

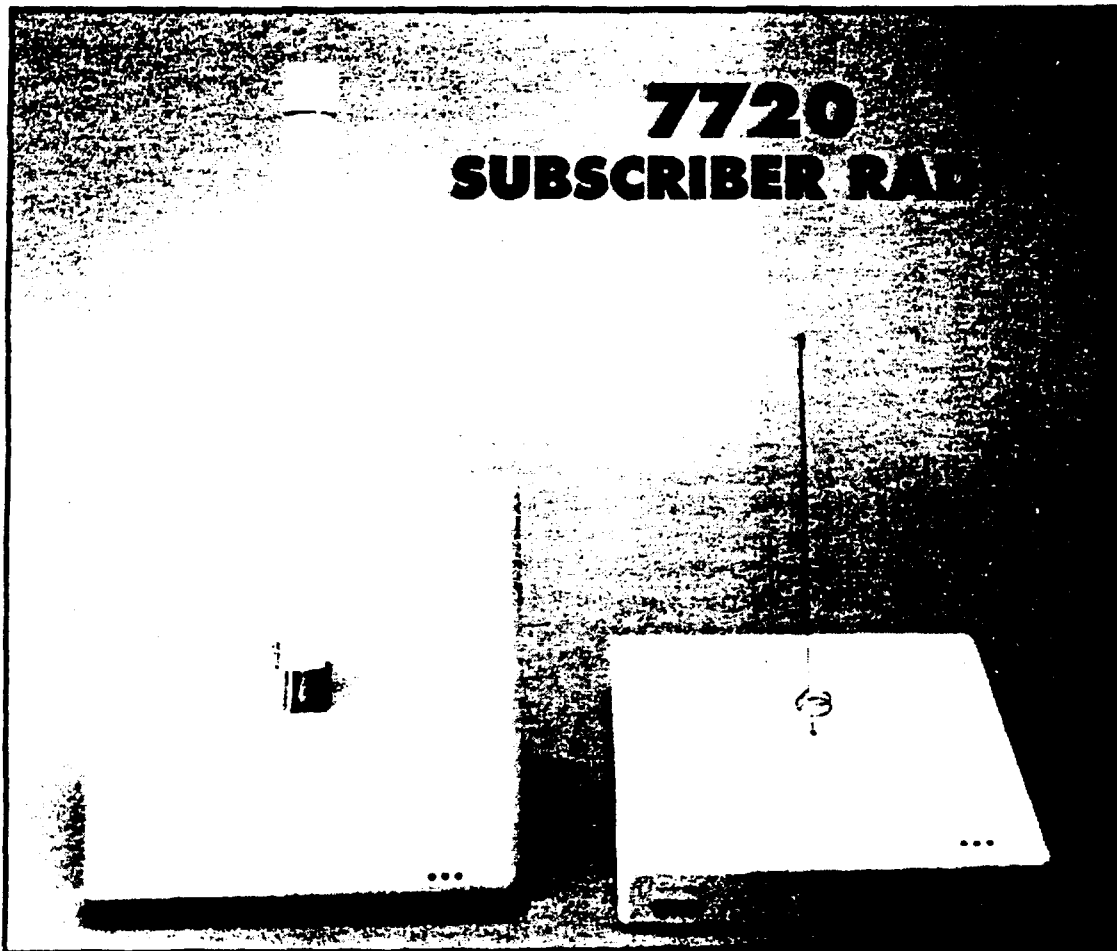
ADEMCO

**7720
SUBSCRIBER RADIO**

INSTALLATION INSTRUCTIONS

Introduction

The 7720 self-contained subscriber radio is the subscriber end of a Long Range Radio alarm reporting system. As a communications link, by analogy to a telephone-based system, the 7720 is comparable to a digital communicator connected by telephone line to a central monitoring station.



Note to the Installer: Please read these Installation Instructions all the way through and become completely familiar with them before attempting to install a 7720 subscriber radio.

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SYSTEM FEATURES

Wireless Reporting: All alarm and status messages are transmitted to the master station network via radio signals, which means faster and more secure reporting.

Integrated Electronics: The entire radio link equipment, including interface, transmitter, power supply, battery and antenna, is housed in a single unit, requiring only battery charging power and alarm inputs from a standard 12 volt alarm panel.

Selection of Input Interfaces: The 7720 can monitor alarm inputs from Ademco ACP, Ademco ECP, discrete 4 zone contact closures or their electrical equivalent, or from external gate and modulation inputs.

Compatibility: The 7720 is compatible with existing installations using ADEMCO equipment or other control panels. The 7720 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 and 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 yellow LED indicates normal operation.

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 7720. The tamper zone number must be entered in programming question 25 to enable protection.

Antenna Included: The 7720 comes with an omni-directional wire antenna, and also features an optional antenna kit (7720ANT) for using a 7625 antenna.

Programmable Features: The 7720 utilizes EEROM (Electrically Erasable ROM) technology, which allows the 7720 to be programmed with a 7720P Programming Tool. The programming options include channel assignments for Telco fault input, inverted trigger inputs, delayed reporting channels (16 second delay, if selected), open/close/restore reporting channels, etc.

Self-Diagnosing Transmitter: Malfunctions of the transmitter, including antenna fault, low output power, loss of external power, low internal DC voltage and internal radio-frequency circuit problems can be reported on both the ACP/ECP interfaces, as well as being transmitted to the master station network, if the fault does not preclude such transmission. For other alarm panels, faults can trigger contact closures on a Form "C" relay to indicate radio faults.

Power Supply: The 7720 is powered by its own 12 volt battery, which can be charged by an alarm panel's output voltage (14.0-14.2VDC). The charging input draws approximately 50mA continuous and 400mA peak current during transmission.

Low Battery Monitoring: The system will notify the central station of a low battery condition whenever the battery voltage drops below 11.2V ($\pm 5\%$).

Low Battery Shutdown: If for any reason the battery voltage drops below 9.75 volts, the radio will automatically shutdown. Refer to the LOW BATTERY SHUTDOWN section for more information.

OPERATION

GENERAL: The 7720 receives alarm and restore signals from the alarm control panel and converts these signals to radio messages which are transmitted to the master station network, which in turn relays the messages to the central station. The 7720 can monitor either 4 traditional zone inputs, or can process serial data from panels which use either ACP or ECP data formats. For traditional zone inputs, the first two zones may be configured by jumper to activate on either 0 volts or activate on 4.5-12VDC; zones 3 and 4 are hard-wired to activate on 4.5-12VDC. Zones 1-4 can also be programmed to invert their input signals.

Upon receiving an alarm, restore, or status message, the 7720 will transmit the message to the master station network after a programmed delay of either 250 milliseconds or 16 seconds. The transmissions will repeat for approximately 6 minutes (total of 60 messages) to ensure that the alarm or other report will be received by the central monitoring station.

The 7720 transmits periodic supervisory messages to alert the central station to system problems. A contact closure is available to indicate a radio fault; this can be either normally open or normally closed. In addition, it can be selected to be "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 between TB1-1 and TB1-2, which float with reference to the rest of the circuit.

The 7720 also provides status information via its serial 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 7720 section for information regarding the "S" command and status messages.

ANTENNA: The 7720 can use either the supplied wire antenna, or, by using the optional 7720ANT connector kit, can use a 7625 omni-directional antenna, 7625-3dB antenna (if additional gain is required), a 7674 or 7674-13 YAGI antenna (if directional antenna is required). The supplied antenna mounts directly to the 7720. The other antennas can be mounted remotely (if desired) using pre-assembled coaxial cable available from ADEMCO (5', 12' or 25' lengths).

LOW BATTERY SHUTDOWN: If battery voltage drops below 9.75 volts, the 7720 will automatically shutdown, and ALL LEDs WILL BE OFF. When the battery is recharged to 10.25 volts, the LEDs will begin to flash in rapid unison (see LED table), until the battery is charged to 12.5 volts. During the charging cycle, the 7720 will not transmit any messages. The 7720 will resume normal operation after the battery is fully charged.

LED INDICATIONS

LED	STATE	MEANING
GRN	Flash	With YEL solid = Message transmission With YEL flashing = HS antenna test
YEL	Solid Rapid Flash (10/second) Slow Flash (1/second) Slower Flash (1 per 3 sec)	Transmission cycle ON Test or FAST message Normal operation Normal, but low batt. or DC charging condition detected
RED	Solid Pattern	Radio Fault detected See Flash Patterns Table
ALL LIT	Consecutive Rapid Unison (10/second) Slow Unison (2/second)	Power On/Reset sequence. Repeated twice before entering normal mode. Press [ENTER] during cycle to enter Program Mode. Battery not fully charged. Repeated about once every 2 seconds until battery is charged to 12.5 VDC. Radio is not properly programmed. Will continue until [ENTER] is pressed to enter programming mode.

RADIO FAULT LED FLASH PATTERNS		
#	FLASH	REASON
1	S-L-L-L	Internal radio fault
2	S-S-L-L	Power detected when radio should be off
3	S-L-S-L	Full power not attained
4	S-S-S-L	Full power not sustained after transmission
5	S-L-L-S	VSWR is bad
S=Short flash (150mS); L=Long flash (600mS) #=-Fault code number. See "S" command in the TESTING THE 7720 section for additional status information.		

SETTING THE JUMPER OPTIONS

(Set Before Installing)

(J2) Zone Inputs Activate on High or Low: If using zone input connections, set the J2 jumper so that zone 1 & 2 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 +12 volts must be applied to zones 1 & 2 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 8 & 9).

If ground is selected, zones 1 & 2 are internally pulled up to 5 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 8 & 9).

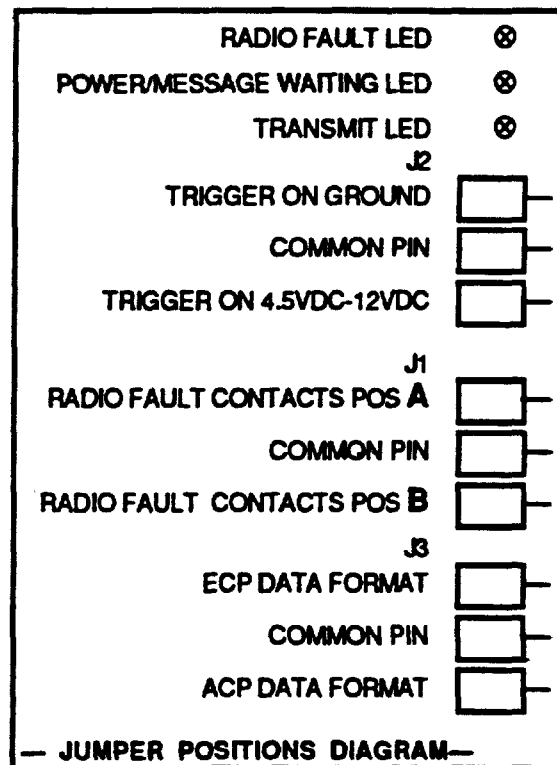
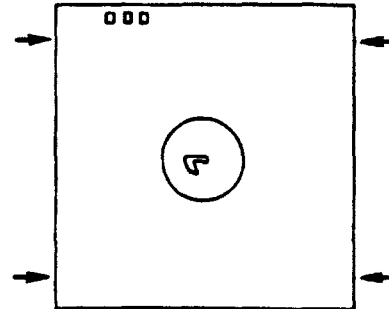
(J1) Fault Output Select: The radio fault output relay may be programmed for either FAIL-SAFE mode (relay always energized) or LOW CURRENT mode (relay normally de-energized) by selecting Yes or No to programming question 13: FLT REL ON (Y/N). In addition, the relay can be set for either N.O. or N.C. operation (in either fail-safe or low current modes) using the J1 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 J1 jumper to position A or position B, according to the following table:

Prog. Ques. 13 Fault Relay ON (relay energized)	J1 Jumper Setting (relay N.O. or N.C.)	
	Pos. B	Pos. A
NO	N.C.	N.O.
YES	N.O.	N.C.

(J3) ACP/ECP Select: If the ACP or ECP interface will be used, then set the J3 jumper as indicated for the desired mode. When connected to the 7720P Programming Tool, the jumper should be set in the ECP mode.

REMOVING THE COVER

Remove the 7720'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.



WIRING, MOUNTING & POWERING

NOTE: Use color-coded wires for the power connections; it is recommended that the positive connection be red and the negative connection be black.

WIRING AT THE CONTROL PANEL:

- Using an ohm meter, measure the resistance from the battery positive terminal to the auxiliary power take-off point on the terminal board. If the resistance is zero ohms, then this auxiliary take-off point may be used. If it is greater than zero ohms, then the positive power wire for the radio will have to be spliced to the positive wire coming from the battery. **IMPORTANT:** If the take-off point is not fused, a 1A inline fuse must be put in line at the control.
- Connect the negative wire to the system negative point, which is also the negative line from the battery.
- Run the alarm and power wires to the transmitter location.

WIRING AT THE 7720:

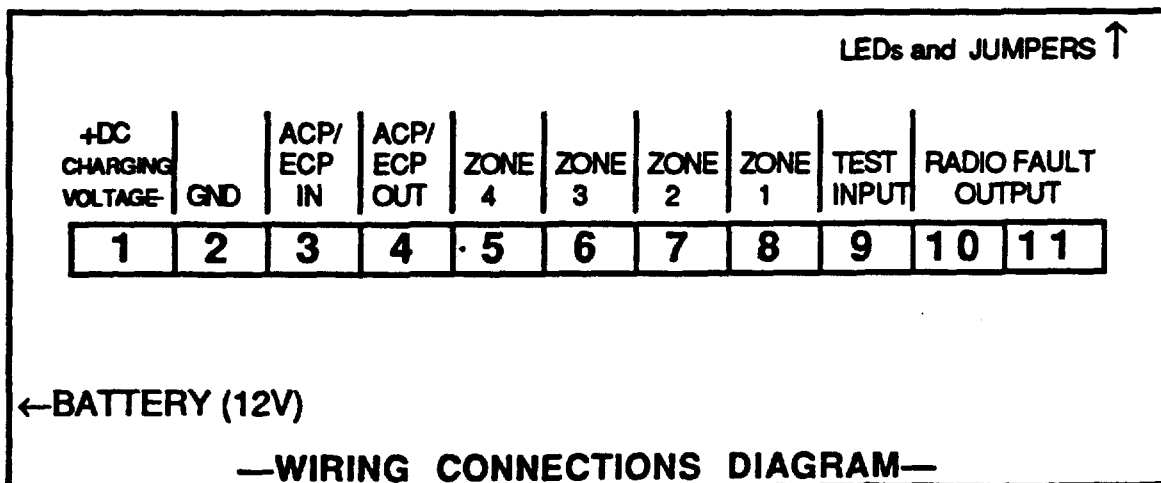
- The alarm and power wires can be brought into the transmitter thru the base, or thru the cover. If they are to be brought thru the cover, cut out the optional wire entry port. Connect the positive and negative power wires to TB 1-1 and TB 1-2, respectively. Install the battery into the battery holder, but do not plug in the battery cable yet.

MOUNTING

- The 7720 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 antenna kit, the 7720 can be mounted to a vertical surface such as a wall or beam. After determining the best location for strong radio communication with the Master Station network using the FAST Tool, mount the 7720 to a horizontal or vertical surface, depending on the antenna used. Be sure to allow access to the programming port when mounting.

POWERING UP:

- After all wiring is complete and the unit is mounted, apply power to the control panel, then plug the 7720'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. If the 7720 has been programmed, the LEDs will begin to flash according to their functions. If the 7720 has not been programmed, the LEDs will flash in unison indefinitely. **Important:** The panel must be powered before the battery is plugged in.



PROGRAMMING THE 7720

USING A 7720P PROGRAMMING TOOL

The 7720P Programming Tool is powered by the 7720, and connects to the telephone connector on the 7720 PC Board. Set the 7720 ACP/ECP jumper to the ECP position.

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 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]: Resets EEPROM defaults*
↓/↑	[↓]: 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. Must press again for each SHIFT function desired.	
1/A	[1]: For entering the number 1	[A]: Used for entering C.S. ID number
2/B	[2]: For entering the number 2	[B]: Used for entering C.S. ID number
3/C	[3]: For entering the number 3	[C]: Used for entering C.S. ID number
4/D	[4]: For entering the number 4	[D]: Used for entering C.S. ID number
5/E	[5]: For entering the number 5	[E]: Used for entering C.S. ID number
6/F	[6]: For entering the number 6	[F]: Used for C.S. ID & FAST mode
7/S	[7]: For entering the number 7	[S]: Press to display diagnostic status
8/T	[8]: For entering the number 8	[T]: Press to send TEST messages
9/X	[9]: For entering the number 9	[X]: Press to reset the 7720
/SPACE	[]: Not used with 7720	[SPACE]: Not used with 7720
0	[0]: For entering the number 0	No SHIFT function
#/ENTER	[#/ENTER]: Press to accept variable entries	No SHIFT function

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

After connecting the 7720P cable, power up the 7720 (apply power to the control panel and plug in the battery connector).

Enter programming mode by pressing [ENTER] during the initial power up period (while LEDs are flashing consecutively).

Pressing SHIFT-X will reset the 7720 to its initial power up phase if it has already entered normal mode. The following will be displayed:

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Press [ENTER] again to begin the programming session. 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.). For numerical responses, press [ENTER] to complete the entry and proceed to 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.

SUBSCRIBER INFORMATION

- 1. Enter the 4-digit customer account number, 0001-9999.
- 2. Enter Y for odd flag (bit value 1), N for even system flag (bit value 0).
- 3. Status reporting is always enabled. Enter the desired interval as follows:
Y = Short form: every 15 minutes (6-hour window for COM-FAIL report)
N = Short form: every hour (standard 24 hour reporting for COM-FAIL)

AlarmNet SYSTEM USERS (Private System users skip to #6)

- 4. Enter Y if an AlarmNet installation. Enter N for Private System users (skip to option 6).
- 5. Enter the primary central station's system ID number, 1-7F. Not applicable for Private System users.

PRIVATE SYSTEM USERS (AlarmNet users skip to #8)

- 6. Enter the Private System routing code, 0-7. Not applicable for AlarmNet users.
- 7. Enter the Private System channel number, 1-F. Not applicable for AlarmNet users.

INVERTED ZONE SELECTION

- 8. For questions 8-12, press Y to invert the input signal for desired zones 1-4 & Test zone (question 12).
- 9. Press N for normal input signal.
- 10.
- 11.
- 12.
- 13. Press Y if fail-safe mode is desired. In this mode, the fault relay is normally energized and will deenergize in the event of a radio fault. Note that fail-safe mode draws slightly more standby current. See the JUMPER SETTINGS section for setting the relay output.

DELAY ZONE SELECTION

14. Delay Z1 (Y/N)

For questions 14-17, press Y for 16 second reporting delay for desired zones 1-4.

15. Delay Z2 (Y/N)

Press N for 250 ms reporting delay.

16. Delay Z3 (Y/N)

17. Delay Z4 (Y/N)

RESTORAL REPORTING ZONE SELECTION

18. Rest. Z1 (Y/N)

For questions 18-22, press Y to selectively enable restoral reporting for desired zones 1-4 & Tamper zone.

19. Rest. Z2 (Y/N)

Press N to disable restoral reporting.

20. Rest. Z3 (Y/N)

21. Rest. Z4 (Y/N)

22. Rest. Tamp (Y/N)

A "yes" entry has no affect if no tamper zone number is entered in #25.

OPEN/CLOSE, TELCO & TAMPER ZONE SELECTION

23. O/C Zone

Enter the open/close reporting zone number, 1-4. A [0] entry disables open/close reporting.

24. 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.

25. Tamper zone

Enter tamper zone, 5-8. A [0] entry disables tamper detection.

26. HS Ant. Tst (Y/N)

Press Y for 135 second interval antenna test. Press N if no antenna test is desired.

27. Fit Latched(Y/N)

Press Y if radio fault line is to be latched high upon detection of transmission error. Press N if a momentary closure upon detection of transmission error is desired.

REDUNDANT CENTRAL STATION REPORTING

28. Press Y if redundant reporting to a second central station is desired. Press N if not desired (skip to end).
29. For questions 29-35, press Y to selectively enable reporting to second central station for zones 1-4, test point zone, tamper and system status. Enter N to disable reporting.
30.
31.
32.
33.
34.
35.
36. Enter the 4-digit customer account number for the second central station, 0001-9999.
37. Enter the second central station's system ID number, 1-7F.

EXITING PROGRAM MODE

When the last question is answered, the following will be displayed:

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.

NOTE: 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 exit program mode, press N in response to the REVIEW? question. The 7720P will display:

The Programming Tool can then be disconnected, or can be used to trigger test messages. Refer to the TESTING THE 7720 section.

ANTENNA MOUNTING

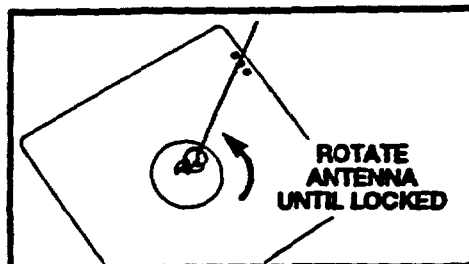
SELECTING A SITE (FAST MODE)

The 7720 must be mounted indoors. If an outdoor location for the antenna is required, or some other antenna location separate from the transmitter, then follow the instructions for mounting the optional antenna connector kit. Determining the antenna location that provides optimum radio communication with the master station network can be done with either the 7915 FAST Tool, or by using FAST Mode ("F" command) in conjunction with a 7920 series receiver (version 7 or higher). FAST Mode triggers a diagnostic message that can be decoded by the 7920 and displayed on an appropriate terminal.

STANDARD WIRE ANTENNA

After programming, connect the remaining wires as required by the installation. If desired, a preliminary test of the radio can be done at this time, using the supplied antenna. Insert the antenna into the antenna jack, and follow the instructions for testing. Remove the antenna before installing the cover.

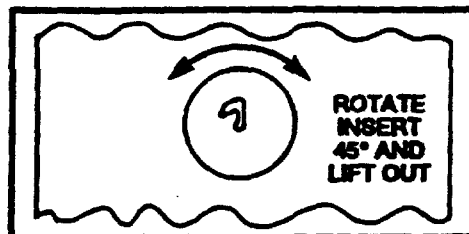
To install the supplied antenna, first replace the radio's cover. Push the antenna into the antenna receptacle until it bottoms out. The antenna should be vertical and straight. Rotate the antenna until it snaps into the locked position. Do not bend the antenna!



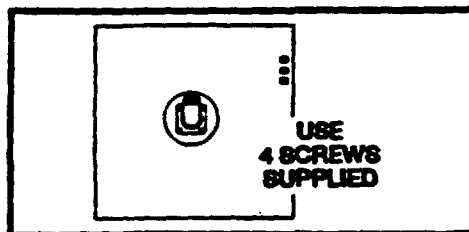
OPTIONAL ANTENNA CONNECTOR KIT (NO. 7720ANT)

The 7720ANT antenna kit consists of a right angle type "N" adapter connector, and all the hardware required to mount the connector. This should be used any time the FAST Tool or other conditions dictate the use of a remote antenna location, or it is desired to use a 7625 or 7625-3 antenna directly on the radio.

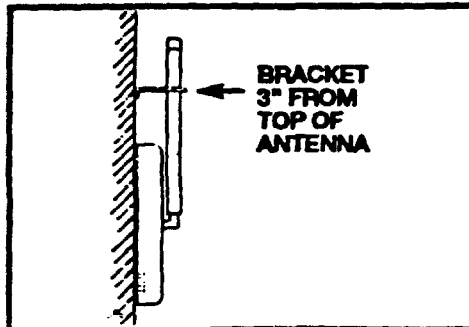
To install the type "N" connector, first replace the radio's cover. Remove the plastic insert from the cover by rotating it 45° counter-clockwise and lifting out. Replace with the insert provided with the antenna kit.



The connector may be installed in any of four positions. Install so that the antenna is vertical—either pointing up or down, not to the side, when the transmitter is mounted. Mount the connector using the 4 screws provided.



If a 7625 or 7625-3 antenna is to be mounted directly, then mount the supplied plastic bracket to the wall about 3 inches from the top of the antenna. If the antenna is to be mounted in a remote location, use Ademco-supplied antenna cables. Do not attempt to make antenna cables yourself, and do not under any condition try to splice them!



INSTALLATION NOTICE

for 7720 SUBSCRIBER RADIO

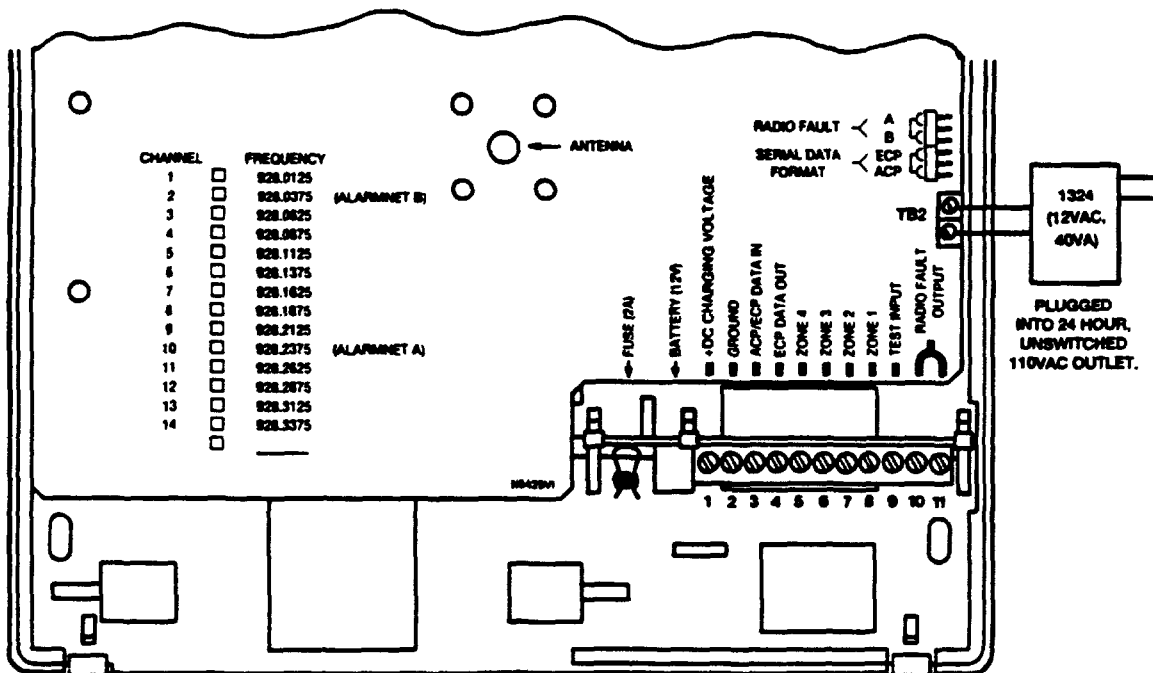
BATTERY CHARGING VOLTAGE

The 7720 is powered from its internal battery. This battery can be charged from a control panel whose output voltage (from either its auxiliary output or directly from its battery) is between 14.0 and 14.2VDC, or can be charged from its own internal charging circuit when used with an Ademco 1324 (12VAC, 40VA) Wall Transformer.

The 7720's charging input will draw approximately 50mA continuous and 400mA peak current. If the control panel being used cannot supply the required voltage and current, a 1324 Transformer must be used in order to guarantee battery life and radio performance.

If using the 1324 Wall Transformer, a suitable 110VAC receptacle must be located. The receptacle's circuit should not be switchable or be in a location where it is likely to be tampered with. Make connections using 20 gauge or larger wire, and connect to the 7720's TB2 terminals, located on the edge of the radio between TB1 and the programming jumpers (see diagram below).

If the control panel's output voltage is suitable for powering the 7720, the panel's output voltage connections can be made directly to the 7720 in accordance with the 7720's Installation Instructions.



ADEMCO

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TESTING THE 7720

RADIO TRANSMISSION TEST

The 7720 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.

For AlarmNet users, the test message will cause the master station network to send a "Field Triggered Diagnostic Message" to the central station. This message provides network information as well as signal strength and frequency characteristics of the transmitted messages. Refer to the AlarmNet User's Guide for detailed information concerning these messages. The test message can be transmitted in any of three ways.

1) The TEST INPUT (terminal 9) of the 7720 can be triggered with a voltage trigger, which will initiate a 6-8 minute cycle (total of 60 messages, repeated about once every 3 seconds) of test message transmissions. Note that once this cycle has been initiated by a voltage trigger, it can be turned off by using the T command described in (2). Otherwise, the messages will not stop until the end of the cycle.

2) A 7720P Programming Tool can be used, if connected to the programming connector of the 7720. To begin a cycle of test message transmissions, press SHIFT-8 (T command). This is a toggle function. To end the transmissions before the end of the cycle, simply enter the command again.

3) A computer terminal can be used, if connected to the programming connector of the 7720. To begin a cycle of test message transmissions, press SHIFT-T (T command). This is a toggle function. To end the transmissions before the end of the cycle, simply repeat the command.

SYSTEM TEST

Trigger an alarm by any convenient means and observe the LED indicators on the radio. The yellow LED should light solidly, followed by the green LED flashing every 1-3 seconds at first, then slowing during the 6 minute cycle. This indicates that an alarm message has been received at the radio (yellow), and the transmitter has been activated (green). The red LED should not light.

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

If at any time the red LED lights, a radio fault has been detected. This could be caused by a faulty antenna connection, or might be caused by low internal battery voltage, or a failure in the radio's power circuits (see LED FLASH PATTERNS on page 3). The 7720P can display diagnostic data ("S" command) related to the status of these conditions. See Status Command section.

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

STATUS "S" COMMAND

The status of the 7720 can be viewed on either a 7720P Programming Tool or an appropriate terminal when either device is connected to the serial port of the 7720. The status display includes zone input status, test terminal status, tamper status, battery condition, charging voltage status and radio fault status. The 2-line display takes the following form:

```
1234TeTmBaDcFIt
5555 5 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
```

Te Test terminal input codes:

```
1 Currently triggered but test
message cycle is pending due
to transmission of higher
priority message (alarm).
5 Normal (not triggered).
6 Currently triggered & message
cycle either in progress or
completed.
```

Tm	Tamper status follows High Speed Format codes above.	Flt	Represents Radio Faults. See LED flash patterns too.
Ba	Represents battery condition: + Battery voltage acceptable - Battery voltage below 11.2V \pm 5%		1 Internal radio fault*
Dc	Represents charging voltage: + DC charging voltage OK - DC charging voltage bad & reported		2 RF power detected without a valid transmission*.
V	DC charging voltage bad, not reported (reporting window not expired)		3 Forward power never attained**
A	DC charging voltage restored, not reported as restored		4 RF power not sustained throughout transmission**.
			5 VSWR bad (check antenna, connections and cable)

* Codes 1 & 2 require factory service.
** Codes 3 & 4 could be the result of a bad or discharged battery. If battery is found to be OK, the unit requires factory service.

SPECIAL NOTES FOR U.L. INSTALLATIONS

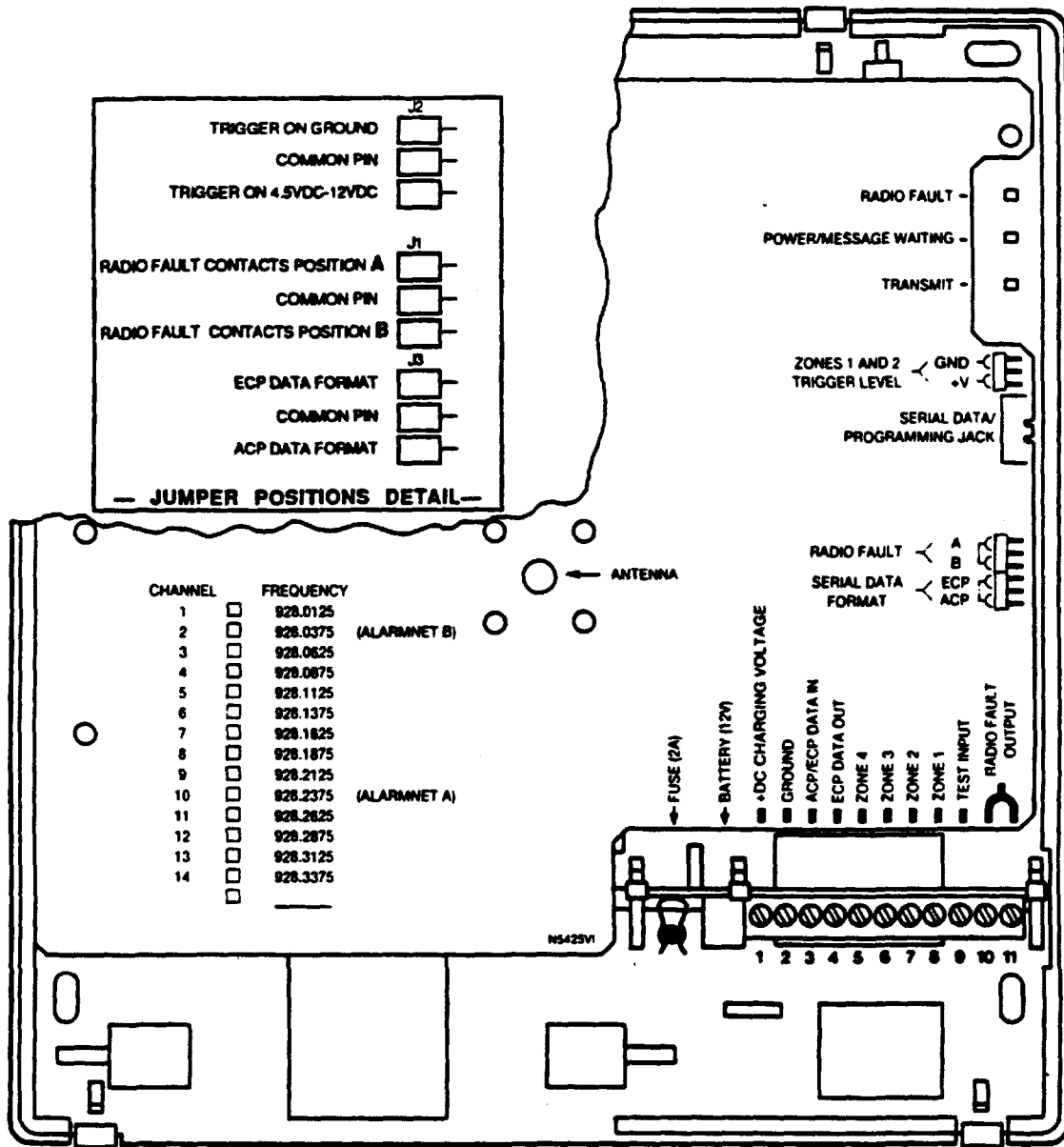
The 7720 Remote Subscriber Unit can be used in systems Listed by Underwriter's Laboratories for Grade A and Grade B Central Station Mercantile Burglary. The following additional requirements must be observed for the installation of subscriber remote equipment in such systems:

1. Installation must be in accordance with the National Electrical code and UL611.
2. The 7720 is intended to be connected to dry contact and voltage trigger outputs of a Listed control unit.
3. The 7720 must be programmed as follows:
 - a) Enable Restoral signals
 - b) Enable high-security self-checking (programming question 26). The default is once every 135 seconds.
4. **FOR GRADE A INSTALLATIONS:** A UL Listed communicator must monitor the radio fault output (terminals 10 & 11) of the 7720. A No. 659EN Telco Line Monitor's output should be connected to an input zone of the 7720 unit. Premises openings and closings should be sent via the communicator.
5. **FOR GRADE B INSTALLATIONS:** All wiring between the 7720 and the control panel must be enclosed in rigid conduit (outside walls) or flexible conduit (inside walls or above ceilings) up to the room in which the transmitter is located. The door and any windows in this room should be protected by a UL Listed intrusion detection device which is connected to a zone of the 7720.

SPECIFICATIONS

Dimensions:	8.5" x 9.5" x 1.7".
Power:	14.0-14.2VDC, supplied from battery in alarm panel. Voltages below 14VDC will result in reduced battery life for the 7720.
Current drain:	Normal standby = 50 mA (with charged battery) Maximum = 500 mA
Fuse:	3 A (ADEMCO No. 90-12)
Input triggering levels:	Zones 1 & 2: selectable 0 volts or 4.5 to 12 volts into 10k ohms Zones 3 and 4: 4.5 to 12 volts into 10k ohms
RF power output:	5 watts nominal
Frequency band:	928.0125 MHz to 928.3375 MHz, 25 KHz channels
Frequency accuracy:	\pm 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 DIAGRAM



—WIRING CONNECTIONS DETAIL—

+DC CHARGING VOLTAGE	GND	ACP/ECP IN	ACP/ECP OUT	ZONE 4	ZONE 3	ZONE 2	ZONE 1	TEST INPUT	RADIO FAULT OUTPUT
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩ ⑪

**"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 Subpart J of 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. Stock No. 004-900-00450-7.

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. In addition, one-way radio communication devices receive no acknowledgment from a master receiving station that their signals are being successfully received. Signals transmitted may clash with those transmitted from other systems. While statistical estimates predict successful operation, if the guidelines in the system manuals are followed, the operation of this system is still probabilistic in nature and may be subject to random signal failures.
- 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.

ADEMCO LIMITED WARRANTY

Alarm Device Manufacturing Company, a Division of Pittway Corporation, and its divisions, subsidiaries and affiliates ("Seller"), 165 Eileen Way, Syosset, New York 11791, warrants its products to be in conformance with its own plans and specifications and to be free from defects in materials and workmanship under normal use and service for 18 months from the date stamp control on the product or, for products not having an Ademco date stamp, for 12 months from date of original purchase unless the installation instructions or catalog sets forth a shorter period, in which case the shorter period shall apply. Seller's obligation shall be limited to repairing or replacing, at its option, free of charge for materials or labor, any product which is proved not in compliance with Seller's specifications or proves defective in materials or workmanship under normal use and service. Seller shall have no obligation under this Limited Warranty or otherwise if the product is altered or improperly repaired or serviced by anyone other than Ademco factory service. For warranty service, return product transportation prepaid, to Ademco Factory Service, 165 Eileen Way, Syosset, New York 11791.

THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, OF MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. IN NO CASE SHALL SELLER BE LIABLE TO ANYONE FOR ANY CONSEQUENTIAL OR INCIDENTAL DAMAGES FOR BREACH OF THIS OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, OR UPON ANY OTHER BASIS OF LIABILITY WHATSOEVER, EVEN IF THE LOSS OR DAMAGE IS CAUSED BY THE SELLER'S OWN NEGLIGENCE OR FAULT.

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.

ADEMCO

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