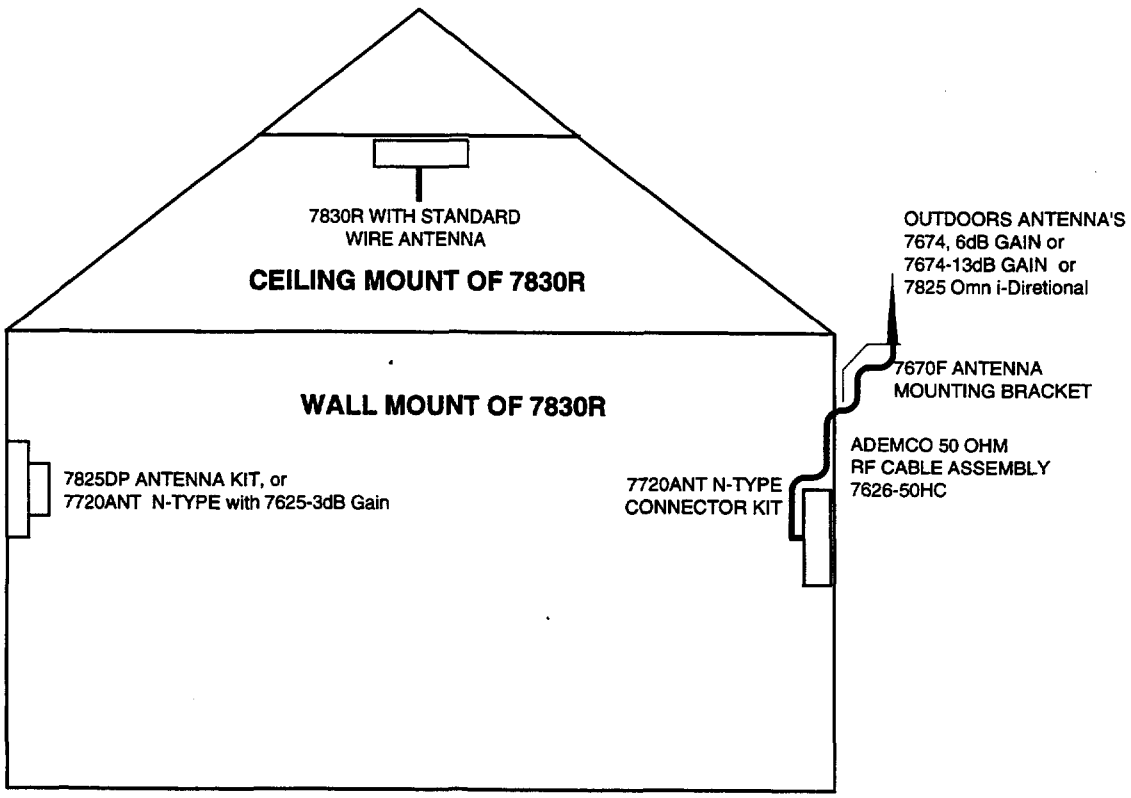


DIAGRAM 1

The 7830R must always be mounted indoors. If the only suitable antenna location found is outside of the protected building, mount the 7830R close to this location on the **inside** of the building and connect an external (outdoor) antenna to the radio. Carefully follow all instructions included with these optional parts to insure integrity of the weather proof seals on all outside connections.

The following antenna kits can be placed in a location determined suitable for outdoor mounting.

Antenna	Description
7720 ANT	Adapter for the Remote Antenna
7670	Remote Antenna bracket
7674	6DB Gain Direct or
7676-13	13DB Gain
7825	Outdoor Omni-Directional Antenna

If the location found allows indoor mounting of the antenna, then the antenna selected depends on the mounting surface of the 7830R. If it is possible to mount the 7830R on a ceiling or on an attic joist, you can use the included wire antenna, which provides excellent performance at no addition cost (see 3a, **Standard Wire Antenna Mounting**). If the only mounting surface available is a wall, you can use the 7825DP (see 3b, **Wall Mounting**).

3. **Mount the 7830R Subscriber Radio** and the selected antenna kit as follows:

Standard Wire Antenna Mounting

a. Mount the 7830R Subscriber Radio on the ceiling or on an attic joist.
b. Replace the 7830R cover.
c. Push the antenna into the antenna receptacle until it bottoms out.
d. The antenna should be vertical and straight.
e. Rotate the antenna until it snaps into the locked position.

DO NOT BEND THE ANTENNA

Wall Mounting using the 7825DP.

a. Mount the radio to a wall or other vertical surface. Make sure the 3 LEDs are in the upper right hand corner.
b. Replace radio's cover.
c. Follow the enclosed Installation Instructions for installing the 7825DP to the 7830R Subscriber Radio.

Wall Mounting with the 7625-3DB Gain and the 7720ANT Adapter.

a. Mount the 7830R Subscriber Radio.
b. Replace the radio's cover.
c. Remove the plastic insert from the cover by rotating it 45° counter-clockwise.
d. Replace with the insert provided with the antenna kit.
e. Mount the 7720ANT vertically pointing either up or down, not to the side.
f. Mount the 7625-3DB Gain directly on to the 7720ANT.

NOTE: For detailed instructions on installing the above antenna kits. Please read the enclosed Installation Instructions.

Remote Antenna Mounting

a. Mount the 7830R Subscriber Radio.
b. Replace the radio's cover.
c. Mount the 7720ANT directly on to the 7830R radio.
d. Mount antenna outdoors in the location found in **Step 1.**
e. Mount the ADEMCO antenna cables (see Diagram 1).

NOTE: Use only ADEMCO Cables P/N 7626-5, 7626-12, 7626-25LL or 7626-50LL.

Do not attempt to make the antenna cables yourself, and **do not under any condition try to splice them!**

Using A 7720P Programming Tool

The 7720P Programming Tool is powered by the 7830R, and connects to the Programming Jack on the 7830R PC Board. The 7830R will automatically sense the presence of the 7720P when it is plugged in.

Each key of the 7720P has two possible functions, a normal function and a SHIFT function. To perform a normal key function, simply press the desired key. To perform a SHIFT key function, press the SHIFT key, then press desired function key.

7720P Normal & Shift Key (shift LED lit) Functions

Key	Normal Key Function	SHIFT Key Function
BS/ESC	[BS]: Press to delete entry	[ESC]: Press to quit program mode. Also, can reset EEPROM defaults*
Ø/_	[Ø]: Scroll down programming	[_]: Scroll up programming
N/Y	[N]: Press for "NO" answer.	[Y]: Press SHIFT-Y for "YES" answer
SHIFT	Press before pressing a SHIFT key function. Will light SHIFT LED. LED goes out once a key is pressed. Press again for each SHIFT function desired.	
1/A	[1]: For entering the number 1	[A]: For entering letter A
2/B	[2]: For entering the number 2	[B]: For entering letter B
3/C	[3]: For entering the number 3	[C]: For entering letter C
4/D	[4]: For entering the number 4	[D]: For entering letter D
5/E	[5]: For entering the number 5	[E]: For entering letter E
6/F	[6]: For entering the number 6	[F]: For entering letter F
7/S	[7]: For entering the number 7	[S]: For entering letter S
8/T	[8]: For entering the number 8	[T]: For entering letter T
9/X	[9]: For entering the number 9	[X]: For entering letter X
Q/SPACE	[Q]: For scrolling option list	[SPACE]: For scrolling option list
0	[0]: For entering the number 0	No SHIFT function
#/ENTER	[#/ENTER]: Press to accept entries	No SHIFT function

* Active only when the "REVIEW?" prompt is displayed.

After connecting the 7720P cable, power up the 7830R . The following will be displayed:

```
7830R Boot x.xx
Chk App Code
```

x.xx = current software revision level

This message indicates that the 7830R's boot program is checking for a valid copy of the operating software (application code). This message will be displayed for a few seconds while the test is taking place. The amber LED will light continuously during this time.

If the 7830R has been programmed with valid application software, the green LED will light and the following is displayed:

```
7830R APP x.xx
(c) Pittway 1995
```

x.xx = current software revision level

At this prompt the user may proceed with Programming the 7830R. Programming is accomplished by answering displayed questions. Most questions require only a [Y]es or [N]o response, while others require a numerical response (ID numbers, etc.). Press ENTER to accept each response and proceed to the next question. A "?" indicates an invalid entry. The current value is displayed on the second line in parenthesis ( ). To accept the current entry, simply press the ENTER key. Use the UP/DOWN arrow keys to scroll through the programming questions without changing any values.

Enter programming mode by pressing [ENTER] during the initial power up period after the Code verification (while LEDs are flashing consecutively or in unison).

The 7830R reads its EEROM to determine its pre-programmed parameters. A CRC of the EEROM locations is also read. If the computed CRC does not match the one read from EEROM or if the programming parameters are invalid, the 7720P LCD displays "NO PROG". While the three LEDs flash in unison, press ENTER to begin programming. If program mode is entered and the EEROM contains invalid programming parameters or the CRC is incorrect, the 7830R displays.

"EEP ERR/NO PROG" "Clear Values?"

Press [Y]es, or [N]o (**Note**: If **NO** is selected, review all entries carefully for possible corruption.)

You must be prepared to program the radio at this time.

Password Protection

If desired, the programming menu can be split into two menus, a central station menu (which contains all programming questions) and a subscriber menu (which contains a subset of the central station menu), by assigning passwords.

NOTE: If using a terminal to program passwords, use only those characters available on the 7720P. This allows later access using a 7720P Programming Tool (A, B, C, D, E, F, S, T, X, and 0-9).

Up to 2 passwords can be assigned, one for each of the menus. Once a password is assigned (for either menu), two menu selection prompts appear upon entering programming mode:

CHOOSE FROM THE FOLLOWING MENUS:

Central Sta(1) Subscriber (2)

Enter 1 or 2 depending on which menu is to be accessed, then enter the appropriate password when prompted. The first programming question in that menu is then displayed. See EXITING PROGRAM MODE paragraph later in this section for assigning and changing passwords.

Subscriber Information

Question 1. | ID # | Enter the 4-digit customer account number, 0001-9999.

Question 2. | City | Enter the 2 digit primary city code 01-FE.

Central Station Menu only
See Exiting Program Mode, Setting Defaults & Assigning Passwords section for Central Station/Subscriber Menu Option.

Question 3. | CS ID | Enter the primary central station's system ID number, 01-FE.

Central Station Menu only

Question 4. | Supervision (24Hr.) | This selection sets the supervision timing for the 7830R. The supervision timing has three options (see below). Once this menu is displayed, the supervision options can be changed by striking the space key on the 7720P. When the desired option is displayed, strike the ENTER key to proceed to the next menu.

Central Station Menu only

The three supervision options are: (24Hr.), (6Hr.), or (ULAA).

(24Hr.) Used for basic SafetyNet service. In this mode, the 7830R sends a supervision message once in a 24 hour period. SafetyNet sends a communications failure alarm to the central station if the supervision message is not heard within the 24 hour period.

(6Hr.) Higher grade SafetyNet service intended for applications where a higher level of supervision is appropriate. In this mode, the 7830R sends supervision messages at least once in a 6 hour period. SafetyNet sends a communications failure alarm to the central station if the supervision message is not heard within the 6 hour period.

(ULAA) Highest grade SafetyNet service intended for high security applications. In this mode, the 7830R uses two different supervision intervals. The supervision interval is dependent on whether the security system in the protected premises is armed or disarmed. If the system is armed, the 7830R will be supervised to meet the standard 6 minute ULAA requirement. If the system is disarmed, the 7830R will be supervised within the 1 hour time period per the ULAA requirement.

If this mode is selected, a signal indicating the arming status of the control panel must be connected to one of the zones on the 7830R. That zone must be programmed as the O/C Zone (question 18).

IMPORTANT: The basic ULAA service is intended for use in locations that keep business hours on weekdays (open at least 10 hours per day, Monday through Friday). O/C reports, shorter hours and 24 hour applications can result in a higher monthly cost. Call your SafetyNet representative to discuss your specific application.

Pulse/Delay Zone Selection

By configuring a zone as a pulsed zone, it is possible to use the output of a panel bell/siren driver to activate the radio directly when the signal from this driver is a pulsed output for fire and a continuous output for Burglary. To implement a Fire/Burg. detection at the radio, connect the driver output directly to two zones on the 7830R. Program the Fire zone as a pulsed zone and the Burglary Zone as a delayed Zone (this is to prevent this zone from reporting an alarm when the pulsed signals are detected). The number of pulses and the length of delay will be dependent on the particular panel or siren driver being used and is therefore a programmable feature.

Note: Zones programmed for pulse cannot be designated as open/close or Telco zones; an invalid entry message will occur, since the pulse zone takes priority over open/close and Telco programmed zones.
UL Note: The control unit total delay shall not exceed 14 seconds in UL Listed applications if "yes"; 0.30 seconds if "no".

Question 6a | Pulse Z1 (Y/N) | Press Y if zone 1 is connected to a pulsed bell output. Question 6c will appear. If N is pressed, the following appears.

Question 6b | Z1 Delay (00-127) | Enter the reporting delay from 1-127 seconds for zone 1. Enter 00 for no reporting delay.

Question 6c | Pulse Cnt? (Y/N) (03 - 254) | If Pulsed Zone is answered Y, the next question will be Pulse Cnt? Input the number of pulses required to place the zone in alarm. Default is (03).

Question 7a | Pulse Z2 (Y/N) | Press Y if zone 2 is connected to a pulsed bell output. Question 7c will appear. If N is pressed, the following appears.

Question 7b | Z2 Delay (00-127) | Enter the reporting delay from 1-127 seconds for zone 2. Enter 00 for no reporting delay.

Question 7c | Pulse Cnt? (Y/N) (03 - 254) | If Pulsed Zone is answered Y, the next question will be Pulse Cnt? Input the number of pulses required to place the zone in alarm. Default is (03).

Question 8a | Pulse Z3 (Y/N) | Press Y if zone 3 is connected to a pulsed bell output. Question 8c will appear. If N is pressed, the following appears.

Question 8b | Z3 Delay (00-127) | Enter the reporting delay from 1-127 seconds for zone 3. Enter 00 for no reporting delay.

Question 8c | Pulse Cnt? (Y/N) (03 - 254) | If Pulsed Zone is answered Y, the next question will be Pulse Cnt? Input the number of pulses required to place the zone in alarm. Default is (03).

Question 9a | Pulse Z4 (Y/N) | Press Y if zone 4 is connected to a pulsed bell output. Question 9c will appear. If N is pressed, the following appears.

Question 9b | Z4 Delay (00-127) | Enter the reporting delay from 1-127 seconds for zone 4. Enter 00 for no reporting delay.

Question 9c | Pulse Cnt? (Y/N) (03 - 254) | If Pulsed Zone is answered Y, the next question will be Pulse Cnt? Input the number of pulses required to place the zone in alarm. Default is (03).

Inverted Zone Selection

Zones 1-4 and the test zone can be programmed for inverted input signals.

Question 10 | Invert Z1 (Y/N) | Press Y to invert the input signal for zone 1. Press N for normal input signal.

Question 11 | Invert Z2 (Y/N) | Press Y to invert the input signal for zone 2. Press N for normal input signal.

Question 12 | Invert Z3 (Y/N) | Press Y to invert the input signal for zone 3. Press N for normal input signal.

Question 13 | Invert Z4 (Y/N) | Press Y to invert the input signal for zone 4. Press N for normal input signal.

Restoral Reporting Zone Selection

Restoral reporting can be enabled, disabled or delayed. Note that if restores are enabled for a delayed zone, the restore condition must exist for at least 2.5 seconds (this is intended to prevent swinger conditions). If any of the zones have been programmed for pulse operation, then, following the Restoral question, the 7720P will display "REST ON CHG (Y/N)". This feature is used for zones connected to the bell output of a panel, and when enabled (Y) will report the zone in restoral when the pulse train stops and a steady state level, either high or low, is left on the zone input or when the steady state level starts pulsing. If this feature is not enabled (N), the zone will only restore on a steady state low logic level.

Question 14 | Rest. Z1 (Y/N) | Press Y to enable restoral reporting for zone 1. Press N to disable restoral reporting

Question 14a | Rest. On CHG (Y/N) | Press Y if restore is to be sent when the type of signal changes, i.e., when pulsing state changes to a steady state level (high or low) or when a steady state changes to a pulsing state. Restore normally occurs when the opposite steady state occurs, e.g., when a steady state high goes low.

Question 15 | Rest. Z2 (Y/N) | Press Y to enable restoral reporting for zone 2. Press N to disable restoral reporting

Question 15a | Rest. On CHG (Y/N) | Press Y if restore is to be sent when the type of signal changes, i.e., when pulsing state changes to a steady state level (high or low) or when a steady state changes to a pulsing state. Restore normally occurs when the opposite steady state occurs, e.g., when a steady state high goes low.

Question 16 | Rest. Z3 (Y/N) | Press Y to enable restoral reporting for zone 3. Press N to disable restoral reporting

Question 16a | Rest. On CHG (Y/N) | Press Y if restore is to be sent when the type of signal changes, i.e., when pulsing state changes to a steady state level (high or low) or when a steady state changes to a pulsing state. Restore normally occurs when the opposite steady state occurs, e.g., when a steady state high goes low.

Question 17 | Rest. Z4 (Y/N) | Press Y to enable restoral reporting for zone 4. Press N to disable restoral reporting

Question 17a | Rest. On CHG (Y/N) | Press Y if restore is to be sent when the type of signal changes, i.e., when pulsing state changes to a steady state level (high or low) or when a steady state changes to a pulsing state. Restore normally occurs when the opposite steady state occurs, e.g., when a steady state high goes low.

Open/Close, Telco & Tamper Zone Selection

Question 18 | O/C Zone

Enter the open/close reporting zone number, 1-4. A [0] entry will not assign a zone to O/C status monitoring. If the zone selected was programmed to be a pulse zone, (see Questions 6-9), this zone number selection is invalid and will be tagged as an error. **If UL AA mode was selected in question 4, a zone number must be assigned in this question.**

Question 18a | O/C Rpt (Y/N)

If a zone was selected in question 18 and UL AA mode was enabled, the O/C zone can be selected to either switch supervision modes only or to switch supervision modes and send an open/close report alarm message. Answer Y to enable O/C reporting. **Note: For UL AA installations the zone must be programmed such that if the electrical connection is broken between the control panel and the 7830R that the 7830R will see the panel as Closed.**

Question 19 | Telco Chan

Enter the physical Telco line fault zone, 1-4. A [0] entry disables Telco detection. **If this zone is the same as the open/close zone, this selection will automatically be set to "0" and Telco detection will be disabled.** If the zone selected was programmed to a pulse zone (see Questions 6-9) this zone number selection is invalid and will be tagged as an error.

Question 20 | Tamper zone

Enter tamper zone, 5-8. A [0] entry disables tamper detection. If tamper is enabled, delayed restores will be automatically generated.

Question 21 Central Station Menu only. | Old Alarm Time (10Min.)->

Once this menu is displayed, the old alarm time can be changed by striking the space key on the 7720P. If the desired entry has scrolled passed, striking the back space key will scroll back through the list. If the desired time is displayed, strike the enter key to proceed to the next menu. The choices available are:
24Hrs, 12Hrs, 8Hrs, 6Hrs, 4Hrs, 2Hrs, 1Hrs, 30Min., 15Min., and 10Min.

The old alarm time sets how long and often an undeliverable alarm will be retried for delivery to SafetyNet. If the message is bounced back, it will be retried at the following times, after the initial alarm, until the old alarm time is reached. After 5 Min the Radio fault will go to the fault condition to indicate that a communications problem exists. 1Min. 2Min., 3Min., 4Min., 5Min., 6Min., 10Min., 15Min., 30Min., 1Hrs, 2Hrs, 4Hrs, 6Hrs, 8Hrs, 12Hrs, 24Hrs

Question 22 | Enhncd LEDs (Y/N) (N)>

This question allows the installer to select the operation of the LEDs when the 7830R cover is closed. Answering Y to this question will cause the LEDs to operate the same with the cover off and on. Answering N (default) will simplify the display and reduce the amount of LED activity when the cover is installed. The display will be equivalent to the 7720 LEDs (see "LED Blinking Patterns" section)

Question 23 Central Station Menu only.	AC Loss RPT (Y/N)	If AC LOSS RPT is answered yes (Y), the radio will report the loss of AC charging voltage within a 10 to 40 minute window, from its detection. If this feature is disabled (N), this message will be suppressed. **NOTE:** In either case, low battery messages will be sent as detected.
Question 24	FLT REL ON (Y/N)	Press Y if fail-safe mode is desired. In this mode, the fault relay is normally energized and will de-energize in the event of a radio fault. Note that fail-safe mode draws slightly more standby current. See the SETTING THE JUMPERS section for setting the relay output.
Question 25	Flt Latched (Y/N)	Press Y if radio fault line is to be latched high upon loss of contact with the network for the fault time. Press N if a momentary closure upon loss of contact with the network for the fault time is desired.
Question 26	Flt Time (min)	Enter in Minutes 1 - 99 the time delay before the fault relay will engage, after a loss of contact with the network.

Redundant Central Station Reporting

Question 27	2nd CS (Y/N)	Press Y if redundant reporting to a second central station is desired. Press N if not desired (skip to end).
Question 28	2CS Z1 (Y/N)	Press Y to enable reporting to second central station for zone 1. Enter N to disable reporting.
Question 29	2CS Z2 (Y/N)	Press Y to enable reporting to second central station for zone 2. Enter N to disable reporting.
Question 30	2CS Z3 (Y/N)	Press Y to enable reporting to second central station for zone 3. Enter N to disable reporting.
Question 31	2CS Z4 (Y/N)	Press Y to enable reporting to second central station for zone 4. Enter N to disable reporting.
Question 32	2CS Tamp (Y/N)	Press Y to enable tamper reporting to second central station. Enter N to disable reporting.
Question 33	2CS Sys Rpt (Y/N)	Press Y to enable reporting of system report to second central station. Enter N to disable reporting.
Question 34	2nd ID #	Enter the 4-digit customer account number for the second central station, 0001-9999.
Question 35	2nd City	Enter the secondary city code 2 digit ID 01-FE.
Question 36	2nd CS ID	Enter the second central station's system ID number, 01-FE. This ID number must be different from the one programmed in question 3 (the Primary CS ID).

EXITING PROGRAM MODE, SETTING DEFAULTS & ASSIGNING PASSWORDS

When the last question is answered, all entries are validated by the system. If no errors are found, the following is displayed:

```
REVIEW?
```

To review the programming options (to ensure that the correct responses have been made), press Y. The programming questions will be displayed again, starting with question 1. Use the UP/DOWN arrow keys to scroll through the program fields without changing any of the values. If a value requires change, simply type in the correct value. When the last field is displayed, the REVIEW? question again appears.

If errors are found during the validation routine (values are out of range or there is a conflict of parameters), the REVIEW? question is replaced by the following:

```
ERRORS FOUND
HIT ANY KEY
```

Upon hitting any key, the first invalid entry is displayed. Correct the entry then press ENTER to display the next invalid entry. When the last invalid entry is corrected, the system again performs a validation routine. If no errors are found, the REVIEW? question is displayed.
To display all program entries (not only invalid entries) press the up arrow key. The previous question appears. Use the down arrow key to display subsequent programming entries.

Setting Factory Defaults: The programming options can be globally reset to their factory default values by pressing ESC at the REVIEW? prompt. A confirmation prompt will appear. Press Y to reset, or press N to return to the REVIEW? prompt. If Y is pressed, all programmed values will be reset to their original factory settings.

To exit program mode & assign passwords, press N in response to the REVIEW? question. If no password has been assigned, the following appears:

```
ENTER PASSWORD?
[Y/N]
```

Passwords can be used to split the programming questions into two menus. See PASSWORD PROTECTION paragraph earlier in this section. If a password is desired, press Y. The following prompts appear. Press N if no passwords are desired.

```
CHOOSE FROM THE
FOLLOWING PSWDS:
```

```
Central Sta(1)
Subscriber (2)
```

Enter 1 or 2 depending on the menu to which a password is to be assigned. When prompted, enter the desired password (up to 4-digits max.) You will then be prompted to reenter it (as confirmation).

```
Choose 1 or 2:
```

NOTE: If using a terminal to program passwords, use only those characters available on the 7720P, to allow later access using a 7720P (A, B, C, D, E, F, S, T, X, and 0-9).

If a password has already been assigned for the current programming menu, the ENTER PASSWORD? prompt is replaced by the following:

CHG PASSWORD? [Y/N]	Press Y or N, depending on whether you want to change the password for the **current** programming menu. If [Y]es, you will be prompted to enter the new password twice (as confirmation). To clear an existing password, answer "Y" to the "change password" prompt, but press only the ENTER key when prompted for the new password and its confirmation.

When the password question(s) have been answered, the system exits program mode and returns to normal mode. The Programming Tool can then be disconnected, or can be used to trigger test messages. Refer to the TESTING THE 7830R section.

If this is a new 7830R, or the 7830R was previously installed and registered with SafetyNet, and the primary or secondary City#, CS#, or Acct# were intentionally or inadvertently changed, during the programming process, the following Question will be displayed as a reminder that the 7830R will need to be registered before it will become operational:

Must Register OK? Y/N	If the change was intentional answer "Y" to this question otherwise answer "N" Answering "Y" will cause the following prompt to appear. Answering "N" will put the radio back to the start of programming mode

Please Reg. to Enable Service.

SafetyNet REGISTRATION

In order for SafetyNet service to be enabled, the 7830R must be registered with SafetyNet. Prior to registration the 7830R will only interact with SafetyNet on a test basis. No messages or alarms will be relayed to the central station. This allows the installer to test the 7830R for network interaction and installation quality without initiating billing for the account. Once the account is to become live, one of the following registration procedures will have to be followed. Once the account is registered, any alarms sent will be passed to the central station, and billing for the account will be enabled.

Quick registration (new installations only)

The quick registration feature allows the installer to register a 7830R without the need for a 7720P programming tool. This is a non-interactive registration process that allows the 7830R to be preprogrammed at the shop and then registered at the installation site.

1) Once the Installation has been completed and checked out, the installer must triple strike the test button, to register the 7830R with SafetyNet. The Amber LED will light continuously at this point and the Green and Red LEDs will blink, to indicate that the registration process is in progress.
2) Observe the LEDs to determine the registration result.

   Green LED: Blinking indicates a successful registration

   Red LED: Blinking indicates that the registration failed. This could be due to either an incorrect CS, CITY, or Account number entry, or reuse of an existing already registered 7830R. A 7720P will be needed at this point to determine the cause of the problem.
3) If the registration was successful the 7830R is now available for complete alarm reporting services.

Interactive registration (new installations and repair replacements):

The interactive registration feature allows the installer to register the 7830R through a series of keyboard commands on the 7720P installation tool. This method of registration gives the installer the capability of replacing an existing 7830R in the event it must be swapped for repair.

Registration Sent!	Once the installation is complete the installer should select the [↑] command on the 7720P.
Registration Successful!	If this is a new installation, and the City, CS, and Cust# have been correctly entered for both the primary and secondary central stations, the 7830R will be registered and this message will be displayed. At this point the 7830R is in full service and available for alarm reporting to the central station.
Registration Timed Out!	If no response is received from SafetyNet, to the registration request, this message will be displayed.
Reg Reject Bad ID! PS	If the City, CS, and Cust# were not correctly entered, this message will be displayed. If this message is displayed with a "P" primary ID, and or an "S" secondary ID, it indicates that the ID information was either entered in error, or the central station failed to pre-authorize programmed ID numbers with SafetyNet customer service.

Account Exists PS Sub Y/N	If this is a repair/replacement, or an error was made in programming the 7830R for an existing account, the following prompt will be displayed. "P" and or "S" will be displayed to indicate which ID numbers are causing this condition. If this is not a replacement/repair answer "N" to this question and review the CITY, CS, and Cust# programming. If this is a replacement/repair answer "Y" and the next prompt will be displayed.
Do You Have A PIN # Y/N	At this point the installer should have called in for a 4-digit alpha numeric PIN # that must be obtained by having an authorized person call the SafetyNet Technical Assistance Center (TAC). Answering "Y" will continue the registration process. Answering "N" will abort the process. If "Y" was selected then the next prompt will be displayed.
Alarm Will Be Sent, OK Y/N	**If the installer proceeds beyond this point by answering "Y," a correct PIN number must be supplied to complete the registration. Any attempt at registration at this point, whether successful or unsuccessful, will result in a radio substitution alarm being sent to the CS.** Answering "Y" allows the installer to continue registration. Answering "N" will abort the registration process. If "Y" was chosen the next prompt will be displayed.
Enter PIN#	The installer must enter a 4 digit alpha numeric PIN # that must be obtained by having an authorized person call the SafetyNet TAC . The PIN# should be entered, followed by the enter key.
Registration Successful!	If the PIN is valid, the new 7830R will register and the old unit will be de-registered. A radio substitution alarm will be sent to the central station by SafetyNet.
Registration Canceled!	If at any point in the substitution process the installer chooses not to register the 7830R, this is the displayed message.
Substitution Rejected!	If an invalid PIN was entered this is the display message, and the registration process will be aborted and will need to be started from the beginning. Note that each attempt will cause a radio substitution alarm to be sent to the central station.

POST INSTALLATION CHECKLIST

Post Installation Checklist is intended for installers who want to get the 7830R up and running quickly.

To take full advantage of the many installation features of the 7830R, we strongly suggest you take a few moments and read the programming section.

Installation Quality	Always confirm installation quality by observing the blink patterns of the LEDs A good install should not have the red LED blinking ever.
Transformer Wiring	Always confirm that the transformer is plugged in to a non switched 24hr. power source and that wiring between the 7830R and the transformer is sufficient to supply the required current.
Installation Confirmation	Always confirm installations using the installation checkout feature this will confirm end to end functionality and positively indicate to the installer if the installation is acceptable with single or dual site coverage.
Antenna Positioning	Make sure the 7825 antenna is vertically mounted. Follow the installation instructions.
Register 7830R	Make sure that the registration procedure was performed . This is important since no Alarms will be relayed to the central station if the radio is not registered.

TESTING THE 7830R

Radio Transmission Test

The 7830R is capable of sending a test message, which can be received by the central station to confirm the radio's communication link to the central station once the 7830R has been registered.
The test message can be transmitted in either of two ways.

1) A 7720P Programming Tool can be used, if connected to the programming connector of the 7830R. To send a test message, press SHIFT-8 (T command). The 7720P will display a message sent.

2)Pressing the test button once will cause the 7830R to send a test alarm to the central station. The amber LED will extinguish when the message has been delivered with no errors.

Installation check out mode

A double click of the test switch will place the 7830R into installation check out mode. The LEDS will display the test in progress pattern. While this pattern is displayed the 7830R will check the signal to the primary base station and will send a message, and look for an acknowledgment from SafetyNet. If these tests are passed we have acceptable single site coverage. The radio then checks its base station list for a possible secondary base station. If one is found in the list the radio will attempt to roam to the secondary base. If the roaming procedure is successful a message is sent to SafetyNet through the secondary base station. If this process is successful we indicate that there is dual site coverage. If the roaming procedure does not work we indicate that there was a roaming error. This process can also be initiated with the E command on the 7720P. Progress of the testing is displayed on the 7720P as the test progresses.
The following progress messages will be displayed on the 7720P if it is connected.

Checking Primary	If a secondary site might be available the test will continue.
Roaming to Secondary	
Checking Secondary	

Once the test is complete one of the following results will be displayed.

No Suitable Sites
or
Single Site Coverage
or
Dual Site Coverage

NOTE: This procedure can take up to 3 minutes, and should not be repeated without waiting 6 min. to allow the radio to roam back to it's primary base station.

The Following LED indications will show the status of the radio during the test.

Test in progress: 1. Red and Green LEDs blink alternately with the Amber LED.

Test Results:
1. Red LED blinking indicates that the installation is not acceptable.
2. Amber LED blinking indicates that there is acceptable single site coverage.
3. Green LED blinking indicates that there is acceptable dual site coverage.

System Test

Once the radio has been registered (see registration procedure) the system test can be performed. Trigger an alarm by any convenient means and observe the LED indicators on the radio. The amber LED should light solidly for about 5 sec. This indicates that an alarm message has been received at the radio (amber). The red LED should not light, and the green transmit LED should light once or twice. When the alarm has been delivered to the local base station successfully the amber LED will blink rapidly. If standard service was selected the amber LED will continue to blink for 90 Sec. indicating that the radio is waiting to see if the alarm failed to be delivered. If the network indicates that the message failed to be delivered the amber LED will re-light continuously and the message will be re-sent. If "End-to-End service" was selected, the amber LED will extinguish when the alarm has been delivered successfully to SafetyNet.

If the zone is programmed for restore, restore the circuit. The amber LED should light solidly, and the green transmit LED should flash once or twice, indicating transmission of the restore message. The central station receiver should display alarm/restore messages for each triggered alarm/restore performed.

Replace the cover (if it was removed) and perform a control panel system test.

NOTE: The 7830R will not respond to commands from the 7720P if the radio is establishing communication with the network ("handshaking") during initial power-up. It is suggested that you wait 30-60 seconds after power-up before entering commands from the 7720P. If there is no response, simply reenter the command.

7720P Keyboard Commands

"A"

7830R APP x.xx (c) Pittway 1995

Display and verify Software Rev.

"B"

BSID# = xxxxxFS=Y MAN# = zzzzzzzz

Display current base station and MAN number
This command displays the primary base station number (xxxxx), the signal strength (y), and the MAN number of the radio(zzzzzzzz). This information might be requested by Technical Assistance Center (TAC) personnel to help them troubleshoot problems.

"C"

Network Time HH:mm

Display SafetyNet Network time.

Time Not Set!

If the time has not been set by the Network this will be displayed.

"D"

Bat Test Start Hit S to Chk

Initiate Battery test.
This selection initiates a 10 min. battery test. The charger is removed from the battery and a load is applied for 10 min. The S command can be used to monitor the battery condition throughout the test.

"E"

Perform an installation check out

"F"

P----+-- S---

Fast mode display.
This is a Bar graph display of the primary and secondary signal strengths. A plus sign displayed in the bar graph indicates the acceptable signal threshold. Each refresh of the display is indicated by a beep. Striking any key will stop this mode of operation.

"T"

Test Alarm Sent

Send a Test alarm to SafetyNet.

"X"

Reset (Y/N)

Reset the 7830R.
This will be the display following the X command. Answering N will return to normal mode. Answering Y will reset the radio and display the following.

Resetting!

"↑"

Initiate registration process.
This command will register the 7830R with SafetyNet if the radio is not registered. If the radio is registered it will confirm the current software revision with SafetyNet. See SafetyNet registration section.

"S"

The status of the 7830R can be viewed on either a 7720P Programming Tool or an appropriate terminal when either device is connected to the Programming port of the 7830R. The status display includes zone input status, test terminal status, tamper status, battery condition, charging voltage status and radio fault status. Refer to the following page for the status display interpretation.

Status Display Interpretation for "S" Command.

1234	BtTmBaAcFlt
5555	T 5 + + 0

1234 The numbers 1-4 represent the four zone inputs, and follow Ademco High Speed Format codes:

1	New Event
2	New Opening
3	Restore
4	New Closing
5	Normal
6	Previously Reported Event
@	Telco New Event
P	Telco Previously Reported
p	Telco Restore

Tm Tamper status follows High Speed Format codes above.

Bt T Indicates that a battery test is being performed

Ba Represents battery condition:

+	Battery voltage acceptable
–	Battery voltage below 10.8V ±5%
V	Battery voltage going low has not yet been sent to the central station
^	Battery restoring, but not yet reported as restored

Ac Represents charging voltage:

+	AC charging voltage OK
–	AC charging voltage bad & reported
V	AC charging voltage bad, not reported (reporting window not expired)
^	AC charging voltage restored, not reported as restored

Flt Represents Radio Faults.

0	Normal
5	No contact with SafetyNet (check antenna, connections and cable)

CRC Ram/EEROM corruption. Reset the radio and if necessary reprogram. If this fault recurs, return radio for service.

TROUBLESHOOTING

Problem	Probable Cause	Solution
No signals received	Antenna Location	See page 19-20 for selecting Antenna locations.
	Programming (Subscriber #, Central Station ID #, or City #)	Verify and correct programming entry.
	Radio Fault	If you have a 7720P, see page 22 If you don't have a 7720P, see page 5 (LED FLASHING).
Low Battery	AC Voltage Supply	AC power source not 24hrs. Incorrect transformer or excessive wire run.
	Environment	If temperature exceeds -30°C to 60°C, this will diminish battery capacity and or life. Replace battery if required. Relocate the 7830R by using the Remote Antenna Kit.
Central Station is not receiving Alarms.	No connection ground	Connect common ground from trigger output (TB Pin 4).
	Incorrect trigger input.	Verify type of input. Application of +4.5 to 12 volts (Non-Inverted). Absence of +4.5 to 12 volts (Inverted).
	Incorrect Jumper settings.	See Setting the Jumper Options: J1 Zone Input J2 Zone Input

SPECIAL NOTES FOR U.L. INSTALLATIONS

The 7830R Remote Subscriber Unit is approved to be used in systems Listed by Underwriter's Laboratories for Grade A, Grade AA and Grade B Central Station Mercantile Burglary. The following additional requirements must be observed for the installation of subscriber remote equipment in such systems:

1. Installation must be in accordance with the National Electrical code and UL681, Installation and Classification of Burglar and Hold-Up Alarm Systems.
2. The 7830R must be connected to a Listed dry contact and voltage trigger outputs of a Listed compatible control unit.
3. The antenna may be mounted remotely including outside the bounds of the protected property. A certified installation must have a minimum measured signal strength of "3," or the "+" symbol should be visible if the 7720P FAST display is being used.
3. The 7830R must be programmed as follows:
   a. The 7830R must be registered as described in the installation instructions.
   b. Zones must be programmed "No" for "Pulsed" and 00 for "Delay."
   c. Enable restoral signals.
   d. The built-in tamper switch shall be enabled (question 20).
   e. Enhanced LED shall be enabled (question 22 = Yes).
   f. AC Loss Report shall be enabled (question 23 = Yes).

4. For Central Station Grade B Installation (UL 611 Central Station Burglar Alarm Systems): The 7830R must be connected to a control unit Listed for at least Grade B central station service. Opening and closing reports must be sent by either a Listed DACT or the 7830R.
5. For Central Station Grade A Installation (UL 611 Central Station Burglar Alarm Systems):a The 7830R must be connected to a control unit Listed for at least Grade A central station service. Opening and closing reports must be sent by a Listed DACT with ringback of the received signal.
6. For Central Station Grade AA Installation (UL 611 Central Station Burglar Alarm Systems): All interconnecting wires between the control and the 7830R must be less than 20 feet in length and contained in the same room. All interconnecting wiring must be installed in rigid conduit or EMT (where exposed on interior walls) or in flexible metal tubing if run in the walls or ceiling.

   A UL Listed communicator must monitor the radio fault output (terminals 11 & 12) of the 7830R. A No. 659EN Telco Line Monitor's output should be connected to an input zone of the 7830R unit. Premises openings and closings should be sent via the communicator.

   The fault relay (question 24) shall be programmed as fail-safe (fault relay ON) and jumper J3 shall be set in "A" position (normally closed); question 25 Latched = Yes; question 26 Fault Time = 02.

   Supervision Question 4 should have ULAA selected. A zone must also be designated as an O/C zone (question 18), and that zone should be connected to a Listed output from the control unit which indicates the open/close state of the unit. Open/Close reports should be sent by the digital communicator.
7. For Grade A Police Connect Installation: Use a Listed Grade A police connect control unit.
8. For Grade AA Police Connect Installation: Use a Listed Grade A police connect control unit and follow the programming for central station Grade AA installations.

"FEDERAL COMMUNICATIONS COMMISSION (FCC) STATEMENT"

This equipment has been tested to FCC requirements and has been found acceptable for use. The FCC requires the following statement for your information:

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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:

- If using an indoor antenna, have a quality outdoor antenna installed.
- Reorient the receiving antenna until interference is reduced or eliminated.
- Move the receiver away from the transmitter.
- Move the antenna leads away from any wire runs to the transmitter.
- Plug the transmitter into a different outlet so that it and the receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions.

The user or installer may find the following booklet prepared by the Federal Communications Commission helpful:

"Interference Handbook"

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402.

The user shall not make any changes or modifications to the equipment unless authorized by the Installation Instructions or User's Manual. Unauthorized changes or modifications could void the user's authority to operate the equipment.

TO THE INSTALLER

Regular maintenance and inspection (at least annually) by the installer and frequent testing by the user are vital to continuous satisfactory operation of any alarm system.

The installer should assume the responsibility of developing and offering a regular maintenance program to the user as well as acquainting the user with the proper operation and limitations of the alarm system and its component parts. Recommendations must be included for a specific program of frequent testing (at least weekly) to insure the system's proper operation at all times.

THE LIMITATIONS OF THIS RADIO COMMUNICATIONS SYSTEM

While this 900 MHz Long Range Radio communications system is part of an advanced and sophisticated security system, it does not offer guaranteed protection against burglary or fire, nor does it guarantee communication of burglary or fire warning signals to a central station. Any alarm system, or any communications system, whether commercial or residential, is subject to compromise, or failure to warn, for a variety of reasons. Examples of some of these reasons are:

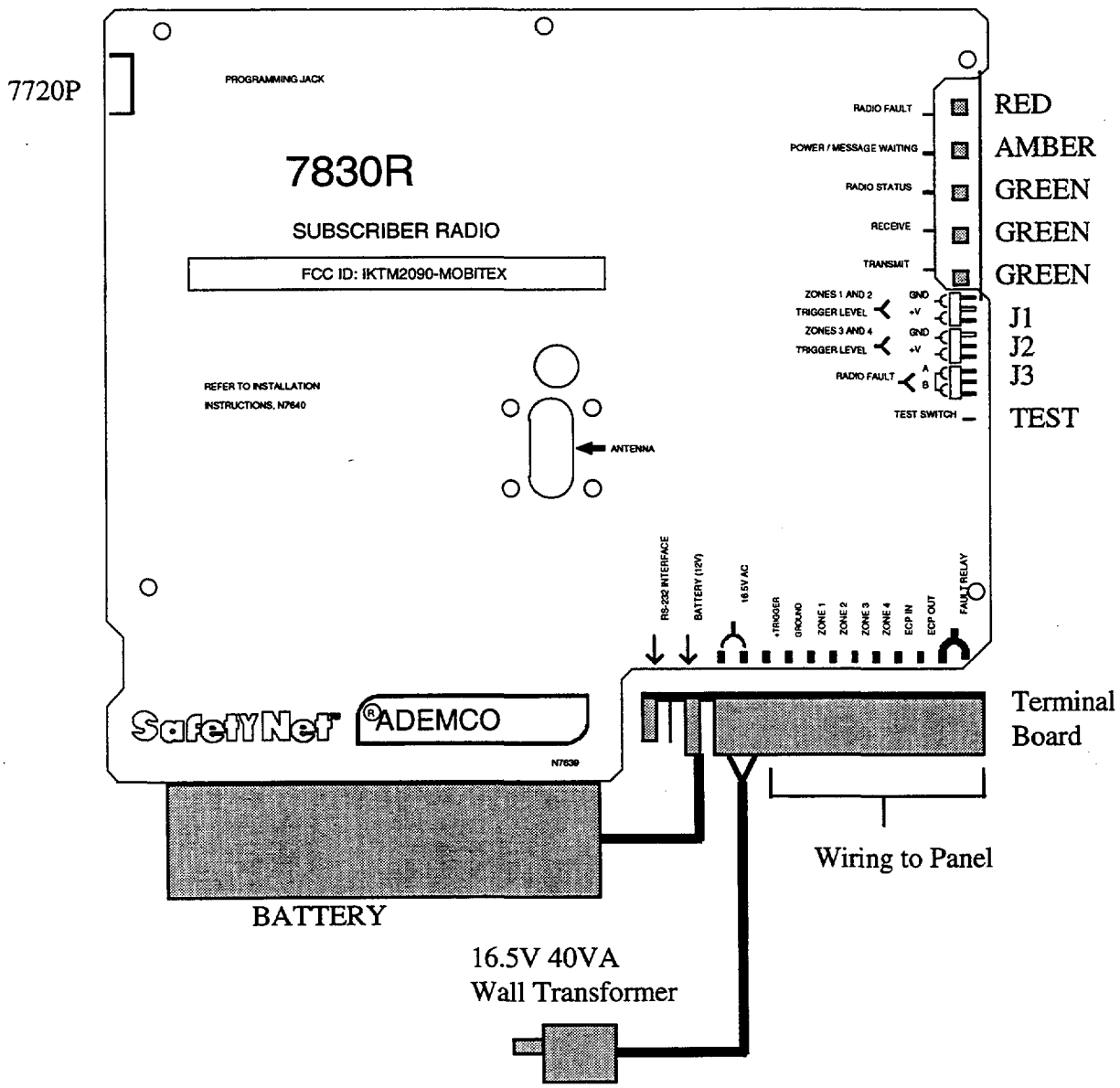
- Intruders may gain access through unprotected openings or have technical sophistication to bypass an alarm sensor, and then disconnect an alarm communicating radio transmitter.
- Signals sent by 900 MHz radio transmitters may be blocked by metal, mountains, hills, foliage and other natural and man made obstructions before they are received by a master receiving station or sent to a central station. Even a path previously verified as acceptable may periodically change its characteristics.
- Long-range radio communication transmitters will not work without power. Radio transmitters require a battery to work properly in the absence of A.C. power. A weak or dead battery, or improperly installed batteries may prevent these devices from functioning properly if A.C. power is disrupted for any reason.
- Radio communication systems are subject to external interference, natural or man-made, intentional or coincidental, that may keep a signal or group of signals from being successfully received by a master receiving station or a central station.
- Radio communication devices may change their characteristics over time. Such parameters as frequency, modulation and power should be properly monitored periodically, with required adjustments made by qualified personnel.
- Radio communication devices must be installed by qualified personnel. Improper installation or selection of a transmitter's location may cause intermittent or unreliable performance.

Any electronic or mechanical device can fail. The most common cause of an alarm system or a radio communications system not functioning properly when an intrusion or fire occurs is inadequate maintenance, maintenance that is intended to find such failures as soon as possible. This alarm and communication system should be tested weekly to be sure all sensors and transmitters are working properly.

Installing an alarm system may make one eligible for lower insurance rates, but an alarm system is not a substitute for adequate insurance. Homeowners, property owners, business owners and renters should continue to insure their property and lives.

SPECIFICATIONS

Dimensions:	8.5" x 9.5" x 1.7".
Power:	16.5VAC 40VA Transformer.
Current drain:	Normal standby = 130 mA Average
	Peak During Transmit = 2Amps
Fault Relay Output:	30V, 1A
Trigger Voltage Outputs:	typically 12.8VDC (battery voltage isolated through an on board, 10k series resistor)
Input triggering levels:	Zones 1 & 2: selectable 0 volts or 4.5 to 14.2 volts into 10k ohms
	Zones 3 & 4: selectable 0 volts or 4.5 to 14.2 volts into 10k ohms
RF power output:	2 watts maximum,
Receive Sensitivity	-113 dBm
Modulation	Modified GMSK 8kbps data rate
Frequency band:	896-902 MHz Transmit 12.5Khz Channel separation
	935-941 MHz Receive 12.5Khz Channel separation
Frequency accuracy:	± 1.5 PPM.
Operating temp:	-30 to +60 deg. Celsius.
Storage temp:	-40 to +70 deg. Celsius.
Humidity:	90% relative humidity, non-condensing
Altitude:	to 10,000 ft. operating, to 40,000 storage.
Antenna:	Integral 5/8 wave whip.
	Optional external Type N connector



SUMMARY OF CONNECTIONS

ADEMCO LIMITED WARRANTY

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Seller does not represent that the products it sells may not be compromised or circumvented; that the products will prevent any personal injury or property loss by burglary, robbery, fire or otherwise; or that the products will in all cases provide adequate warning or protection. Customer understands that a properly installed and maintained alarm may only reduce the risk of a burglary, robbery, fire or other events occurring without providing an alarm, but it is not insurance or a guarantee that such will not occur or that there will be no personal injury or property loss as a result. CONSEQUENTLY, SELLER SHALL HAVE NO LIABILITY FOR ANY PERSONAL INJURY, PROPERTY DAMAGE OR OTHER LOSS BASED ON A CLAIM THE PRODUCT FAILED TO GIVE WARNING. HOWEVER, IF SELLER IS HELD LIABLE, WHETHER DIRECTLY OR INDIRECTLY, FOR ANY LOSS OR DAMAGE ARISING UNDER THIS LIMITED WARRANTY OR OTHERWISE, REGARDLESS OF CAUSE OR ORIGIN, SELLER'S MAXIMUM LIABILITY SHALL NOT IN ANY CASE EXCEED THE PURCHASE PRICE OF THE PRODUCT, WHICH SHALL BE THE COMPLETE AND EXCLUSIVE REMEDY AGAINST SELLER. This warranty replaces any previous warranties and is the only warranty made by Seller on this product. No increase or alteration, written or verbal, of the obligations of this Limited Warranty is authorized.

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