ENFORCER®

1- and 2-Output HL-Series RF Receivers

Additional Information and Sample Use Case Scenarios

HL-951R2-SQ / HL-851R2-SQ shown

General Introduction

The new 1- and 2-Output HL-Series Receivers are a significant upgrade from earlier versions and provide new configuration possibilities for greater flexibility and many new types of use cases.

This document will expand on some of the options mentioned in the Installation Manual, but these are just a few of the many possibilities that are now opened up to you.

As before, the 917MHz (or 868.35MHz CE versions) frequency is designed to give you a much more reliable signal even in difficult environments, providing improved penetration of obstacles, greater immunity to interference, and less sensitivity to temperature fluctuations, as well as much greater range of up to 1,800ft (550m)*

These receivers are compatible with all ENFORCER HL-Series Transmitters of the same frequency.

*Actual operating range will vary greatly depending on the installation and operating environment.

NOTE: This guide only applies to version 2 of the HL-series receivers (identified by the updated housing as pictured above)

SECO-LARM®

Table of Contents

Applicable Products

917MHz FCC Certified Receivers – New Version

1-Output, 2-Channel, Long-Range

HL-951R1-SQ

2-Output, 2-Channel, Long-Range

HL-951R2-SQ

868.35MHz CE Certified Receivers – New Version*

1-Output, 2-Channel, Long-Range

HL-851R1-SQ

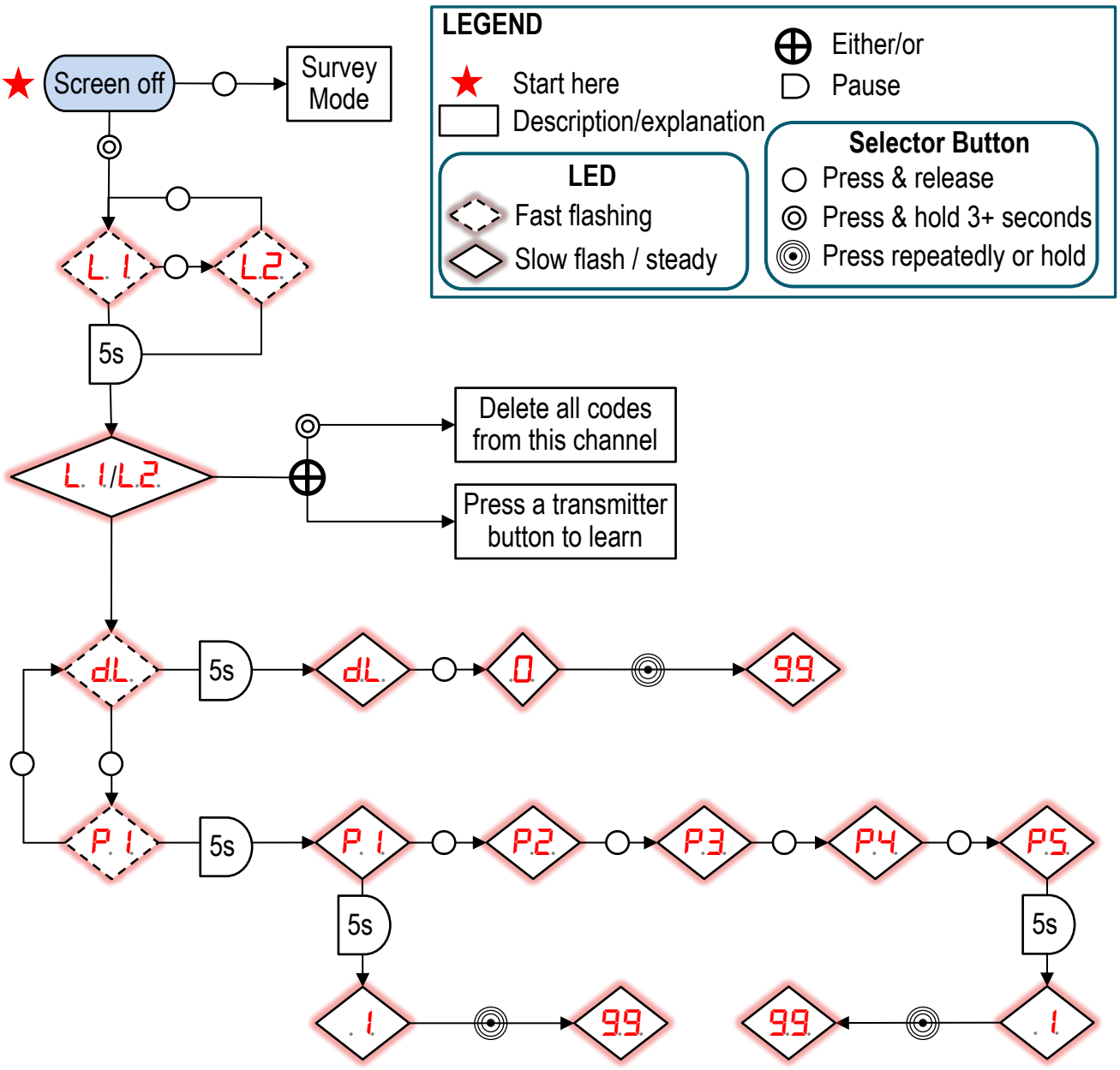
2-Output, 2-Channel, Long-Range

HL-851R2-SQ

* Special order

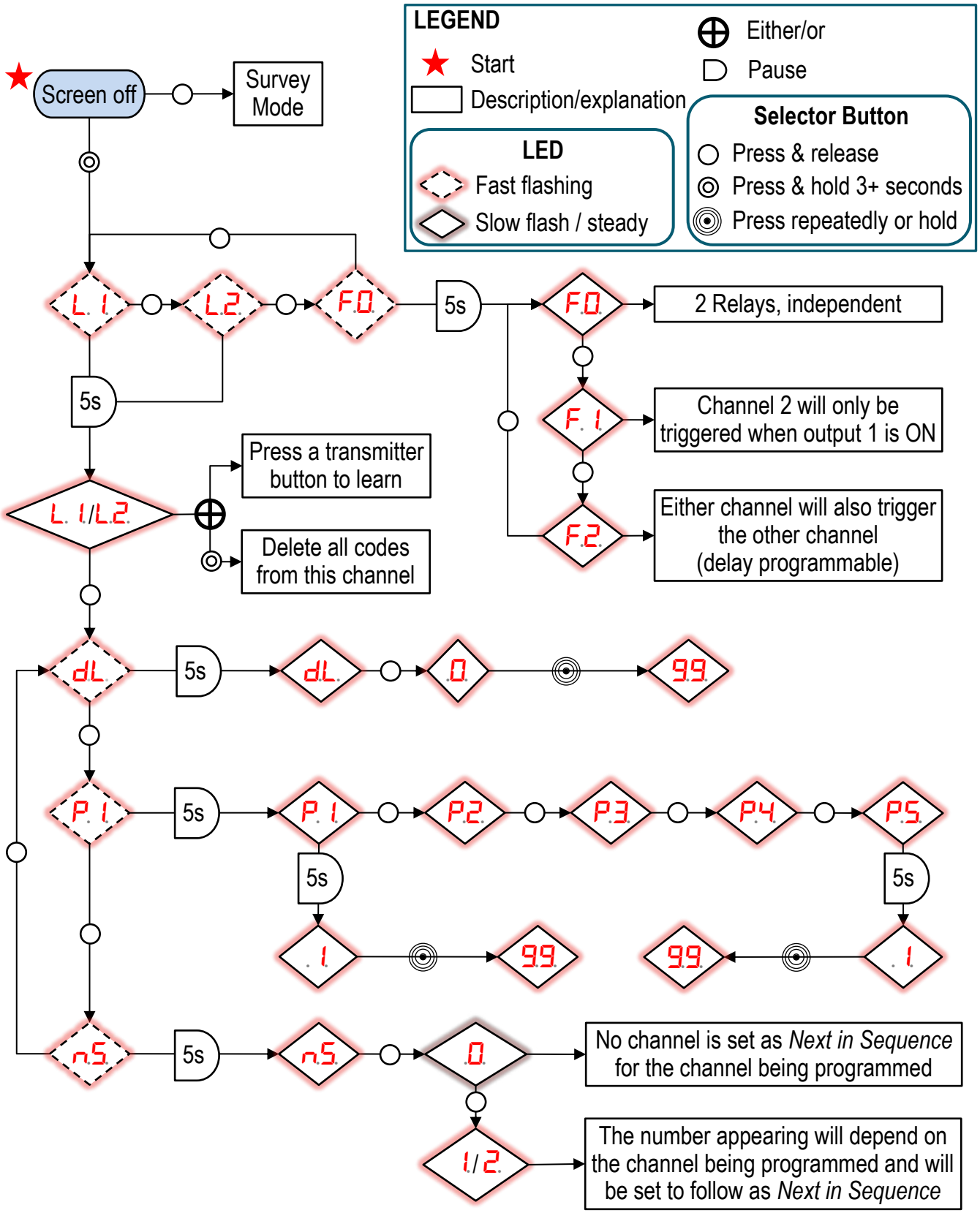
Programming Flow

1-Output, 2-Channel Receiver Flow Chart



Programming Flow (Continued)

2-Output, 2-Channel Receiver Flow Chart



Programming Flow (Continued)

Programming Example

The flow chart is meant as a help to the description in the manual that was provided with your receiver. As an example of how to use the flow chart, we will program channel 2 with a 15 second delay time.

1. Note the starting point, where the screen is blank. At this point you can go in two directions, but we want to move to the programming, choose channel 2, program the delay, and exit.
2. Press the selector button until the display lights and begins flashing rapidly. It will read L. 1 if you are starting from factory default.
3. Immediately press the button again until the display reads L.2., (i.e., for channel 2). If you accidentally pass it, you can keep pressing until it cycles around again.
4. Pause for about 5 seconds or until the display stops flashing rapidly and press the selector again until dL. appears in the display, again flashing rapidly.
5. Pause for about 5 seconds, or until the display stops flashing rapidly, and press the selector repeatedly until 15. appears (options are 0~99 seconds). You can press and hold to move more rapidly through the numbers. When you reach 99, it will cycle back to 0 and start again.
6. Pause for at least 5 seconds until the screen turns blank.

You have now set channel 2 to always delay triggering its output for 15 seconds.

Difference between Channel and Output

In the past, *channel* and *output* were often used interchangeably because each channel was connected to a single output.

However, it is important to make a distinction with these models. It is helpful to think of *channel* as the input for the RF signal. With most models, the channel has a one-to-one connection to a corresponding output as expected.

The 1-output variants are an exception since they have 2 channels. The difference between the two channels is that channel 1 triggers the output directly with no delay. Channel 2 works indirectly, triggering the output by triggering channel 1 but, since channel 2 can be programmed with a delay (0~99 seconds), that allows the same single channel receiver to perform differently depending on which channel is triggered—either immediately, or with a customized delay, opening up a lot of new possibilities and saving the expense of having to use multiple receivers.

Sample Applications for 1-Output Models

In addition to the typical use, the following offer a couple of basic uses that you can adapt to other situations.

Immediate or Delay

Channel 1 always triggers immediately, but channel 2 can be set to trigger only after a delay using the *Output Delay* (dL).

Vestibule Sequencing

For this you'll need 2 receivers and 4 transmitters.

- The inner and outer doors each use one receiver connected to the door opener, set with an *Output Delay* (dL) for Channel 2.
- Use one transmitter connected to an entry button outside and learned to channel 1 of the outside door opener and channel 2 of the inside door opener.
- Use one transmitter connected to an entry button inside and learned to channel 1 of the inside door opener and channel 2 of the outside door opener.
- Place 2 transmitters in the vestibule, each learned to channel 1 of one of the door openers and connected to a button for opening that door.

Setup

1. Wire the receiver as normal for the application (see *Sample Wiring Applications*, pg. 20).
2. Program Channel 2 with the desired delay time by following the programming steps in the *Installation Manual* and the *Programming Flow* (see pg. 3).

Sample Applications for 2-Output Models

The various combinations of the *Channel Function (F.0.)*, *Next in Sequence (n.S.)*, and *Output Delay (dL.)* settings can be used in many creative ways so you may experiment with various settings. Combine those also with various *Output Modes* [1~99 seconds timed, 1~99 minutes timed, toggle, latch, and follow, (validity)] and even more possibilities open up. Below are some ideas and how to set them up. Unless specifically stated, the configurations below assume one 2-Output receiver and either 1- or 2-button transmitters. Alternatively, a wired transmitter can be connected to an RTE button, a sensor, or another switching device

Two Independent Outputs

To use the two outputs independently as traditionally done, there is nothing that needs to be done out of the box. If you have a receiver that has already been set up previously and you wish to return to this mode, simply set the *Channel Function* back to its default of F.0.. Configure each channel individually as usual.

Sample Applications for 2-Output Models (Continued)

Single-Direction Switching Network

In this scenario, the two channels are connected but only in one direction using the *Next in Sequence (n.S)* feature. You can combine it with the *Output Delay* to set a delay between the two or omit that so that the "sequence" becomes simultaneous. Either channel can be made to follow the other, so in the example below, channel A could be channel 1 or 2 and B would be its opposite.

Example

Assume that, in programming channel A, you have set channel B to be *Next in Sequence (n.S)*. You have also configured each channel's *Output Mode* as desired and learned transmitter button codes for each channel.

- Press a transmitter button for channel A, and the outputs for both channel A and channel B will be triggered.
  - If no Output Delay (dL.) has been set for channel B, the two will trigger simultaneously.
  - If an Output Delay of 5 seconds has been set for channel A, there will be a 5 second delay after pressing the transmitter button, but then both channel A and B will be triggered.
  - If an Output Delay of 10 seconds has been set for channel B, it will then trigger 10 seconds after channel A.
- Press a transmitter button for channel B and its output will be triggered directly (or after a delay if you have set an Output Delay for channel B). Channel A will not be triggered.

This is useful anytime you have two devices that need to be triggered together or in sequence. If you don't want the second device be triggered without the first, just don't learn any transmitter button code to that channel.

Setup

1. Wire the two devices to the receiver's two outputs as normal for their application (see *Sample Wiring Applications*, pg. 20).
2. In programming the channel for the output of the priority device, set the other channel to be *Next in Sequence* to it.
3. Set the *Output Mode* for each channel's output relay as desired.
4. Learn any controlling transmitter buttons to the channel that controls the priority device.
5. If a delay is desired for the secondary device, program the channel for the output it is connected to and set its *Output Delay* to the desired number of seconds.
6. If you wish to also be able to trigger the secondary device without the priority device, learn a transmitter button to the channel for the output connected to that device.

Sample Applications for 2-Output Models (Continued)

Bidirectional Switching Network

In this scenario, the two channels are connected but operate in both directions using the *Output Function* feature set to F.2.. Either channel will trigger the other channel. One or both channels can be programmed with their own *Output Delay* if desired.

Example 1

Assume you have set the *Output Function* to F.2., the *Output Delay* for channel 1 to be 5 seconds, and the *Output Delay* for channel 2 to be 10 seconds. You have also configured each channel's *Output Mode* as desired and learned transmitter button codes for each channel.

- Press a transmitter button for channel 1.
  - After 5 seconds, its output will be triggered according to whatever *Output Mode* you have set for output 1.
  - After 10 more seconds the output for channel 2 will be triggered according to whatever *Output Mode* you have set for output 2.
- Press a transmitter button for channel 2.
  - After 10 seconds, its output will be triggered according to whatever *Output Mode* you have set for output 2.
  - After 5 more seconds the output for channel 1 will be triggered according to whatever *Output Mode* you have set for output 1.

Example 2

Assume you have set the *Channel Function* to F.2., no *Output Delay* for channel 1, and the *Output Delay* for channel 2 to be 10 seconds. You have also configured each channel's *Output Mode* as desired and learned transmitter button codes for each channel.

- Press a transmitter button for channel 1.
  - Its output will be triggered immediately according to whatever *Output Mode* you have set for output 1.
  - After 10 more seconds the output for channel 2 will be triggered according to whatever *Output Mode* you have set for output 2.
- Press a transmitter button for channel 2.
  - After 10 seconds, its output will be triggered according to whatever *Output Mode* you have set for output 2 and output 1 will also be triggered simultaneously (since it was not programmed with a delay).

Sample Applications for 2-Output Models – Bidirectional Switching Network (Continued)

Most likely this would be used either when you want to trigger two devices simultaneously, or you want to trigger them sometimes starting with one and sometimes starting with the other. One possibility would be something like a vestibule. However, note that this doesn't allow for individually opening one door if one gets trapped in between.

Setup

1. Wire the two devices to the receiver's two outputs as normal for their application (see *Sample Wiring Applications*, pg. 20).
2. Set the *Channel Function* to F.2..
3. Set the *Output Delay* for each channel as desired.
4. Set the *Output Mode* for each channel's output relay as desired.
5. Learn any controlling transmitter buttons to their respective channels for the right device.

Sample Applications for 2-Output Models (Continued)

Latched Mode Switching Network

This scenario allows you to ensure that one channel cannot trigger unless the other channel is ON. An example would be an industrial or safety situation where operating one device requires first ensuring that another safety device is also operating. To accomplish this, use the *Channel Function* set to F. 1. When this is set, channel 2 will not activate unless channel 1 is ON.

Example 1

Assume you have set the *Output Function* to F. 1, the *Output Mode* for channel 1 to be timed (P.S.) 99 minutes, and the *Output Mode* for channel 2 as desired. You have also learned transmitter button codes for both channels.

- Press a transmitter button for channel 1.
  - Its output will be triggered and remain so for 99 minutes (1 hour, 39 minutes).
- At any time after that point and before the time expires, press a transmitter button for channel 2.
  - Its output will be triggered according to the *Output Mode* set.
- Unless a transmitter button for channel 1 is pressed again (restarting the 99 minute countdown), after 99 minutes has passed output 1 will turn OFF.
- Press a transmitter button for channel 2.
  - Its output will not be triggered because output 1 is now Off.

Example 2

Assume you have set the *Output Function* to F. 1, the *Output Mode* for channel 1 to be timed (P.S.), 2 minutes, and have set channel 2 as the *Next in Sequence* to channel 1. You have set the *Output Delay* for channel 2 at 2 seconds and set its Output Mode to be timed (P. 1) 70 seconds. You have also learned transmitter button codes for channel 1.

- Press a transmitter button for channel 1.
  - Its output will be triggered and remain ON for 2 minutes (120 seconds).
  - After 2 seconds, channel 2 will be triggered and its output remain ON for 70 seconds after which it will turn off.
  - After an additional 48 seconds, output 1 will turn OFF.

This could be used for a door lock connected to output 1 and a door opener connected to output 2 (with a wired transmitter connected to an access control keypad or other entry device) or other similar use.

Sample Applications for 2-Output Models – Latched Mode Switching Network (Continued)

Example 3

Assume you have set the *Output Function* to F. t, the *Output Mode* for channel 1 to be toggle. You have set up channel 2 as desired. You have also learned transmitter button codes for both channels.

- Press a transmitter button for channel 1.
  - Assuming it is off, its output will be toggled ON.
- Press a transmitter button for channel 2.
  - Its output will operate as you have set it up to do.
- Press a transmitter button for channel 1.
  - Its output will be toggled OFF.
- Press a transmitter button for channel 2.
  - Its output will not operate.

This could be used for a door lock connected to output 1 and a door opener connected to output 2 or other similar use. A manager would have access to the transmitter for channel 1 to unlock the main doors for a room or building when it is to be opened to the public, and a door opener sensor or access pushbutton is connected to a wired transmitter that is learned to channel 2. The doors would only open when the manager has toggled them to unlock.

Of course, it is also useful for any use where one device's operation depends on another device being on, or when a device's use needs to be controlled by a person with authority.

Setup

1. Wire the two devices to the receiver's two outputs as normal for their application (see *Sample Wiring Applications*, pg. 20).
2. Set the *Channel Function* to F. t.
3. Set the *Next in Sequence* for channel 1 to Channel 2 if you want 1 button to automatically trigger both devices in sequence.
4. Set the *Output Mode* for each channel's output relay depending on use case.
5. Learn any controlling transmitter buttons to their respective channels for the right device.

Sample Applications for 2-Output Models (Continued)

Latched Mode in a Timed System

This scenario allows you to ensure that one channel can only be triggered according to a set schedule. An example could be an entrance that can only be unlocked during certain business hours or equipment that may not be operated during certain times. To accomplish this, also use the *Channel Function* set to F. 1. When this is set, channel 2 will not activate unless channel 1 is ON and the transmitter for channel 1 is connected to a timer or other control system.

Example

Assume you have set the *Output Function* to F. 1, the *Output Mode* for channel 1 to toggle, and the *Output Mode* for channel 2 as desired. A wired transmitter learned by channel 1 has been connected to a timer or other type of system controller with the desired schedule programmed. You have also learned transmitter button codes for channel 2.

- The timer will trigger the transmitter button for channel 1 according to its scheduled ON time.
  - Its output will be triggered ON and remain ON.
- At any time during the timer's programmed ON time, press a transmitter button for channel 2.
  - Its output will be triggered according to the *Output Mode* set.
- When the timer reaches the scheduled OFF time, it will again trigger the transmitter button for channel 1
  - Its output will be triggered OFF and remain OFF until the timer schedule reaches another ON time.
- Press a transmitter button for channel 2.
  - Its output will not be triggered because output 1 is now Off.

This is similar to the Latched Mode Switching Network's Example 3 except that it does not rely on a person to manually trigger it ON or OFF and thus is better for uses that happen according to a regular schedule. It could still be used for a door lock connected to output 1 and a door opener connected to output 2 or other similar use. The doors would only open during the scheduled times.

Of course, it could also be used for any use that should also be restricted to a regular schedule.

Additional Devices Required

- Timer or other control device
- ENFORCER HL-Series Wired Transmitter for timer

Sample Applications for 2-Output Models – Latched Mode in a Timed System (Continued)

Setup

1. Wire the two devices to the receiver's two outputs as normal for their application (see *Sample Wiring Applications*, pg. 20).
2. Set the *Channel Function* to F. 1.
3. Set the *Output Mode* for channel 1 to toggle (P.2.).
4. Set the *Output Mode* for channel 2 as desired for its application.
5. Learn the transmitter connected to the timing device to channel 1
6. Learn any other transmitters to channel 2.

Sample Applications for 2-Output Models (Continued)

Vestibule Sequencing – One Way

This scenario is designed for a one-way entrance or exit vestibule with a triggering device that opens the first door and then in sequence opens the second door. However, another button may be placed in the vestibule to help someone trapped by being too slow for the programed sequence.

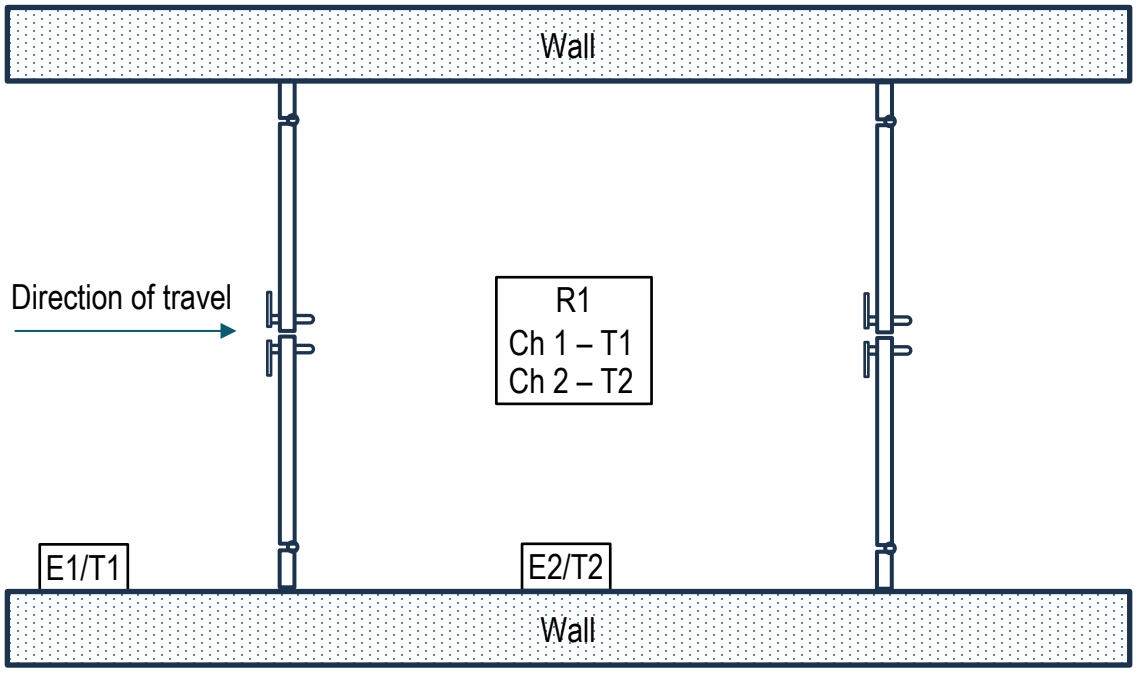
Devices Required

The following devices are required for the setup as described and shown in the installation diagram (with the abbreviations in parentheses referring to the diagram).

- 1x ENFORCER 2-Output HL-Series Receivers (R1)
- 3x ENFORCER Wired HL-Series Transmitters (T1, T2,)
- 1x Access control device, entry button, or sensor (depending on need) on the side where people would enter the vestibule (whether entering or exiting the room/building) (E1)
- 1x Exit button inside the vestibule (E2)

Example Diagram

In the diagram below, the receiver is shown closer to the main door, but in practice, it could be mounted anywhere convenient to connect to each door's door controllers. The transmitters that would be learned to each channel are shown with the receiver. Output 1 is connected to the first door's controller and output 2 to the second door's controller. The E1 device and transmitter might be on the wall but could be an above-the-door type sensor.



Sample Applications for 2-Output Models – Vestibule Sequencing – One Way (Continued)

In this example, assume we have programmed channel 1 with its *Output Mode* to timed (P. 1) and the time to 5 seconds and set its *Next in Sequence* to channel 2. We have programed channel 2 with an *Output Delay* of 3 seconds and its *Output Mode* to timed (P. 1) and the time to 5 seconds.

Example Description

In the example, when someone enters the sensor range or presses the exit button, the first door begins to open. Within 3 seconds of that door beginning to open, the second door will also begin to open. Each door will release and begin to close 5 seconds from the time when it first started to open. Should someone be too slow, they can press the button E2 and the second door will again begin to open after a delay of 3 seconds. These durations are only for illustration and should be adjusted for your own situation.

Setup

1. Install the receiver (R1) somewhere convenient to the two door's controllers.
2. Wire the first door controller (in relation to the direction of travel) to output 1 and the second door to output 2 of the receiver (R1) as normal for their application (see *Sample Wiring Applications*, pg. 20).
3. Install the 2 wired transmitters (E1, E2) to their respective devices as shown in the preceding diagram.
4. Program R1 channel 1 *Next in Sequence* (n.5) to channel 2
5. Program R1 channel 1 *Output Mode* to timed (P. 1) and set the appropriate time for your installation.
6. Program R *Output Delay* for Channel 2 if you desire the first door to close before the second door opens but note that this will also delay its opening when triggered from within the vestibule.
7. Learn R1 Channel 1 to T1 transmitter.
8. Learn R1 Channel 2 to T2 transmitter.
9. Test and adjust timing as necessary.

Sample Applications for 2-Output Models (Continued)

Vestibule Sequencing – Bidirectional Entry/Exit

This scenario, when implemented fully, requires more thought and additional receivers and transmitters. It is designed specifically for a two-way (serving as both entry and exit) vestibule scenario with some sort of triggering device outside that opens the outside door and then in sequence opens an inside door. The same sequence must be applied to exit the doors in reverse sequence. However, buttons should be placed between the doors for those who may be too slow for the programed sequence so that the second door closes before they pass through. This would require two buttons, one for each door, to choose the correct door to reopen.

NOTE: This is not suitable for a 'man-trap' installation, although it could be adapted by replacing the vestible "entry" button with a second access control device, removing the *Next in Sequence* from R1, and ensuring that the timing for exit allows the interior door to close before the exterior door opens.

Devices Required

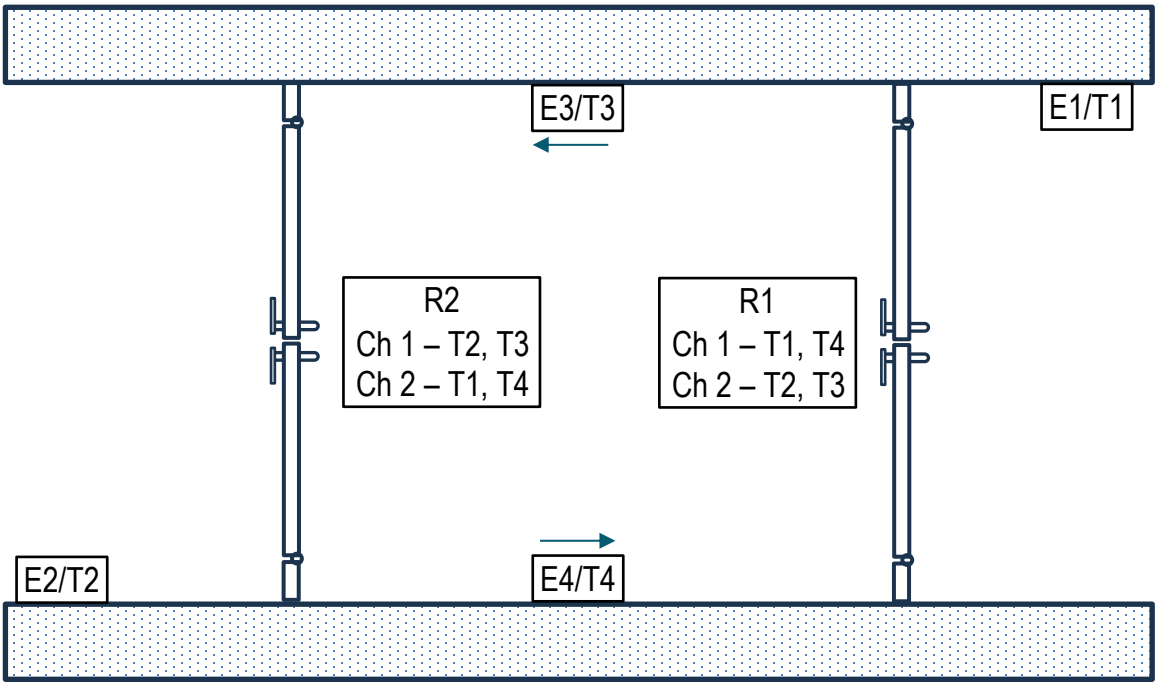
The following devices are required for the setup as described and shown in the installation diagram with the abbreviations in parentheses referring to the diagram).

- 2x ENFORCER 2-Output HL-Series Receivers (R1, R2)
- 4x ENFORCER Wired HL-Series Transmitters (T1, T2, T3, T4)
- 1x Access control device, entry button, or sensor (depending on need) outside the room/building (E1)
- 1x Exit button or sensor for inside the room/building (E2)
- 2x Exit buttons inside the vestibule, one to continue to enter (E3) and one to continue to exit (E4)

Sample Applications for 2-Output Models – Vestibule Sequencing – Bidirectional Entry/Exit (Continued)

Example Diagram

In the diagram below, the receivers are shown closer to the main door that they control, but in practice, they would be mounted anywhere where it is convenient to connect to both door controllers. Output 1 of Receiver 1 (R1) is connected to the exterior door's controller and output 2 to the interior door's controller. Output 1 of Receiver 2 (R2) is connected to the interior door's controller and output 2 to the exterior door's controller. With each receiver are shown the transmitters that would be learned to each channel. The E1 and E2 devices with their transmitters might be on the wall but could be above-the-door type sensors.



In this example, assume we have programmed both receivers in the same way—channel 1 with its *Output Mode* to timed (P. 1) and the time to 5 seconds and set its *Next in Sequence* to channel 2. We have programed channel 2 with an *Output Delay* of 3 seconds and set its *Output Mode* to timed (P1) and the time to 5 seconds.

Example Description

In the example, when someone enters the sensor range, presses the exit button, or initializes an access device (depending on the setup and which direction they are coming from), the first door begins to open. Within 3 seconds of that door beginning to open, the second door will also begin to

Sample Applications for 2-Output Models – Vestibule Sequencing – Bidirectional Entry/Exit (Continued)

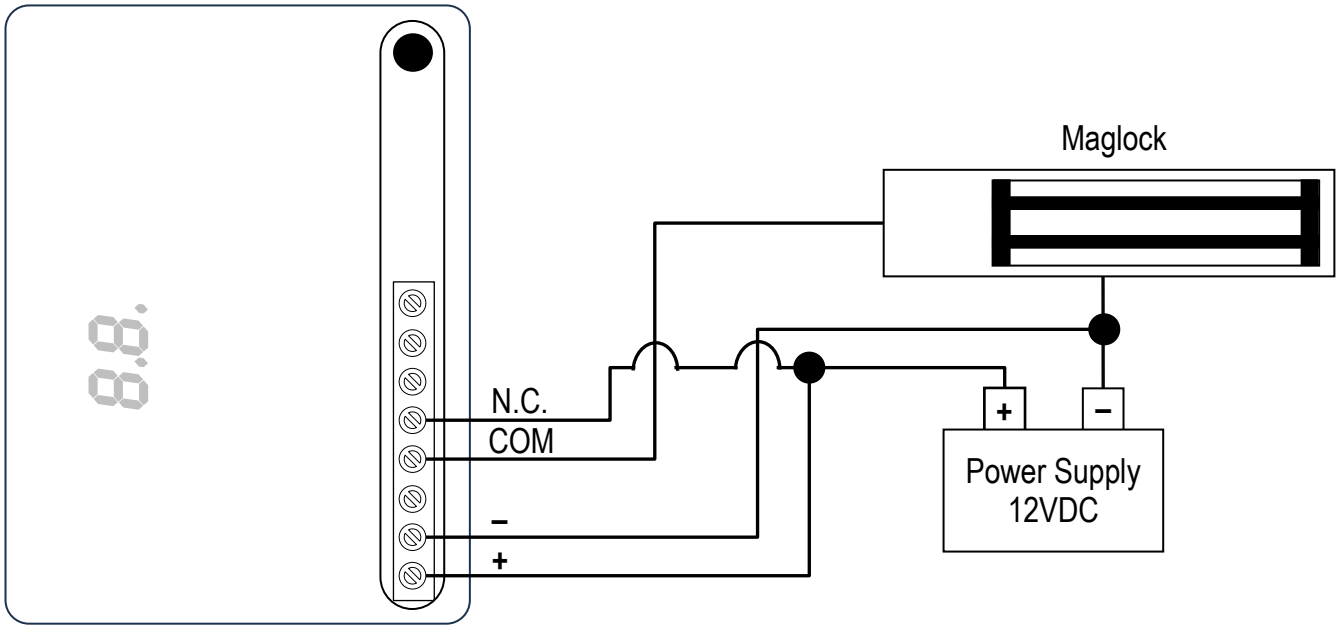
open. Each door will release and begin to close 5 seconds from the time when it first started to open. Should someone be too slow, they can press the corresponding button inside the vestibule marked for direction (E3 to continuing entering and E4 to continue exiting) and the second door will again begin to open after a delay of 3 seconds. These durations are only for illustration and should be adjusted for your own situation.

Setup

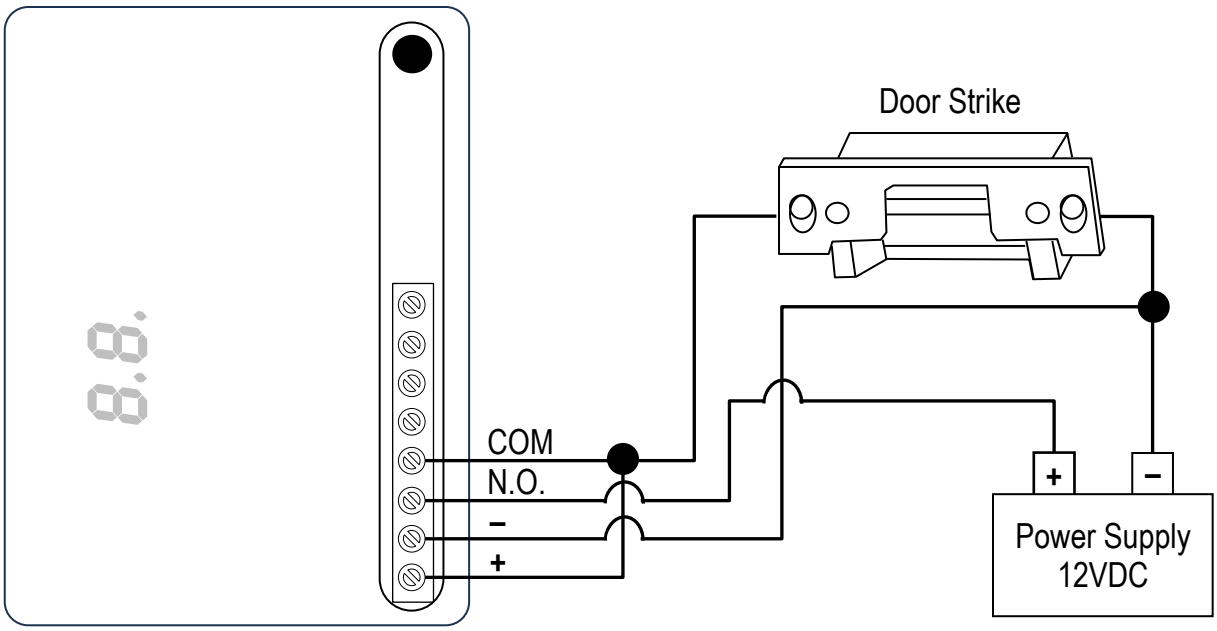
1. Install the two receivers somewhere convenient to both door controllers.
2. Wire the exterior door controller to output 1 and the interior door to output 2 of receiver 1 (R1) as normal for their application. Wire the interior door controller to output 1 and the exterior door to output 2 of receiver 2 (R2) as normal for their application (see *Sample Wiring Applications*, pg. 20).
3. Install the 4 wired transmitters (E1~E4) to their respective devices as shown in the preceding diagram.
4. Program R1 channel 1 *Next in Sequence* (n.5.) to channel 2
5. Program R1 channel 1 *Output Mode* to timed (P. 1.) and set the appropriate time for your installation.
6. Program R1 *Output Delay* (dL.) for Channel 1 if you desire the interior door to close before the exterior door opens when exiting but note that this will also delay its opening when triggered for entry.
7. Learn R1 Channel 1 to T1 and T4 transmitters.
8. Learn R1 Channel 2 to T2 and T3 transmitters.
9. Program R2 channel 1 *Next in Sequence* (n.5.) to channel 2
10. Program R2 channel 1 *Output Mode* to timed (P. 1.) and set the appropriate time for your installation.
11. Program R2 *Output Delay* (dL.) for Channel 2 if you desire the exterior door to close before the interior door opens when entering but note that this will also delay its opening when triggered for exit.
12. Learn R2 Channel 1 to T2 and T3 transmitters.
13. Learn R2 Channel 2 to T1 and T4 transmitters.
14. Test and adjust timing as necessary.

Sample Wiring Applications

Typical N.C. Wiring Diagram

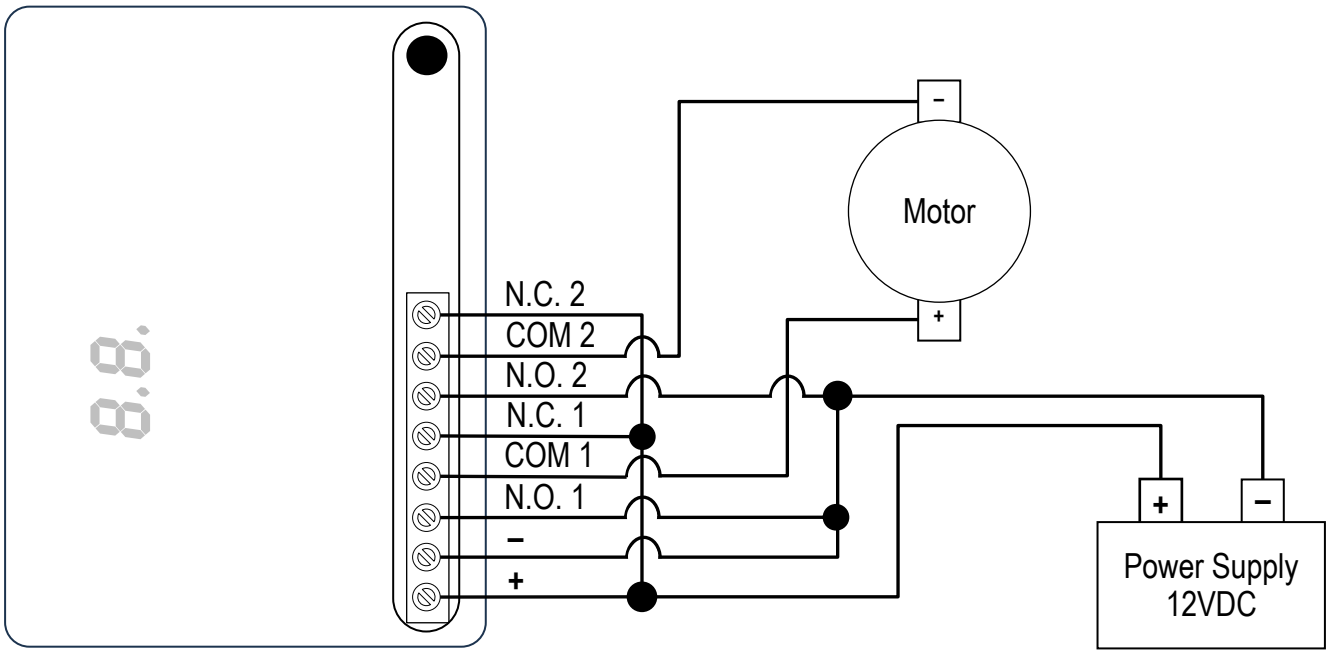


Typical N.O. Wiring Diagram



Sample Wiring Applications (Continued)

Typical Forward/Reverse Wiring Diagram



Accessories

1-Button Transmitter

917MHz FCC
HL-951T1-SQ

868.35MHz CE
HL-851T1-SQ*

2-Button Transmitter

917MHz FCC
HL-951T2-SQ

868.35MHz CE
HL-851T2-SQ*

1-Button DIP-Switch Coded Transmitter

917MHz FCC
HL-951T1-SDQ

868.35MHz CE
HL-851T1-SDQ*

1-Button Wired Transmitter

917MHz FCC
HL-951T1-SWQ

868.35MHz CE
HL-851T1-SWQ*

*868.35MHz CE versions available only by special order.

SECO-LARM ® U.S.A., Inc.
16842 Millikan Avenue, Irvine, CA 92606 Website: www.seco-larm.com
Phone: (949) 261-2999 | (800) 662-0800 Email: sales@seco-larm.com