

SS-32T SUPERVISOR

SUPERVISED WIRELESS SECURITY RECEIVER

Installation and Operation Manual



Includes Eight New "T" Version Features!

TO THE INSTALLER...

The Linear Alert Model SS-32T is a Supervised Wireless Receiver/Annunciator. Correctly installed and properly used, it will provide years of reliable service.

The instructions in this manual are intended for the guidance of security installers. It is recommended that, in order to become fully familiar with this system, installers read the entire manual before beginning any work.

An SS-32 Supervised Wireless Applications Manual is included with each unit. Additional copies are available from Linear at no charge. The Applications Manual provides hook-up diagrams for many commonly used control panels along with recommended installation techniques.

Some control panels may require the 32-RB1 Relay Interface Adapter Board. Refer to the Applications Manual for instructions on specific control panel wiring.

If you require additional information, please call Linear Technical Services Department at 1-800-392-0123, or from inside California 1-800-321-1845.

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1. INTRODUCTION

A Linear Alert Supervised Wireless Security System is a self-monitoring, multi-purpose system comprised of wireless components designed for use in residential and commercial installations.

The SS-32T is a 32-channel input, eight-zone output, supervised receiver/annunciator that acts as a wireless zone expander for conventional hardwire control panels.

Transmitters send coded radio signals to the SS-32T which receives, processes, displays, and transfers each radio signal report to a hardwire control panel.

A typical supervised wireless system includes the following components:

- ☆ Model SS-32T receiver/annunciator
- ☆ Model ST stationary door/window transmitter(s)
- ☆ Model ST-1 portable panic-button transmitter(s)
- ☆ Linear supervised passive infrared detector(s)
- ☆ Model ESL371 supervised smoke detector(s)
- ☆ A hardwire control panel and its accessories

NOTE: Only the Linear "S" Series supervised transmitters can be used with the SS-32T. Linear's "D" Series standard digital transmitters are **not** compatible with this receiver.

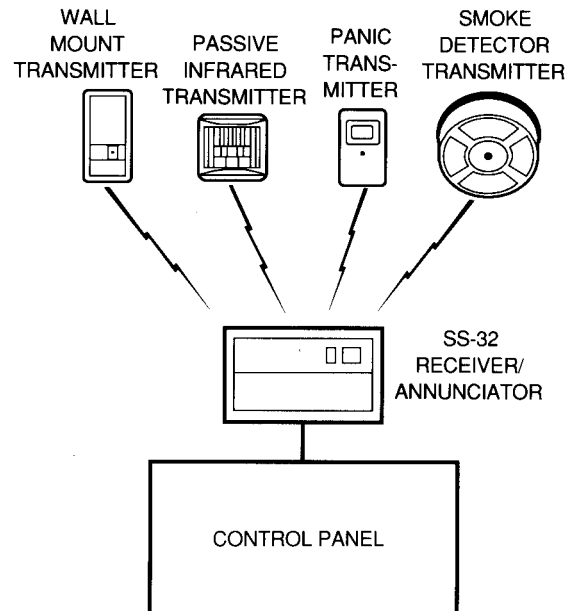


Figure 1. Typical Supervised System Configuration

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2. SS-32T RECEIVER/ANNUNCIATOR

TRANSMITTER REPORTS AND SIGNALS

The SS-32T monitors five types of transmissions from Linear "S" series transmitters:

☆ Alarm Reports

Transmitters instantly signal an **alarm** report when the sensor wired to the transmitter is faulted.

☆ Restore Reports

Transmitters instantly signal a **restore** report when the sensor wired to the transmitter is returned to its normal state.

☆ Low Battery Reports

Transmitters test their internal 9-volt battery under load every 60 seconds. If the battery tests at 7.5 volts or less, a **low battery** report is instantly sent to the receiver. The test is disabled until the low battery is replaced.

☆ Test Signal

When the test button is pressed on any stationary transmitter, a unique **test** signal is sent to the receiver. This signal is used when programming the SS-32T, and for routine testing of the system.

☆ Status Reports

When the status option is selected in the transmitter, a **status** report is sent every hour. This report, which contains all of the above information, updates the SS-32T's memory so that it knows each transmitter is still active and operating in the correct mode.

LED DISPLAYS

The transmitter's reports (or the exception thereof) are shown on the SS-32T LED display in a continuous cycle. The left display shows the condition, and the right displays indicate the transmitter channel to which the condition applies.

There are six possible condition displays:

☆ "O" for OPEN

"O" shows that the transmitter displayed has sent an **alarm** report. As long as the transmitter is faulted, the "O" will remain on the display and the output zone programmed for that transmitter will remain faulted. A **restore** report from the same transmitter will clear the "O" indication.

☆ "L" for LOW BATTERY

The "L" indication shows that the transmitter displayed has sent in a **low battery** report. The "L" will remain on the display until the battery is replaced in the transmitter, and a **test, status, alarm, or restore** report is sent from that transmitter. Whenever an "L" is indicated on the display, the *low battery* output (brown wire #14) will activate.

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☆ "P" for STATUS EXCEPTION

"P" indicates that the SS-32T has not received a **status** transmission from the transmitter displayed during a period of 8 hours. The "P" will remain on the display until a manually actuated **test** signal is received from that transmitter. Whenever a "P" is indicated on the display, the *status* output (black wire #10) will activate.

☆ "F" for FIRST-ALARM-IN

The "F" indication is used for alarm memory of the first **alarm** report that occurred. The transmitter displayed has been, or currently is faulted with the control panel armed. The first "O" indication that appears when the control panel is armed will cause an "F" to be displayed for alarm memory of that channel as the first alarm in. Additional "O" indications will cause "A's" to be displayed (see below). If the transmitter channel is programmed for an Exit/Entry Delay zone, the "F" will occur *after* any delays have expired if the transmitter is still faulted. The "F" alarm memory will remain on the display even after the control panel is disarmed. To erase the "F", the control must be disarmed for at least 10 seconds and then rearmed.

☆ "A" for ALERTED

The "A" indication is used for memory of any *additional* alarms. The transmitter channel displayed has been, or currently is faulted with the control panel armed. Any secondary "O" indication that appears when the control is armed will cause an "A" to be displayed for alarm memory of that channel. If the transmitter channel is programmed for an Exit/Entry Delay zone, the "A" will occur *after* any delays have expired if the

transmitter is still faulted. The "A" alarm memory will remain on the display even after the control panel is disarmed. To erase the "A", the control must be disarmed for at least 10 seconds and then rearmed.

☆ "S" for SHUNTED

"S" indicates that the transmitter channel indicated has been shunted out of the system by the SS-32T Auto-Shunt or Manual-Shunt function. **Alarm** and **restore** reports from this transmitter will be ignored and the zone output for that channel will not be triggered as long as it remains shunted. **Status**, **test**, and **low battery** reports are not affected.

Figure 2 illustrates an alerted condition on Channel 32, indicating that the transmitter assigned to Channel 32 was tripped while the system was armed.

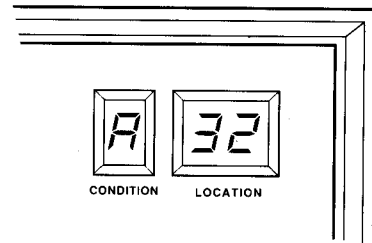


Figure 2. Display Indication Showing Alert on Channel 32

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3. NEW "T" VERSION FEATURES

AUTO RESTORE

For security, transmitter **alarm** reports always last longer than **restore** reports. If an installation has more than one passive infrared detector, or a situation exists where two or more transmitters are triggered adjacently, an **alarm** transmission can override a **restore** transmission. This causes an "O" to persist on the SS-32T display with its corresponding output zone remaining faulted, even when the transmitter is actually restored.

The SS-32T provides an Auto Restore option that converts Zones 3,4,5 and 6 to self-restoring zones. This type of zone does not require a **restore** transmission to clear the display and return the zone output to a normal state. The **alarm** and **test** signal responses, along with the **status** and **low battery** supervisory functions of these zones, when converted, are not effected.

EXIT DELAY

The SS-32T furnishes an adjustable Exit Delay on transmitter channels programmed for Zones 1, 2, and 3. This gives the user the ability to exit the premises during the delay time without causing the receiver's alarm memory display to latch.

The Exit Delay timer starts when the system is armed, and continues until its selected time (10, 20, 30, or 40 seconds) expires.

AUTO-SHUNT

The Auto-Shunt feature works in conjunction with the Exit Delay to automatically bypass any faulted transmitters after the system is armed.

When the Exit Delay time expires, any transmitter(s) that are recognized by the receiver as being in the faulted (**alarm**) state (whether actual or created because of a blocked **restore** transmission) are automatically shunted. The display will show an "S" along with the shunted transmitter's channel number(s). A shunted transmitter will not cause its programmed zone output to activate.

Any transmitter channel will remain shunted until the receiver recognizes a **restore** signal from that transmitter or the system is disarmed. The shunt is then automatically removed. Any subsequent **alarm** transmissions from the transmitter channel will again be able to activate its programmed zone output.

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ENTRY DELAY

The SS-32T furnishes an adjustable Entry Delay on transmitter channels programmed for Zones 1, 2, and 3. This gives the user the ability to enter the premises without causing the receiver's alarm memory display to latch as long as the system is disarmed before the delay time expires.

The Entry Delay timer starts when the SS-32T receives an **alarm** transmission on transmitter channels programmed for Zones 1, 2, or 3. The timer continues until its selected time (20, 30, 40, or 50 seconds) expires. If the system is not disarmed when the time expires, the alarm memory display latches to indicate the transmitter channel(s) that caused the alarm. Any subsequent alarms will also be indicated on the display. The alarm memory display remains latched until the next time the system is re-armed.

FIRST-ALARM-IN INDICATION

The First-Alarm-In indication gives the user or installer the ability to pinpoint the location of the initial intrusion.

When the system is armed, the first transmitter to send an **alarm** transmission (if it is programmed for an Exit/Entry Delay zone, the delay period must be expired) causes the alarm memory display to show an "F" with the corresponding channel number. Any following **alarm** transmissions from other transmitters causes the alarm memory display to show an "A" with the corresponding channel number.

UNARMED ALERT

The Unarmed Alert option is used to annunciate signals from transmitters used for 24-hour functions (fire, panic, medical, etc.).

This option causes the alarm memory to latch on transmitter channels programmed for Zones 6,7 and 8 even if the system is disarmed. The alarm memory display remains latched until the next time the system is re-armed.

DISPLAY BLANKING WHILE ARMED

Display blanking saves current and extends the time that the system operates off a backup battery during AC power loss.

When the Display Blanking option is selected, the SS-32T display goes blank when the system is armed. During blanking, any display information is stored in memory. When the system is disarmed the display is re-enabled, revealing all stored information.

The blank display also provides positive visual indication that the system is armed.

STATUS MEMORY

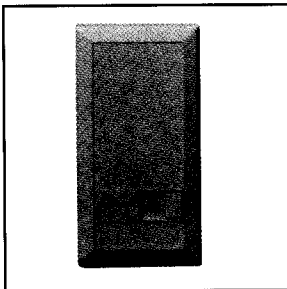
The Status Memory feature gives the installer the ability to pinpoint any transmitter experiencing intermittent or marginal radio reception.

This feature latches any status exception "P" display until a manually actuated **test** transmission is received from the problem transmitter's channel.

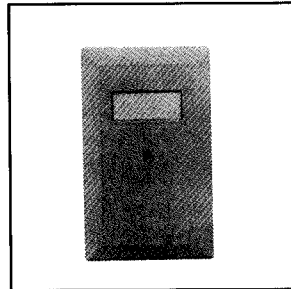
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4. SUPERVISED DIGITAL TRANSMITTERS

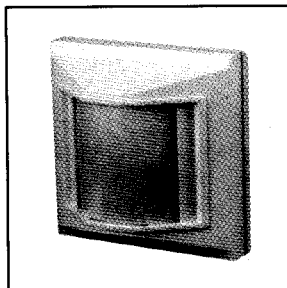
The following "S" Series transmitters are available:



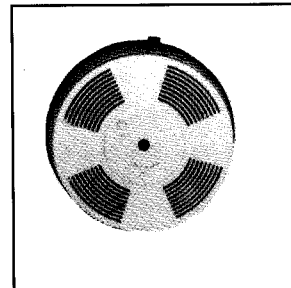
ST Wall-mounted
Door/window Transmitter



ST-1 Portable Panic Button



50S40 Supervised Passive
Infrared Detector



ESL371 Supervised Smoke
Detector

Permanently stationed transmitters, such as the wall-mounted ST or PIR, are fully supervised and should be installed at every location where protection is desired. These stationary transmitters provide routine **status** reports every hour and should be coded to fully supervised zones.

Portable transmitters, such as the ST-1, are semi-supervised. Because they may be taken out of range of the receiver, they do not signal hourly **status** reports. They do, however, provide a **low battery** report if the condition should occur. These transmitters do not send **restore** reports and therefore must be coded to Zones 7 or 8.

NOTE: If fully supervised portable transmitters are required, two jumpers must be cut inside the ST-1 to cause the transmitter to send **status** and **restore** reports. The unit can then be coded to Zones 1-6 (see Figure 3).

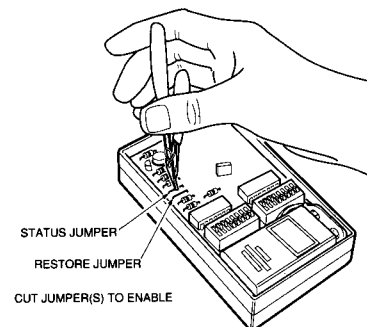


Figure 3. Cutting ST-1 Status and Restore Jumpers

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DIGITAL SUPERVISED TRANSMITTER CODING

Linear "S" Series supervised transmitters communicate with the SS-32T via a broadcasted digital code. These transmitters incorporate two groups of switches labeled CHANNEL and SYSTEM for setting the system, channel, and zone codes. In the stationary ST transmitter a third, MODE switch, is also used. The code switches are accessible through the back of each transmitter case; with the ST and ST-1 models, the case may be opened by unsnapping and lifting off the back cover (see Figures 4 and 5).

SETTING THE TRANSMITTER SYSTEM CODE

One of the 256 discrete eight-digit codes must be chosen for the system code. **Keys 1-8 on the SYSTEM switch in all "S" Series transmitters should be set to match keys 1-8 on the SS-32T 12-position coding switch.** Factory set codes should not be used. In addition, the following codes should not be used: (1) all keys set to ON; (2) all keys set to OFF; (3) keys set in alternating OFF-ON or ON-OFF positions. **Do not** use a pencil or pen to code transmitters or receiver. Graphite from pencil lead and ink can contaminate the switch and cause a failure.

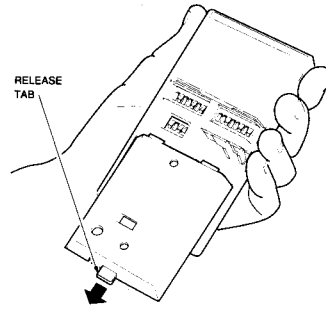


Figure 4. Wall-mounted ST Transmitter

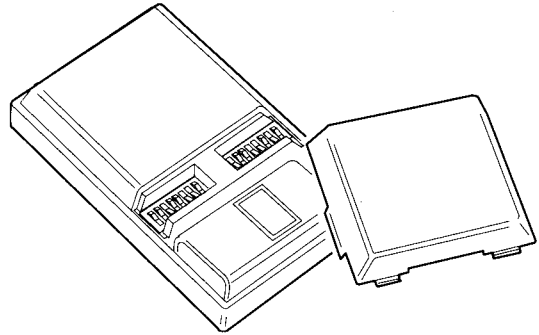


Figure 5. Handheld ST-1 Transmitter

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SETTING THE TRANSMITTER CHANNEL AND ZONE CODE

By use of binary codes, the eight-position CHANNEL coding switch establishes the input channel and the output zone to which the transmitter is assigned. Figure 6 shows a transmitter CHANNEL switch set to Zone 6, Channel 20.

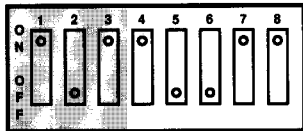


Figure 6. Example Channel Coding Switch

OUTPUT ZONE IDENTIFICATION

CHANNEL switch keys 1-3 identify the output zone that the transmitter will activate.

Different options can be selected for some of the zones. These alternatives are described in Section 3 and 6 and are selected with the OPTION switch. They are:

- ☆ Zones 1, 2 and 3 are always EXIT/ENTRY DELAY zones. Different delay times are selected with the OPTION switch.
- ☆ Zones 6, 7 and 8 can be selected as UNARMED ALERT zones for transmitters used in 24-hour applications.

- ☆ Zones 7 and 8 are always AUTO-RESTORE zones, although Zones 3, 4, 5 and 6 can also be selected as AUTO-RESTORE zones for non-restoring ST-1 transmitters.
- ☆ Zones 7 and 8 are always semi-supervised and do not require **status** reports. These zones are used for portable transmitters that may be taken out of range of the receiver.

Following the coding scheme in Figure 7, set the keys 1-3 on the CHANNEL switch in the transmitter to assign it to the specific zone that fits its application.

ZONE #	EXIT/ENTRY DELAY (STD)	AUTO RE-STORE (STD)	AUTO RE-STORE (OPT)	UN-ARMED ALERT (OPT)	CHANNEL SWITCH #		
					1	2	3
1	✓				OFF	OFF	OFF
2	✓				OFF	OFF	ON
3	✓		✓		OFF	ON	OFF
4			✓		OFF	ON	ON
5			✓		ON	OFF	OFF
6			✓	✓	ON	OFF	ON
7		✓		✓	ON	ON	OFF
8		✓		✓	ON	ON	ON

Figure 7. Zone Options and Transmitter Zone Coding

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INPUT CHANNEL IDENTIFICATION

CHANNEL switch keys 4-8 in the transmitter identify its input channel. Following the coding scheme shown in Figure 8, set the keys to assign that transmitter to a specific channel.

NOTE: Do not code any transmitter for Channel 32, Zone 8. Channel 32 can be used however with any other zone, 1-7.

CAUTION: The channel code must be unique for each transmitter. Do not set more than one transmitter to each channel code. A maximum of 32 transmitters can be used with each SS-32T system.

SETTING THE ST TRANSMITTER MODE SWITCH

The four-key MODE switch in the ST transmitter controls the way the unit functions. No other Linear "S" series transmitter contains a MODE switch.

The functions of the four MODE switch keys are:

KEY #1: STATUS SWITCH

The STATUS switch is used to enable or disable the transmitter's status timer. When the switch is in the *open* (OFF) position, the transmitter sends a **status** report to the SS-32T every hour. This report updates the SS-32T, indicating the existence of the transmitter, the condition of the battery, and the state of the input sensor. When the switch is in the *closed* (ON) position, the transmitter does **not** send hourly **status** reports.

The STATUS switch **must** be in the *open* (OFF) position to use the transmitter on Zones 1-6.

CHANNEL SWITCH #					CHANNEL NUMBER
4	5	6	7	8	
OFF	OFF	OFF	OFF	OFF	1
OFF	OFF	OFF	OFF	ON	2
OFF	OFF	OFF	ON	OFF	3
OFF	OFF	OFF	ON	ON	4
OFF	OFF	ON	OFF	OFF	5
OFF	OFF	ON	OFF	ON	6
OFF	OFF	ON	ON	OFF	7
OFF	OFF	ON	ON	ON	8
OFF	ON	OFF	OFF	OFF	9
OFF	ON	OFF	OFF	ON	10
OFF	ON	OFF	ON	OFF	11
OFF	ON	OFF	ON	ON	12
OFF	ON	ON	OFF	OFF	13
OFF	ON	ON	OFF	ON	14
OFF	ON	ON	ON	OFF	15
OFF	ON	ON	ON	ON	16
ON	OFF	OFF	OFF	OFF	17
ON	OFF	OFF	OFF	ON	18
ON	OFF	OFF	ON	OFF	19
ON	OFF	OFF	ON	ON	20
ON	OFF	ON	OFF	OFF	21
ON	OFF	ON	OFF	ON	22
ON	OFF	ON	ON	OFF	23
ON	OFF	ON	ON	ON	24
ON	ON	OFF	OFF	OFF	25
ON	ON	OFF	OFF	ON	26
ON	ON	OFF	ON	OFF	27
ON	ON	OFF	ON	ON	28
ON	ON	ON	OFF	OFF	29
ON	ON	ON	OFF	ON	30
ON	ON	ON	ON	OFF	31
ON	ON	ON	ON	ON	32

Figure 8. Transmitter Channel Coding

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KEY #2: RESTORE SWITCH

The RESTORE switch enables or disables the transmitter's capability to send a **restore** report. When the switch is in the *open* (OFF) position, the transmitter sends a **restore** report to the SS-32T each time the sensors connected to the transmitter are returned from a faulted state to a normal state (door closed). When the switch is in the *closed* (ON) position, the transmitter will **not** send **restore** reports.

The RESTORE switch **must** be in the *open* (OFF) position to use the transmitter on zones that are **not** auto-restore.

KEY #3: DELAY SWITCH

The DELAY switch **must** be in the *closed* (ON) position, when the ST transmitter is used with the SS-32T.

If the transmitter is to be used on an exit/entry door, set the transmitter CHANNEL switch to activate an Exit/Entry Delay zone on the SS-32T and connect that zone to an Exit/Entry Delay zone on the control panel.

In this system the control panel and the SS-32T, not the transmitter, provides the delay.

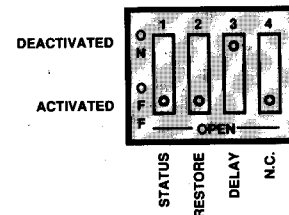


Figure 9. Typical MODE Switch Settings

KEY #4: NC SWITCH

When the NC switch is in the *open* (OFF) position, the transmitter is set for a normally **closed** loop.

When the NC switch is in the *closed* (ON) position, the transmitter is set for a normally **open** loop.

Up to 10 sensors with a maximum wire run of 50 feet may be connected to any one ST transmitter. (A twisted pair is recommended.) Wire multiple sensors in parallel for normally open, and in series for normally closed sensors.

In Figure 9 the MODE switches have been set with status activated, restore activated, no delay, and the loop normally closed.

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5. INPUT/OUTPUT CABLE DESIGNATIONS

The SS-32T I/O Cable uses a 24-pin header assembly to connect with the socket on the circuit board. It is very important to be sure the wiring is correct and the header is installed properly into the socket **before** applying any power to the system.

Figures 10 and 11 show the header assembly and I/O wires in detail. Note that there is a brown wire on one edge and a yellow wire on the other edge of the ribbon cable. Use one of these wires as a starting point when counting in from either edge to select a particular wire.

CAUTION: Only ten wire colors are used for the 24 connections on the I/O cable. Some colors may be repeated up to three times.

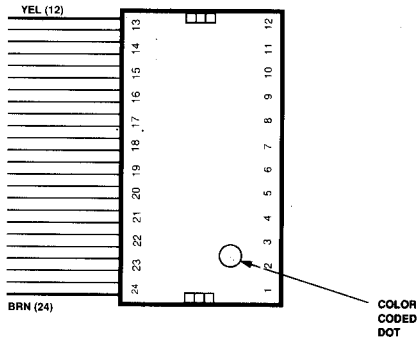


Figure 10. I/O Cable Header Detail

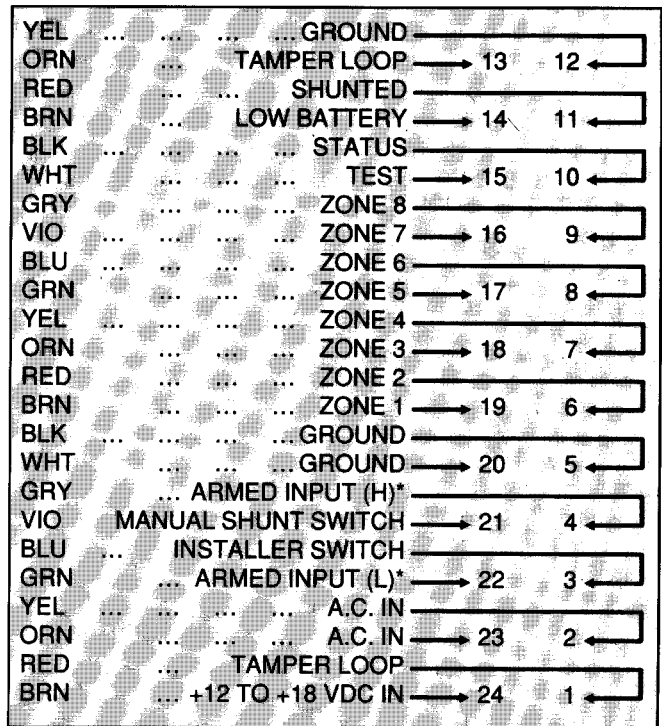


Figure 11. I/O Cable/Header Wiring Order

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6. MOUNTING AND PROGRAMMING THE SS-32T

The SS-32T should be mounted on the wall above or next to the control panel. Generally, the higher the receiver is mounted above ground level the better the radio range will be.

CAUTION: DO NOT MOUNT THE SS-32T RECEIVER ON OR IN A METAL CONTROL PANEL! SHORT RANGE AND/OR ERRATIC OPERATION WILL OCCUR!

PREPARATION

The SS-32T has a spring-loaded tamper switch that, when activated, signals unauthorized access to the system circuits (see Figure 13). Set to activate when the case cover is removed, the tamper switch is wired in series with the closed circuit loop on the SS-32T's Input/Output (I/O) Cable.

NOTE: Before working on a pre-existing installation, the tamper switch must be deactivated. This can be accomplished in either of two ways: (1) Power may be removed from the system by disconnecting the AC transformer and backup battery; or (2) the tamper loop can be jumpered out in the control panel.

1. Remove the screw from the front cover of the case (if installed), then lift off the cover by prying the case apart at the top edge (see Figure 12).

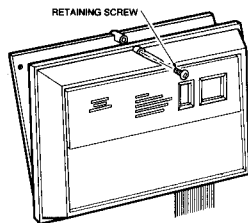


Figure 12. Removing SS-32T Cover

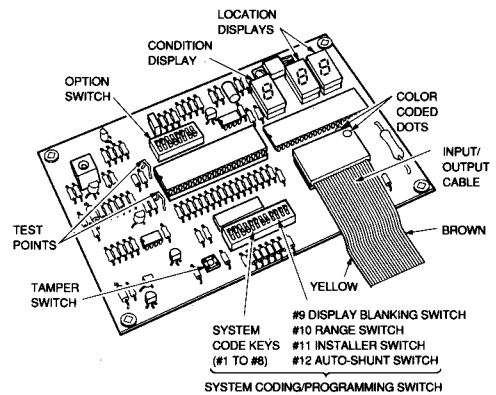


Figure 13. SS-32T Circuit Board

2. Using the I/O cable provided with the unit, connect the wires to the system's control panel. The I/O cable is described in detail in Section 5. Some control panels may require the 32-RB1 Relay Interface Adapter Board. Refer to the SS-32 Supervised Wireless Applications Manual for instructions on specific control panel wiring.
 - ✓ Connect the ground wire (yellow #12) to the negative terminal on the 12-volt 24-hour output from the control panel.
 - ✓ Connect the +12-volt input wire (brown #24) to the positive terminal on the 12-volt 24-hour output from the control panel.

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- ✓ Connect the zone output wires on the I/O cable to the zone input terminals on the control panel (see SS-32 Applications Manual).
- ✓ Connect the armed input wire (either armed high or low true) to the armed LED or opening/closing output on the control panel (see SS-32 Applications Manual).
- ✓ Connect the tamper loop wires (red #1 and orange #13) on the I/O cable to the tamper loop on the control panel (optional).
- ✓ Connect the external manual-shunt switch (if shunting by channel is desired) to the manual-shunt input wire (violet #21) and the ground (yellow #12).

3. Proper installation of the I/O Cable to the SS-32T is essential! When connecting the 24-pin header assembly to the 24-pin socket, consider two items:

First, be sure all the pins on the connector are straight.

Second, insert the connector slowly and carefully with pin #1 (red dot) in the upper right hand corner (see Figure 13).

WARNING: THE RIBBON CABLE, WHICH MAY HAVE THE CONNECTOR ON EITHER END, CAN EXIT FROM EITHER THE TOP OR BOTTOM OF THE HEADER. BE SURE THAT THE YELLOW WIRE ON THE CABLE EDGE IS DIRECTED TOWARD THE CENTER OF THE CIRCUIT BOARD, AND THAT THE BROWN WIRE IS LOCATED ADJACENT TO THE OUTSIDE EDGE.

4. To apply 12-volt power to the SS-32T, reconnect the AC transformer on the control panel. **DO NOT connect the back-up battery until after the installation is complete.**

SYSTEM CODE SETTING

5. Locate the **12-position code switch** on the SS-32T circuit board (see Figure 13).
6. Set keys 1-8 of the 12 position switch in the receiver to match the SYSTEM code switch keys 1-8 in every transmitter.

RECEIVER PROGRAMMING

In the procedure under subheading "Setting The Transmitter Channel and Zone Code," Page 8, a zone and unique channel code were assigned to each transmitter in the system. These transmitter codes now need to be programmed into the SS-32T's memory. This non-volatile memory will retain its information indefinitely without DC power. If the installer chooses to program the SS-32T prior to installation, it can be disconnected at the programming site and transported to the job site without losing the memory. Also, if a control panel has a complete power failure, the SS-32T will retain its memory.

7. Set the RANGE switch (key #10) and the INSTALLER switch (key #11) to the ON position. Set the DISPLAY BLANKING switch (key #9) to OFF.

NOTE: The range switch (key #10) reduces the receiver sensitivity by 15-20%. This gives the receiver a "worst-case" radio reception condition during set-up. This switch must be turned OFF after set-up.

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8. Set the AUTO-SHUNT switch (key #12) to ON, then OFF. This will erase the memory and set up the SS-32T for programming with the transmitters (see Figure 14).

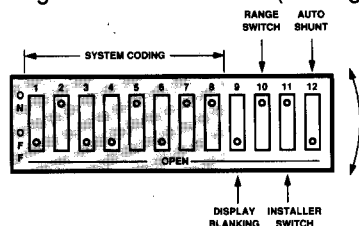


Figure 14. Switches Set for Channel Entry Mode

9. Log in all transmitters, one at a time, by pressing the test button on each transmitter. For ST-1 panic transmitters, simply press the button. For PIRs, walk through the detection pattern. Transmissions received while in this channel-entry mode will be entered and stored automatically in the SS-32T's memory. As each transmission is received, the SS-32T's display will indicate entry into the memory by showing an "E" on the condition display followed by the channel number on the location display (see Figure 15).

CAUTION: If duplicate transmitter channel codes are accidentally entered into the system while in the channel-entry mode, the SS-32T will recognize only the **last** transmitter channel/zone code combination for that channel.

NOTE: Enter codes from **all** transmitters during the same programming session. If, later, it is necessary to add additional transmitters, **all** of the transmitter codes must be re-entered as described above.

AUTO-ENTRY

As an alternative to manual programming, the system design provides for automatic programming in conjunction with the reception of each transmitters initial status report. This can be accomplished by leaving the SS-32T in the channel-entry mode for at least 1 hour, which is enough time to permit each transmitter to transmit its first **status** report.

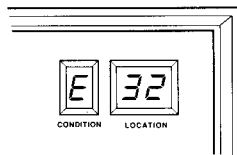
NOTE: Because portable ST-1 transmitters do not normally transmit a **status** report, their identification codes must still be entered manually.

10. Return the INSTALLER switch (key #11) to the OFF position. This action stores all new transmitter channel/zone information in the SS-32T's memory.

OPTION SWITCH

An eight-key OPTION Switch, as shown in Figure 13, is used to enable the Auto Restore and Unarmed Alert options and select the Exit and Entry Delay times. Keys #1 and #3 are not used; they must always be set to OFF. Refer to Figure 16 when setting the following OPTION Switch keys.

Figure 15. Display Indication in Entry Mode



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OPTION SWITCH (CONT.)

☆ AUTO RESTORE (Key #2)

Setting key #2 to ON automatically restores transmitter **alarm** signals sent on channels programmed for Zones 3,4,5 and 6. With key #2 OFF, transmitters must send a **restore** signal to clear the zone.

☆ UNARMED ALERT (Key #4)

Setting key #4 to ON causes the alarm memory display to latch on transmitter **alarm** signals sent on channels programmed for Zones 6,7 and 8 regardless if the system is armed or disarmed. With key #4 OFF, these zones will only latch the alarm memory while the system is armed.

☆ EXIT DELAY (Keys #5 AND #6)

Keys #5 and #6 can be set four possible ways to select different Exit Delay times. **To allow time for the Auto Shunt feature to activate, the SS-32T Exit Delay time must be at least five seconds less than the control panel's Exit Delay.** Set keys #5 and #6 to select the proper delay time as shown in Figure 17.

☆ ENTRY DELAY (Keys #7 AND #8)

Keys #7 and #8 can be set four possible ways to select different Entry Delay Times. To coordinate the control panel's and the SS-32T's Entry Delay times, the SS-32T's Entry Delay must be equal to or longer than the control panel's. Set keys #7 and #8 to select the proper delay time as shown in Figure 18.

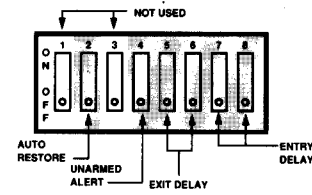


Figure 16. OPTION Switch Settings

OPTION SWITCH KEY #		APPROXIMATE SS-32T EXIT DELAY	RECOMMENDED CONTROL PANEL EXIT DELAY
5	6		
OFF	OFF	10 SECONDS	15 SECONDS
OFF	ON	20 SECONDS	25 SECONDS
ON	OFF	30 SECONDS	35 SECONDS
ON	ON	40 SECONDS	45 SECONDS

Figure 17. OPTION Switch Exit Delay Settings

OPTION SWITCH KEY #		APPROXIMATE SS-32T ENTRY DELAY	RECOMMENDED CONTROL PANEL ENTRY DELAY
7	8		
OFF	OFF	20 SECONDS	15 SECONDS
OFF	ON	30 SECONDS	25 SECONDS
ON	OFF	40 SECONDS	35 SECONDS
ON	ON	50 SECONDS	45 SECONDS

Figure 18. OPTION Switch Entry Delay Settings

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7. INSTALLER OPTIONS

EXIT/ENTRY DELAY VARIATIONS

The SS-32T Exit and Entry Delays are initiated by the armed signal from the control panel. Because some control panels flash their armed LEDs at varying rates after alarms, for trouble, or during certain delays, the SS-32T Exit and Entry Delay times may be slightly different than the times shown in Figures 17 and 18. Some experimentation may be required by the installer in selecting the proper SS-32T Exit/Entry Delay times to accommodate the Auto-Shunt (Exit) and Alarm Memory (Entry) SS-32T features.

If the control panel used gives a constant armed signal during all conditions, remove the armed signal conditioning capacitor (Figure 19) on the SS-32T circuit board to more closely obtain the approximate times shown in Figures 17 and 18.

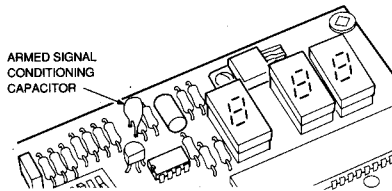


Figure 19. Armed Signal Conditioning Capacitor

MANUAL-SHUNT BYPASS FEATURE (OPTIONAL)

The SS-32T receiver incorporates an automatic as well as a manual shunt feature. This feature makes it possible to bypass (shunt) one or more transmitter channels so that the zone that they are programmed to operate will not be activated if the transmitter is faulted.

Because most control panels **will not** let the user arm the system when a loop is faulted, this feature is useful for shunting doors or windows that are intended to be left open or to force arm the control panel. When a transmitter is shunted, the SS-32T will ignore **alarm** and **restore** reports, but will still acknowledge **status** and **low battery** reports from shunted transmitters.

The Manual-Shunt input is the violet #21 wire on the input/output cable. To use the input, wire a user-accessible toggle switch or pushbutton to the violet #21 wire and the yellow #12 (ground) wire. When the switch is closed, any channel that is in the open ("O") condition will be set into the shunted ("S") condition. This shunted condition will remain until the Manual-Shunt switch is opened.

By using a momentary pushbutton, faulted transmitters can be temporarily manually shunted while the button is held down to allow arming of the control panel. Then, as soon as the panel is armed the button can be released. The SS-32T's auto-shunt will then take over if any transmitters remain faulted after the Exit Delay expires.

Whenever the Manual-Shunt switch is activated, the shunted output wire (red #11) will activate. This output wire can be used to trigger a communicator zone to indicate an abnormal closing (arm over fault).

DISPLAY BLANKING SWITCH

The system coding switch key #9 controls the Display Blanking option. Set key #9 to ON to blank the display when the system is armed. With key #9 set to OFF, the display is always active.

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8. SYSTEM CHECK-OUT

VERIFY MODE

The Verify Mode has two functions. When a unit is first set to verify, the LED display sequentially shows each of the zone/channel combinations currently programmed into the SS-32T. This ensures that the proper channels are assigned to the correct zones (see Figure 20). The *Verify Mode* is then used to range check the transmitters from their respective locations.

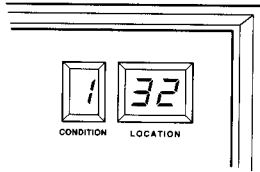


Figure 20. Display in Verify Mode (Zone 1, Channel 32)

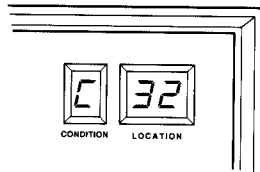


Figure 21. Display in Verify Mode (Confirm on Channel 32)

To set the SS-32T to the *Verify Mode*, the AUTO-SHUNT switch (key #12) should be set in the OFF position, and the INSTALLER switch (key #11) in the ON position. The SS-32T will not go into the verify mode if the AUTO-SHUNT switch is ON or the control panel is armed.

NOTE: If no transmitters are logged in the SS-32T memory, only a continuous series of dashes will appear on the display.

RANGE CHECK

1. Move the transmitters to the desired test locations.
The transmitters should be temporarily mounted in case they have to be moved later. Double-stick tape works well for this.
CAUTION: DO NOT mount any transmitter on a metal surface. Some windows have a concealed metal flashing around the frame. Beware of this and other hidden metal objects. If such a situation is encountered, install the sensor on the window frame and use enough wire to locate the transmitter on the wall away from the frame.
2. While the SS-32T is still in the verify mode, trigger a test transmission from each transmitter. If the transmitter is within radio range the SS-32T will replace that transmitter's zone number on the condition display with a "C" for "checked" (see Figure 21). If the transmitter is out of radio range, no "C" will appear. If the transmitter does not range check from the desired location, either experiment by moving the transmitter to different areas and testing, or use the Linear Model 76 Tuning Meter to make field strength measurements at the receiver to determine the best possible location for the transmitter.
3. After completing range checking for all of the transmitters, return the INSTALLER switch (key #11) and the RANGE switch (key #10) to the OFF position.

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9. FINAL INSTALLATION

Replace the cover on the SS-32T and secure it by installing the case cover retaining screw.

Permanently mount all of the transmitters in the optimum locations, as verified by the range check.

FINAL TESTING

1. With the control panel disarmed, open a protected door. This should cause an "O" to be displayed in the condition window. At the same time the channel number should be displayed in the location window.
2. Close the same protected door. The transmitter should send a **restore** report, causing the "O" to revert back to the moving dashes indication.
3. Arm the control panel with the siren or bell disconnected and wait for the Exit Delay to expire. Open a protected exit/entry door and wait for the Entry Delay to expire. This procedure should result in an "O" alternating with an "F" on the condition display. The channel number of the transmitter should show on the location display.
4. Close the same protected door. The "O" should be removed from the display but the "F" should remain. The channel number should still be on the location display.

5. Open then close any other protected door. This procedure should result in an "A" alternating with an "F" on the condition display. The channel number of both transmitters should alternate on the location display. The first transmitter with an "F", and the second transmitter with an "A".
6. Disarm the control panel. The "F" and "A" and channel numbers should remain on the display. The "F" and "A" remain to give the SS-32T an alarm memory. This is so the customer or installer can look at the display after the system is disarmed and determine which transmitter(s) have gone into alarm since the last time the control panel was armed.
7. Re-arm the control panel. The "F" and "A" will be erased and the display should return to dashes.
NOTE: The control panel must be disarmed for at least 10 seconds before re-arming will clear the SS-32T memory. This prevents a blinking armed LED from resetting the alarm memory.
8. Disarm the control panel to complete final testing.

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10. CABLE SPECIFICATIONS

COLOR	PIN	SIGNAL	FUNCTION
Yellow	12	Ground	Power supply ground connection to control panel.
Orange	13	Tamper Loop	Normally closed loop used with Red Pin #1 to supervise SS-32T case and ribbon cable.
Red	11	Shunted	Output will activate when Auto or Manual Shunt option is used.
Brown	14	Low Battery	Output will activate when any transmitter reports a low battery. Output will remain latched until all low battery signals are cleared.
Black	10	Status	Output will activate when any transmitter causes a status exception by not reporting in. Output will remain on until all status exceptions are cleared.
White	15	Test	Output will activate when a manual test transmission occurs by pressing a test button on any transmitter, which can be used to trigger a panic or test report.
Gray	9	Zone 8	Output will activate for four seconds, then automatically restore.
Violet	16	Zone 7	
Blue	8	Zone 6	
Green	17	Zone 5	
Yellow	7	Zone 4	
Orange	18	Zone 3	
Red	6	Zone 2	
Brown	19	Zone 1	
Black	5	Ground	Optional additional power supply ground connections to control panel.
White	20	Ground	
Gray	4	Armed Input High	Input controls the SS-32T alarm memory. Use if control panel gives a +12 volt signal when armed.
Violet	21	Manual Shunt Switch	Activates the SS-32T Manual Shunt feature by using a normally open switch to short input to ground.
Blue	3	Installer Switch	For factory use only. DO NOT USE.
Green	22	Armed Input Low	Input controls the SS-32T alarm memory. Use if control panel gives 0 volts (short to common) when armed.
Yellow	2	VAC In	For factory use only. DO NOT USE.
Orange	23	VAC In	
Red	1	Tamper Loop	Normally closed loop used with Orange Pin #13 to supervise SS-32T case and ribbon cable.
Brown	24	+12 to +18 VDC In	Power supply positive connection to 24-hour voltage output from control panel. 100 mA current draw typical.

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11. RECEIVER SPECIFICATIONS

Coding Technique	Pulse position A-1 modulation at 150 bits per second. Two 21-bit words are required for a valid transmission
Number of Codes	256 System codes, 32 Channel codes, 8 Zone codes
RF Carrier Frequency	303.875 MHz
3 db Bandwidth	2 MHz
Power Requirements	12 VDC, Standby and during display blanking 25 mA, Operating 200 mA maximum
Output Rating	Open collector, 10 mA maximum, 12 Volts maximum per output
Temperature Range	+ 32 to + 140 degrees F (0 to + 60 degrees C)
Size	Approximately 5 x 7-1/2 x 1-5/16 inches (127 x 190.5 x 153.3 mm)
Weight	11.5 ounces

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LIMITED WARRANTY

This Linear product is warranted against defects in material and workmanship for twenty-four (24) months. The Warranty Expiration Date is labeled on the product. **This warranty extends only to wholesale customers who buy direct from Linear or through Linear's normal distribution channels. Linear does not warrant this product to consumers.** Consumers should inquire from their selling dealer as to the nature of the dealer's warranty, if any. **There are no obligations or liabilities on the part of Linear Corporation for consequential damages arising out of or in connection with the use or performance of this product or other indirect damages with respect to loss of property, revenue, or profit, or cost of removal, installation, or reinstallation.** All implied warranties, including implied warranties for merchantability and implied warranties for fitness, are valid only until Warranty Expiration Date as labeled on the product. **This Linear Corporation Warranty is in lieu of all other warranties express or implied.**

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5957 Landau Court
Carlsbad, CA 92008
Attn: Service Manager

IMPORTANT !!!

Linear radio controls provide a reliable communications link and fill an important need in portable or wireless signaling.

However, there are some limitations which must be observed.

- The radios are required to comply with standards, rules, and regulations for the countries in which they are used. As such, they have limited transmitter power and therefore limited range.
- Receivers may be blocked by radio signals that occur on or near their operating frequencies, regardless of code settings.
- A receiver cannot respond to more than one transmitted signal at a time.
- Infrequently used radio links should be tested regularly to protect against undetected interference or fault.
- A general knowledge of radio and its vagaries should be gained prior to acting as a wholesale distributor or dealer, and these facts should be communicated to the ultimate users.

FCC NOTICE

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 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:

Re-orient the television or radio receiving antenna.

Relocate the SS-32T with respect to the receiver.

Move the SS-32T away from the receiver.

Power the control panel from a different AC outlet.

If necessary, the user should consult the installer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems" This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402, Stock # 004-000-00345-4.



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