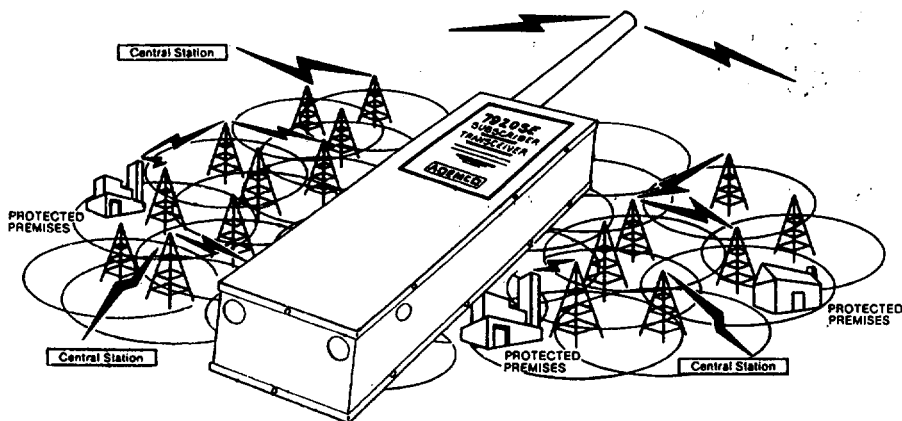# 7920SE TRANSCEIVER

INSTALLATION INSTRUCTIONS

MARGIN LINES INDICATE PRINCIPAL CHANGES IN THIS ISSUE

GENERAL INFORMATION

NOTE: This Product Is Approved By The New York City Board Of Standards And Appeals Under Calendar Number 865-89-SA.

The 7920SE Transceiver is a self-contained, two-way polled radio, intended for use with an ADEMCO Long Range Radio security communication network. The 7920SE serves as a Subscriber's link to the radio security network, and is comparable to a digital communicator used in a system which communicates with a Central Monitoring Station by telephone line. The 7920SE can monitor 6 traditional channel trigger inputs.

NOTE: THESE INSTRUCTIONS ARE INTENDED FOR UNITS WITH REVISION 7.83 AND HIGHER SOFTWARE.

TABLE OF CONTENTS

GENERAL INSTALLATION PROCEDURES

To install the 7920SE, the following tasks must be performed:

1. Program the unit's system parameters using a standard or laptop computer terminal, or 7720P Programming Tool with 7720RS Terminal Adapter.
2. Determine a suitable antenna location using the FAST mode of operation.
2a. Verify through TAC Center, 800-222-6525.
3. Install the optional tamper switches, if desired.
4. Mount the unit and antenna.
5. Complete wire connections.
6. Test the system.

SYSTEM FEATURES

WIRELESS REPORTING

Alarm and status messages are transmitted to the security network by radio, providing faster and more secure reporting than that typically achieved by conventional telephone line reporting.

COMPATIBILITY

The 7920SE is compatible with installations using standard alarm control panels with alarm trigger outputs. The 7920SE may be used with digital communicators on the same system, each serving as a backup to the other. (Use an Ademco No. 659EN Line Fault Monitor connected to a 7920SE telco fault input to report a line cut as a system backup to the control/communicator). The 7920SE can also serve as a stand-alone alarm reporting device in applications where remote sensors are continuously armed.

PROGRAMMABLE FEATURES

The 7920SE utilizes EEPROM (Electrically Erasable PROM) technology, which allows the 7920SE to be programmed with a computer terminal. 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, and auxiliary control output programming.

CHANNEL TRIGGER INPUTS

The 7920SE provides monitoring of up to 6 traditional channel triggers, with any channel capable of being programmed for triggering on inverted inputs. Channel inputs are activated by 4.5-12VDC voltage inputs, or by the application or removal of dry contact closures.

CHASSIS TAMPER PROTECTION

For UL "AA" installations, chassis tamper switches (Ademco No. 945WH or No. 945BR) must be added to trigger an alarm whenever the chassis cover is removed, thus protecting against unauthorized access to the 7920SE.

BUILT-IN LEDs

The 7920SE Interface Board has four LED indicators which indicate message reception, message transmission, messages waiting to be transmitted, and the execution of a control function. The No.7920SE also provides output terminals for connection to remote LEDs. The remote LED outputs can also be programmed to serve as Central Station controlled outputs.

POWER SUPPLY

The 7920SE features a self-contained power supply, which can be provided by an Ademco No. 1361 transformer plugged into a 120VAC, 60 Hz, 0.5 amp continuous AC power source. A battery provides backup operating power in the event of a primary power failure.

SYSTEM FEATURES

LOW BATTERY MONITORING

The 7920SE tests the battery under unloaded conditions every 2 minutes, and tests under loaded conditions during each periodic transmission. The system sends a low battery message if the battery fails the loaded test (battery level drops below 11.2V $\pm5\%$), even if AC power is still present. In addition, the relative condition of the battery can be displayed on a computer terminal or 7720P connected to the 7920SE when displaying the NODE TABLE (see ADVANCED DIAGNOSTICS section).

HIGH SECURITY SELF-CHECK

The high security test verifies that the antenna cable is intact by sensing reflected power levels (VSWR test) of periodically transmitted signals, and serves as antenna tamper protection. The test is performed automatically at regular intervals and when the 7920SE transmits messages. Failure of this test results in a fault signal (low output) at the "Radio OK" output terminal. The condition of the antenna can be displayed on a laptop computer or 7720P connected to the 7920SE as part of the NODE TABLE display (see ADVANCED DIAGNOSTICS section).

TELCO LINE FAULT INDICATOR

When selected, this feature will report the failure of a monitored telephone line to the Central Station. For zone trigger operation, any of the 6 input channels may be designated the Telco fault input.

SELF DIAGNOSING TRANSCEIVER

The 7920SE has self-checking features which provide central station notification in the event of a radio failure. Should a continuous transmit malfunction occur, the 7920SE will notify the Master Stations with a special alarm message. Immediate action should then be taken to remedy the fault. The "High Security Self-Check" feature (described separately) supervises non-transmit functions and signals faults at terminal 7 of TB2 (Radio OK output), which can be used to locally enunciate the fault or to communicate the condition to the central station via phone link.

Receiver operation is checked by two programmable timeout periods: Receiver Trouble Timeout and Poll Timeout. The "Receiver Trouble Timeout" triggers a fault at the "Radio OK" terminal (TB2-7) if the receiver does not hear normal network radio activity within a programmable time period. The "Poll Timeout" will transmit a poll timeout message to the network if the Transceiver is not polled within a programmable time period. In addition, the Master Stations continuously collect diagnostic data from each Subscriber in the network, and will notify the Central Station if a particular 7920SE is malfunctioning.

FUNCTIONAL DESCRIPTION

GENERAL OPERATION

The 7920SE is a digitally synthesized FM transceiver that converts conventional alarm system messages to radio messages, enabling an alarm control panel, or control/communicator, to communicate with the Central Station via the radio security network Master Stations. Once a radio communications channel is programmed, the 7920SE automatically and continuously fine tunes its frequency to that of the security network Master Stations. This frequency is then stored in EEPROM and will be the initial frequency of the 7920SE upon power-up and reset.

The 7920SE utilizes a No. 7625-3dB antenna which is an omni-directional antenna, that may be mounted indoors, connected directly to the transceiver, or may be mounted outdoors, using pre-assembled coaxial cable available from Ademco. (Choice of cable lengths: 5 feet, 12 feet, or 25 feet).

COMMUNICATION

The network communication scheme is based on a polling process, whereby the network Master Stations regularly poll each of the No.7920SE Transceivers entered in the network database, and will alert the central station if a particular Transceiver has not acknowledged repeated poll messages within a Master Station programmable time period. This, in addition to the Transceiver's "poll timeout" feature, which alerts the Master Station if it has not received a poll within a programmable time period, provides full Transceiver supervision. To further ensure that the Transceivers are periodically heard from, each Transceiver regularly transmits asynchronous "I'm OK" messages to the Master Stations.

When the 7920SE receives an alarm from the alarm control panel (zone trigger or serial data), it first waits a brief period of time (6-12 seconds) for a network poll. If the 7920SE does not receive a poll within that time, it transmits "alarm waiting" messages, waiting a brief period between transmissions to receive network acknowledgment. When the transceiver is polled, or the Master Station acknowledges the "alarm waiting" status of the 7920SE, the Master Station opens a time slot for the 7920SE to transmit the actual alarm message. When the alarm message has been transmitted, it is relayed through the Master Station network to the Central Station, where it is processed by the No. 685 Digital Receiver. The 7920SE then reports the alarm as a previously reported event in subsequent polls, for as long as the alarm condition exists.

OLD ALARM TIMEOUT

The Transceiver will normally report all asyncronously transmitted alarms as new events when it is eventually polled by the network. If desired, the 7920SE can be programmed to report the asyncronously transmitted alarm as a previously reported event after a set time period (10 minutes - 42 hours).

FUNCTIONAL DESCRIPTION

LED INDICATORS

There are four LED indicators, located on the Interface Board (located beneath the chassis's removable cover), which indicate the following functions of the 7920SE:

```
MW   TX   RX   CTRL   | NO. 90-21 |
(Y)  (R)  (G)  (Y)    |_____|
```

LED INDICATORS

Message Waiting (MW):   Yellow LED lights solid when the 7920SE has an alarm message to transmit to the Master Stations.

Transmitting (TX):   Red LED flashes when the 7920SE is transmitting a message, either alarm or status, to the Master Stations. When an RF fault occurs, the Red LED flashes three times.

Receiving (RX):   Green LED flashes when the 7920SE is receiving messages from the Master Stations.

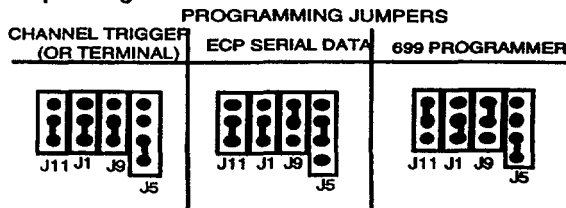**Control (CTRL):**   Yellow LED flashes when a downlink command is received. *

Upon initial power-up, the MW, TX & RX LEDs will blink for 8 seconds, after which they will begin flashing in accordance with their functions. These LEDs should be observed to verify proper communication with the security radio network (the red and green LEDs should flash relatively frequently). Provision is also made for connection to remote LEDs, if desired. These remote LED outputs can also be used as auxiliary control outputs. **

**Note that if more than one control output is being used, the LEDs will NOT flash according to their radio function described above. They will light in accordance with their Control Output programming. *

*CAUTION: When using control outputs, note that transceiver power resets (as when entering Program Mode) can affect the state of any device connected to the control outputs, and that appropriate measures such as time delays, should be taken to avoid undesirable results due to the device's change of state.

INTERFACE BOARD JUMPERS

The Interface Board has 4 Programming jumpers (J11, J1, J9, J5) which are used to set the operating mode of the 7920SE as follows:

PROGRAMMING JUMPERS

CHANNEL TRIGGER (OR TERMINAL)	ECP SERIAL DATA	699 PROGRAMMER
J11 J1 J9 / J5	J11 J1 J9 / J5	J11 J1 J9 / J5

PROGRAMMING THE 7920SE

NOTE: These programming instructions apply only to units with software version 7.83 or higher.

INTRODUCTION

IMPORTANT: If upgrading the software to version 7.02 or higher, refer to Detail A on the COVER REMOVED Pictorial Diagram at the end of this manual for resistor jumping information.

Before installing the 7920SE, the unit must be programmed by using either a 7720P Programming Tool (with 7720RS Terminal Adapter), No. 699 programmer with 695-79 programming cartridge (see No. 695-79 Installation Instructions for procedures), or by using a standard or laptop ASCII, RS232C computer terminal. Programming is accomplished by answering questions to two sets of programming menus: Central Station Setup Menu and Subscriber Setup Menu. Ideally, the Central Station parameters should be programmed by an authorized Central Station representative *prior* to the unit's delivery to the installation site.

CONNECTING A 7720P PROGRAMMING TOOL

If using the 7720P to program the 7920SE, a 7720RS Terminal Adapter must also be used:

a. Connect the cable from the 7720P to the 7720P jack on the 7720RS Terminal Adapter. Connect another cable from the 7920SE jack on the Terminal Adapter to the 7920SE's programming jack. If the 7920SE is already powered up, **hold down the ENTER [#] key while making the connection to the 7920SE.** Holding down the ENTER [#] key sets the baud rate to 9600, which is required when using the 7720P with the 7920SE.

b. Power up the 7920SE (if not previously powered up), but **hold down the ENTER [#] key while power is being applied.** After a few moments the following prompt should appear: 7920 PROGRAMMER (note that this message may be replaced by incoming data messages). If 7920SE was previously powered up, press SHIFT-X to reset the system.

CONNECTING A COMPUTER TERMINAL OR LAPTOP COMPUTER

1. Set the computer terminal to the following parameters:

Auto Return	Disabled
Baud rate	9600
Parity	none
Data bits	8
Stop bits	1

Be sure the Interface Board jumpers are set for channel trigger operation when programming the 7920SE.

Connector: RJ11 telephone plug (male) connected to a DB25 (standard computer) or DB9 (for Laptop computers) wired as follows:

WIRING TABLE FOR CONNECTING THE 7920SE TO A COMPUTER TERMINAL

7920SE TRANS. (RJ11)	STANDARD COMPUTER (DB25)	LAPTOP COMPUTER (DB9)	COLOR	FUNCTION
1	DO NOT USE	DO NOT USE	Yellow	DO NOT USE
2	7	5	Green	Circuit Ground
3	3	2	Red	Receive Data
4	2	3	Black	Transmit Data

2. Remove the Interface Board cover from the 7920SE and connect the RJ11 plug from the computer terminal to the J2 telephone jack. Turn on the computer.

PROGRAMMING THE 7920SE

USING A 7720P PROGRAMMING TOOL

```
7720P(Y/N)█
```

The 7720P is powered by the 7920SE and can be used to program the 7920SE, as well as be used to monitor FAST mode displays. Refer to the CONNECTING A 7720P paragraph for connections.

Each key of the 7720P has two functions, normal and SHIFT as follows:

KEY	NORMAL KEY FUNCTION	SHIFT KEY FUNCTION
BS/ESC	[BS]: Press to delete entry	[ESC]: Not used with 7920SE
↓/↑	[↓]: Not used with 7920SE	[↑]: Not used with 7920SE
N/Y	[N]: Press for "NO" answer. Also used to display Node Table.	[Y]: Press 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]: 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/ FAST
7/S	[7]: For entering the number 7	[S]: For entering letter S/ SETUP
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
*/SPACE	[*]: Not used with 7920SE	[SPACE]: Not used with 7920SE
0	[0]: For entering the number 0	No SHIFT function
#/ENTER must powered	[#/ENTER]: Press to accept variable entries. Note that this key be held down while powering up or connecting to previously up 7920SE. No SHIFT function	

PROGRAMMING THE 7920SE

PROGRAMMING MODE SELECTION

Power up (or "X" key reset) the 7920SE (see "POWERING THE SYSTEM" section). The red, green and yellow LEDs will blink on and off (if 4 control lines are programmed, console will beep once/second) for 8 seconds, during which time the operating mode can be selected. **Press one of the following letters to select mode:**

F = FAST mode, for determining antenna location.
S = Subscriber Setup mode, for setting user options.
C = Central Station mode, for setting Central Station settings and passwords.

Once the mode is selected, a password prompt will appear (if programmed). If a password is not assigned, the "7720P(Y/N)" question will appear. If selection is not made within 8 seconds from power up (or reset), the unit will automatically enter normal mode. **To reset the 7920SE at any time,** press "X" (SHIFT-X for 7720P).

Once the password is accepted (if programmed), the 7920SE asks which type of computer is being used. Press SHIFT-Y if using a 7720P Programming Tool. The current settings are displayed on the second line of each programming question however.

GENERAL PROGRAMMING NOTES

To exit programming mode, press "N" in response to the "CHANGE OPT(Y/N)" question.

- For the purposes of this manual, the symbol ∎ shown in the displays, represents a flashing cursor that appears on the computer screen or 7720P display.
- Each menu displays a series of questions which are answered by pressing "Y" for yes, "N" for no, or the RETURN key for no change to the parameter. When a numerical entry is required, type the appropriate value, then press the RETURN (ENTER) key to display the next question.
- Enter zero (0) to clear previously assigned option values.
- When more than one zone is being assigned an option, type all zone numbers consecutively. Do not use any spaces or punctuation between the numbers. Unless otherwise noted, leading zeroes are *not* required in numerical entries.
- If the "4 Cntrl lines option is programmed, a beep will sound once per second for the duration of the 8 second mode selection time instead of the blinking LEDs.

PROGRAMMING THE 7920SE

PASSWORD PROTECTION
Both the Central Station setup menu and the Subscriber setup menu can be programmed for password protection, if desired, and each of these menus can be assigned a different password, which provides additional security. Passwords are programmed using the Central Station Setup Menu. Upon entering this menu (pressing "C" within 8 seconds of power up or "X" key reset), and answering the "7720P(Y/N)" question, this series of questions appears:

CS PROGRAMMING **CHNG PWRD(Y/N)▪**	Press "Y" to assign a password for either the Subscriber or Central Station menus. If "N" is pressed, the display goes directly to the current parameters display shown in the "CENTRAL STATION SETUP MENU" section. If "Y" is pressed, the following is displayed:
SELECT 1 OR 2▪	Press "1" to assign a password for the subscriber menu. Press "2" to assign a password for the central station programming menu. **NOTE:** The 7720P Programming Tool is limited to A thru F, S, T and X characters. Use a terminal or laptop if you need to use characters not available with the 7720P.
PWRD 1 ▪	Enter any four characters (**must** be four characters) and press RETURN. Note that the characters are not displayed while typing.
VERIFY ▪	Reenter the same four characters. If the new characters do not match the first entered characters, the following is displayed:
PWRD N/G ▪	The characters entered did not match the first entered characters. Enter the password characters desired and press RETURN. The VERIFY message will again be displayed.
PWRD OK **SVE NU PWRD(Y/N)** ▪	Press "Y" to install the new password. Press "N" if the entry is to be discarded. The screen displays:
NU PWRD DISCRD ▪	When password programming is completed, the screen displays the current system parameters with the CHNG OPT (Y/N) question. Refer to the "CENTRAL STATION SETUP MENU" section for Central Station programming instructions.

CENTRAL STATION SETUP MENU

INTRODUCTION

Prior to installation, the 7920SE must be programmed with Central Station parameters. **To enter this programming mode, press "C"** at the terminal within 8 seconds of power-up or "X" key reset. A password prompt will appear (if previously programmed). This password must be entered correctly on the first try. If not, the unit must be powered off, then on, and the mode selection repeated. When the password is accepted, the "CHANGE PASSWORD?" question appears (described earlier). When password programming is completed (or bypassed by answering "N"), and the "7720P(Y/N)" question is displayed.

Followed by:
CENTRAL STATION SETUP PARAMETERS QUESTIONS.

CS PROGRAMMING **CHNG OPT(Y/N)█**	If changes are desired, or the unit is being programmed for the first time, press "Y", which will begin a series of questions. Press "N" when programming is complete. This will reset the unit (as if powered off/on) and allow entry into another programming mode. The unit will return to Normal mode if no entry is made within the 8 seconds.

NETWORK OPTIONS

ODD(Y/N) **(ODD)█**	Press "Y" if the security radio network is using an odd flag. "N" if the system is using an even flag.
AlarmNet(Y/N) **(ALARMNET CS#11)** **█**	Press "Y" if the subscriber is part of the AlarmNet security system. Press "N" for Private System subscribers. Note that the Subscriber Menu "VERIFY" question must be answered before the unit will operate. AlarmNet users answer the following:
CHAN A-B-C-D-E **(A)█**	Enter the assigned channel designation. Selecting A, B, C or D will set the 7920SE to the standard AlarmNet channel combinations. Selecting "E" will allow the user to enter channels of operation manually. After selecting "E", the user will be prompted for Primary and Secondary channel numbers. If "E" is selected, an AlarmNet Representative will inform you on the proper channel selections. If "E" is entered, answer the following:
PRI CHAN # **█**	Enter the 2-digit Primary Channel # after this prompt.

SEC CHAN #
■

Enter the 2-digit Secondary channel # after this prompt.

NOTE: If there is no secondary AlarmNet channel available in your service area, the Secondary channel # must be set to the same as the Primary channel #.

CS#(01-7F)
(11)■

Enter the assigned central station ID number. Use Leading zeroes.

Chnl #(1-14)■

For Private System users, enter the assigned channel number. This message does not appear for AlarmNet users.

SUPERVISORY OPTIONS

RxT/O(200-65533)
(600)Y/N■

Press "Y" if the 7920SE is to signal a fault at the "Radio OK" terminal (TB2-7) if network messages are not heard within a programmed time period, indicating a possible receiver problem. Enter the number of seconds to elapse without hearing network messages, after which time a fault is generated (default = 600 seconds). To convert hours to seconds, simply multiply the seconds by 3600. (Ex. 8 hours = 8 X 3600 or 28,800 seconds)

Old Alr (1-255)
(1x10)Y/N■

Press "Y" if the 7920SE is to clear asyncronously transmitted alarms after a programmed timeout period. Enter the timeout period after which the 7920SE is to clear asyncronously transmitted alarms. Multiply the entered amount by 10 minutes for the actual time period. If this option is not programmed, the 7920SE will report the asyncronously transmitted alarm as a new event the next time it is polled, regardless of the actual time elapsed since the original alarm.

Poll-T/O(5-255)Y/N
(30)Y/N■

Press "Y" if a "Poll Timeout" report is desired. This message indicates that the unit has not been polled by the network within a programmed time period and takes the form: 5515 5555 6. Enter the number of minutes to elapse without a poll, after which time the unit sends the Poll Timeout alarm (default = 30 minutes).

Flt Latched (Y/N)
(LATCHED)■

Press "Y" if the fault output to the "Radio OK" terminal (pin 7) is to remain latched low. Pressing "N" results in a momentary ("PULSE") low trigger on faults. When this question is answered, the display again lists all system parameters (unless using 7720P) as shown at the beginning of this section.

SUBSCRIBER SETUP MENU

IMPORTANT! Be sure that the Central Station setup parameters have been programmed (see Central Station Setup Menu) before proceeding with these procedures. The unit will not operate otherwise.

To enter the Subscriber Setup Menu, press "S" within 8 seconds of power-up. When "S" is selected, a password prompt will appear (if programmed). The password must be entered correctly on the first try. If not, the unit must be powered off, then on again, and the mode selection procedure repeated. When the password is accepted, the question "7720P (Y/N)" will appear. Press "Y" or "N" according to the terminal being used.

| SUBSCRIBER PRG |
| CHNG OPT(Y/N)▌ |

Press "Y" to begin the series of Subscriber Setup questions. When all questions have been answered, the screen will again display the list of current parameters and offer the opportunity to make changes or exit the programming mode (by pressing "N"). When "Y" is pressed, the following questions appear one at a time:

SUBSCRIBER INFORMATION

| ID #(0001-9999) |
| (0525)–>▌ |

Enter the customer's four-digit ID number, using leading zeroes if required, and press RETURN.

| {CS} or {Pvt Chan} |
| VERIFIES |

This entry is used as a verification to prevent unauthorized users from altering parameters. AlarmNet users enter the Central Station ID number, Private System users enter the assigned channel number. Once the verification is accepted, this question will no longer appear, unless the central station number or private channel is changed in the central station menu, in which case this question **must** be answered before the unit will operate. An incorrect entry displays the following:

| {CS# ERROR} or {Pvt |
| Chan Error} |
| Did Not Verify |
| 7920 NOT RUN |
| Until Re-Prgd |

If this message appears, programming can still be completed, but the unit will not return to Normal mode when finished. Rather, it will display this error message again. To clear the error, the correct ID or channel number must be entered.

| Routing (0-7) |
| (0)–>▌ |

Enter the Private System routing code (if used) . Refer to the No. 7610/7910 Master Station manual for routing code information. This message does not appear for AlarmNet users.

ZONE OPTIONS

| Telco Zone (1-6) |
| (2)→∎ |

Enter the Telco fault input zone number. Do not program this zone for Open/Close option.

| Inverted Zone (1-6) |
| (NONE)→∎ |

Enter the zone number(s) for all zones which are to trigger on low inputs or relay contact openings.

| Delay Zone (1-6) |
| (NONE)→∎ |

Enter the zone numbers for which it is desired to permit a 16 second delay before reporting an alarm.

| O/C Zone |
| (NONE)→∎ |

Enter the zone number for the zone which is to report openings and closings after a 16 second delay. Do not program this zone as the Telco fault input channel. Only one zone can be an open/close zone.

| Rst Zone (1-6) |
| (123456)→∎ |

Enter the zone which are to report restored conditions. Note that the Telco Fault zone will always report a restore, and need not be programmed for this option.

| Ademco Supv |
| (NONE)→∎ |

Enter the zone numbers which have Ademco Mode supervision (an option in VECTOR 3000, for example).

CONTROL OUTPUT OPTIONS

CAUTION: When using control outputs, note that transceiver power resets (as when entering Program Mode) can affect the state of any device connected to the control outputs, and that appropriate measures, such as time delays, should be taken to avoid undesirable results due to the device's change of state.

| 4 Cntrl lines |
| (1L)Y/N∎ |

The 7920SE provides one control output terminal (TB1-2), with the option to program three additional control outputs. Press "N" if no additional control outputs are required and skip to the last question. If additional control outputs are required, press "Y". The display then asks:

IMPORTANT! If "Four Control Outputs" is selected, the LEDs WILL NOT flash according to their radio functions described earlier. They will light in accordance with their Control Output programming.

Note that if Control Outputs are used, the keyboard will beep to indicate return to Normal mode, rather than light the LEDs. If the transceiver cannot return to Normal mode (ex. a parameter set incorrectly), the keyboard will beep rapidly.

Norm hi (1-4)
∎

Control outputs are normally low but can be programmed to be normally high. Enter the control outputs which are to be at a normally high output level (refer to the Summary of Connections diagram for identifying the control output terminals). When entered, the display again lists all current parameters, as shown at the beginning of this section.

1 norm hi
(Y/N)∎

Press "Y" if the control output provided (TB1-2) is to be at a normally high output level. Press "N" if the control output is to be normally low. If this option is not required, this question can be bypassed by pressing RETURN. Note that if the "4 Cntrl lines (Y/N)" question is answered with a "Y", this question is omitted. If changing from 4 control lines back to only one (answering "N" to the "4 Cntrl Lines" question), this question **must** be answered with "Y" or "N". Pressing RETURN (instead of "Y" or "N") will retain the previously programmed control lines settings. When "Y" or "N" is pressed, the display returns to the list of current parameters (unless 7720P is used) shown at the beginning of this section.

FAST MODE OPERATION

NOTE: The 7920SE must be completely programmed before it will operate in the FAST mode.

FAST mode is used to find antenna locations that provide the strongest radio links with the network Master Stations (or Mini Stations if Mini Station mode is selected). When activated, the 7920SE operates as a signal strength indicator, and will display two lines of numbers on a computer screen or the 7720P display. The upper numbers identify the Master Stations (or Mini Stations) in the network (in hexadecimal notation) and the lower numbers indicate the signal strength at which uplink or downlink messages (depending on which display is activated; see next paragraph) are being received. Signal strength is measured on a scale of 0 to 10 (10 is displayed as hexadecimal A), where 10 is the strongest, and 0 is the minimum receivable signal strength. By moving the antenna to various sites, and observing these displays, the Installer can easily determine the best location for mounting the antenna.

To use FAST mode, attach the 7625 antenna to one end of an antenna extension cable, and connect the other end of the cable to the chassis antenna connector. Connect a computer terminal or 7720P Programming Tool as described in the PROGRAMMING section. Apply power to the Transceiver, and press "F" within 8 seconds of power up or "X" key reset. The following will be displayed:

| 7720P(Y/N)∎ | Press **Y** if using a 7720P. Press **N** if using a terminal or laptop computer. The following will then be displayed. |

Monitoring One-Way Subscribers

| 1-WAY FAST (Y/N)
∎ | The 7920SE can also be used as an antenna installation tool for one-way subscriber radios. By answering "Y" to the 1-WAY FAST (Y/N) question and entering the subscriber number for the one-way radio you wish to monitor, the 7920SE will listen and display network or FAST messages sent about that subscriber on the 7720P or computer screen. |

To listen to a specific one-way subscriber radio, press "Y", then enter the 4-digit subscriber number for the desired subscriber radio. Press "T" to begin the display. Note that the one-way radio must be in the FAST mode in order for data to be received. When activated, the data received by the 7920SE will reflect the quality of the uplink signals from that subscriber radio*.

If one-way subscriber monitoring is not desired, press "N" for this question.

Summary of FAST mode functions
•To select FAST mode, **press F** within 8 seconds of power up (LEDs flashing).
•To display uplink communication from 7920SE test messages or selected 1-way FAST messages to Master Stations, **press T** (caret mark in display).
• To display uplink communication from 7920SE test messages or selected 1-way FAST messages to Mini Stations, **press T again** (letter "M" in display).
•To return to the downlink display, **press D.**
•To exit FAST Mode, **press X.**

FAST MODE OPERATION

Uplink/Downlink Monitoring

When FAST Mode is first selected, the lower line of the display shows the signal strength at which the 7920SE is receiving **downlink** signals from the network Master Stations.

Press "T" once to monitor **uplink** communication received by **Master Stations** (displays how well the Master Stations hear the 7920SE, or selected one-way subscriber). The lower numbers on the display indicate the signal strength at which the network Master Stations are receiving the 7920SE test messages or selected one-way subscriber FAST messages*. The Master Station display is indicated by the caret mark in the upper left corner of the display (described later).

Pressing "T" again displays **uplink** communication received by network **Mini Stations** (up to 7 stations for AlarmNet networks, and up to 3 stations for Private Systems). The Mini Station display is indicated by the letter "M" instead of the caret mark in the corner of the display. Press "T" again to return to the Master Station display.

The "T" command test message transmissions end after about 5 minutes. To return to the downlink display before this time, press "D".

*NOTE: The 7920SE will not transmit any messages if 1-WAY FAST mode is selected.

FAST Mode Displays

The two-line FAST Mode display appears as follows:

^123456789ABCDEF * A7290	^0123456789ABCDE * 34A79900000A
Typical AlarmNet display	*Typical Private System display*

The caret mark in the upper left corner of the display indicates whether the display is for Master Station uplink (upward pointing caret) or downlink (downward pointing caret) messages. If monitoring Mini Stations, the letter "M" replaces the caret mark. The bouncing asterisk indicates that radio activity is being heard.

> **IMPORTANT!:** To ensure optimum communication with the network Master Stations, downlink field strength levels should consistently read 7 or higher and uplink levels should read 5 or higher.

Installer judgment should be used when determining acceptable antenna locations. Since these readings are real-time measurements, a sporadic high reading does not necessarily mean reception will always be good. Move the antenna to various locations, checking the readings each time. Allow about 20 seconds of viewing for downlink signals and about 30 or more seconds for uplink signals to get a more accurate display of radio activity. Mount the antenna at the location which gives the most number of consistently high readings when the 7920SE is transmitting test messages (T mode), and when receiving downlink polls from the network (D mode).

MOUNTING THE 7920SE

GENERAL INFORMATION

The 7920SE should be mounted indoors, in an area where it will be undisturbed. To facilitate system testing and to enhance its reliability, the transceiver should also be mounted in an easily accessible area. Before mounting though, it is important that the installer first examine the alarm site to verify that the radio will be able to communicate with the Master Station network. To determine the best antenna location, the FAST mode of operation is used. Refer to the FAST Mode section for instructions in its use. Once a good antenna location has been found, the antenna can be mounted. Follow the instructions below for the appropriate antenna mounting being used.

> **IMPORTANT!** Although the specifications state an operating range of 4°F to 140°F (-30°C to 60°C), it is recommended that these temperature extremes be avoided. The most appropriate installation site (one which enables long term, trouble free operation) will avoid environmental extremes and will preferably be climate controlled.

MOUNTING THE 7625 ANTENNA (AND OPTIONAL 7674 ANTENNA)

When mounting the antenna, avoid obstructions such as metal ducts, pipes, foil backed insulation, etc. as these will adversely affect transmission. The antenna may be mounted either remotely (via coaxial cable) or directly to the Transceiver. If mounted remotely, the antenna can be either indoors or outdoors.

> **IMPORTANT!** To avoid interference, the antenna should be mounted as far as possible from sources of RFI interference and other electronic equipment, whose operation might be affected by the RF energy radiated by the Transceiver. Vertical separation is more important than horizontal separation, as signal radiation is strongest in the horizontal plane. The following distances are suggested:
>
> | EQUIPMENT | DISTANCE |
> |---|---|
> | No. 5720/4280 WIRELESS RECEIVER | 20 feet |
> | PASSIVE INFRARED | 10 feet |
> | CONTROL/COMMUNICATOR | 25 feet |
> | FM & TV ANTENNA | 25 feet |
> | OTHER | Never less than 10' |

Mounting Directly to the Transceiver

1. Determine the best antenna location by using the FAST Mode procedure previously described.
2. Connect the antenna to the chassis antenna connector.
3. Mount the transceiver at the best location as determined in step 1.

Mounting Away From the Transceiver

1. Determine the best antenna location by using the FAST Mode procedure previously described.
2. Secure the Ademco No. 7670 antenna bracket to the mounting surface using #10 screws. Connect the antenna base to the connector on the bracket.

MOUNTING THE 7920SE

3. Connect the antenna to the Transceiver using 50 ohm coaxial cable. To avoid signal loss through attenuation, cable lengths should be 25 feet or less. Use only the cables and No. 7670 bracket available from Ademco. To insure the integrity of the security system, *do not* assemble your own extension cables. Order the following cable lengths:

5 feet	=	No. 7626-5
12 feet	=	No. 7626-12
25 feet	=	No. 7626-25LL

4. Tape all connections with a quality insulating tape.

5. **IMPORTANT!** With cable lengths over 25 feet, the High Security check may fail to indicate a fault if cable tampering occurs. To test if the cable is tamper protected, trigger an alarm message transmission (after first properly wiring and powering unit) and monitor the "Radio OK" terminal (TB2 pin 7). It should read a voltage of about +5VDC (If it reads a low voltage while the antenna is connected, the cable is defective and should be replaced). Disconnect the antenna from the end of the cable and trigger another alarm transmission. The voltage should now be low. If it still reads high, the cable is too long. Use a shorter cable and repeat the test.

No. 7625-3dB and No. 7674 Antennas

In the event that acceptable signal strength cannot be achieved using the No. 7625 antenna, the optional No. 7625-3dB high gain or No. 7674 YAGI antenna may be used. The No. 7625-3dB adds about 3dB gain when compared to the standard No. 7625, and mounts in exactly the same way.

The No. 7674 antenna mounts outdoors in a suitable location (black element up) using the bracket supplied (the No. 7670 bracket is not required), has directional characteristics, and must be aimed in the direction which provides the strongest signal. Once this direction has been determined, the antenna should be permanently mounted in precisely the same position. Connect the antenna to the 7920SE using the shortest of the available fifty ohm coaxial cables which will reach. Tape all connections with a good quality insulating tape.
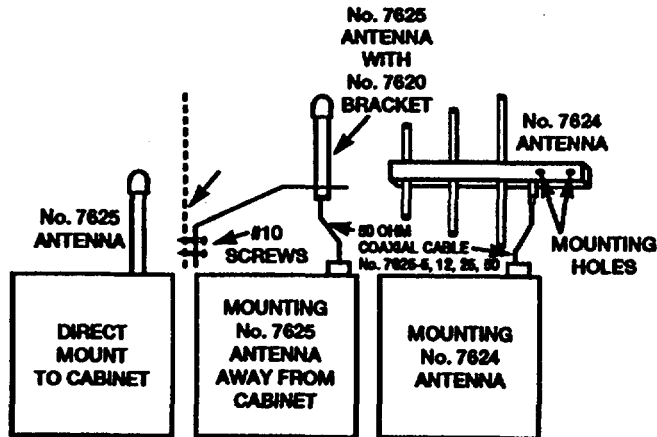
INSTALLING CHASSIS TAMPER SWITCHES

If chassis cover tamper protection is desired, mount Ademco No. 945WH or No. 945BR tamper switches to both chassis covers, wiring them in series with the "+" lead of the first switch connected to TB1-5, and the outgoing lead of the last switch connected to one of the six channel input terminals (TB2 pins 1-6). When mounting these switches, do not exceed a gap of 7/8" between the contact and the magnet. *Note that tamper protection is required for UL "AA" rated installations.*

MOUNTING THE TRANSCEIVER

The 7920SE must be mounted indoors. Secure the transceiver bracket, using #10 screws that are screwed into wall studs, not sheet rock. Failure to mount into wall studs may result in the unit dislodging from the sheet rock .

FIRE INSTALLATIONS

If the 7920SE is being used for fire alarm signaling, a separate Battery Cabinet (No. 7920SEBB) must be used and special UL considerations must be followed. Refer to the SPECIAL INSTRUCTIONS FOR UL INSTALLATIONS section and the FIRE INSTALLATIONS diagram in this manual for detailed information.

No. 7625 ANTENNA WITH No. 7620 BRACKET
No. 7624 ANTENNA
No. 7625 ANTENNA
#10 SCREWS
50 OHM COAXIAL CABLE No. 7625-5, 12, 25, 50
MOUNTING HOLES

DIRECT MOUNT TO CABINET

MOUNTING No. 7625 ANTENNA AWAY FROM CABINET

MOUNTING No. 7624 ANTENNA

WIRING THE 7920SE

Remove the Interface Board chassis cover to access the terminal blocks for wiring connections. Connect the 7920SE to the alarm control panel, routing the wires through the chassis knockout hole, as follows. Use either shielded or twisted pair 22 AWG wire.

Transformer wires to the radio must not exceed the lengths given in the following table.

Trans. Wire Size	16.5V, 40 VA Max. Number of Ft. from Radio	18V, 40VA Max Number of FT. from Radio	Radios SN Less than 3700 18v, 40VA Max Number of feed from Radio
24	25	27	8.5
22	40	44	14
20	65	71	22
18	100	109	35
16	150	164	50

NOTE: When installing the Ademco 712BNP or ADI YA-NP 712, 12V, 7AH Battery, check that the quick-disconnect connectors coming from the radio make good contact with the battery terminals. If they feel loose to the touch, remove them from the battery and squeeze them using a long nose pliers.

Zone Input Terminals

For traditional channel trigger operation, TB2 terminals 1-6 represent channels 1-6 respectively, and can be connected to the appropriate control panel zone trigger outputs. Any channel can be used as the Telco fault input. Each channel is normally at a low voltage, with faults triggered by voltage inputs (4.5-12VDC). These terminals can also be individually programmed for inverted operation (i.e. normally high input, with triggering on loss of voltage or on dry contact openings).

Refer to the SUMMARY OF CONNECTIONS Diagram at the back of this manual for wiring connections.

Remote LED/Control Output Connections (optional).

These outputs are TTL Level outputs. These outputs cannot drive relays directly. LED's maybe connected to these outputs directly. The LED Anode should connect to the output with a 390ohm resistor in series. The LED cathode should connect to circuit ground TB1-3.

POWERING THE SYSTEM

CONNECTIONS

The 7920SE has a self-contained, battery backed-up power supply, which can be provided by an Ademco No. 1361 Transformer. The battery (not supplied) is Ademco No. YA-NP712, 12VDC, 7AH battery. A battery fuse (No. 90-21, 3 amps) protects against inadvertent polarity reversal.

1. Connect the battery to the wires hanging from TB1 terminals 7 (red +) and 8 (black -).
2. Apply power and observe the Interface Card LEDs. They should blink for about 8 seconds (operating mode selection time), then flash according to their specific functions.
3. Verify that the battery and battery fuse is operational by measuring the voltage at TB1 terminals 7 & 8 (see CAUTION). It should measure +13.5 to 13.8VDC. If not, check the battery fuse (No. 90-21). Visually inspect, the battery, as the 7920SE does not provide indication for a blown battery fuse.
4. Connect wires from the transformer output to TB1 terminals 9 & 10, routing the wires through the chassis knockout hole.
5. Plug the No. 1361 transformer into a 24 hour, unswitched, continuous 120VAC, 0.5 amp power source, securing it so it cannot be inadvertently unplugged.

LOW BATTERY/AC LOSS MONITORING

The 7920SE monitors the battery voltage and will transmit Low Battery and AC Loss messages at specific voltage levels as follows:

AC Loss triggered when battery voltage is less than 12.5VDC.
AC Loss restore is reported when voltage remains above 13.0VDC for about 6 minutes.
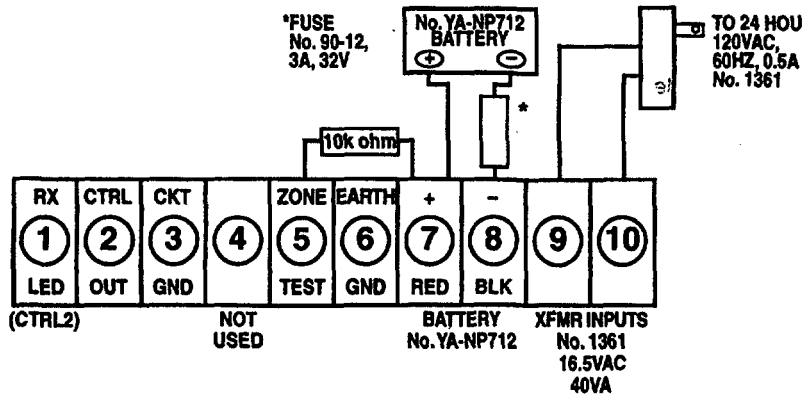Low Battery triggered when battery voltage is less than 11.5VDC.
Low Battery restore is reported when battery voltage remains above 12VDC for about 6 minutes.

WARNING!
FOR SAFETY, BE CERTAIN THERE IS NO POWER CONNECTED TO THE SYSTEM WHEN WORKING WITH THE COVER REMOVED.

SOFTWARE UPGRADE NOTE: If upgrading the software to Rev. 7.0 or higher, the message "PLEASE WAIT" will appear (if connected to a display terminal) for about 30 seconds after entering Normal or FAST mode. This is normal and will only occur the first time the unit is powered up with the new software.

POWER CONNECTIONS

RX	CTRL	CKT		ZONE	EARTH	+	–		
①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩
LED	OUT	GND		TEST	GND	RED	BLK		

(CTRL2)
NOT USED
BATTERY No.YA-NP712
XFMR INPUTS No.1361 16.5VAC 40VA

*FUSE No.90-12, 3A, 32V

No.YA-NP712 BATTERY

10k ohm

TO 24 HOU 120VAC, 60HZ, 0.5A No.1361

CAUTION: If terminal 7 is shorted to ground, damage to the radio may result. Shorting can occur if a wire that is connected to terminal 7 (i.e. for channel triggering tests) accidentally touches the chassis. Therefore, always use the zone test lead attached to terminal 5 for trigger tests.

SPECIAL INSTRUCTIONS FOR UL INSTALLATIONS

Installation must be in accordance with the National Electric Code and UL681.

IMPORTANT

The 7920SE can be used in systems listed by Underwriters Laboratories for Grade AA, Grade A and Grade BB Central Station Mercantile Burglary if the following additional requirements are observed:

GRADE AA INSTALLATIONS

A) The 7920SE with a UL Listed Digital Dialer and a No. 659EN Line Fault Monitor may be used when polling occurs at least every 6 minutes. Six minute polling can be used only when both receiver and transmitter circuits are functionally monitored*. Openings and closings may be done using the digital communicator and not via the 7920SE.

B) The 7920SE must be polled at least every 200 seconds when connected with a UL Listed Digital Dialer and a No. 659EN Line Fault Monitor when only the transmitter output is monitored*. Openings and closings may be done using the digital communicator and not via the 7920SE.

C) All covers must have Tamper switches.

D) Invert at least one zone.

E) Required signal strength (two towers Minimum).

   7 or greater on Downlinks.

   5 or greater on Uplinks.

F) Verify with TAC (AlarmNet Users)

GRADE A INSTALLATIONS

The 7920SE is used in conjunction with a UL Listed Digital Dialer and a No. 659EN Line Fault Monitor. Channel inputs must be supervised (either inverted or Ademco mode supervision required).

GRADE BB INSTALLATIONS

The 7920SE must be polled every 90 seconds without a Digital Alarm Communicator. Ringback capability is not required. Channel inputs must be supervised (either inverted or Ademco mode supervision is required).
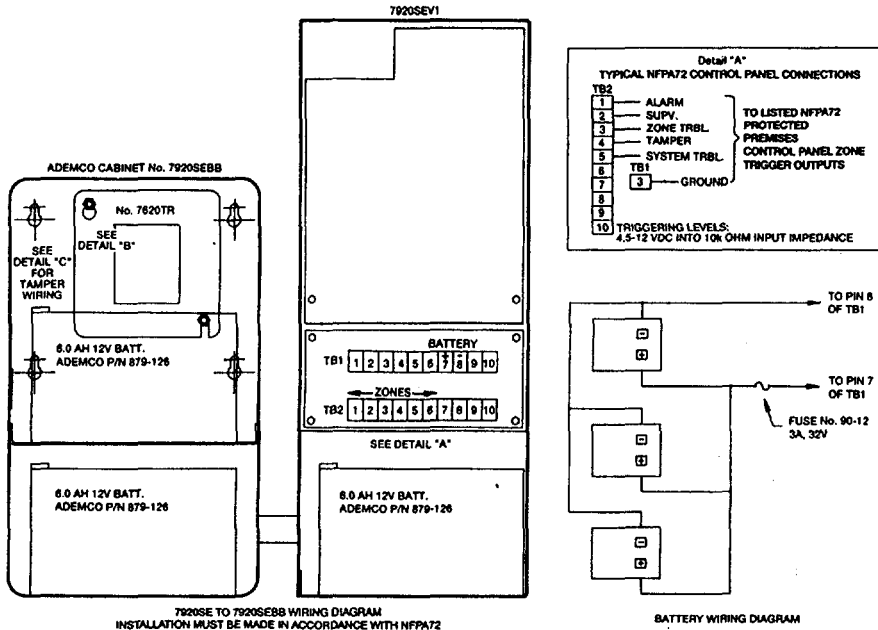
*NOTE

Receiver circuits are monitored at terminal 7 of TB2 (Radio OK) when the "Receiver Trouble Timeout" option is programmed. Transmitter circuits are also monitored at terminal 7 of TB2. Refer to the Programming section of this manual for programming information.

FIRE INSTALLATIONS

NFPA 72 FIRE ALARM SIGNALING APPLICATIONS

NFPA Standard 72 (Signaling Systems for Central Station Service) requires 24 hours of battery backup for subscriber fire alarm signaling equipment. This requires the use of three 6 amp hour 12 volt batteries connected in parallel. One battery is mounted in the 7920SE chassis. The other two batteries must be mounted in the 7920SEBB Battery Cabinet and connections to the 7920SE must be closed-nippled. In addition, the 7920SEBB Battery Cabinet tamper switch must be connected to one of the zone inputs of the 7920SE. The 7620TR Transformer must also be used for providing AC power to the 7920SE, and must be mounted inside the 7920SEBB Battery Cabinet.

7920SE TO 7920SEBB WIRING DIAGRAM
INSTALLATION MUST BE MADE IN ACCORDANCE WITH NFPA72

BATTERY WIRING DIAGRAM

TESTING THE SYSTEM

STEP 1: Connect a computer terminal or 7720P to the Transceiver as described in the "PROGRAMMING" section. Power up the Transceiver. After about 8 seconds, the unit will automatically enter Normal mode.

STEP 2: Observe the red and yellow LEDs on the Interface board. Upon initial power up, the 7920SE transmits five consecutive poll timeout messages (displayed as 551555556). The red LED will flash as these messages are transmitted, and the yellow LED will light steady (message waiting). The network Master Stations recognize these messages from newly installed transceivers and adjust their polling responsibilities accordingly. For Private System users, these messages are used during the Master Station "AUTO LEARN" process (refer to the No. 7610 Master Station manual for "Auto learn" information). The yellow LED should extinguish after a brief period of time indicating that the network Master Stations have acknowledged the new Transceiver. *Note that the poll timeout messages are used by the network only, and are not transmitted to the Central Station monitoring receiver.*

STEP 3: In a short time after the yellow LED is extinguished, various network messages should appear on the computer terminal screen, indicating that the unit is receiving network radio signals. Refer to the Advanced Diagnostics section for the specific messages that should be observed.

STEP 4: Check the radio communication path to the Central Station by pressing "T" on the terminal keyboard. This forces the 7920SE to transmit a test message, which should be received and displayed at the Central Station's No. 685 Digital Receiver. For Private Systems, the message is 555555559. For AlarmNet users, the "Field Triggered Network Diagnostic Message" (refer to the AlarmNet manual) is transmitted. All AlarmNet users must confirm with TAC, 800-222-6525.

STEP 5: Using the zone test lead connected to TB1-5, touch each of the six channel input terminals. The red LED should flash as the unit transmits each alarm, and the Central Station's No. 685 Receiver should display alarm/restore messages for each channel.

STEP 6: Create a system test as described in the control/communicator installation instructions. Choose a system test which is not selected as a disabled report. The 7920SE system will mimic the control/communicator telco transmitted data, within the limits described in this manual.

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.

ADVANCED DIAGNOSTICS

IMPORTANT!: Since the 7920SE Transceiver communicates with the network Master Stations much more frequently than one-way transmitters (because it is a polled unit), it is vital that the antenna be placed such that consistently high readings are observed when using FAST Mode (refer to FAST Mode procedures previously described). Failure to achieve minimum field strength values may result in the 7920SE missing poll messages, thus causing unnecessary communication failure messages. If unsure, activate FAST mode and recheck for proper antenna placement.

The 7920SE is a sophisticated device with many built-in diagnostic features. This section explains some of these features and may be helpful when discussing communication problems with authorized service representatives.

To use the diagnostic features, a computer terminal or 7720P Programming Tool must be connected to the No. 7920SE (see PROGRAMMING section). If using the 7720P, the LED on the 7720P will light whenever the 7920SE transmits a message, thus making it easier to monitor transmissions.
Note: Diagnostic messages are sent at 9600 baud. Some portable computers may not be compatible with this data rate, and will display garbled messages on the screen.

FAST MODE
FAST Mode was described in a previous section, and is a real-time measurement of signal strength levels. A common cause of communication problems is low signal strength. It is vital that readings for downlink messages are consistently 7 or higher, and uplink levels (messages transmitted by 7920SE are 5 or higher. Radio communication can change with varying environmental conditions, and for this reason, these readings must be achieved. If these readings are not achieved, move the antenna to a location that provides these levels of signal strength.

NODE STATUS TABLE
The Node Status Table displays information regarding the network Master Stations, and identifies the Master Stations that are operational, the field strength at which the 7920SE is hearing them, and whether or not the 7920SE was polled. In addition, the battery condition and other internal functional information is displayed.

To activate the Node Status Table, press "L" for long form display, or " N" for one line at time display (for 7720P use), while the 7920SE is in Normal mode.

To only display Radio Status Information, Press "S". The "S" command is compatible with both the computer terminal and the 7720P devices.

ADVANCED DIAGNOSTICS

The Table takes the following long form:

N#	ST	FREQ	FS	P
01 (00)	UP (UP)	0000		
02 (01)	UP (UP)	019C	7	Y
03 (02)	UP (UP)	019F	0	
04 (03)	DN (DN)			
05 (04)	DN (DN)			
06 (05)	UP (DN)			
07 (06)	UP (DN)			
08 (07)	UP (DN)			
09 (08)	UP (DN)			
0A (09)	DN (DN)			
0B (0A)	DN (DN)			
0C (0B)	UP (DN)			
0D (0C)	UP (DN)			
0E (0D)	DN (DN)			
0F (0E)	DN (DN)			
AFC REF 0245				
AFC DAC 0188				
RX OK				
AFC OK				
EE-CRC OK				
BAT OK (+)				
ANT OK				
REV. 7.83				

Both AlarmNet and Private System node numbers and status indications are shown in this representation, with Private System information in parenthesis. Values shown are examples only; actual values will probably be different.

N# (NODE): Every Master Station in a network is assigned a number as shown.

ST (STATUS): For *AlarmNet* users, this column represents the Master Station status that was included in the network's latest node table. It does not represent what the 7920SE actually hears, which explains why some nodes are reported "UP", though no diagnostic information is displayed. Node tables are routinely sent between Master Stations and indicate overall network status.

For *Private System* users, "UP" status will appear when the 7920SE has actually heard from a particular node. "DN" appears if it did not hear a particular node.

FREQ: Hexadecimal value meaningful only to authorized service personnel .

FS: This represents the field strength at which the 7920SE is hearing a particular node at the time the node table was first displayed.

P (POLL): Y means subscriber is being polled. Blank means no poll active.

AFC REF/ AFC DAC: These lines of information represent internal circuitry values and are meaningful only to authorized service personnel.

RX OK: This line will display the receiver's current condition.

RX OK: Messages are being received all is "all is normal".

RX BAD: The 7920SE has not received any valid messages for the RX T/O period.

AFC OK: This line indicates if the 7920SE is locked to the Master Station.

AFC OK: Operation is normal

AFC BAD: The 7920SE is not locked to the Master Station, operation will be unreliable.

EE-CRC OK: This line indicates the condition of the factory settings stored in EEPROM.

EE-CRC OK: Operation is normal.

EE-CRC BAD: The 77920SE has lost on corrupted factory settings and will not function.

ANT OK: This line indicates the last VSWR measurement on the 7920SE Antenna.

ANT OK: Operation is normal.

ANT BAD: The antenna or connecting cable on the 7920SE is causing a high VSWR which will cause degraded performance.

BAT OK: This line will display the battery condition as follows:

BAT OK: The word "OK" indicates the battery voltage is above 13.5 volts.

BAT NOT CHRGD: The unloaded battery voltage is less than 13.2V. The loaded battery test is not performed when the battery is not fully charged. This message will also be displayed if no AC voltage is present.

BAT WARNING x: The battery measures full voltage when unloaded, but has failed the loaded battery test for the past "x" number of transmissions (x= 0-A).

BAT BAD: If the battery has failed more than ten consecutive loaded battery tests (BAT WARNING x where x is greater than "A"), this message appears. It means that the battery when unloaded measures full voltage, but that when loaded (7920SE transmitting) its voltage drops below adequate limits.

BAT LOW: The battery measures less than 11.5V unloaded.

(+) At the end of the line indicates that the last message sent to the Central Station was that the Battery was OK.

(-) At the end of the line indicates that the last message sent to the Central Station was that the Battery was Low or Bad.

REV: This is the software revision level that is installed in the 7920SE, and should be referred to when discussing Transceiver problems with service representatives.

·ADVANCED DIAGNOSTICS

MONITORING NETWORK MESSAGES

When the 7920SE is in Normal mode, network messages are displayed on the computer terminal screen. These messages are part of the normal Master Station network communication, and should be observed when installing a 7920SE for the first time. While it is not necessary to interpret all the messages that are displayed, the ALARM SENT and various forms of the Poll messages should be checked. Typical messages are as follows:

15 05 ALARM SENT   551555556

This is the initial power up transmission (same as Poll Timeout) message which is transmitted whenever a 7920SE is first turned on. It is used by the network to acknowledge a new subscriber. For other alarm messages, the actual alarm is displayed in Ademco High Speed Format (see No. 685 Digital Receiver Messages section for additional information).

Poll 02 18xxxx*

The 7920SE has overheard a poll that was sent from Master Station 02 to a subscriber that is being supervised by Central Station 18. There will be many poll messages such as this, since polling is the primary activity of the network.

Poll 02 18xxxx Response OK*

The "Response OK" included in the poll message indicates that the 7920SE that is connected to the terminal has responded to a poll from a network Master Station (number 02 in this example), and has indicated that it has no messages waiting to be sent. This is the normal response to a network poll when the 7920SE is in normal, standby operation.

Poll 02 18xxxx Response Msg Waiting*

The "Response Message Waiting" indicates that the 7920SE that is connected to the terminal is informing Master Station 02 that it has a message to be transmitted. This is the first step in the normal alarm message transmission process, whereby a 7920SE reporting an alarm condition first waits to be polled before sending the alarm message. If, after a brief period of time (6-12 seconds), the 7920SE is not polled, the 7920SE will begin to send asynchronous "Message Waiting" messages.

ADVANCED DIAGNOSTICS

P Poll 02 18xxxx*

A Master Station (02 in this example) sends a priority (P) poll to a 7920SE after receiving a "Message Waiting" message. The 7920SE responds by transmitting the actual alarm message.

P Poll 02 18xxxx Response 555155556*

The 7920SE has responded to the priority poll with the actual alarm message, in this case a Power on Reset message (see 685 Digital Receiver Messages section for an explanation of Ademco High Speed Format).

Freq. updated 0189 *

The 7920SE routinely adjusts its frequency to that of the network Master Stations, based on the average of the frequency error measurements taken over a period of time.

Discrim. Calibrated

The 7920SE routinely adjusts its internal circuitry and displays this message when doing so.

?

Garbled data message. When the 7920SE receives partial or distorted data, it simply displays "?".

*

When the 7920SE receives a valid message unimportant to the user, it displays a "*".

TYPICAL PRIVATE SYSTEM MESSAGES

Private Command *

A Master Station is transmitting a system command to another Master Station.

Pvt. Map Xfer Msg *

A Master Station has transferred mapping information in response to a system command.

Pvt. I am Empty *

A Master Station has acknowledged a system poll command, and indicates that the Master Station has completed transmission of all waiting data.

TYPICAL AlarmNet MESSAGES

Net Alarm 02*
Master Station 02 is relaying an alarm message to another Master Station.

Net ACK 02*
Master Station 02 is relaying an acknowledgment to another Master Station.

Fast 02 000*
Master Station 02 is transmitting a FAST Tool message usually in response to a Transceiver which is in FAST Mode. The three-digit number partially identifies the Transceiver in FAST Mode by displaying the 3 most significant digits of the Subscriber number. In addition, the Master Stations routinely transmit FAST Tool messages, which are identified by the number 000 (as in this example).

Time Stamp 0F*
The network Master Stations routinely transmit time stamp messages which help to synchronize the network. In this example, Master Station 15 (hexadecimal 0F) is sending the time stamp.

Sync Msg 0F
5FF9 7FFF 1FFE 1BFE ...etc.
The network Master Stations routinely transmit network diagnostic information to other Master Stations, following the transmission of their time stamp message. The data is important only to authorized service representatives.

IMPORTANT! While the previous list does not list all possible messages, it provides a guide for the more common messages. If some of these messages are not observed after installing the 7920SE, recheck all connections and programming parameters and contact your authorized service representative.

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685 DIGITAL RECEIVER MESSAGES
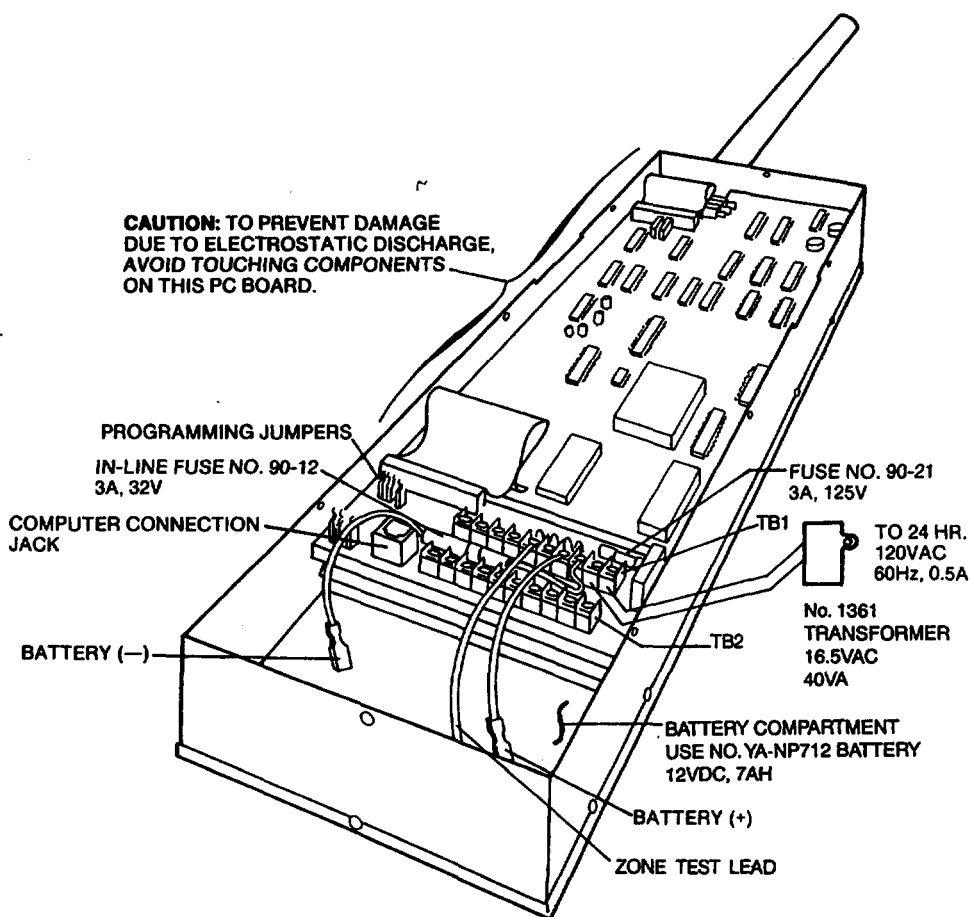
INTRODUCTION

The messages displayed at the Central Station on the Ademco No. 685 Digital Receiver consist of subscriber identification number and nine status channels conforming to Ademco's Extended High Speed communication format. The status of all channels is reported with each transmission. An initial incident will be reported as a NEW EVENT while subsequent reports of that same channel, if not corrected, will appear as a PREVIOUS EVENT. Note that channels 7 and 8 are not used when the 7920SE is set for zone trigger operation. The following table describes code definitions:

CODE DEFINITIONS

| CH.	CODE	EXPLANATION
ONE	1	NEW EVENT (Previously unreported)
TO	2	OPENING (Armed system is disarmed)
SIX	3	RESTORE (Event is restored to normal; channel is normal if option is selected)
	4	CLOSING (Disarmed system is armed)
	5	NORMAL (No event for an armed or disarmed system)
	6	OLD EVENT (A previously reported event still exists)
SEVEN	5	NOT DEFINED (no trigger inputs or system troubles for these channels)
EIGHT	5	NOT DEFINED (no trigger inputs or system troubles for these channels)
NINE	2	OPEN (Opens are being reported in the first 8 channels)
	4	CLOSE (Closes are being reported in the first 8 channels)
	5	TROUBLE (Zone troubles being reported in the first 6 channels)
	6	SYSTEM TROUBLE REPORT (System troubles are being reported in the first 6 channels defined as follows:

WHEN CHANNEL 9 REPORTS A CODE 6:

CH.	CODE	EXPLANATION
ONE	1	AC LOSS (Reported when battery voltage is less than 12.5VDC)
	3	AC LOSS RESTORE
	6	PREVIOUS AC LOSS
TWO	1	LOW BATTERY (Reported when battery voltage is less than 11.5VDC)
	3	LOW BATTERY RESTORE
	6	PREVIOUS LOW BATTERY
THREE	1	7920SE Poll Timeout has occurred
FOUR	1	Watchdog Timer reset or Power ON reset issued
FIVE	1	FAILURE to receive a status message (Loss of communications with network has occurred. This is generated by the receiving network when a status message is not received.)
	3	RESTORE
	6	PREVIOUS FAULT
SIX	1	NEW TELCO FAULT
	3	TELCO FAULT RESTORE
	6	PREVIOUS TELCO FAULT
	7	NORMAL (Zone alarms are being reported in the first 6 channels)
	9	TEST (Indicates a Status Message or a System Test)

CAUTION: TO PREVENT DAMAGE
DUE TO ELECTROSTATIC DISCHARGE,
AVOID TOUCHING COMPONENTS
ON THIS PC BOARD.

PROGRAMMING JUMPERS

IN-LINE FUSE NO. 90-12
3A, 32V

COMPUTER CONNECTION
JACK

FUSE NO. 90-21
3A, 125V

TB1

TO 24 HR.
120VAC
60Hz, 0.5A

No. 1361
TRANSFORMER
16.5VAC
40VA

BATTERY (—)

TB2

BATTERY COMPARTMENT
USE NO. YA-NP712 BATTERY
12VDC, 7AH

BATTERY (+)

ZONE TEST LEAD

No. 7920SE TRANSCEIVER (COVER REMOVED)

IMPORTANT: If upgrading the software to version 7.02 or higher for a previously installed unit, the last resistor (next to the diode) in the resistor row below the programming jumpers on the Interface board must be jumpered. This jumper allows the use of the 7720P for programming the 7920SE Transceiver.

DETAIL A

WHEN UPGRADING
TO VERSION 7.02
OR HIGHER
SOFTWARE,
JUMPER THIS
RESISTOR

RESISTORS

DIODE

JUMPERS

COMPUTER
JACK

– 35 –
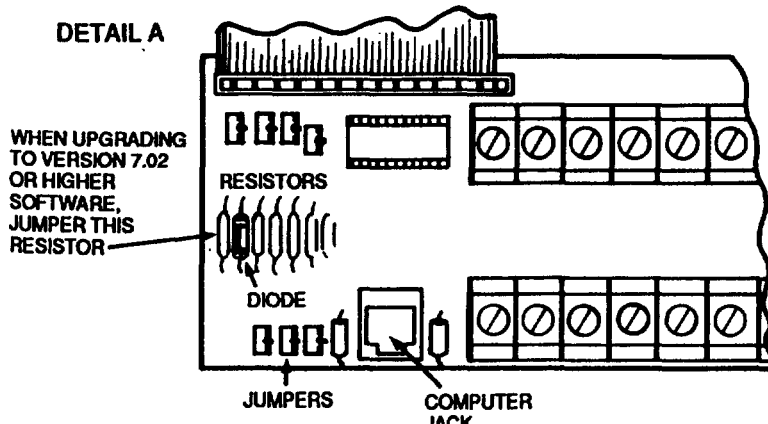
SPECIFICATIONS

DIMENSIONS:	16.25" H x 6.76" W x 3.38" D
POWER:	12 to 14.5 VDC from 1361 Transformer
CURRENT DRAIN:	Standby 500 mA (incl. transmitter)
	Active 2 Amps (incl. transmitter)
BATTERY:	YA-NP712, 12VDC, 7AH, gel type, starved lead acid
BATTERY FUSE :	3 Amps, 125V (Ademco No. 90-21)
IN-LINE FUSE:	3 Amps, 32V (Ademco No. 90-12)
TRIGGERING LEVELS:	4.5-12 VDC into 10K ohm input impedance
RF POWER OUTPUT:	Nominal 4 watts
FREQUENCY:	928.0125-928.8375 MHz Transmit;
	952.0125-952.8375 MHz Receive
FREQ. STABILITY:	± 5 PPM
TEMPERATURE:	-30°C to 60° C (operating)
	-40°C to 70°C (storage)
HUMIDITY:	95% non-condensing
ELEVATION:	40,000 ft. max. (storage); 10,000 ft. max. (operation)
NO. 7625 ANTENNA	
TYPE:	Omnidirectional INDOOR/OUTDOOR; No ground plane required
CABLE:	50 ohm coaxial; Type "N" connector

"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 Transceiver.
• Move the antenna leads away from any wire runs to the Transceiver.
• Plug the Transceiver 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.

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.

— NOTES —

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.

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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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