

The EL-2541 is a single channel standalone receiver that provides an interface between Electronics Line 3000 supervised wireless transmitters and most popular control panels. The receiver uses SecuriCode™ technology to prevent code grabbing and scanning. Using this method, the code received from the transmitters changes every time the transmitter is used. The EL-2541 can support up to 16 individual transmitters, each with its own unique 24-bit serial number. The condition of each transmitter is shown on the receiver's display.

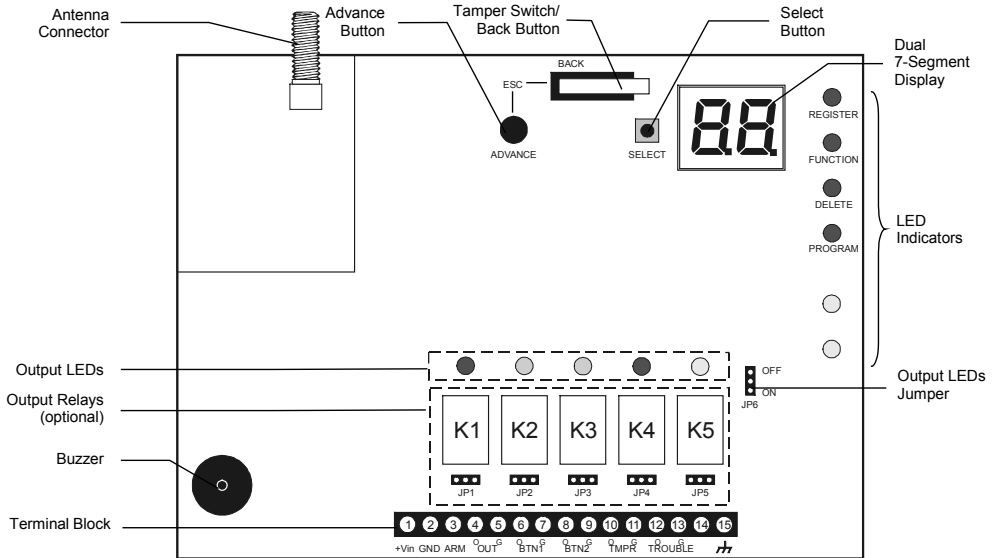


Figure 1: EL-2541 (PCB)

1: Installation

Consider the following before mounting the receiver:

- Mount the receiver in a central location as high above ground level as possible.
- Whenever possible, minimize the distance between the receiver and transmitters.
- Metal based construction materials, such as steel reinforced concrete walls, reduce the range of radio transmissions.

To install the receiver:

1. Remove the front cover by unscrewing the screws located at the four corners of the receiver.
2. Knockout the required wiring hole.
3. Mount the unit on the wall by attaching two screws in the keyhole slots and securing with the two bottom screws – see Figure 2.

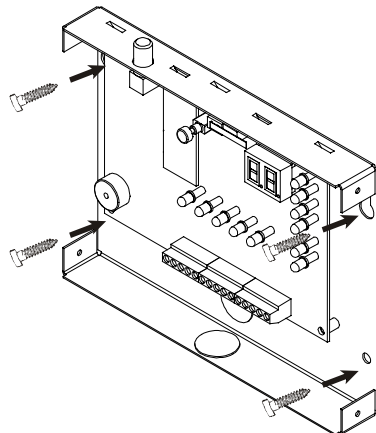

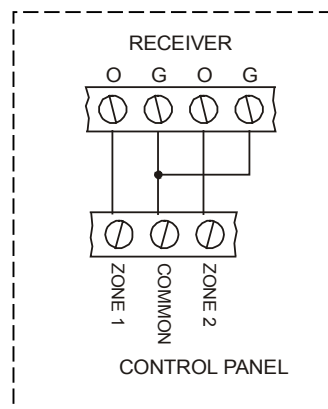


Figure 2: Wall Mounting

- +Vin GND ARM ^OOUT^G ^OBTN1^G ^OBTN2^G ^OTMPR^G ^OTROUBLE^G 
- 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15



Programmable as Normally Active or Normally Inactive

Terminal 3: Armed input - connect to an output on the control panel that is activated when the system is armed.

Terminals 6 & 7: Zone output for Button 1 on hand-held transmitters.

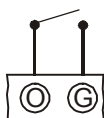
Terminals 10 & 11: Tamper output – activated by a Tamper transmission or by the tamper switch on the receiver.

Terminals 12 & 13: Trouble output – activated by an Inactive condition, Jamming condition or a Low Battery transmission.

Terminal 15: Earth

2: Outputs

Relay Output



Relay outputs can be configured as Normally Open or Normally closed using the jumper situated directly below each relay.

N.O. N.C.
 Normally Open

N.O. N.C.
☒ ☐ Normally Closed

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3: Programming

This section explains how to program the receiver, register and delete transmitters, and configure the settings for each output and function. In this section default values are indicated in bold.

To program the receiver:

1. Disarm the control panel to which the receiver is connected.
2. Remove the front cover of the receiver. All programming and transmitter registration is performed using the buttons ADVANCE, SELECT and BACK (tamper switch) located at the top of the board.
3. Press SELECT to enter programming mode; the Program LED is lit.
4. Press ADVANCE to scroll through the menu until the required function is shown on the display (pressing BACK enables you to scroll backwards). The available functions are:

rG	Registration Mode	0	Zone Output Mode	At	Activation Time
Lt	List Transmitters	b1	Button 1 Output Mode	SU	Supervision Time
tL	Test Transmitters	b2	Button 2 Output Mode	dL	Display Time
rt	Reception Test	t	Tamper Output Mode	dF	Display Function
dL	Delete Transmitter	tr	Trouble Output Mode	Ed	Event Display
RL	Delete All Transmitters	Ar	Armed Input Mode	EP	Exit Programming

Table 1: Menu Functions

5. Press SELECT to select the function.
6. To exit programming mode, press ADVANCE and BACK together or select Exit Programming (EP) from the menu. Programming Mode is automatically terminated 10 minutes after the last keystroke.

3.1: Registering and Deleting Transmitters

Once the receiver is installed, up to 16 individual transmitters can be registered. Transmitter registration enables the receiver to recognize the source of received transmissions.

To register transmitters:

1. Press SELECT to enter programming mode; "rG" appears on the display.
2. Press SELECT; the Register LED is lit.
3. The registration procedure differs for each transmitter, refer to the installation instructions provided with the transmitter for further details.
4. On registration, the newly assigned transmitter number is displayed and four acknowledge tones are sounded. Write the transmitter number on the Transmitter Register form for future reference. Where relevant, you should also write this number on the stickers provided with the transmitter. Should the transmitter fail to register, Er (Error) is displayed and an error tone is sounded.
5. Press ADVANCE; the Register LED is lit and the receiver is ready to register the next transmitter.
6. After 16 transmitters are registered, if any attempt is made to register additional transmitters, "FL" is displayed, an error tone is sounded and registration mode is automatically terminated.
7. Press SELECT to exit Registration mode. Registration mode is automatically terminated after 4 minutes.

To delete a registered transmitter:

1. Press ADVANCE or BACK until Delete mode “dL” appears on the display.
2. Press SELECT; the Delete LED flashes.
3. Press ADVANCE or BACK until the required transmitter is displayed.
4. Press and hold down SELECT; the display flashes.
5. While holding down SELECT, press ADVANCE twice; a long tone is sounded confirming that the transmitter has been deleted.

To delete all registered transmitters:

1. Press ADVANCE or BACK until Delete All mode “AL” is shown on the display.
2. Press SELECT; the Delete LED flashes.
3. Press and hold down SELECT; the display flashes.
4. While holding down SELECT, press ADVANCE twice; a long tone is sounded confirming that all transmitters have been deleted.

Note: When holding down SELECT, if the operation is not completed within 2½ seconds, the operation is cancelled.

3.2: Output Settings

The EL-2541 comprises 5 programmable outputs for connection to zones on the control panel. Table 2 explains the display and activation of each of these outputs.

DISPLAY	NAME	ACTIVATED BY
0	Zone	Alarm transmission from detection devices
b1	Button 1	Pressing Button 1 on a hand-held transmitter
b2	Button 2	Pressing Button 2 on a hand-held transmitter
t	Tamper	Tamper transmission from one of the transmitters or the receiver
tr	Trouble	Inactive transmitter, Low Battery transmission or code jamming attempt

Table 2: Outputs

Note: During programming, Button 2 is displayed as “b.” and Trouble is displayed as “t.”.

To program output settings:

1. Press SELECT to enter programming mode.
2. Press ADVANCE or BACK until the required output appears on the display.
3. Press SELECT; the Function LED is lit and the Register LED is lit whenever the current selection is displayed.
4. Using the ADVANCE key, choose the normal state of the output from Table 3 and press SELECT.

Note: In the following two tables, the display letter appears next to the display letter of the output. For example, if the tamper output is normally active the letters “tA” are displayed.

DISPLAY	NAME	EXPLANATION
I	Inactive	The output is normally inactive
A	Active	The output is normally activated

Table 3: Normal State

5. Using the ADVANCE key, choose the operation mode from Table 4 and press SELECT.

DISPLAY	NAME	EXPLANATION
n	Momentary	The output is activated for the programmed amount of time
F	Follower	The output is dependent on the state of the transmitter (Not Buttons)
L	Latched	The output remains activated until the system is disarmed
t	Toggle	The output is toggled on each transmission (Buttons Only)

Table 4: Operation Mode

Note: If one of the button outputs (B1 or B2) is defined as Latched, when the system is disarmed the output operates in Momentary mode. If the zone output (O) is defined as Latched, when the system is disarmed the output operates in Follower mode. In Follower mode, a PIR detector activates the zone output for a period of 5 seconds.

If a zone output defined as Momentary is activated when the system is disarmed. If the system is armed before the zone output is restored, it will be activated again. This prevents, for example, a window with a magnetic contact being left open when the system is armed.

3.3: General Function Settings

To program function settings:

1. Press SELECT to enter programming mode.
2. Press ADVANCE or BACK until the required general function is shown on the display.
3. Press SELECT; the Function LED is lit and the Register LED indicates the current selection.
4. Press ADVANCE to view the options.
5. Press SELECT to choose the displayed option.

DISPLAY	NAME	OPTIONS			
Ar	Armed Input	AL	Active Low	AH	Active High
dL	Display Time	dA	Always Active	dd	During Disarm
dF	Display Function	dC	Continuous	dP	When a key is pressed
Ed	Event Display	EA	Automatic Scrolling	En	Manual Scrolling
At	Activation Time	Choose the activation time for momentary outputs (1-50 seconds) Default: 1 second			
SU	Supervision Time	Choose the supervision time length (1.5 - 9 hours) Default: 6 hours			

Table 5: General Functions

Armed Input

This option determines if the Armed Input operates as active low (AL) or active high (AH).

Display Time

The Display Time option determines when the EL-2541's display is active. The display can be programmed to be always active (dA) or only when the system is disarmed (dd).

Display Function

Display Function determines if the display is continuously active (dC) or is activated for 4 minutes when a key is pressed (dP).

Event Display

Events are displayed by the status LEDs and the transmitter display. The event display can either scroll through the events automatically (EA) or manually by pressing ADVANCE (En).

Activation Time

Outputs defined as Momentary are activated for a programmed amount of time. To program this time, use ADVANCE and BACK to choose a time between 1 and 50 seconds. To scroll quickly, hold down the ADVANCE or BACK button.

Supervision Time

The transmitters in the MasterLink range send a supervision signal approximately one hour after the last transmission was sent. The amount of time after which a transmitter is considered as “inactive” is programmable. To program this time, use ADVANCE and BACK to choose a time between 1.5 and 9 hours in ½ hour increments. To scroll quickly, hold down the ADVANCE or BACK button.

3.4: Listing Transmitters

To list all registered transmitters:

- 1. Press SELECT to enter programming mode.
- 2. Press ADVANCE or BACK until “Lt” appears on the display.
- 3. Press SELECT; an automatically scrolling list of the current status of all registered transmitters appears on the display.

3.5 Testing Transmitters

To test the transmitters:

- 1. Press SELECT to enter programming mode.
- 2. Press ADVANCE or BACK until “rt” appears on the display.
- 3. Press SELECT; a list of all registered transmitters appears on the display.
- 4. Test each transmitter. Each time a transmission is received, the transmitter is removed from the list. When all transmitters have been tested successfully, “00” appears on the display.
- 5. Press SELECT to end Test mode.

3.6 Testing Reception

To test the quality of the signal received from each transmitter:

- 1. Press SELECT to enter programming mode.
- 2. Press ADVANCE or BACK until “rt” appears on the display.
- 3. Press SELECT; the display appears blank.
- 4. Activate a transmitter. The transmitter's number and the reception quality are displayed (0-9). For example, “05” then “=7” indicates that transmitter number 5 has a signal quality of 7. Additionally, a series of tones are sounded to indicate the signal quality. A summary of these tones is shown in Table 6. If the signal quality is poor, relocate the transmitter and perform the test again.
- 5. Press SELECT to end Test mode.

Signal Quality	Number of Tones
0-1	1 Low Tone
2-3	1 High Tone
4-5	2 High Tones
6-8	3 High Tones
8-9	4 High Tones

Table 6: Signal Quality Tones

4: Operation

During normal operation, the EL-2541 displays events as they happen. These events are displayed until the condition is restored.

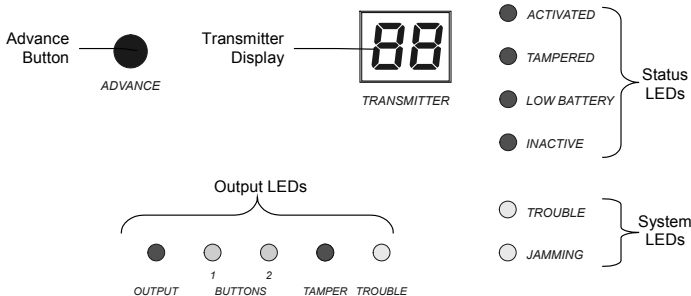


Figure 5: Operation Display (cover on)

LED		Lit when
Status	Activated	The displayed transmitter has been activated. <i>Event Log Display:</i> This LED also indicates Button 1 on hand-held transmitters.
	Tampered	The displayed transmitter has been tampered with. <i>Event Log Display:</i> This LED also indicates Button 2 on hand-held transmitters. If the transmitter display reads "00", the EL-2541's tamper switch was opened.
	Low Battery	The displayed transmitter's battery is low and needs replacing.
	Inactive	No transmission has been received from the displayed transmitter for the programmed supervision time. If this LED flashes, the displayed transmitter is out of synchronization with the receiver. In most cases, this indicates that an unauthorized attempt at grabbing the transmission has occurred - i.e. a previous transmission has been recorded and sent by somebody trying to violate the system. <i>Event Log Display:</i> If the transmitter display reads "00", a jamming condition was recorded.
System	Trouble	A Tamper, Low Battery or Inactive condition exists within the system.
	Jamming	The receiver's frequency is being jammed.

Table 7: Status LEDs

Note: The System LEDs only display current events and are not used in the event log display.

4.1: Viewing the Log

The log records alarm events that occurred when the system was armed and system events such as Low Battery and Tamper. When new events have entered the log, the decimal point on the right flashes. **Note: For hand-held transmitters, the Activated LED indicates Button 1 and the Tampered LED indicates Button 2.**



Flashes to indicate new log entries

To view the log:

1. Press and hold down ADVANCE for a few seconds, until the decimal point stops flashing; the Transmitter Display and the Status LEDs display the first event in the log.
2. Use the ADVANCE button to scroll through the events. After the last event in the log, the decimal point is turned off and a long tone is sounded.

The event log is deleted the next time the control panel is armed.

5: Technical Specifications

Model number	EL-2541	Outputs	5
Operating Frequency	868.35, 433.92 or 418MHz FM	Output Rating	24V, 1A (relay)
Number of Transmitters	16 max.	Armed Input	24V, 50mA (open collector)
Sensitivity	-100dBm (nominal)	Operating Temperature	Low: Open or +5 to +12VDC High: Short to GND
Operating Voltage	12Vdc \pm 15%	Dimensions	0 to 60°C 32° to 140°F
Current consumption	150mA (full load)		20 x 15.6 x 3.1cm 7.9" x 6.1" x 1.3"

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