



EscapeKeeper & EscapeKeeper JR

OPERATING MANUAL



This manual will always refer to the most recent firmware.
See [Upgrading your Firmware](#)



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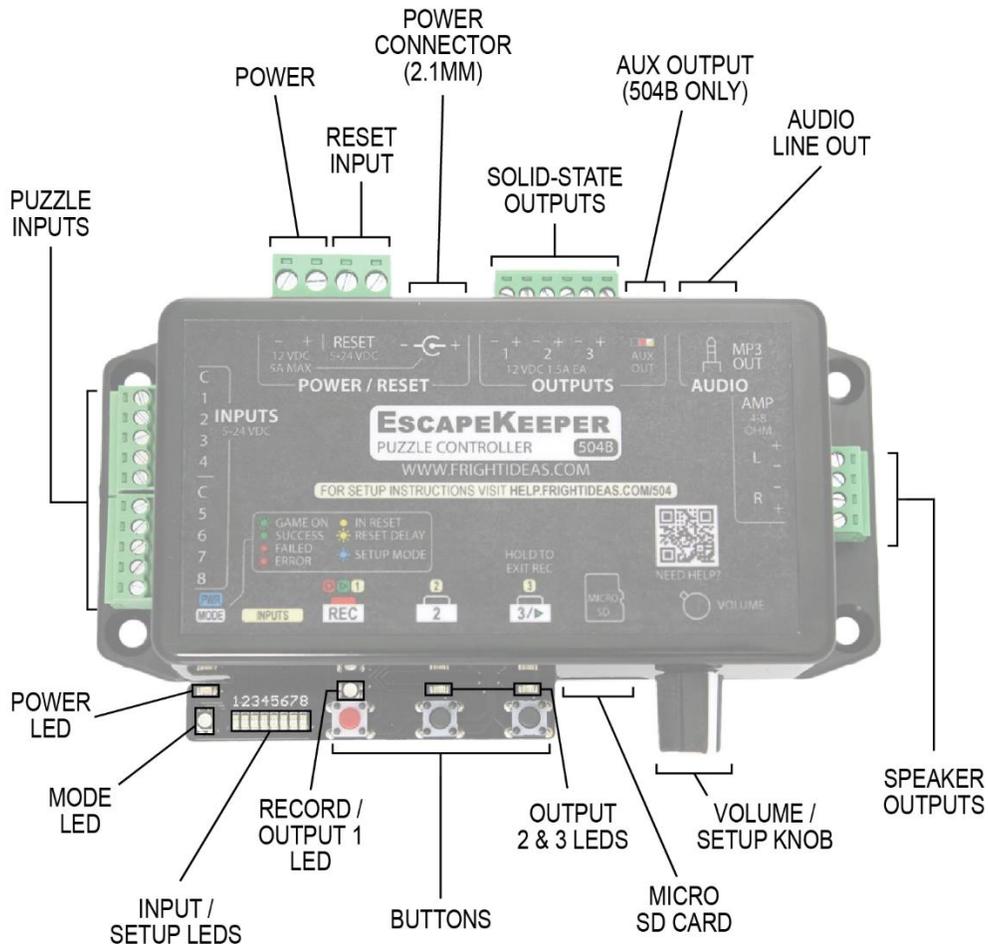
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Getting Familiar with your EscapeKeeper

Connections and Controls



CONNECTIONS AND CONTROLS	
Power	12 VDC Input / Output. Internally connected to 2.1mm Power Connector
Reset Input	5-24 VDC Input can be used to disable or reset the puzzle
Power Connector	Power connector for standard 2.1mm center-positive power supply
Solid-State Outputs	One success output and two programmable outputs
AUX Output	Connect to an accessory board to provide indication via lights, servos, more.
Audio Line Out	3.5mm stereo line-level output for connection to external amp
Speaker Outputs	35 watt stereo (2 x 17.5W) amp to directly drive speakers
Volume / Setup Knob	Speaker output volume knob. Also used to adjust settings in setup mode.
Micro SD Card	Micro SD card socket
Output 2 & 3 LEDs	Output 2 & 3 status LEDs
Buttons	Buttons to setup, program, and control the Escape Keeper
Record / Output 1 LED	Indicates animation record / playback and output 1 status
Input / Setup LEDs	Eight input status LEDs. Also used to display settings in setup mode.
Mode LED	Indicates current state of controller (Idle, Game On, Success, Failure, etc.)
Power LED	Blue power LED
Puzzle Inputs	Eight 5-25 VDC puzzle inputs for connection to sensors, buttons, etc.

Watch some Videos

We have lots of tutorial videos posted at the help addresses above. If you prefer to learn by seeing us go through the setup steps in a video please check them out.

Your Current Firmware Version

It's important to keep your firmware up to date to fix any bugs, get all the latest features, and to stay current with this manual. This manual will always refer to the most current firmware. If you're trying to use it as a guide for a different version of firmware you may find things don't make sense.

You can always get the latest firmware from our website. See the [Upgrading your Firmware](#) section below for more information.

To know if a firmware update is required you need to know the current version running in your unit. The current version is flashed on the input LEDs during the boot sequence. If your version is different from the one we've posted online you should update. You can read the version history online to see what's changed between your current version and the latest.

See the table below to learn how to read the current version in your EscapeKeeper.

LEDS DURING BOOT SEQUENCE	
Mode LED	Boot Sequence Step
	Step 1 - Firmware Check The Mode LED will turn green for a few seconds as it validates the installed firmware.
	Step 2 - Current Version Display When the mode LED turns yellow the EscapeKeeper will indicate the current firmware version on the eight input LEDs. It will show two patterns. If it turns on the 1 LED, followed by the 2 & 3 LEDs, that would be version 1.23. If it flashes the 2 LED followed by just the 5 LED, that would be version 2.05.
	There are a few more blinks in the boot sequence. The full sequence is posted in the Operation section.

Upgrading your Firmware

You can download the latest firmware at one of the addresses below ...

EscapeKeeper help.frightideas.com/504
EscapeKeeper JR help.frightideas.com/503

The firmware download will be a zip file. Open the zip file by double-clicking on it. Inside you should find two BIN files, 503EFRM.BIN and 504EFRM.BIN. Copy both files into the EK folder on your SD card. If there is no EK folder, you can create one or insert your SD card into the EscapeKeeper for 15 seconds and it will create it for you. If you are asked to replace existing files select "Yes".

Once you insert the SD card into the EscapeKeeper the Mode LED should blink green for about 90 seconds as it updates.

Firmware Version History

Version 2.68 – Nov 3, 2021

- Added a new [Delayed Miss on Bad Input](#) option to the Input Sequence puzzle mode. This option allows more robust input sequences to be created.

Version 2.67 – Nov 1, 2021

- Fixed a bug where hidden .MP3 files left by some operating systems would sometimes be chosen instead of visible .MP3 files.

Version 2.58 – Jun 9, 2021

- Added support for MISS sounds to the Patch Panel puzzle mode. Once all the wires have been inserted a miss sound will be played if the wires are not in the correct position.

Version 2.57 – Jan 25, 2021

- Fixed a bug where the EK would NOT beep when starting or resetting a puzzle that is already in a solved state. This will work with Number of Inputs, Input State Match, and Patch Panel puzzle modes.

Version 2.56 – Nov 23, 2020

- Fixed a bug with Output 1 Pulse mode, where it would stay on until the sound finished.

Version 2.48 – Jun 10, 2020

- Progress indication using a servo now works with Simon Says

Version 2.47 – Dec 18, 2019

- Added a [Miss on Bad Input](#) option to the Simon Says puzzle mode.
- Added a [Immediately Unlock on Good Sequence](#) option to Input Sequence options.

Version 2.46 – Oct 23, 2019

- Fixed a bug where the Output Expander would not work correctly if both banks were used.

Version 2.45 – Oct 7, 2019

- The EK will now skip ID3 tags in MP3 files. This prevents delays at the beginning of sounds that have large ID3 tags with embedded images.

Version 2.38 – July 12, 2019

- Fixed a bug where Progress indication on NeoPixels was not working for the Input Sequence puzzle mode.

Version 2.37 – May 4, 2019

- The [Input Latch Mode](#) option now works correctly when combined with the [Minimum On Time](#) option.
- The [START](#) sound can now be set to be Interrupted by the puzzle inputs.
- Added the [Set Reset Input to Single Shot Mode](#) option to prevent the reset input from holding the EscapeKeeper in reset if it's left on. This is useful if the Reset Input is controlled by the players through a magnet / reed switch setup. Now players will hear the START sound as soon as the reed switch is triggered, rather than when it's triggered and then removed.

Version 2.36 – May 1, 2019

- Fixed a bug where Mission Impossible mode would fail as soon as it was started.

Version 2.35 – May 1, 2019

- Added a [_LOOP](#) option to the [SUCCESS](#) folder to allow the SUCCESS sound to be looped until the puzzle is started again, either manually or from the Auto-Reset timer. This could be useful if you want the EK to repeat an audio clue for another puzzle once it has been solved.
- Fixed a bug where the GAMEON music would not resume after the first round during the Simon Says puzzle.

Version 2.34 - Apr 30, 2019

- Improved Morse Code interpretation.
- Added [Input Latch Mode](#) option to the Input Sequence puzzle mode to allow for puzzles like candle puzzles where lights/outputs have to turn off and stay off until they fail the attempt or succeed.
- Added a [Minimum On Time](#) option to the Advanced Menu to filter out short inputs like those that would occur as a magnet was moved across a Ouija board or map with reed switches below.
- Added [_ONONLY](#) option to [INXON](#) folders to prevent non-game input sounds from playing unless the puzzle is active.
- Added a [_NOINT](#) option to the [INXON](#) folders to allow Input sounds to NOT be interrupted by other input sounds.
- Added a [Minimum Match Time](#) option to the Input State Match puzzle to allow the match time to be adjusted. It was previously fixed at 1 second.
- Increased [Miss on Input Timeout](#) delay in the Input Sequence puzzle mode. Added 15, 30, 60 seconds.
- Added a [Must Not Break Input Filter](#) to the Mission Impossible mode to help with lasers / sensors that may vibrate slightly during play.
- Added an [Invert Reset Input](#) option to the Advanced Menu to invert the behavior of the reset input.
- Added a [Turn Output 2 On During Sequence](#) option the Input Sequence / Morse Code modes to keep output 2 on while a sequence is in progress. This can be used to let players know their presses are being registered. It turns off after a miss or success.
- Increased time between Simon Says rounds from 1 second to 3 seconds.
- Added a [Use Pre-set Sequence Instead of Random](#) option to the Simon Says options. This allows users to define their own sequences for each round in mode 1. Previously that mode could only be random.
- Fixed a bug where sounds were delayed if another was triggered right at the end of the previous sound.
- Fixed a bug where animation longer than 2m16s was ignored.
- Fixed a Simon Says timing bug.
- Fixed a Simon Says bug where the number of attempts per round was the selection + 1.

Version 2.26 - Nov 5, 2018

- Completed Simon Says Random Input Sequence from Sound Filename mode.
- Completed Simon Says Random Input State from Sound Filename mode.
- Input sounds can now be different for each Simon Says round.
- Mission Impossible Must-Break Inputs must now be off before the next attempt begins, otherwise it will cause a Miss.

Version 2.18 - Sep 10, 2018

- Improved indication in the Input Sequence mode for displaying progress connected to the AUX output.

Version 2.17 - Aug 9, 2018

- Outputs 2 & 3 now always turn off after a double-hit on the reset input.
- Added an advanced option to allow use of single-shot inputs in the Input Sequence.
- Inputs above Puzzle Inputs are now correctly ignored during input sequences.
- When a game is failed, and the Output 1 Mode is set to unlock on failure, the door now unlocks after any Failed sound or animation is finished playing.
- Added an `_AFTER` option in the FAILED folder. This can be used to play the failed sound after the door unlocks, rather than before it unlocks.

Version 2.16 - July 28, 2018

- Fixed some bugs with Servo indication.
- Added an `_AFTER` option in the SUCCESS folder. This can be used to play the success sound after the door is unlocks, rather than before it unlocks.

Version 2.15 - July 17, 2018

- Mission Impossible mode can now turn lasers on once players activate input 1 if laser power relay is connected to output 3.

Version 2.14 - July 12, 2018

- Added support for the Output Expander.
- Game timer and logic now doesn't start until START scene is done.
- Fixed a bug where patch panel wouldn't work with 7 cables.
- Mission Impossible mode now works better with RFID inputs.

Version 2.12 - Jun 8, 2018

- Added Simon Says puzzle mode.
- Major improvements to Morse Code puzzle mode to improve short/long press interpretation and prevent brute forcing.
- Some NeoPixel improvements.

Version 2.01 - May 31, 2018

- Added Patch Panel Puzzle Mode.
- Added support for NeoPixel and Servo Indication on 504b MODEL.
- Mission Impossible puzzle can now have Must-Break inputs.
- Added latching inputs option to Number of Inputs puzzle mode.
- Added GAMEOVER folder to play music after the game is done.
- Numbered sound files can now contain text in the filename after the number.
- Bug fixes

Version 1.24 - Oct 17, 2017

- Fixed bug where input sounds would no longer play, even after reset, when the Game Timer or Max Number of Tries expired.

Version 1.23 - Oct 3, 2017

- Fixed bug where "Miss on Bad Input" option wouldn't fail the attempt if the previous button press was a higher value.

Version 1.18 - Aug 4, 2017

- Added the option to use output 2 as an "input received" indicator in Input Sequence mode. This can be used to indicate to the players their input has been registered. It's more useful with the JR version that does not have sound to do this.

Version 1.17 - Aug 3, 2017

- Added "1 try" to the maximum attempts option in the Advanced Settings.

Version 1.16 - Jun 1, 2017

- Increased speed of input scanning so quick actions like ball drops can be used in an input sequence.
- Added _MOMUSIC option in the SUCCESS folder that allows music from the GAMEON folder to continue after the puzzle has been solved.

Version 1.14 - May 20, 2017

- More complex input sequences involving holding inputs and pulsing others are possible.
- RFID filter moved to Advanced Options and enabled on a per input basis.
- Unit can be reset if the success scene is playing.
- E-Stop output now limited to 2.5 amps.
- Other minor fixes

Version 1.04 - Apr 25, 2017

- Initial public release

Power Supply Requirements

Power can be supplied using the barrel connector or the terminal block in the Power / Reset area. Both connectors are internally connected. This means if you are powering the EscapeKeeper from a 2.1mm power supply you can easily borrow some of that power through the terminal block.

Sizing your Power Supply

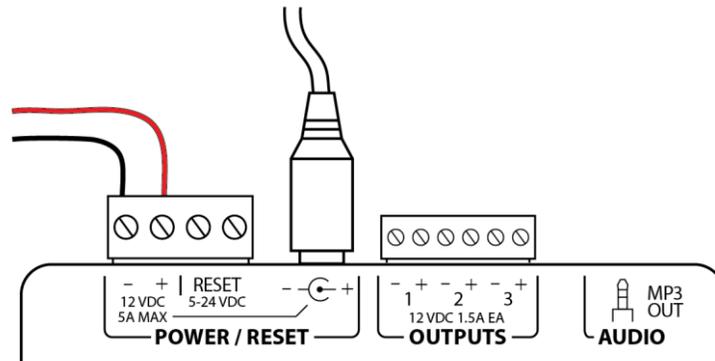
The EscapeKeeper normally ships with a 12 volt DC 1 amp power supply. That's large enough to power the EscapeKeeper, a typical maglock, and a few low wattage accessories. If you will be controlling high wattage devices like a solenoid latch, or really cranking the built-in amplifier, then you will likely need a larger power supply.

To calculate how large your power supply needs to be you must add up the wattage of the EscapeKeeper, any outputs, powered sensors, and other devices that may be borrowing power from the same supply.

ESCAPEKEEPER POWER REQUIREMENTS	
No Use of Amp	100mA (1.2 watts)
Light Use of Amp	500mA (6 watts)
Heavy Use of Amp	2.5A (30 watts)

A 12 VDC 5A power supply is available as an upgrade option and is adequate for most demanding applications.

Whichever power supply you choose, the voltage **MUST be 12VDC**.



Inputs

Puzzle Inputs

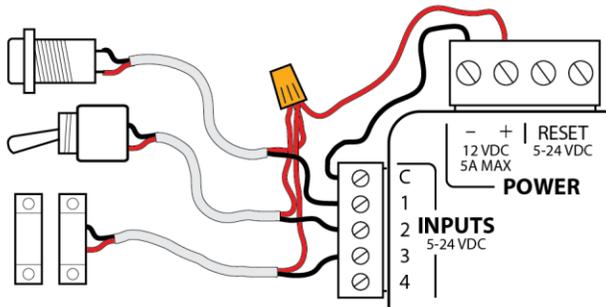
The EscapeKeeper has eight puzzle inputs that can be connected to pushbuttons, sensors, switches, or other controllers. Anything that can output 5 to 24 VDC or complete an electrical circuit can be used as a puzzle input. The EscapeKeeper will monitor these inputs when it's in game mode to decide if the players have solved the puzzle. How it does that depends on the current puzzle mode and your recorded solution. See the [Selecting your Puzzle Mode](#) section for more information on how these inputs are evaluated during the game.

Extra Inputs?

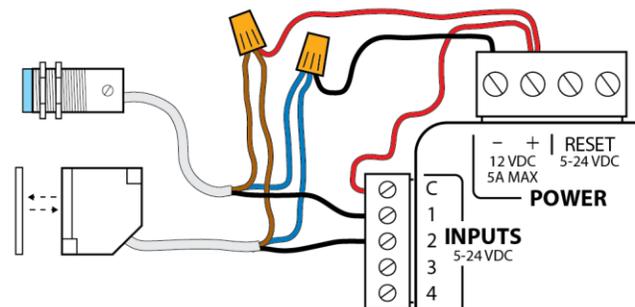
If you have extra inputs available, they can still be used to play sounds. This could be useful if you want a hint button that either the players or game master can press. You could also connect them to sensors if for example you wanted a sound to play when a player opened a door or moved an object.

By default, these extra inputs will play sounds whether the puzzle is active or not. If you only want these sounds to play during the game, there is an `_ONONLY` folder option. See the README.TXT file inside the sound folders for more info.

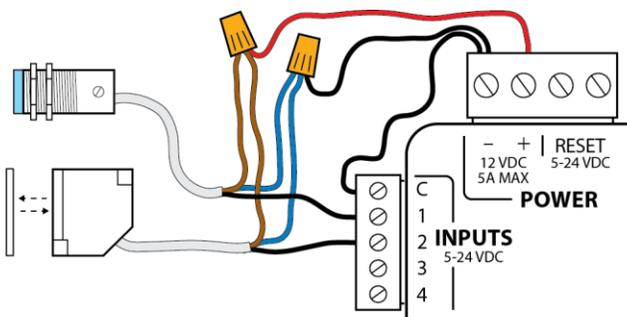
Puzzle Input Wiring Diagrams



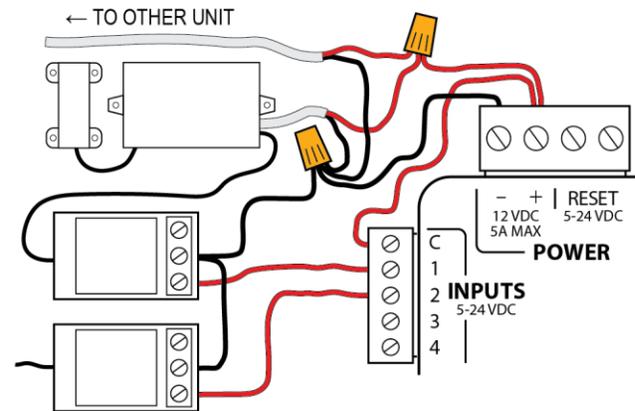
BUTTONS, SWITCHES, MAGNETIC CONTACTS



TYPICAL NPN OUTPUT SENSORS



TYPICAL PNP OUTPUT SENSORS



TYPICAL RFID SENSORS

Reset Input

The reset input can be connected an external reset button or switch. This would usually be located in a staff area and used to reset the EscapeKeeper to prepare it for the next group. The “3” button on the EscapeKeeper can also be used to reset the EscapeKeeper and restart the puzzle if that’s preferred.

The reset input can also be connected to an external controller like another EscapeKeeper or a master controller like a FlexMax or PLC. This would allow the master controller to keep this puzzle inactive until a previous puzzle has completed or other conditions have been met. To see a diagram showing how to link this EscapeKeeper to another one see [Linking To Another EscapeKeeper](#) in the Outputs section.

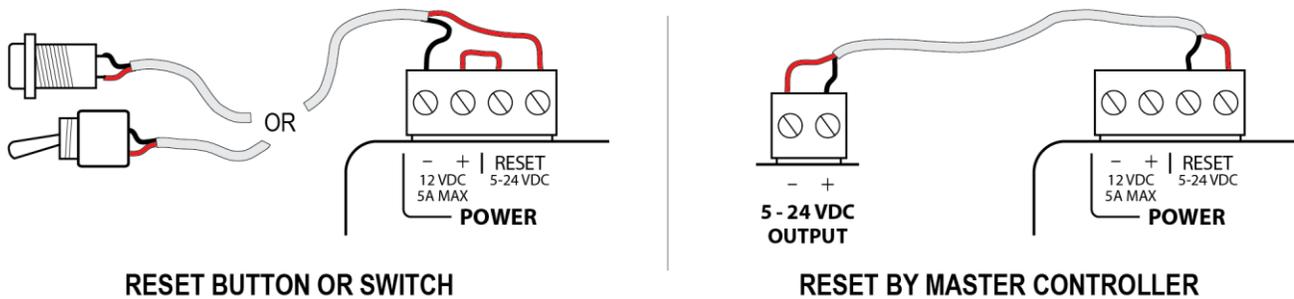
Inverting the Reset Input

By default, the EscapeKeeper will enter reset mode when 5-24V is applied to the reset input. When the voltage is removed the EK will start the puzzle. If you’d like to reverse this behavior, so that the puzzle starts when power is applied to the reset input, see the [Advanced Options](#).

Auto Reset

Manually resetting the EscapeKeeper is not mandatory. You can use the [Auto Reset](#) option to automatically reset the puzzle immediately, or a certain amount of time after the puzzle has been solved. A manual reset is likely preferred if you only want a puzzle to be solved once, or if you are using a game timer to limit the amount of time they have to solve the puzzle.

Reset Input Wiring Diagrams



Puzzle Bypass

Input 8 can be used to manually bypass the puzzle if the players aren’t able to figure it out. This would usually be connected to a pushbutton in the game master area. When pressed, it would immediately trigger the success scene so output 1 switches to the success state and any success animation on outputs 2 & 3 is played. See [Advanced Options](#) for information on enabling this feature.

Outputs

About the Outputs

The EscapeKeeper has three solid-state outputs. Output 1 is dedicated to indicating the success of the puzzle. This is usually connected to a maglock, solenoid latch, pneumatic solenoid, light, etc. By default, output 2 will turn on when the puzzle is solved, output 3 will stay on *until* the puzzle is solved. But this behavior can be overridden by programming your own output animation. Different animation can be played when the game starts, the game is running, they make a mistake (we call this a miss), solve the puzzle, or if they fail.

See [Output 1 Mode](#) in the settings section to control the behavior of output 1.

See [Recording Output Animation](#) to learn how to record animation for outputs 2 & 3.

Output Ratings

All outputs are solid-state and will output 12 VDC when they turn on. Output 1 can output up to 2.5 amps (30 watts). Outputs 2 & 3 output up to 1.5 amps (18 watts). All outputs are rated for inductive loads like maglocks, solenoids, and relays.

Make sure your power supply is large enough to handle all the current the outputs will require, as well as some for the EscapeKeeper itself. If the power supply is too small it will likely reset and the EscapeKeeper will reboot. For more information on sizing your power supply see [Power Supply Requirements](#).

Fault Protection

If the outputs are shorted or you exceed their current limit for too long they will automatically shut down. They will turn back on once the fault is removed.

Checking the Outputs with a Volt Meter

The protection circuitry inside the solid-state outputs leak voltage at a very low current. This current isn't enough to turn on anything, but it is enough to trick a volt meter into thinking there's 12 volts at the output even when they are off. This will only happen if you don't have a load connected. Once a load is connected to the output the voltage should drop close to zero.

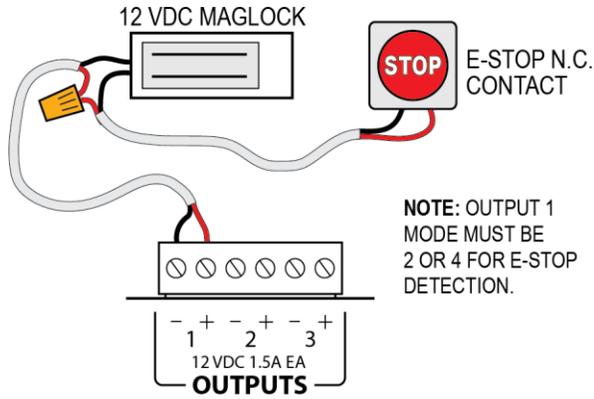
E-Stop Detection

Output 1 has special circuitry in it to monitor the current flowing through the output. This feature allows the EscapeKeeper to detect if the lock circuit has been interrupted due to an E-Stop button being pressed. When this condition is detected the EscapeKeeper can be set to turn off Output 1 and go into an alarm state. This notifies the staff and prevents the door from being locked again if the E-Stop button is released.

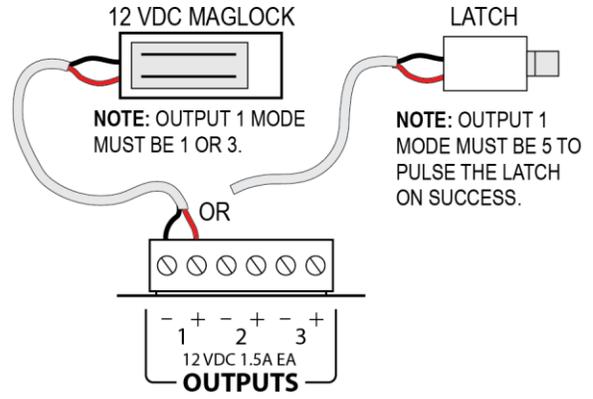
The alarm can only be silenced by pressing button 3 or by pulsing the Reset input.

E-Stop Detection must be enabled when setting the [Output 1 Mode](#) during setup.

Output Wiring Diagrams

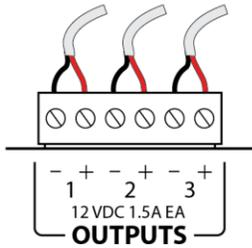


MAGLOCK WITH E-STOP DETECTION

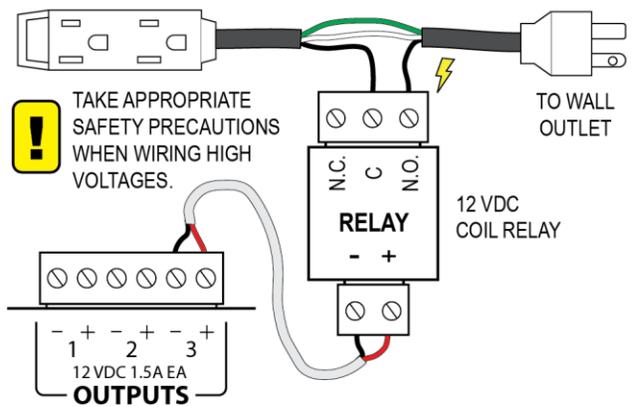
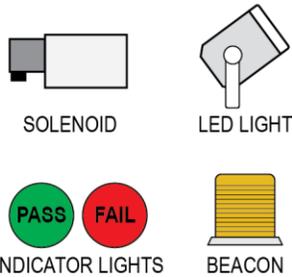


MAGLOCK OR SOLENOID LATCH

OUTPUTS CAN BE USED TO CONTROL ANY 12 VDC DEVICES UNDER 1.5 AMPS (18 WATTS).



ANY 12 VDC DEVICE



ANY 110 VOLT LOAD

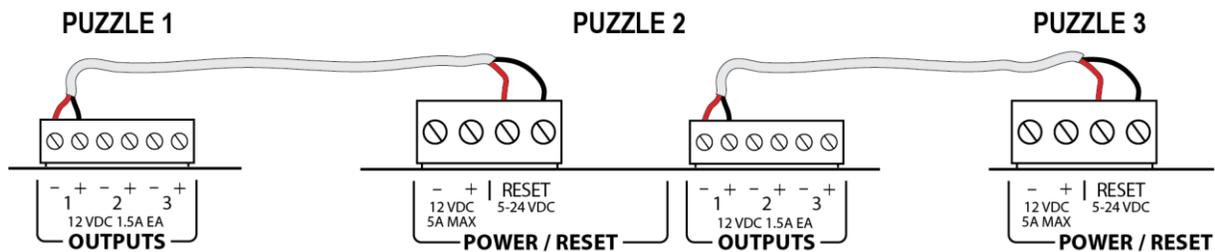
Linking to Another EscapeKeeper

EscapeKeepers can be linked together using the reset input to ensure multiple puzzles are solved in a particular order. Any EscapeKeepers held in reset will be inactive, meaning they will not play sounds or change their outputs if players interact with their inputs. They will also keep their outputs in the unsolved state, which means any maglocks will remain locked.

When the first puzzle is solved, any success sound in that puzzle will play. A few seconds after the sound finishes the next puzzle will be released from reset. Any Start sound and animation in that puzzle will then be allowed to play.

We recommend waiting to link the EscapeKeepers together until all the programming is done. Otherwise the additional EscapeKeepers will be held in reset as you try to program them.

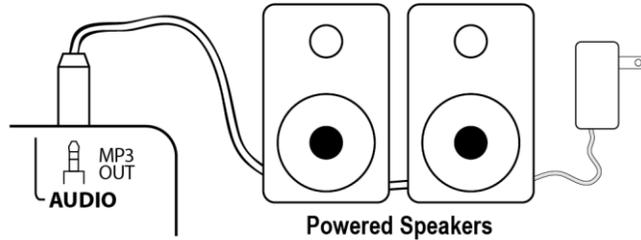
NOTE: The [Output 1 Mode](#) of any EscapeKeeper holding another unit in reset must be set to *Link Mode*.



Audio Outputs

Line Level Output

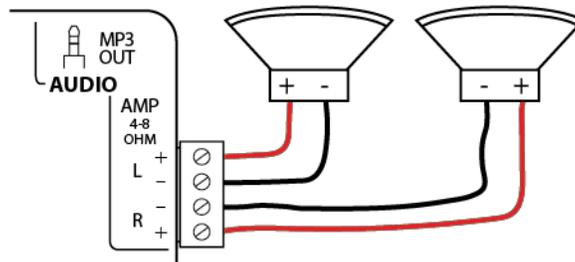
Use the line-level output to connect to an external amplifier or powered speakers.



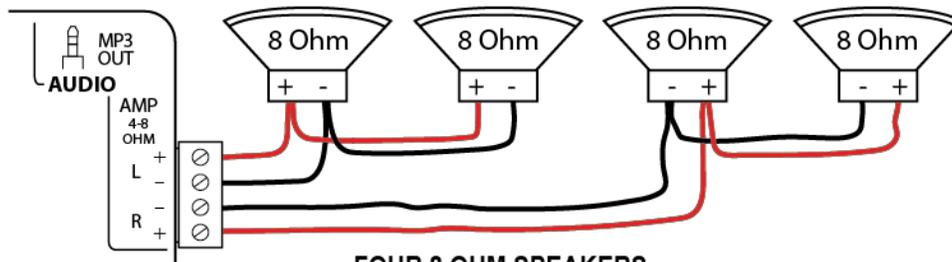
POWERED SPEAKERS OR AN EXTERNAL AMPLIFIER

Amplified Speaker Outputs

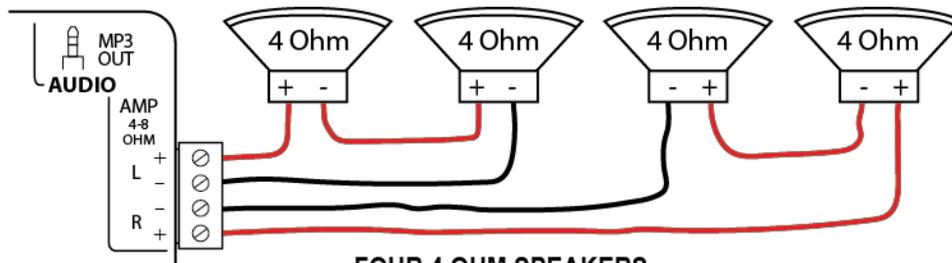
Use the speaker outputs to play sound through non-powered speakers. Use the volume knob to adjust the volume. If you are going to be turning it loud you may need a power supply with more current than the default 1A supply. See [Power Supply Requirements](#) for more information on selecting the correct power supply for your application.



TWO 4 OR 8 OHM SPEAKERS



FOUR 8 OHM SPEAKERS



FOUR 4 OHM SPEAKERS

Puzzle Modes in Depth

Input Sequence

This mode forces the players to match a particular sequence you recorded. This can be done by pressing buttons, moving objects onto sensors, triggering light sensors, etc. The most basic use of this mode would be to enforce a simple sequence of inputs such as 1 2 3 4 5 6, or 1 2 1 3 1 1 4, etc.

More complex sequences where some buttons are held down while others are pressed are also possible. For example: tap 1, hold 2, while holding 2 tap 3,4,5, then let go of 2.

By default, the EscapeKeeper will only indicate when the sequence was entered correctly, it will never declare the sequence was wrong (a miss). If you want to play miss sounds, miss animation on the outputs, or limit the number of attempts, you have to tell the EscapeKeeper when to do that. See the [Input Sequence Puzzle Options](#) for more information on what can be declared a miss.

Feedback Options

To give some simple feedback to the players, output 2 can optionally be set to pulse each time an input is activated. It could also be set to stay on while a sequence is being input. See the [Input Sequence Puzzle Options](#) for more information.

With the EscapeKeeper model, each input can play a different sound. You can also play sounds at any point in the sequence. For example, you can play a sound representing a correct press, and nothing for a bad press, or vice-versa, forcing them to piece the code together by process of elimination. You can also play specific sounds at certain points in the sequence, for example if they correctly press the 5th button in a 6 step sequence.

Indication Options

This puzzle mode can output the player's current progress in the input sequence to the Indication module's *Progress* state. This can be displayed on external LEDs, a servo, or any other output device. As inputs are entered this progress value will increase. It will increase with each input to the sequence until the puzzle is solved, or a Miss event fires. What triggers a Miss event depends on your [Input Sequence Puzzle Options](#), but it's usually a timeout or incorrect input. When a Miss event fires the Progress value will be reset to zero. This will set all LEDs and output devices back to their Off state, and return any servos to their no progress position.

LED Indication

For example, if you use a strip of LEDs, the next LED segment will turn on as they progress through the sequence. This will create a progress bar effect, where the next segment of LEDs turns on each time they make an input to the sequence. If you want all the LEDs to turn off when they make a mistake, allowing them to assemble the code by trial and error, enable the "Miss on Bad Input" puzzle option. This way, once they make a mistake, a miss event will fire, setting the progress to zero and turning off all the LEDs.

If you want a tracer effect instead of a progress bar, where only one segment of LEDs is lit and moves across with each input, you can select that during Indication setup. If you want the sequence to fail and LEDs to turn off after a couple seconds of inactivity, enable the "Miss on Timeout" option. Leave the "Miss on Bad Input" option off if you don't want to give them clues to the solution, but instead want the lights to represent more of a cursor position in the sequence.

Output Indication

If you prefer to turn other electrical devices off and on instead of changing the color of LEDs, use our Output Expander accessory. It works pretty much identical to how the LEDs work except you can turn off and on any electrical device.

Servo Indication

You can also use an RC servo. For example, as they make progress, maybe you'd like a needle on a fake gauge to rotate, or some sort of object to rotate or lift. Instead of LEDs turning on, a servo would rotate or extend and get closer to the win position as progress increases. How much the servo rotates is expressed as a percentage of the total steps in the input sequence across your servo's usable range. For example, if you have a 12 step sequence, and you've set your servo limits so there's 120 degrees of usable range, the servo will move 10 degrees with each input.

Morse Code

Similar to Input Sequence except with a distinction between short and long presses. This can be used with a single input to force players to enter a Morse code sequence, or with multiple inputs to create a more complex input sequence.

A short and long press will differ from player to player. The EscapeKeeper dynamically adjusts the short/long press threshold at each attempt. The input number and hold length of each press is recorded. Once they've entered the correct number of inputs each press is categorized as short or long based on the lengths of the presses in that attempt. If the input number and length match that of the recorded solution the puzzle is solved.

Indication Options

Due to this puzzle mode's need to dynamically determine what is a short and long press, it cannot determine or display progress in real-time.

Input State Match

Use this mode if you want the players to figure out what state the inputs should be in to solve the puzzle. This mode compares the on/off states of each puzzle input to make sure they match the solution. For example, you could use a bunch of toggle switches, knobs, objects with sensors, etc. Once the EscapeKeepers sees the inputs match your solution it will declare success.

To make sure the attempt is intentional it does make sure the state is held for at least 1 second before it will declare success. This prevents brute force attacks on certain puzzles where the players could quickly change the state by spinning wheels or flipping switches instead of making an intentional guess. This time can be increased or decreased from the setup menu if necessary.

Unlike Input Sequence and Morse Code, it's not possible for the EscapeKeeper to reliably determine when the players have made an attempt at the solution. This is a problem if you want to play Miss sounds or enforce a certain number of attempts at the solution. To get around this we've added the option of a submit button on Input 8. The players can then setup their guess on the first 7 inputs and submit it by pressing a button connected to input 8. That will register their guess so the EscapeKeeper can declare it a Miss or Success.

Indication Options

Puzzle progress indication is not available in this puzzle mode as it would allow players to brute force the solution in a matter of seconds. Other indication channels such as Game Timer, Tries Left, and Input state can still be used.

Number of Inputs

Some puzzles require the players to find a certain number of objects. These could be keys, body parts, objects with magnets or RFID tags in them, etc. It doesn't matter what order they find them in, just how many they find. This mode will declare success when all your selected inputs have been turned on.

Sounds

In addition to the usual input sounds, the EscapeKeeper can play sounds as they activate additional inputs. For example, each time they find another object, or only when they find a specific number of objects. See the PROGRESS folder for more information on using progress sounds. The progress sounds will only play once per game. If they remove an object and replace it the progress sound will NOT be repeated.

Indication Options

This puzzle mode can output the player's current progress to the Indication module's *Progress* state. This can be displayed on external LEDs, a servo, or any other output device. Each time the players turn on another input the progress value will increase. This will turn on the next segment of LEDs, next output on an Output Expander, or move a servo closer to the win position.

LED Indication

During LED Indication setup you can set how many LEDs turn on with each progress step. We refer to this as the segment size. This could be one LED in a small display, or 10 or more if you want a larger display. Each time the players turn on another input, the next segment of LEDs will turn on. For example, if you have a total of 30 LEDs in your strip, and 6 inputs required to win, an ideal segment size might be 5 LEDs.

Output Indication

If you'd prefer to turn on small light bulbs, pneumatic solenoids, or any other device that can be controlled electrically, our Output Expander accessory might be a better choice. It works very much like LED Indication except one or more digital outputs turn on instead.

Servo Indication

Progress on a servo is expressed as a percentage of the puzzle progress across the servo's selected range. For example, if you set the servo limits so that the servo has 100 degrees of movement, and the players have turned on half the inputs, the servo would move 50 degrees.

Mission Impossible

This mode was designed for laser mazes where players must get from one end to the other without breaking one of the lasers, moving the wrong object, stepping on a booby-trapped tile, etc.

Inputs 1 & 2 are dedicated to start and win buttons. The rest of the inputs are dedicated to one or more must-not-break sensors (booby traps), and optionally one or more must-break sensors (progress inputs). The object of the challenge is to press the start button, get through the booby traps successfully while also activating any progress inputs, then press the win button.

Start and Win Buttons

This mode was envisioned to use illuminated start and win pushbuttons, or buttons paired with some other visual indication. Outputs 2 & 3 are repurposed to control these pushbutton lights in this mode. When the puzzle is started, the Start button light would flash, indicating to the players they need to press it to start. Once pressed, the Win button at the other end of the challenge will light up.

Must-Not-Break Inputs

These inputs would be connected to laser sensors or other sensors the players must NOT trigger as they try to get to the other side. If they do trigger one of these the Win light will turn off and they must return to the start to press the start button.

Must-Break Inputs

This feature was added in firmware version 2.2. It allows you to connect other sensors, like invisible beam sensors or pushbuttons, that the players must activate on their way to the Win button. If they press the Win button without activating these inputs it will cause a Miss. These inputs can be obvious to the players and used to increase difficulty, or they can be invisible. Invisible beam sensors could be used to ensure they are walking across the challenge and not trying to cheat the game by having one player at the start button and another at the win button.

Note that the Must-Break Inputs must all be OFF when the puzzle starts. This might help to prevent cheating. For example, a pressure pad or sensor could be placed near the win area to make sure someone is not standing there before the puzzle starts.

Tips

The Start and Win buttons could also be replaced with RFID sensors. An RFID tag could be embedded in an object the players have to carry from one end of the room to the other.

The win button could optionally be replaced with a keypad to add another level of complexity. If they hit one of the booby traps the win button is disabled, they have to go back to the beginning and press the start button to re-enable it. If they

Typical Example

1. As the players enter the room they see a start button flashing.
2. They press the start button, the win button at the other end of the room illuminates.
3. They proceed through the maze but trip one of the lasers. The win button light turns off indicating it's been disabled, the start button begins flashing again to indicate they must go back to the beginning and restart.
4. Once the start button is pressed again the win button lights back up and they can try again.
5. If they make it all the way to the win button without tripping one of the booby traps they succeed.

Sounds

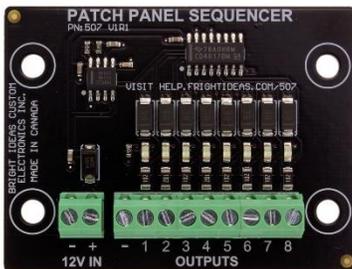
You can put sounds in the INXON folders that will play when the corresponding input is activated. You could use these to tease the players depending on which booby trap caught them. If you are using must-break inputs, you can also employ the PROGRESS folder. As they activate each must-break input their progress will increase by one step.

Indication Options

Game Timer, Attempt Timer, and Tried Remaining states are always available with this puzzle mode. If you employ the use of Must-Break Inputs there will also be a Progress state that will increment as they activate the must-break inputs.

Patch Panel (Connect the Wires) / Rotary Switch Combination

This mode allows you to create a puzzle where players must make electrical connections between specific points. This can be staged as an old telephone operator patch panel, a network patch panel, a circuit board that needs repair, an electrical panel, etc. Any puzzle where multiple electrical contacts need to be connected in a specific pattern will work.



The EscapeKeeper, combined with our Patch Panel Sequencer board, will ensure all wires are in the solved position before declaring success. There is no way for the players to bypass any of the connections as there would be if this puzzle was wired up as a simple series circuit. This setup also allows you to easily change the winning solution without having to change any of your wiring. Simply install the patch cables in the solved position and tap the record button to save the new solution.

Sounds

Any sound inside the IN1ON folder will play when a new connection is made. Any sound in the IN2OFF folder will play when a connection is broken. Once all the wires have been inserted, a MISS sound can be played if the wires are not in the correct configuration.

Indication Options

Puzzle progress indication is not available in this puzzle mode as it would allow the players to brute force the solution in a matter of seconds. Other indication channels such as the Game Timer can still be used.

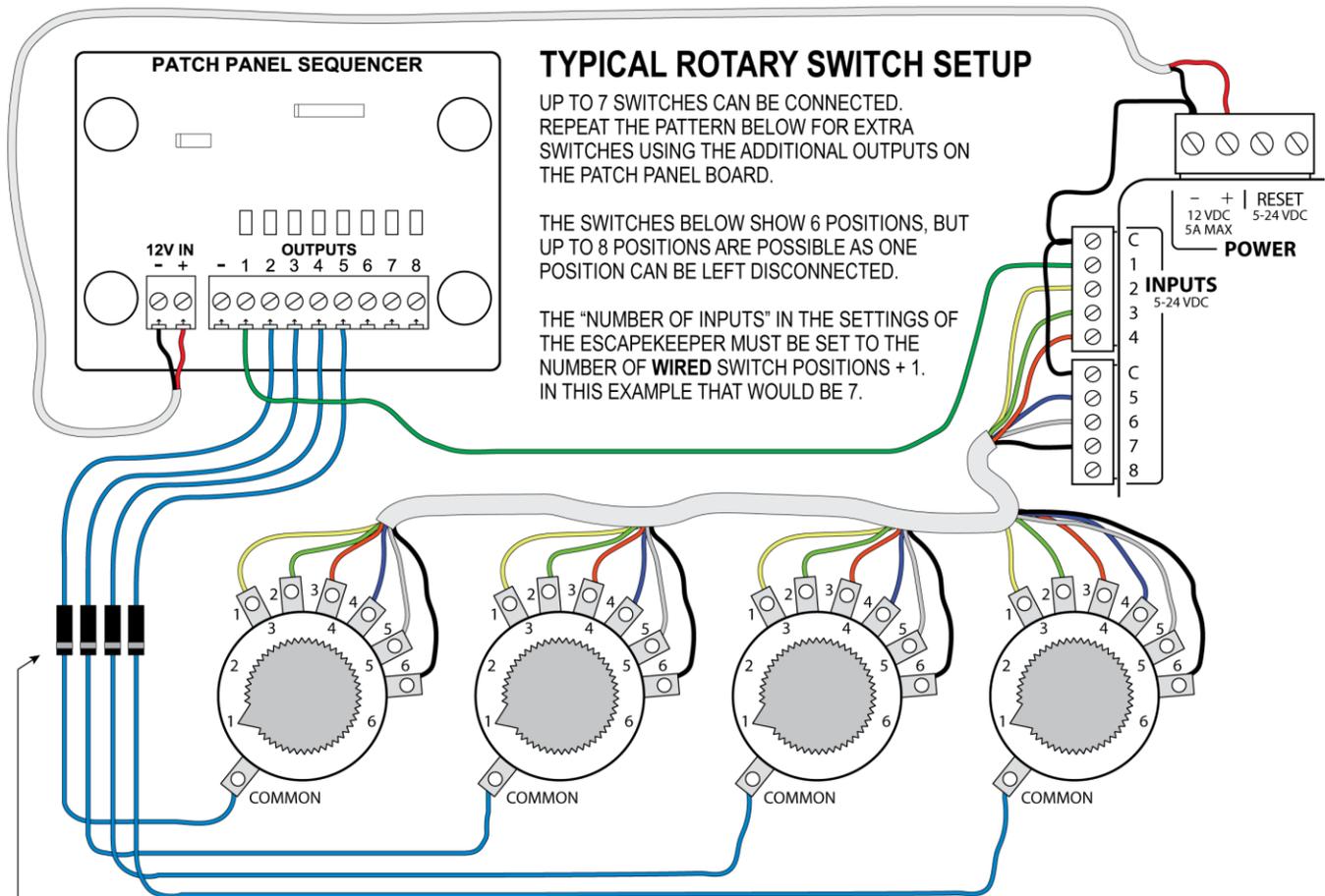
Possible Solutions

The number of possible solutions increases dramatically with the number of patch cables involved in the puzzle.

Number of Wires	Possible Solutions
7	25,401,600
6	518,400
5	14,400
4	576
3	36
2	4

Rotary Switch Wiring Diagram

The Patch Panel Sequencer board can also be used with up to 7 rotary switches. In this setup the EscapeKeeper can read the position of each switch. To change the winning combination just rotate all the switches to the winning position and tap the record button.



DIODES MUST BE INSTALLED HERE IF YOU WANT THE ABILITY FOR ANY TWO KNOBS TO BE IN THE SAME POSITION FOR THE SOLUTION. FOR EXAMPLE, IF YOU WANT THE SOLUTION TO BE 1,2,3,1, YOU WOULD NEED DIODES. IF YOU ARE OK WITH 1,4,3,2 OR 4,2,1,3, ETC. THEN YOU DON'T NEED THEM.

Simon Says

In this puzzle mode the EscapeKeeper will either generate a random sequence or state or derive one from a list of files you provide. The sequence or clues can be played using one or more sound files, and / or played on output devices or LEDs. The puzzle can be repeated for multiple rounds and difficulty can increase in various ways as they progress to the solution.

Simon Says Modes

This puzzle has a few different modes you can choose from:

Repeat Pre-set or Random Sequence

In this mode the EscapeKeeper will either generate a random sequence or read one from a filename you provide in the SIMONX folders. It will then play the sequence on outputs or LEDs. The sequence can be played automatically or only when a specific input is triggered. The corresponding INXON sounds can optionally be played as the random sequence is being shown. The players will then have a certain amount of time to repeat that pattern on the inputs.

If they solve the pattern successfully you can repeat the puzzle for multiple rounds. Each round can optionally be made more difficult by increasing the length or speed of the sequence, or by decreasing how much time they'll have to repeat the sequence.

Once they've completed the number of rounds you specified the puzzle is solved.

If you wish to define your own sequences instead of letting the EscapeKeeper generate random ones for you, enable the *Use Pre-set Sequence Instead of Random* option in the Simon Says options. Read the section below for information on creating the necessary files in the SIMONX folders. In this mode the sound files will never be played, only the filenames are read to determine the sequence.

Repeat Sequence in Sound Filename

In this mode the EscapeKeeper will start by playing a random sound file from the SIMON1 folders on the MicroSD card. There are additional folders, one for each possible round. A sequence can be played automatically, or only when a specific input is triggered. The sound file could contain a pattern of sounds which the players must reconstruct by triggering inputs that play smaller portions of that same sound. The input sounds can even change in each round. The sound file could also contain a riddle that the players need to cross-reference with other clues, or otherwise solve to determine the correct input sequence.

The EscapeKeeper will read the winning sequence from the filename of the sound file. If the solution is supposed to be inputs 6, 4, 1, 2, 5 triggered in sequence, the filename would be 64125.MP3. The sequence length must be 13 or less.

You can fill each round folder with multiple sounds. One will be chosen at random when a round starts. Round 2 will use the SIMON2 folder, round 3 uses SIMON3, etc. Once they progress through each round the puzzle is solved.

NOTE: If your filenames contains digits other than 1 thru 8 you will get an error. That's assuming you are using all 8 inputs as puzzle inputs. If you are only using 6 puzzle inputs, only use characters 1 thru 6.

Match Random State

In this mode the EscapeKeeper will generate and display a random state on some LEDs or outputs. The state will be some combination of outputs being on and some being off. The players then must match that state on the inputs.

For example, the outputs could be connected to some indicator lights on a control panel. Some of the lights would be on and some would be off. The lights could represent which valves or switches in the room had to be open or closed to

solve the puzzle. Once solved, another state could be shown, but this time with a time limit. The valves or switches could be spread out so players would have to work together to match the states before the timer runs out.

Match Random State in Sound Filename

In this mode the EscapeKeeper will play a random sound file from the SIMON1 folder on the MicroSD card. The sound file could contain a riddle of some sort that the players must decipher to determine the winning input state. Outputs or LEDs can also be used to display this state if needed.

The EscapeKeeper will read the winning state from the filename of the sound file it chose at random. If the winning state is supposed to be inputs 1, 2, and 6 on, 3, 4 and 5 off, the filename would be 110001.MP3.

If you have more than 1 round, the additional SIMONx folders can contain sets of sounds that are more difficult to solve. Once they progress through each level the puzzle is solved.

NOTE: If your filenames contains digits other than 1 or 0 you will get an error. If your filenames are too short so that they don't specify a state for all the inputs you are using in your puzzle, you will get an error.

Last Output Wins

In this mode a random sequence will be played on LEDs or outputs. The sequence can be played automatically or only when a specific input is triggered. These outputs would be arranged in such a way that players must spread out to see them all. The players must then work together to determine which light or other output device activated last. They would then activate the input that corresponds to the last activated output.

You must have as many inputs as outputs for this puzzle mode. The number of inputs you select for this puzzle will determine how many outputs are flashed during the random sequence.

If they solve the puzzle successfully difficulty can be set to increase in higher rounds. You can increase the speed or length of the sequence or decrease how much time they have to activate the input.

Sounds

This mode supports Input sounds, Progress sounds, Miss sounds, Clue sounds, and the usual Success and Failure sounds.

Indication Options

In the Random Sequence mode, the sequence the players must repeat will be played through the Clue state. The Clue state can be displayed on RGB LEDs or an Output Expander.

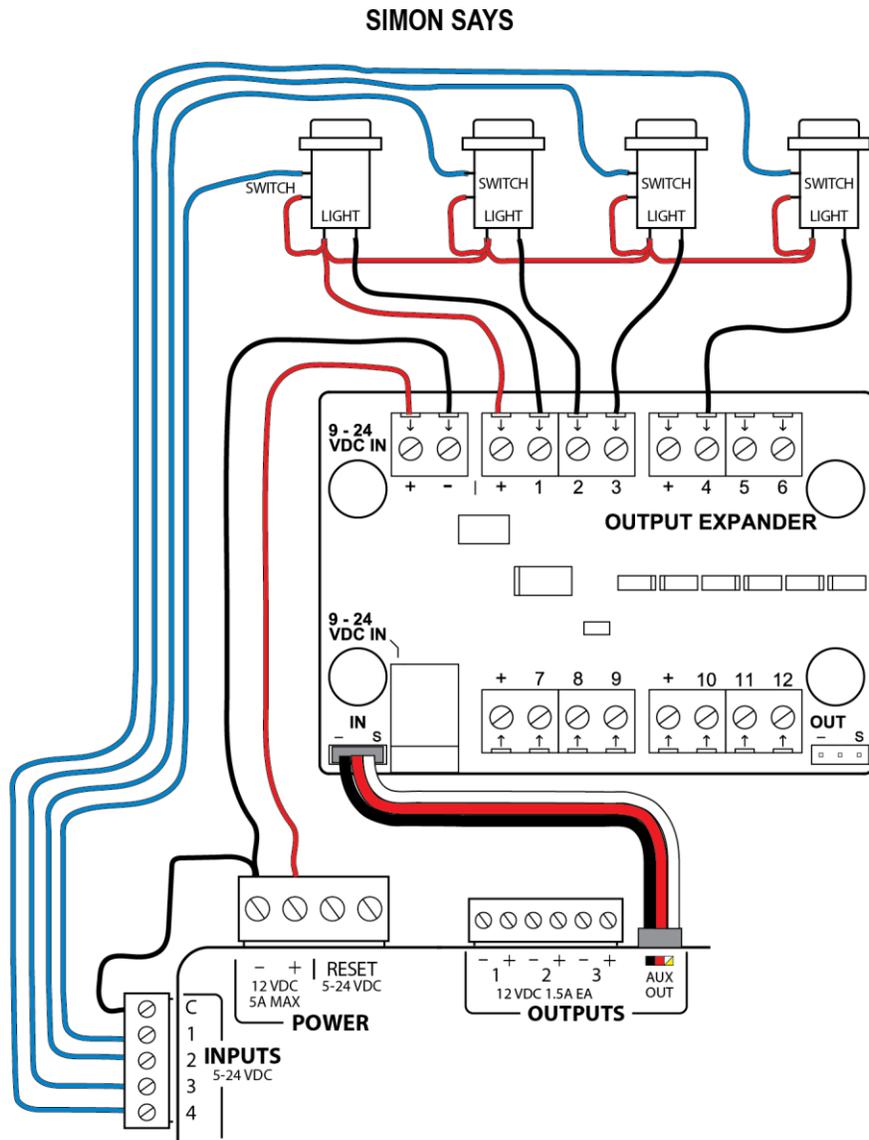
In the Match Random State modes, the random state can be displayed on outputs or LEDs through the Clue state.

In all modes, the current Round will be output through the Progress state. This could be displayed on LEDs, an Output Expander, or an RC Servo, indicating to the players how many rounds they've completed and how many are left.

If you enable the Attempt Timeout during setup, you can use that state to display how much time they have left in the current attempt. This would often be displayed on LEDs or some sort of mock gauge or clock using a servo.

Wiring Diagram

The below wiring diagram could be used for a Simon Says puzzle, where the EscapeKeeper displays hints on pushbuttons by illuminating their internal lights. In this particular diagram these switches would have internal 12 volt bulbs or LEDs.



Indication Options in Depth

About the AUX Output

The AUX output was added to the EscapeKeeper 504B model in early 2018. This output allows the EscapeKeeper to display internal states using devices in the real world. LED Strips, servos, or even pneumatic devices or motors can be used to indicate progress, how much time is left, the state of the inputs, etc. In some cases, two states can be shown on different devices at the same time.

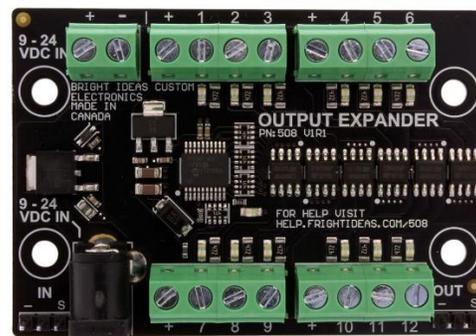
Accessory Board Required

The AUX output requires at least one of our indication accessory boards. Which one you need depends on what you want to control. The Power Injector board is used to supply 5 volts to RGB LEDs, or 5-6 volts to RC Servos. The Output Expander can be used to control any 12 or 24 volt device.



Power Injector

Required for RGB LEDs or Servos



Output Expander

Required to turn 9 - 24 VDC devices on and off.

States Available for Indication

The table below briefly lists which indication states are available in each puzzle mode. Note that in some cases the corresponding feature must be enabled during puzzle setup, or in the Advanced menu. For example, to indicate the Game Timer or Tries Left states, those features must be enabled.

Most states are represented as a percentage across the available range of the indication device. For example, if you selected 28 RGB LEDs to represent puzzle progress and the players are 25% complete, 7 LEDs would be on. If you are using an RC servo to represent a Game Timer that is half depleted, the servo will be exactly half way between your Low and High Limits.

More specific details are available in each puzzle's section under [Puzzle Modes in Depth](#).

STATES AVAILABLE FOR INDICATION		
State	Puzzle Modes	Description
Puzzle Progress	<ul style="list-style-type: none"> - Input Sequence - Number of Inputs - Simon Says - Mission Impossible 	This state value will increase as the puzzle gets closer to being solved. This can be used to “fill up” or trace across an LED strip or ring, turn on digital outputs, or move an RC servo.
Game Timer	All	This state starts at 100% when the puzzle starts. As the game timer runs out the percentage decreases. This can be used to fill or deplete an LED display or series of outputs as time runs out. It could also be used to rotate a needle on a mocked up gauge or clock using an RC Servo.
Attempt Timer	<ul style="list-style-type: none"> - Input Sequence - Mission Impossible - Simon Says 	Similar to the Game Timer above, except this state displays how much time is left in the current attempt. Some puzzle modes have an Attempt Timer option that will cause a Miss if they take too long. For example, if they take too long to respond during Simon Says, or take too long to get to the end of a Mission Impossible maze.
Tries Left	All except: <ul style="list-style-type: none"> - Number of Inputs - Patch Panel 	If you have enabled Maximum Attempts at Solution in the Advanced Menu, selecting this option will indicate how many tries are left. It starts at 100% and decreases on each Miss by a percentage based on your maximum number of tries.
Inputs	All except: <ul style="list-style-type: none"> - Patch Panel 	This state will always represent the current state of the EscapeKeeper's inputs. This is useful if you'd like to display the current input state to the players. For example, if you want lights to turn on when objects are placed on sensors, buttons are pressed, etc. It can be used with LEDs or devices connected to an Output Expander, not with servos.
Clues	<ul style="list-style-type: none"> - Simon Says 	This state is used to present puzzle clues to the player. Currently it's used only by Simon Says to present the pattern the players must repeat. This pattern can be played on LEDs, an Output Expander, or a Servo IF the puzzle mode does not require the clue to have more than one output on at a time.
Clues & Inputs	<ul style="list-style-type: none"> - Simon Says 	Same as <i>Clues</i> above except combined with the <i>Inputs</i> state. This allows the same LEDs or outputs to indicate both the pattern they need to repeat, and the state of the inputs once the players start to interact.

RGB LEDs (NeoPixels)

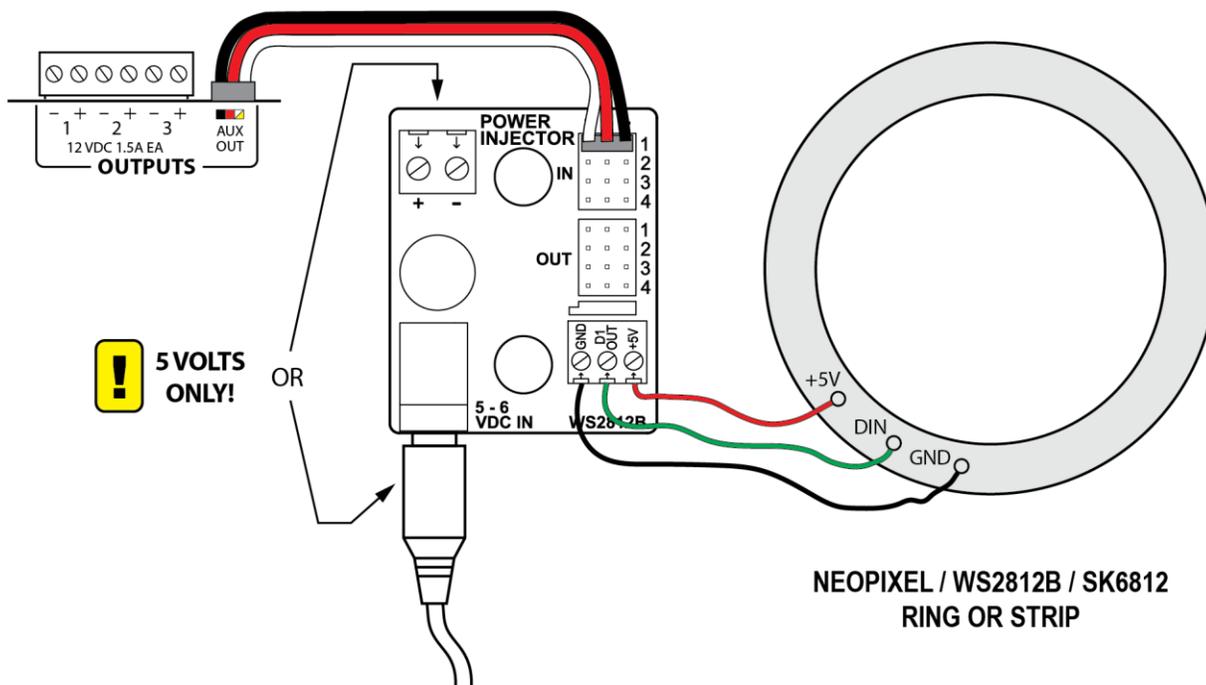
The EscapeKeeper supports RGB LEDs of the WS2812B or SK6812 variety. These are commonly referred to as NeoPixels by Adafruit, though they are available through other vendors as well under different names. These RGB LEDs can be purchased in single 3 or 5mm diameter sizes, or in assembled strips and rings containing many LEDs.

The LEDs are daisy chained together where the output of the first one connects to the input of the second, and so on. This allows the EscapeKeeper to control an entire chain of LEDs just by connecting it to the first LED in the chain. You can also connect these strips and rings together, for example, you can connect an LED ring to the end of an LED strip. The ring can be used to represent one internal state, while the strip is used to represent another.

Up to a total of 60 LEDs can currently be addressed. Note that RGBW versions of these LEDs will NOT work.

RGB LED Wiring Diagrams

These LEDs can require a fair amount of power at 5 volts. You should budget for about 60ma (0.060A) per LED. Our Power Injector accessory and an external 5 volt power supply are required. See below for an example diagram. An LED strip is wired up the exact same way. Note that if there are two black wires you only need to connect one. If you are connecting to an LED strip, make sure you connect to the end with DIN, not DOUT.

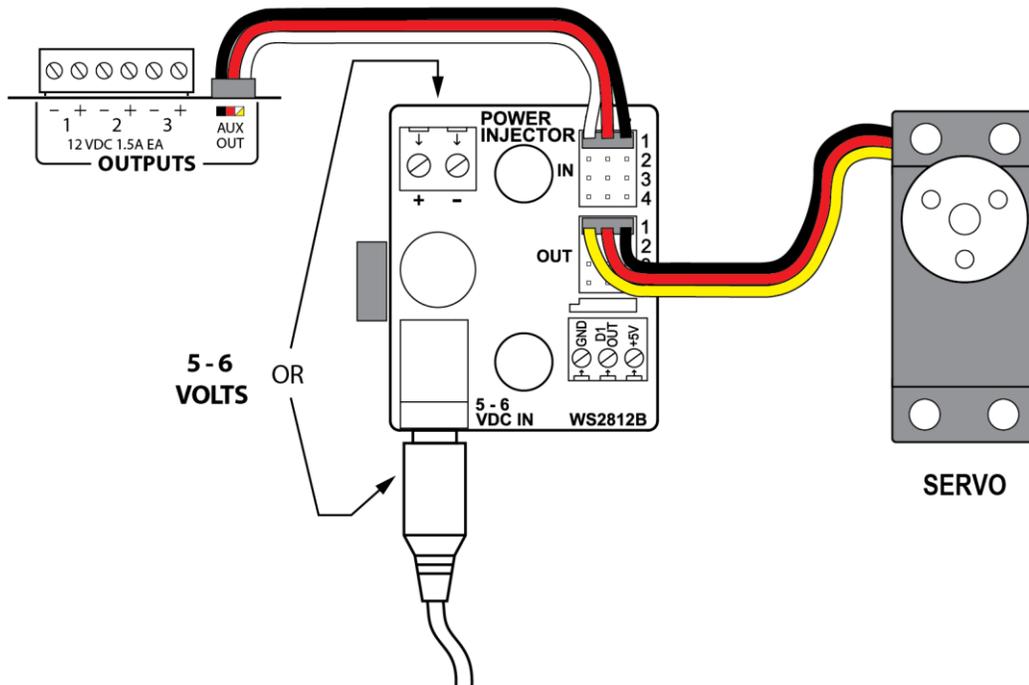


Servo

An RC servo can also be used to represent internal states that can be represented as a percentage. This includes all the available states with the exception of Inputs and sometimes Clues, as those can consist of more than value at a time.

Servo Connection Diagram

As with RGB LEDs, an RC servo can require a lot of power at 5 or 6 volts DC. A Power Injector and external power supply are required to supply the servo with this power.



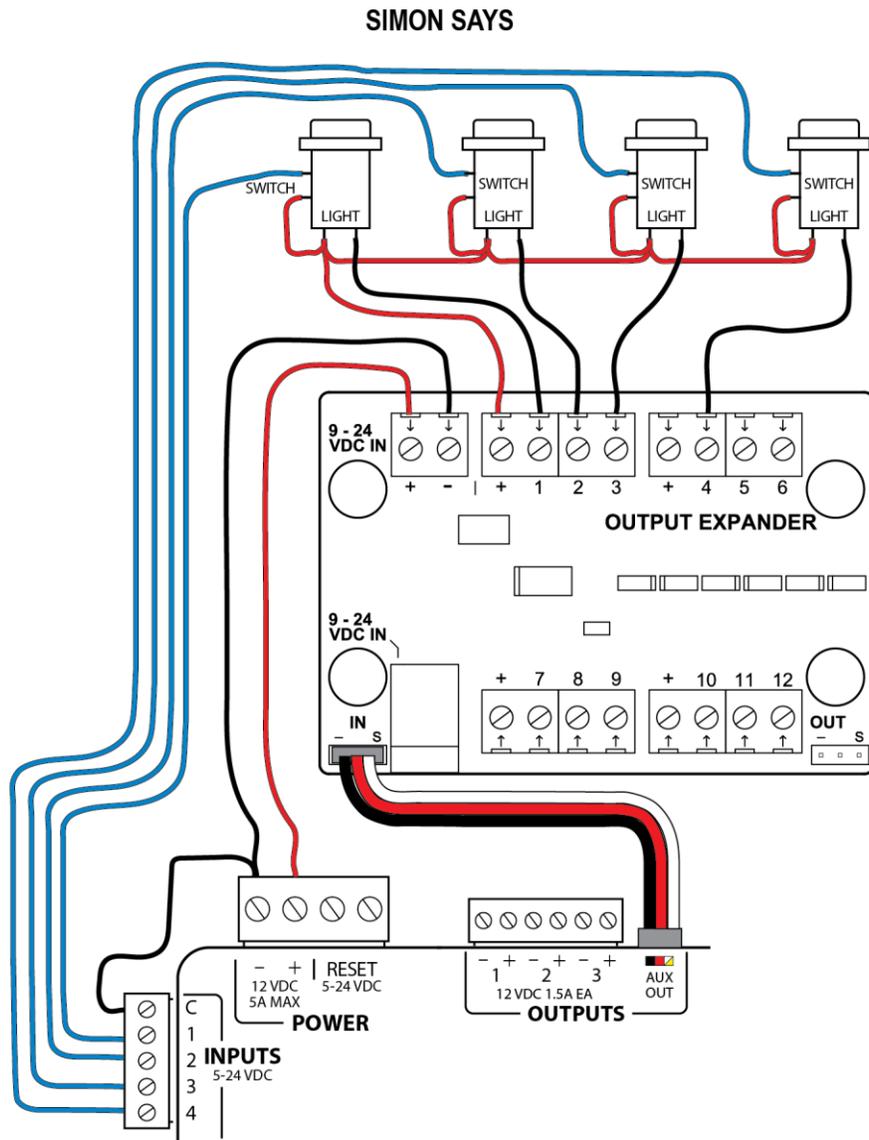
Output Expander

An Output Expander can be used if you'd like to indicate states by turning off and on almost any other electrical device. The Output Expander will output 12 or 24 volts DC, depending on which power supply you connect to it.

The outputs on the Output Expander can be directly connected to relays, solenoids, LED lights, and small bulbs, just to name a few examples. Whatever device you choose, you need to make sure it draws 1.5 amps or less and operates at the same voltage as the power supply connected to the Output Expander. You also need to make sure this power supply can provide enough current to power all the devices that may turn on at any given time.

Wiring Diagram

The below wiring diagram could be used for a Simon Says puzzle, where the EscapeKeeper displays hints on pushbuttons by illuminating their internal lights. In this particular diagram these switches would have internal 12 volt bulbs or LEDs.



Selecting your Puzzle Mode and Setup Options

Entering the Setup Menu

Power up holding button 3 to enter setup mode. You can let go when the MODE light starts flashing blue. The current puzzle mode selection will be shown on the yellow LEDs. If you just want to browse through your settings without changing anything you can keep tapping 3 to advance to the next setting. If you want to change any of the settings use the volume knob.

You must advance through all the settings for any changes to be saved. Which also means if you want to abort and return to your previous settings you can just unplug.

Selecting your Settings

INITIAL SETUP STEPS	
Mode LED	Setting Description and Options
 x1	<p>Puzzle Mode The puzzle mode defines how the EscapeKeeper monitors the puzzle inputs and when it declares the puzzle has been solved. See Puzzle Modes in Depth for more information.</p>
	<p>1 2 3 4 5 6 7 8 Input Sequence Players must activate the inputs in a specific sequence to solve the puzzle.</p>
	<p>1 2 3 4 5 6 7 8 Morse Code Players must match your sequence of short and long presses.</p>
	<p>1 2 3 4 5 6 7 8 Input State Match Players must match the inputs to a recorded input state. By default, success is declared if the inputs match your recorded state for 1 second. You can optionally use a submit button so they have to submit their guess. This way you can play Miss sounds and optionally limit the number of attempts.</p>
	<p>1 2 3 4 5 6 7 8 Number of Inputs Players must activate a certain number of inputs. Set that number in the next step <i>Number of Puzzle Inputs</i>.</p>
	<p>1 2 3 4 5 6 7 8 Mission Impossible Players must navigate through a laser field or other booby traps to trigger a win input at the other side. If they hit a trap they must return to the beginning to trigger the start input before they can try again.</p>
	<p>1 2 3 4 5 6 7 8 Patch Panel Players must connect patch cords to a patch panel, or wiring to connectors, in a way that matches your solution.</p>
	<p>1 2 3 4 5 6 7 8 Simon Says (EscapeKeeper Model Only) Players must repeat a random or pre-defined pattern shown to them on LEDs or outputs, or decipher a sound file to determine which inputs they need to activate.</p>



x2

Number of Puzzle Inputs

Number of buttons, switches, or sensors used for the puzzle. Remaining inputs can optionally be used to play sounds or hints but should not be included in the count.

Mission Impossible

If you are using the Mission Impossible mode, this number must be:

The number of must-not-break inputs + the number of must-break inputs + 2.

Patch Panel

If you are using the Patch Panel puzzle mode, select the number of connections + 1.



Use the knob to turn on the LED that represents the number of inputs used in your puzzle.



x3

Output 1 Mode

Output 1 is dedicated to indicating the puzzle has been solved. Often this is done by releasing a maglock, turning something on, or by pulsing a solenoid latch.



Maglock, NO E-Stop Detection, Unlock on Failure

Use this mode if you want a maglock to release on success. An E-Stop button can be used but the EscapeKeeper will not stop the game if it's pressed. The lock will be unlocked if the Game Timer expires or they've run out of attempts.



Maglock, E-Stop Detection, Unlock on Failure

Use this mode if you want a maglock to release on success. If the current through the maglock stops, usually because an E-Stop button is pressed, the EscapeKeeper will stop the game and start beeping. The lock will be unlocked if the Game Timer expires or they've run out of attempts.



Maglock, NO E-Stop Detection

Use this mode if you want a maglock to release on success. An E-Stop button can be used but the EscapeKeeper will not stop the game if it's pressed. The lock will remain locked if the Game Timer expires or they've run out of attempts.



Maglock, E-Stop Detection

Use this mode if you want a maglock to release on success. If the current through the maglock stops, usually because an E-Stop button is pressed, the EscapeKeeper will stop the game and start beeping. The lock will remain locked if the Game Timer expires or they've run out of attempts.



Pulse On

Output will turn on for 1 second if the puzzle is solved. This mode is often used to pulse a solenoid latch or to notify a master controller the puzzle has been solved.



Turn On

Output will turn on and stay on if the puzzle is solved. Often used to turn on a light or provide power or indication to the next puzzle.



Link Mode

Use this mode if Output 1 is connected to another EscapeKeeper's Reset input. This will force this puzzle to be solved before the next one can be played.

 <p>x4</p>	<p>Auto-Reset Timer This timer starts when the puzzle is solved or fails due to timeout or too many attempts. When it expires it restarts the puzzle allowing it to be solved again.</p> <table border="0"> <tr> <td> Off</td> <td> 30 sec</td> <td> 10 min</td> </tr> <tr> <td> After Sound</td> <td> 1 min</td> <td> 15 min</td> </tr> <tr> <td> 5 sec</td> <td> 2 min</td> <td> 30 min</td> </tr> <tr> <td> 15 sec</td> <td> 5 min</td> <td> 60 min</td> </tr> </table>	 Off	 30 sec	 10 min	 After Sound	 1 min	 15 min	 5 sec	 2 min	 30 min	 15 sec	 5 min	 60 min			
 Off	 30 sec	 10 min														
 After Sound	 1 min	 15 min														
 5 sec	 2 min	 30 min														
 15 sec	 5 min	 60 min														
 <p>x5</p>	<p>Game Timer Used to automatically fail the game if the players can't solve the puzzle before the timer expires.</p> <table border="0"> <tr> <td> Off</td> <td> 5 min</td> <td> 40 min</td> </tr> <tr> <td> 1 min</td> <td> 10 min</td> <td> 50 min</td> </tr> <tr> <td> 2 min</td> <td> 15 min</td> <td> 60 min</td> </tr> <tr> <td> 3 min</td> <td> 20 min</td> <td></td> </tr> <tr> <td> 4 min</td> <td> 30 min</td> <td></td> </tr> </table>	 Off	 5 min	 40 min	 1 min	 10 min	 50 min	 2 min	 15 min	 60 min	 3 min	 20 min		 4 min	 30 min	
 Off	 5 min	 40 min														
 1 min	 10 min	 50 min														
 2 min	 15 min	 60 min														
 3 min	 20 min															
 4 min	 30 min															
	<p>Puzzle Specific Options If your MODE light has turned off your setup is complete. If it starts blinking green there are a few more settings specific to your puzzle mode. Continue your setup using the appropriate table for your puzzle mode.</p> <p>Note that if you enabled the Auto-Reset timer the unit may immediately enter game mode, which is also a green blinking light but at a different rate. If your selected puzzle mode isn't listed below that's what happened.</p> <p>Jump to Puzzle Specific Options for ...</p> <ul style="list-style-type: none"> Input Sequence & Morse Code Input State Match Number of Inputs Mission Impossible Simon Says 															

Puzzle Specific Options - Input Sequence & Morse Code

These options are only shown if you selected the Input Sequence or Morse Code puzzle mode.

Miss Indication

A *Miss* is an incorrect attempt at the puzzle's solution. By default, the Input Sequence and Morse Code puzzle modes will never indicate a miss, they only indicate success. Some of the options below allow you to specify when the EscapeKeeper should declare a Miss has occurred.

In On/Off options you'll see one of the lights flash quickly, this is the cursor position. The cursor can be moved left or right by turning the knob. If you want to toggle one of the options on or off, move the cursor to that position, then tap the red REC button. When you are finished toggling all the options and are ready to move on to the next step tap button 3.

ONLY FOR INPUT SEQUENCE & MORSE CODE PUZZLE MODES																																																																																																																																																																																																																																																																																																																																																																																								
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	<p>Miss on Input Timeout Use this to limit the maximum number of seconds between inputs in the sequence. This option will declare the current attempt a miss and play any miss sound and animation if they take too long to activate the next input, button, etc.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table> </td> <td style="padding: 0 10px;">No Limit</td> <td style="text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table> </td> <td style="padding: 0 10px;">5 sec</td> <td style="text-align: center;"> <table border="1" style="display: inline-table; 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1 2 3 4 5 6 7 8

Pulse Output 2 for each Keypress

With this enabled output 2 will pulse to indicate the EscapeKeeper registered a keypress. It would usually be connected to a light of some kind to give players visual feedback their press was registered.

Note that it will only pulse output 2 when a game is in progress, not before the puzzle has been started or after it's been solved. Also, with this option enabled output 2 will no longer indicate fail status or play output animation.

1 2 3 4 5 6 7 8

Input Latch Mode

With this enabled each input can only be activated once. The input will latch and appear to stay on even once the trigger is no longer active. This is useful in puzzles where you only want the input's sound and or corresponding Output Expander output to activate once. Like for example, in a puzzle where you want the players to turn outputs on or off in a particular order. The outputs will remain in the changed state until the EscapeKeeper declares their attempt a miss, the puzzle is solved, or the game is reset.

1 2 3 4 5 6 7 8

Turn Output 2 On During Sequence

With this enabled output 2 will stay on while a sequence is being entered. Once a Miss occurs, or the puzzle is solved, it will turn off. This option is useful if you want to have a light or other device turn on to let the players know their inputs are being registered.

1 2 3 4 5 6 7 8

Immediately Unlock on Good Sequence

With this enabled, Output 1 will immediately unlock once the correct sequence has been input. By default, the EscapeKeeper waits until any input sounds are finished playing before playing the SUCCESS sound and unlocking the door.

1 2 3 4 5 6 7 8

Delayed Miss on Bad Input

Like *Miss on Bad Input* above, but instead of immediately interrupting the attempt to play a Miss, it waits until the user pauses. This option requires the *Miss on Input Timeout* to be set as well, as that is how long it will pause before playing the Miss.

This option is recommended over the original *Miss on Bad Input* if you do not want to reveal the code's length. With *Miss on Bad*, the *Miss on Code Length* option was a requirement if you wanted to prevent an attempt with incorrect entries at the start from being declared a success. For example, without *Miss on Code Length* set, 31234 would be a success if 1234 was the solution. But since *Miss on Code Length* lets the players know how long the code is, it leaks information about the solution.

Delayed Miss on Bad Input combined with *Miss on Input Timeout* set at 2 or 3 seconds is likely the best setup for most keypad applications.

Puzzle Specific Options – Input State Match

These options are only shown if you selected the Input State Match puzzle mode.

In On/Off options you'll see one of the lights flash quickly, this is the cursor position. The cursor can be moved left or right by turning the knob. If you want to toggle one of the options on or off, move the cursor to that position, then tap the red REC button. When you are finished toggling all the options and are ready to move on to the next step tap button 3.

ONLY FOR INPUT STATE MATCH																	
Mode LED	Setting Description and Options																
 x1	<p>Options ON/OFF</p> <p>In this step each of the options below can individually be toggled off or on. See the ON/OFF icon above for more information as these are set a little differently than previous settings. Currently there is only one option so the cursor won't move left and right.</p> <p> 1 2 3 4 5 6 7 8 Use Submit Button </p> <p>Instead of having the puzzle succeed once they've matched the input state and kept it there for 1 second, you can require them to also press a button. This submission enables the EscapeKeeper to declare the attempt a "miss" if they've guessed incorrectly. This allows you to play a miss sound effect or animation, and also gives you the option of limiting the number of attempts.</p> <p>Connect the submit button to input 8, or 7 if puzzle bypass is enabled. The button should not be included in the count for "Number of Puzzle Inputs".</p>																
 x2	<p>Minimum Match Time</p> <p>To prevent the players from brute-forcing the solution by quickly spinning wheels or flipping switches, the inputs must be in the winning state for a minimum amount of time. By default, that time is 1 second, you can adjust it here if necessary.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%;">1 2 3 4 5 6 7 8</td> <td style="width: 25%;">None</td> <td style="width: 25%;">1 2 3 4 5 6 7 8</td> <td style="width: 25%;">3 seconds</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>½ second</td> <td>1 2 3 4 5 6 7 8</td> <td>4 seconds</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>1 second</td> <td>1 2 3 4 5 6 7 8</td> <td>5 seconds</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>2 seconds</td> <td></td> <td></td> </tr> </table>	1 2 3 4 5 6 7 8	None	1 2 3 4 5 6 7 8	3 seconds	1 2 3 4 5 6 7 8	½ second	1 2 3 4 5 6 7 8	4 seconds	1 2 3 4 5 6 7 8	1 second	1 2 3 4 5 6 7 8	5 seconds	1 2 3 4 5 6 7 8	2 seconds		
1 2 3 4 5 6 7 8	None	1 2 3 4 5 6 7 8	3 seconds														
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1 2 3 4 5 6 7 8	1 second	1 2 3 4 5 6 7 8	5 seconds														
1 2 3 4 5 6 7 8	2 seconds																

Puzzle Specific Options – Number of Inputs

These options are only shown if you selected the Number of Inputs puzzle mode.

ON/OFF

In On/Off options you'll see one of the lights flash quickly, this is the cursor position. The cursor can be moved left or right by turning the knob. If you want to toggle one of the options on or off, move the cursor to that position, then tap the red REC button. When you are finished toggling all the options and are ready to move on to the next step tap button 3.

ONLY FOR NUMBER OF INPUTS	
Mode LED	Setting Description and Options
 x1	<p>Latched Inputs ON/OFF</p> <p>In this step each of the eight inputs can be individually set to latched mode. See the ON/OFF icon above for more information as these are set a little differently than previous settings.</p> <p>1 2 3 4 5 6 7 8 Latched Inputs</p> <p>The Number of Inputs puzzle mode will only go into a success state once all the puzzle's inputs are on at the same time. This is fine if you are using reed switches, key switches, or similar devices that will keep the input on until the objects are removed. But if you would like to use buttons or other momentary output devices that only pulse the input briefly, you need the inputs on the EscapeKeeper to "latch", so they stay on until the end of the puzzle.</p> <p>Turn the input light on for any inputs that are connected to momentary sensors. Once you start the puzzle, you'll notice the input light stays on once the EscapeKeeper sees it pulse. They will turn off when the puzzle is reset.</p>

Puzzle Specific Options – Mission Impossible

These options are only shown if you selected the Mission Impossible puzzle mode.

ONLY FOR MISSION IMPOSSIBLE																																																																																													
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 x2	<p>Must Break Inputs If you are using the Must-Break Input option, set how many inputs you'd like to use for that feature here. These inputs will be at the end of your puzzle inputs. For example, if you chose 6 for <i>Number of Puzzle Inputs</i>, and "2 inputs" here, inputs 1 & 2 would be start/win buttons, 3 & 4 would be must-not-break, and 5 & 6 would be must-break.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table> </td> <td style="width: 50%; text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table> </td> </tr> <tr> <td style="text-align: center;">None</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">5</td> </tr> <tr> <td style="text-align: center;">2</td> <td></td> </tr> <tr> <td style="text-align: center;">3</td> <td></td> </tr> </table>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table>	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table>	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	None	4	1	5	2		3																																			
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 x3	<p>Must Not Break Input Filter If the lasers and sensors are not mounted on a perfectly rigid surface, your lasers or laser sensors may vibrate slightly during play, causing them to go out of alignment. If you experience this, enable this option to tell the EscapeKeeper to ignore very brief input activations on the Must Not Break inputs. The inputs must be ON for the time below before the EscapeKeeper will declare a Miss.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table> </td> <td style="width: 50%; text-align: center;"> <table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table> </td> </tr> <tr> <td style="text-align: center;">Off</td> <td style="text-align: center;">200ms</td> </tr> <tr> <td style="text-align: center;">33ms</td> <td style="text-align: center;">300ms</td> </tr> <tr> <td style="text-align: center;">66ms</td> <td style="text-align: center;">500ms</td> </tr> <tr> <td style="text-align: center;">100ms</td> <td></td> </tr> </table>	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table>	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	<table border="1" style="display: inline-table; border-collapse: collapse;"> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> <tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr> </table>	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	1	2	3	4	5	6	7	8	Off	200ms	33ms	300ms	66ms	500ms	100ms																			
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Puzzle Specific Options – Simon Says

These options are only shown if you selected the Simon Says puzzle mode. There are quite a few options here so get comfy and take your time. Note that if you are coming in here to adjust one setting you can just tap 3 until you get to the setting you want to edit.

ONLY FOR SIMON SAYS PUZZLE MODE													
Mode LED	Setting Description and Options												
 x1	<p>Simon Says Mode Select which of the Simon Says modes you'd like to use. More detailed explanations for each mode can be found here.</p> <p>1 2 3 4 5 6 7 8 Repeat Pre-set or Random Sequence A random or pre-set sequence of outputs and/or sound files is played that the players must repeat on the inputs. Enable the <i>Use Pre-set Sequence Instead of Random</i> option in the Options if you want to define your own sequence.</p> <p>1 2 3 4 5 6 7 8 Repeat Sequence from Sound Similar to above, except instead of the EscapeKeeper generating a random sequence, a random sound is played from one of the SIMONX folders. There is one folder for each round. Each round can even have different input sounds. Players must interpret the sounds or riddle to determine the winning sequence. The EscapeKeeper derives the winning sequence from the filename.</p> <p>1 2 3 4 5 6 7 8 Match Random State A random state is shown on outputs or LEDs. The players must figure out how to replicate that state on the devices connected to the inputs.</p> <p>1 2 3 4 5 6 7 8 Match Random State in Sound Filename Similar to above, except instead of the EscapeKeeper generating a random input state, a random sound is played from one of the SIMONX folders. Players must interpret the sound file to determine the winning state. The EscapeKeeper derives the winning state from the filename.</p> <p>1 2 3 4 5 6 7 8 Last Output Wins A random sequence is played on outputs or LEDs. The players must work together to determine which output activated last.</p>												
 x2	<p>Attempt Timeout Used to automatically fail the attempt if the players take too long to solve the current challenge. The attempt timer starts once the hint or clue is finished playing.</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 25%;">1 2 3 4 5 6 7 8 None</td> <td style="width: 25%;">1 2 3 4 5 6 7 8 5 sec</td> <td style="width: 25%;">1 2 3 4 5 6 7 8 1 min</td> </tr> <tr> <td>1 2 3 4 5 6 7 8 2 sec</td> <td>1 2 3 4 5 6 7 8 10 sec</td> <td>1 2 3 4 5 6 7 8 2 min</td> </tr> <tr> <td>1 2 3 4 5 6 7 8 3 sec</td> <td>1 2 3 4 5 6 7 8 20 sec</td> <td></td> </tr> <tr> <td>1 2 3 4 5 6 7 8 4 sec</td> <td>1 2 3 4 5 6 7 8 30 sec</td> <td></td> </tr> </table>	1 2 3 4 5 6 7 8 None	1 2 3 4 5 6 7 8 5 sec	1 2 3 4 5 6 7 8 1 min	1 2 3 4 5 6 7 8 2 sec	1 2 3 4 5 6 7 8 10 sec	1 2 3 4 5 6 7 8 2 min	1 2 3 4 5 6 7 8 3 sec	1 2 3 4 5 6 7 8 20 sec		1 2 3 4 5 6 7 8 4 sec	1 2 3 4 5 6 7 8 30 sec	
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1 2 3 4 5 6 7 8 3 sec	1 2 3 4 5 6 7 8 20 sec												
1 2 3 4 5 6 7 8 4 sec	1 2 3 4 5 6 7 8 30 sec												

 <p>x3</p>	<p>Attempt Timeout Decrease Rate This setting can be used to shorten the Attempt Timeout by the percentage shown for each successive round. For example, if you set the Attempt Timeout above to 10 seconds and Difficulty to 6 (50%), round two would have a timeout of 5 seconds and round three would have a timeout of 2.5 seconds.</p> <table border="0"> <tr> <td>1 2 3 4 5 6 7 8</td> <td>0%</td> <td>1 2 3 4 5 6 7 8</td> <td>40%</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>10%</td> <td>1 2 3 4 5 6 7 8</td> <td>50%</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>20%</td> <td>1 2 3 4 5 6 7 8</td> <td>60%</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>30%</td> <td>1 2 3 4 5 6 7 8</td> <td>70%</td> </tr> </table>	1 2 3 4 5 6 7 8	0%	1 2 3 4 5 6 7 8	40%	1 2 3 4 5 6 7 8	10%	1 2 3 4 5 6 7 8	50%	1 2 3 4 5 6 7 8	20%	1 2 3 4 5 6 7 8	60%	1 2 3 4 5 6 7 8	30%	1 2 3 4 5 6 7 8	70%
1 2 3 4 5 6 7 8	0%	1 2 3 4 5 6 7 8	40%														
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1 2 3 4 5 6 7 8	30%	1 2 3 4 5 6 7 8	70%														
 <p>x4</p>	<p>Number of Rounds The total number of rounds they must complete before the EscapeKeeper will go to the Success state.</p> <p>1 2 3 4 5 6 7 8 Turn the knob to select the number of rounds they'll need to solve (2 shown).</p>																
 <p>x5</p>	<p>Allowed Attempts in each Round Use this to limit how many chances they have to solve the current round. If they hit this limit they'll be sent back to round 1.</p> <table border="0"> <tr> <td>1 2 3 4 5 6 7 8</td> <td>No Limit</td> <td>There's no limit so they'll never get sent back to round 1.</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>1 Chance</td> <td>If they mess up even once they'll be sent back to round 1.</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>5 Chances</td> <td>They'll have five chances to solve the current round before being sent back to round 1.</td> </tr> </table>	1 2 3 4 5 6 7 8	No Limit	There's no limit so they'll never get sent back to round 1.	1 2 3 4 5 6 7 8	1 Chance	If they mess up even once they'll be sent back to round 1.	1 2 3 4 5 6 7 8	5 Chances	They'll have five chances to solve the current round before being sent back to round 1.							
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1 2 3 4 5 6 7 8	5 Chances	They'll have five chances to solve the current round before being sent back to round 1.															

Options

ON/OFF

In On/Off options you'll see one of the lights flash quickly, this is the cursor position. The cursor can be moved left or right by turning the knob. If you want to toggle one of the options on or off, move the cursor to that position, then tap the red REC button. When you are finished toggling all the options and are ready to move on to the next step tap button 3.

1 2 3 4 5 6 7 8

No Timeout Miss in Round 1

Enable this option if you'd like the clue to repeat in round 1 without causing a Miss. This is useful if you'd like the same clue to play over and over until players figure out what they need to do and start to engage with the puzzle.

1 2 3 4 5 6 7 8

Only Change Sequence when Allowed Attempts Expires

Enable this option if you'd like the same sequence to play for all attempts in the same round. By default, a new random sequence is generated anytime the players make an attempt at the solution. Even if they are allowed multiple attempts in the same round. With this setting enabled the random sequence will only change when they move to a different round.

1 2 3 4 5 6 7 8

Random Sequence Played by Input

By default, the random sequence of sounds or outputs is played automatically. This is usually at game start, when the Attempt Timeout expires, or when a new round starts. If instead you'd like the players to trigger an input to see or hear the sequence, enable this option.

The input immediately following your puzzle inputs will be assigned this duty. For example, if you selected 4 for Number of Puzzle Inputs, your sequence would involve those four inputs, and input 5 would be used to play the clue.

1 2 3 4 5 6 7 8

Do Not Miss on Failed Match

By default, the EscapeKeeper will fire a Miss if the sequence input by the players doesn't exactly match the generated sequence. For example, if the generated sequence is 1,2,3, they must input exactly 1,2,3. 2,1,2,3 would be a Miss, even though it ends with the correct sequence.

Puzzles where the players must recreate a sequence of sounds by activating inputs often need to be more liberal with the matching. This allows the players to experiment with the inputs to learn the sounds without the EscapeKeeper firing a Miss every time.

1 2 3 4 5 6 7 8

Use Pre-set Sequence Instead of Random

This setting only applies to Simon Says Mode 1, *Repeat Pre-set or Random Sequence*. If you prefer to craft your own sequences, enable this option. See the SIMONX folders on the SD card for info on how to define your own sequences. Basically, you'll create dummy MP3 files with the sequence in the filename. In this case, the MP3 file will never be played, the filename will just be read to determine the desired sequence.



x6

	<p>1 2 3 4 5 6 7 8 Miss Immediately on Bad Input</p> <p>Set this option if you'd like the EscapeKeeper to Miss as soon as the player activates an incorrect input. Normally it will wait for the Attempt Timeout to expire, or for the players to enter the full code length before it will Miss. In some cases you may want the players to have more immediate feedback on their error.</p>																								
 x7	<p>Entry Timeout</p> <p>This option only applies if you have selected one of the "Repeat Sequence" modes. This is the maximum amount of time to allow between inputs in the sequence. This was previously hard-coded at 3 seconds but was exposed in version 2.23 to allow for more control.</p> <p>For example, assume the Attempt Timeout is set to 1 minute, and this Entry Timeout to 5 seconds. The players would have a total of one minute after the clue finishes to complete the sequence. Once they start activating inputs to try and repeat the sequence, this timer will also start, ensuring they leave no more than 5 seconds between inputs.</p> <table border="0" data-bbox="256 674 1393 835"> <tr> <td>1 2 3 4 5 6 7 8</td> <td>1 sec</td> <td>1 2 3 4 5 6 7 8</td> <td>5 sec</td> <td>1 2 3 4 5 6 7 8</td> <td>1 min</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>2 sec</td> <td>1 2 3 4 5 6 7 8</td> <td>10 sec</td> <td>1 2 3 4 5 6 7 8</td> <td>2 min</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>3 sec</td> <td>1 2 3 4 5 6 7 8</td> <td>20 sec</td> <td></td> <td></td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>4 sec</td> <td>1 2 3 4 5 6 7 8</td> <td>30 sec</td> <td></td> <td></td> </tr> </table>	1 2 3 4 5 6 7 8	1 sec	1 2 3 4 5 6 7 8	5 sec	1 2 3 4 5 6 7 8	1 min	1 2 3 4 5 6 7 8	2 sec	1 2 3 4 5 6 7 8	10 sec	1 2 3 4 5 6 7 8	2 min	1 2 3 4 5 6 7 8	3 sec	1 2 3 4 5 6 7 8	20 sec			1 2 3 4 5 6 7 8	4 sec	1 2 3 4 5 6 7 8	30 sec		
1 2 3 4 5 6 7 8	1 sec	1 2 3 4 5 6 7 8	5 sec	1 2 3 4 5 6 7 8	1 min																				
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1 2 3 4 5 6 7 8	4 sec	1 2 3 4 5 6 7 8	30 sec																						

If you selected *Repeat Pre-set or Random Sequence or Last Output Wins* please continue below.

ONLY FOR REPEAT PRE-SET OR RANDOM SEQUENCE, LAST ONE WINS

Mode LED	Setting Description and Options																								
 x1	<p>Sequence Length in First Round This is the length of the random sequence played to the players in round 1.</p> <table border="0"> <tr> <td>1</td><td>1 2 3 4 5 6 7 8</td><td>5</td><td>1 2 3 4 5 6 7 8</td><td>9</td><td>1 2 3 4 5 6 7 8</td></tr> <tr> <td>2</td><td>1 2 3 4 5 6 7 8</td><td>6</td><td>1 2 3 4 5 6 7 8</td><td>10</td><td>1 2 3 4 5 6 7 8</td></tr> <tr> <td>3</td><td>1 2 3 4 5 6 7 8</td><td>7</td><td>1 2 3 4 5 6 7 8</td><td></td><td></td></tr> <tr> <td>4</td><td>1 2 3 4 5 6 7 8</td><td>8</td><td>1 2 3 4 5 6 7 8</td><td></td><td></td></tr> </table>	1	1 2 3 4 5 6 7 8	5	1 2 3 4 5 6 7 8	9	1 2 3 4 5 6 7 8	2	1 2 3 4 5 6 7 8	6	1 2 3 4 5 6 7 8	10	1 2 3 4 5 6 7 8	3	1 2 3 4 5 6 7 8	7	1 2 3 4 5 6 7 8			4	1 2 3 4 5 6 7 8	8	1 2 3 4 5 6 7 8		
1	1 2 3 4 5 6 7 8	5	1 2 3 4 5 6 7 8	9	1 2 3 4 5 6 7 8																				
2	1 2 3 4 5 6 7 8	6	1 2 3 4 5 6 7 8	10	1 2 3 4 5 6 7 8																				
3	1 2 3 4 5 6 7 8	7	1 2 3 4 5 6 7 8																						
4	1 2 3 4 5 6 7 8	8	1 2 3 4 5 6 7 8																						
 x2	<p>Sequence Length Increase Per Round The length of the random sequence can be made longer as the players progress to higher rounds. Select how much you'd like the length to increase. For example, if your <i>Sequence Length in First Round</i> above is set to 4, and you choose "Increase by 2" here: Round 1's length will be 4, round 2's length will be 6, and round 3's length will be 8.</p> <p>By default, the generated sequence will still be completely new, it will just be a longer sequence. If instead you want to add more steps to the sequence from the previous round you must also enable the <i>Only Add to Existing Sequence with Each Round</i> a few steps down.</p> <table border="0"> <tr> <td>1 2 3 4 5 6 7 8</td> <td>No Increase</td> <td>1 2 3 4 5 6 7 8</td> <td>Increase by 4</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>Increase by 1</td> <td>1 2 3 4 5 6 7 8</td> <td>Increase by 5</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>Increase by 2</td> <td>1 2 3 4 5 6 7 8</td> <td>Increase by 6</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>Increase by 3</td> <td>1 2 3 4 5 6 7 8</td> <td>Increase by 7</td> </tr> </table>	1 2 3 4 5 6 7 8	No Increase	1 2 3 4 5 6 7 8	Increase by 4	1 2 3 4 5 6 7 8	Increase by 1	1 2 3 4 5 6 7 8	Increase by 5	1 2 3 4 5 6 7 8	Increase by 2	1 2 3 4 5 6 7 8	Increase by 6	1 2 3 4 5 6 7 8	Increase by 3	1 2 3 4 5 6 7 8	Increase by 7								
1 2 3 4 5 6 7 8	No Increase	1 2 3 4 5 6 7 8	Increase by 4																						
1 2 3 4 5 6 7 8	Increase by 1	1 2 3 4 5 6 7 8	Increase by 5																						
1 2 3 4 5 6 7 8	Increase by 2	1 2 3 4 5 6 7 8	Increase by 6																						
1 2 3 4 5 6 7 8	Increase by 3	1 2 3 4 5 6 7 8	Increase by 7																						
 x3	<p>Sequence Speed in First Round This setting dictates how long each step in the sequence is displayed on the clue device before switching to the next step. For example, let's say you are using Random Sequence and your <i>Sequence Length in First Round</i> setting above is set to a length of 4. If you choose "1 sec" here, it will take 4 seconds for the EscapeKeeper to display the sequence on the output device.</p> <p>After the sequence is played, the players will have the length of the Attempt Timer to input the solution. If the Attempt Timer expires the random sequence will be displayed again, or another one will be generated and displayed.</p> <p>NOTE: If you are using the <i>Play Corresponding Input Sounds with Sequence</i> option, this setting will instead be the length of silence <i>between</i> sounds. For example, if you choose "1 sec" here, the first sound will play, the EscapeKeeper will then wait 1 second, then it will start the next sound. Also, if you have an Output Expander or NeoPixels displaying clues, those lights will stay on for the duration of the sound file.</p> <table border="0"> <tr> <td>1 2 3 4 5 6 7 8</td> <td>5 sec</td> <td>1 2 3 4 5 6 7 8</td> <td>1 sec</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>4 sec</td> <td>1 2 3 4 5 6 7 8</td> <td>0.75 sec</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>3 sec</td> <td>1 2 3 4 5 6 7 8</td> <td>0.5 sec</td> </tr> <tr> <td>1 2 3 4 5 6 7 8</td> <td>2 sec</td> <td>1 2 3 4 5 6 7 8</td> <td>0.25 sec</td> </tr> </table>	1 2 3 4 5 6 7 8	5 sec	1 2 3 4 5 6 7 8	1 sec	1 2 3 4 5 6 7 8	4 sec	1 2 3 4 5 6 7 8	0.75 sec	1 2 3 4 5 6 7 8	3 sec	1 2 3 4 5 6 7 8	0.5 sec	1 2 3 4 5 6 7 8	2 sec	1 2 3 4 5 6 7 8	0.25 sec								
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1 2 3 4 5 6 7 8	2 sec	1 2 3 4 5 6 7 8	0.25 sec																						



Sequence Speed Increase Per Round

This setting can be used to increase the speed in the previous setting as players progress to higher rounds.

For example, if your *Sequence Speed in First Round* above is set to “1 sec”, and you choose “2x Faster” here, the speed will double with each round. Your round one step display time will be 1 second, round two 0.50 seconds, and round three 0.25 seconds.

1 2 3 4 5 6 7 8	No Change	Example step times if round one is “1 sec”
1 2 3 4 5 6 7 8	1.25x Faster	1.0s, 0.8s, 0.64s
1 2 3 4 5 6 7 8	1.5x Faster	1.0s, 0.66s, 0.44s
1 2 3 4 5 6 7 8	2x Faster	1.0s, 0.5s, 0.25s
1 2 3 4 5 6 7 8	2.5x Faster	1.0s, 0.4s, 0.16s
1 2 3 4 5 6 7 8	3.0x Faster	1.0s, 0.33s, 0.11s
1 2 3 4 5 6 7 8	4.0x Faster	1.0s, 0.25s, 0.06s



Options

In On/Off options you’ll see one of the lights flash quickly, this is the cursor position. The cursor can be moved left or right by turning the knob. If you want to toggle one of the options on or off, move the cursor to that position, then tap the red REC button. When you are finished toggling all the options and are ready to move on to the next step tap button 3.

1 2 3 4 5 6 7 8 **Play Corresponding Input Sounds with Sequence**

This option is only valid in the *Repeat Random Sequence* and *Last One Wins* modes. With this option enabled, the EscapeKeeper will play the sound files in the INXON folders as it plays the sequence. You can use this option to play the sequence using sound files instead of, or together with, any outputs and LEDs.

Note that you can have different sounds play for each round. So for example round 1 could play guitar notes while round 2 plays piano notes. See the INXON folders for details.

1 2 3 4 5 6 7 8 **Only Add to Existing Sequence with Each Round**

Rather than generating a completely new sequence in each round, this option will tell the EscapeKeeper to add to the existing sequence to make it longer. This feature must be used in conjunction with *Sequence Length Increase Per Round*.



Important Note

If you are using an Expansion Board or NeoPixels to display the sequence, you must also set that up in the [Aux Output Menu](#). You would usually set the device up to use the Clues and Inputs source.

Selecting Advanced Options

Entering the Advanced Menu

Power up holding button 3 to enter setup mode. You can let go when the MODE light starts flashing blue. Hold button 2 until the mode light starts flashing yellow. You are now in the Advanced Options menu.

Advanced Options

In On/Off options you'll see one of the lights flash quickly, this is the cursor position. The cursor can be moved left or right by turning the knob. If you want to toggle one of the options on or off, move the cursor to that position, then tap the red REC button. When you are finished toggling all the options and are ready to move on to the next step tap button 3.

ADVANCED OPTIONS																									
Mode LED	Setting Description and Options																								
 x1	<p>Maximum Attempts at Solution Use this to limit the maximum number of incorrect guesses (Misses) the players can make at the solution. If they hit the limit the EscapeKeeper will immediately go into a failed state and remain there until it's reset by auto-reset, the reset input, or Button 3.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;"> <table border="1" style="display: inline-table; text-align: center; width: 40px; height: 20px;">1</table> <table border="1" style="display: inline-table; text-align: center; width: 40px; height: 20px;">2</table> <table border="1" style="display: inline-table; text-align: center; width: 40px; height: 20px;">3</table> <table border="1" style="display: inline-table; text-align: center; width: 40px; height: 20px;">4</table> <table border="1" style="display: inline-table; text-align: center; width: 40px; height: 20px;">5</table> <table border="1" style="display: inline-table; text-align: center; width: 40px; height: 20px;">6</table> <table border="1" style="display: inline-table; text-align: center; width: 40px; height: 20px;">7</table> <table border="1" style="display: inline-table; 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ON/OFF

Options

In this step each of the options below can individually be toggled off or on. See the ON/OFF icon above for more information as these are set a little differently than previous settings.

1 2 3 4 5 6 7 8

Puzzle Write Protection

Toggle the 1 LED on if you want the puzzle solution to be write-protected.

1 2 3 4 5 6 7 8

Animation Write Protection

Toggle the 2 LED on if you want the animation scenes to be write-protected.

1 2 3 4 5 6 7 8

Puzzle Bypass

Toggle the 3 LED on if you want input 8 to be used as a puzzle bypass so you can manually force the controller into the success state.

1 2 3 4 5 6 7 8

Ignore Input Off Transitions in Sequences

Toggle the 4 LED on if you want the Input Sequence and Simon Says modes not to care when inputs turn off. This would be useful if you want players to turn on a set of switches in a specific order, but you don't care if they turn the switches off or leave them on during the sequence. For example, players may have to open doors in a particular order, but you don't care or require that they close each door before opening the next one.

1 2 3 4 5 6 7 8

Invert Reset Input

By default, the EscapeKeeper will enter reset mode when power is applied to the reset input. This also implies that to start the puzzle, power must be *removed* from the reset input.

If instead, you want the puzzle to start when power is *applied* to the Reset input, enable this option.

Note that with this option enabled, the EscapeKeeper will appear to be locked up until power is applied to the reset input.

1 2 3 4 5 6 7 8

Set Reset Input to Single Shot Mode

By default, the Reset Input will hold the EscapeKeeper in reset if it's kept active. This is usually what you want if the reset input is connected to another controller, a key switch, etc. In this setup, the START sound is only played when the reset input is turned ON and then turned OFF.

However, if the reset input is accessible to the players via a reed switch or other sensor, it's likely preferable that the reset occurs as soon as the Reset Input is activated, rather than waiting for it to turn OFF. This will allow the START sound to play immediately, which may be more intuitive to the players. Enable this option if you prefer that behavior.



x2



x3

Normally Closed Inputs

ON/OFF

In puzzle modes other than Input State Match you usually want the game to start with all the inputs off. If you have a sensor or switch that keeps the EscapeKeeper's input on by default you can tell the EscapeKeeper to invert that input by setting it to Normally-Closed.

1 2 3 4 5 6 7 8

N.C. Inputs

Each light represents the normally-closed status of the corresponding input.

 <p>x4</p>	<p style="text-align: right;">ON/OFF</p> <p>Input Bounce Filter This option will tell the EscapeKeeper to ignore short off durations for the enabled inputs. This is useful for some RFID and proximity sensor setups. As an RFID tag or magnet approaches the sensor the sensor can turn off and on a few times. Also in some RFID setups, depending on the tag's final distance from the sensor, the relay can even chatter occasionally as it sits in the correct position.</p> <p>This option can be enabled on a per-input basis. Enabling it tells the EscapeKeeper to pretend it doesn't see those short off durations. It will only declare the input off if it's off for more than a second. Without this enabled, each click of the relay becomes another entry in an Input Sequence, making it nearly impossible to use RFID and proximity sensors in an input sequences.</p> <p>1 2 3 4 5 6 7 8 Bounce-Filtered Inputs Each light represents the bounce-filter status of the corresponding input.</p>																
 <p>x5</p>	<p>Minimum ON Time Use this option to force the EscapeKeeper to ignore input activations that are shorter than the time below. This is useful to filter out brief input activations that may occur during normal play. For example, in Ouija board or map-based puzzles, where the players slide a magnetic object across a surface. The players may briefly slide over one of the sensors on the way to stopping at the correct one. This option will allow you to filter out the brief inputs and only the register the ones where they stop.</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">1 2 3 4 5 6 7 8</td> <td style="padding-left: 10px;">None</td> <td style="text-align: center;">1 2 3 4 5 6 7 8</td> <td style="padding-left: 10px;">1 ½ seconds</td> </tr> <tr> <td style="text-align: center;">1 2 3 4 5 6 7 8</td> <td style="padding-left: 10px;">¼ second</td> <td style="text-align: center;">1 2 3 4 5 6 7 8</td> <td style="padding-left: 10px;">2 seconds</td> </tr> <tr> <td style="text-align: center;">1 2 3 4 5 6 7 8</td> <td style="padding-left: 10px;">½ second</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">1 2 3 4 5 6 7 8</td> <td style="padding-left: 10px;">1 second</td> <td></td> <td></td> </tr> </table>	1 2 3 4 5 6 7 8	None	1 2 3 4 5 6 7 8	1 ½ seconds	1 2 3 4 5 6 7 8	¼ second	1 2 3 4 5 6 7 8	2 seconds	1 2 3 4 5 6 7 8	½ second			1 2 3 4 5 6 7 8	1 second		
1 2 3 4 5 6 7 8	None	1 2 3 4 5 6 7 8	1 ½ seconds														
1 2 3 4 5 6 7 8	¼ second	1 2 3 4 5 6 7 8	2 seconds														
1 2 3 4 5 6 7 8	½ second																
1 2 3 4 5 6 7 8	1 second																

Selecting Indication Options (Aux Output)

Entering the Indication Setup Menu

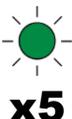
Power up holding button 3 to enter setup mode. You can let go when the MODE light starts flashing blue. Now hold the REC button until the mode light starts flashing purple. You are now in the Indication Setup Menu. This menu is only available on the 504B model.

Selecting your Settings

AUX OUTPUT MENU	
Mode LED	Setting Description and Options
 x1	<p>Aux Output Options The Aux Output can be used to control different types of devices, and in some cases more than one device at the same time.</p>
	<p>1 2 3 4 5 6 7 8 RGB LED Bank 1 Select this to enter the RGB LED Bank 1 setup menu. Proceed to RGB LED Options on one of the following pages.</p>
	<p>1 2 3 4 5 6 7 8 RGB LED Bank 2 Select this to enter the RGB LED Bank 2 setup menu. Proceed to RGB LED Options on one of the following pages.</p>
	<p>1 2 3 4 5 6 7 8 Expansion Board Bank 1 Select this to enter the Expansion Board Bank 1 setup menu. Proceed to Expansion Board Options on one of the following pages.</p>
	<p>1 2 3 4 5 6 7 8 Expansion Board Bank 2 Select this to enter the Expansion Board Bank 2 setup menu. Proceed to Expansion Board Options on one of the following pages.</p>
	<p>1 2 3 4 5 6 7 8 Servo Select this to enter the Servo setup menu. Proceed to Servo Options on one of the following pages.</p>
	<p>1 2 3 4 5 6 7 8 Toggle AUX Output Modes Some of the above outputs can be enabled simultaneously. If you'd like to see which ones are enabled, or disable one, select this then refer to the table below.</p>
	<p>1 2 3 4 5 6 7 8 Exit Select this option to exit the Aux menu and return to game mode.</p>

Mode LED	Setting Description and Options
 x2	<p>Enabled AUX Output Modes ON/OFF LEDs 1 thru 5 will represent which of the above modes are enabled. Use the knob to select which one you'd like to turn off. Tap REC to turn it off. Tap 3 to return to the menu above.</p> <p>1 2 3 4 5 6 7 8 Enabled AUX Output Modes</p>

Indication Setup Menu – RGB LED Options

RGB LED SETUP	
Mode LED	Setting Description and Options
 <p>x1</p>	<p>Select First LED Make sure your LEDs are connected and powered up. Use the knob to select the first LED you'd like to light up for this state. This will be the first LED that will turn on when progress is made, or the last one to turn off when representing a Game Timer, Attempt Timer, or Tries Left counter.</p> <p>If you are setting up bank 2 to display a second state, choose an LED outside of bank 1's range.</p>
 <p>x2</p>	<p>Select Last LED Turn the knob to select the last LED you'd like to light up for this bank.</p>
 <p>x3</p>	<p>Draw Mode Select how you'd like the state rendered on the LEDs. The effect will start from your first LED and fill or trace to your last LED. If you'd like the effect to render in the other direction then swap your first and last LEDs when you select them in steps 1 and 2 above.</p> <p> <input checked="" type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 Fill In this mode the lights will fill up like a progress bar as the state's value increases. </p> <p> <input type="checkbox"/> 1 <input checked="" type="checkbox"/> 2 <input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8 Tracer In this mode, only the light that represents the current position will light up. </p>
 <p>x4</p>	<p>On Color & Brightness Turn the knob to select the color and brightness the lights will be when they are representing the "on" state.</p>
 <p>x5</p>	<p>Off Color & Brightness Turn the knob to select the color and brightness the lights will be when they are representing the "off" state. This will often be set all the way counter-clockwise which turns the LED off, but you could also set the lights to be red when they're "off" and green when they're "on".</p> <p>Also, consider a setup where the game designer may want a progress bar of some sort to appear full when the puzzle starts and the progress is zero. As players progress, the progress bar would drain until it's completely empty when the puzzle is solved. Let's pretend it's a large thermometer and the players goal is to reduce the temperature to a safe level. To achieve this effect, you would set the First LED to be at the top of the thermometer, and the last to be at the bottom. The "Off Color" would be set to red so the thermometer is full when the puzzle starts. The "On Color" would be set to turn the LEDs off completely, or to a safe color that will fill downwards as the puzzle gets closer to being solved.</p>



Source

Select the source the EscapeKeeper will use to decide which pixels should be turned on. See the Indication section for your puzzle mode in [Puzzle Modes in Depth](#) for more details on how this information will be displayed.



Puzzle Progress (*Input Sequence, Number of Inputs, Simon Says*)

Use this if you want the lights to turn on based on how much progress they've made towards the solution, or to indicate their position in the sequence.



Game Timer (*All puzzle modes*)

In Fill mode the lights will turn on when the puzzle starts and progressively turn off as the game timer expires. In Trace mode only one segment will be lit.



Attempt Timer (*Mission Impossible, Simon Says*)

Like the game timer except this mode displays how much time is left in the current attempt. Some puzzle modes have a timer that will cause a Miss if you take too long. For example, if you take too long to solve Simon Says, or take too long to get to the end of a Mission Impossible puzzle.



Tries Left (*All except Number of Input and Patch Panel*)

If you have enabled [Maximum Attempts at Solution](#) in the advanced menu, selecting this option will light up a percentage of the pixels representing how many tries are left. For example, if you have 50 pixels and 5 tries, each try will be allotted 10 pixels.



Inputs (*All except Patch Panel*)

In this mode the lights will directly represent the state of the inputs. This is great if you want lights to turn on when objects are placed on sensors, buttons are pressed, etc.



Clues (*Simon Says*)

In this mode the lights will be used to play the randomly generated pattern that needs to be repeated in the Simon Says puzzle.



Clues & Inputs (*Simon Says*)

Same as Clues above except it will also turn the lights on when the inputs are turned on.



Exit the Menu

At this point you should be back at the [Aux Output Menu](#) with the exit option selected. Tap 3 to exit and return to normal operation, or if you have another bank to setup you can do that. Most people will just exit.



Exit

Select this option to exit the Aux menu and return to game mode.

Indication Setup Menu – Expansion Board Options

EXPANSION BOARD SETUP	
Mode LED	Setting Description and Options
	<p>Select First Output Use the knob to select the first output you'd like to turn on when representing this state. This will be the first output that will turn on when progress is made, or the last one to turn off when representing a Game Timer, Attempt Timer, or Tries Left counter.</p>
	<p>Select Last Output Turn the knob to select the last output you'd like to turn on. If you are representing a progress state, the total outputs you've selected should be equal to the number of steps in progress. If you are representing inputs or clues, the total outputs should be equal to the number of used inputs. And finally, if you are representing Tries Left, the total number of outputs should be equal to the number of tries.</p>
	<p>Draw Mode Select how the outputs will turn on to represent the information.</p> <p> Fill N.O. In this mode the outputs will turn on starting from the first output to the last as progress increases. If you are representing a timer or Tries Left, the puzzle will start with all outputs on and empty towards the first output as the state decreases.</p> <p> Fill N.C. Same as above except outputs will be on instead of off and off instead of on.</p> <p> Tracer N.O. Similar to Fill N.O. except only the output representing the current value of the state will be on. The outputs before that one will not fill in.</p> <p> Tracer N.C. Same as Tracer N.O. except outputs will be on instead of off and off instead of on.</p> <p> Maglocks Similar to Fill N.C. where outputs are on by default and turn off as progress or is made or time runs out. The difference is mainly that in this mode the outputs will turn off when the puzzle is not running.</p>
	<p>Source Select the source the EscapeKeeper will use to decide which outputs should be turned on. See the Puzzle Modes in Depth section for details on how this information is displayed for each puzzle mode.</p> <p> Puzzle Progress (<i>Input Sequence, Number of Inputs, Simon Says</i>) Use this if you want successive outputs to turn on based on how much progress they've made towards the solution, or to indicate their position in the sequence.</p> <p> Game Timer (<i>All puzzle modes</i>) In Fill mode the outputs will all turn on when the puzzle starts and progressively turn off as the game timer expires. In Trace mode only the output representing the current time will be lit.</p>

	<p>1 2 3 4 5 6 7 8 Attempt Timer (<i>Mission Impossible, Simon Says</i>) Similar to the game timer except this mode displays how much time is left in the current attempt. Some puzzle modes have a timer that will cause a Miss if you take too long. For example, if you take too long to solve Simon Says, or take too long to get to the end of a Mission Impossible puzzle.</p> <p>1 2 3 4 5 6 7 8 Tries Left (<i>All except Number of Input and Patch Panel</i>) If you have enabled Maximum Attempts at Solution in the advanced menu, selecting this option will turn on the number of outputs that represent how many tries are left.</p> <p>1 2 3 4 5 6 7 8 Inputs (<i>All except Patch Panel</i>) In this mode the outputs will directly represent the state of the inputs. This is great if you want lights to turn on when objects are placed on sensors, buttons are pressed, etc.</p> <p>1 2 3 4 5 6 7 8 Clues (<i>Simon Says</i>) In this mode the outputs will be used to play the randomly generated pattern that needs to be repeated in the Simon Says puzzle.</p> <p>1 2 3 4 5 6 7 8 Clues & Inputs (<i>Simon Says</i>) Same as Clues above except it will also turn the outputs on when the inputs are turned on.</p>
 x1	<p>Exit the Menu At this point you should be back at the Aux Output Menu with the exit option selected. Tap 3 to exit and return to normal operation, or if you have another bank to setup you can do that. Most people will just exit.</p> <p>1 2 3 4 5 6 7 8 Exit Select this option to exit the Aux menu and return to game mode.</p>

Indication Setup Menu – Servo Options

EXPANSION BOARD SETUP	
Mode LED	Setting Description and Options
 x1	<p>Low Position Turn the knob to select the position you want the servo to be in when the progress is zero, timer is empty, or no tries remain.</p>
 x2	<p>High Position Turn the knob to select the position you want the servo to be in when the progress is 100%, timer is full, or all tries remain.</p> <p>If after testing you notice your servo is rotating in the wrong direction, just repeat these steps with the low and high positions reversed.</p>
 x3	<p>Source Select the source the EscapeKeeper will use to decide where to position the servo. See the Puzzle Modes in Depth section for details on how this information is displayed for each puzzle mode.</p> <p>1 2 3 4 5 6 7 8 Puzzle Progress (<i>Input Sequence, Number of Inputs, Simon Says</i>) Use this if you want the servo to move based on how much progress they've made towards the solution, or to indicate their position in the sequence.</p> <p>1 2 3 4 5 6 7 8 Game Timer (<i>All puzzle modes</i>) The servo will start at the high position when the puzzle starts and move closer to the low position as the game timer depletes.</p> <p>1 2 3 4 5 6 7 8 Attempt Timer (<i>Mission Impossible, Simon Says</i>) Similar to the game timer except this mode displays how much time is left in the current attempt. Some puzzle modes have a timer that will cause a Miss if you take too long. For example, if you take too long to solve Simon Says, or take too long to get to the end of a Mission Impossible puzzle.</p> <p>1 2 3 4 5 6 7 8 Tries Left (<i>All except Number of Input and Patch Panel</i>) If you have enabled Maximum Attempts at Solution in the advanced menu, selecting this option will move the servo to a position proportional to how many tries are left.</p>
 x1	<p>Exit the Menu At this point you should be back at the Aux Output Menu with the exit option selected. Tap 3 to exit and return to normal operation, or if you have another bank to setup you can do that. Most people will just exit.</p> <p>1 2 3 4 5 6 7 8 Exit Select this option to exit the Aux menu and return to game mode.</p>

Recording the Solution

If you selected the Input Sequence or Morse Code puzzle mode, you need to teach the EscapeKeeper the winning sequence required to solve the puzzle. If you selected Input State Match or Patch Panel, you'll need to teach it the winning input state. Other modes not mentioned do not require a solution be recorded.

Input Sequence & Morse Code

1. If you previously recorded one of the animation scenes since you last powered up, you must re-select the solution for recording. See *Selecting the Solution* below.
2. Tap REC to start the recording process, the light above the red button should turn red.
3. Trigger the EscapeKeeper's inputs by pushing the buttons or activating the sensors as the players would if they solved the puzzle correctly.
4. Tap REC again to save.
5. Tap button 3 to start the puzzle, then test the solution is correct by acting it out once more.

Input State Match

1. If you previously recorded one of the animation scenes since you last powered up, you must re-select the solution for recording. See *Selecting the Solution* below.
2. Set the inputs to the winning state by activating the appropriate sensors, turning on the appropriate switches, rotating the appropriate dials, etc.
3. Tap the red REC button to save the current input state as the solution. The light above the record button should flash red. The solution is now saved.
4. Reset all the inputs back to the reset state as if you were resetting the game.
5. Tap button 3 to start the puzzle, then test the solution is correct by setting the inputs back to the winning state.

Patch Panel

1. If you previously recorded one of the animation scenes since you last powered up, you must re-select the solution for recording. See *Selecting the Solution* below.
2. Plug your wires into the patch panel so that they represent the puzzle's solved state. You can even make it so that one of the wires must be left out.
3. Tap the red REC button. The light should flash red once. If it flashes more than once there was an error recording the solution. Maybe too many wires were missing when you tried to record?
4. Remove one or more of the cables so that the patch panel is no longer in the winning state.
5. Tap button 3 to start the puzzle, then put the wires back in to make sure the EscapeKeeper declares success.

Selecting the Solution

1. Hold the REC button for a few seconds until the light above it turns blue.
2. While still holding the button, turn the Volume/Adjust knob to select the Puzzle Solution mode.
3. Let go of the REC button. From now on when you tap REC you will be recording the puzzle's solution.

TEACHABLE SOLUTIONS								
1	2	3	4	5	6	7	8	Puzzle Solution The default after power-up. Records the puzzle solution for Input Sequence and Morse code, or the winning state for Input State Match.

Recording Output Animation

By default, outputs 2 and 3 indicate the pass / fail status of the puzzle. If you'd like, you can create different scenes of output animation that will be played in the puzzle's different states. See *Selecting a Scene* below for the list of available scenes .

NOTE: If ANY of the available scenes contain custom animation, outputs 2 & 3 will no longer indicate pass / fail status.

Selecting a Scene

1. Hold the REC button for a few seconds until the light above it turns blue.
2. While still holding the REC button, turn the Volume/Adjust knob to select one of the animation scenes in the table below.
3. Let go of the REC button. From now on when you tap REC you will be recording that scene.

ANIMATION SCENES AVAILABLE FOR RECORDING	
1 2 3 4 5 6 7 8	Game Start This animation plays when the game is started. If an MP3 file is in the START folder, that sound will play along with this scene.
1 2 3 4 5 6 7 8	Game Loop This animation will loop as the game is running. If one or more MP3s are in the GAMEON folder, those sounds will play as the animation loops.
1 2 3 4 5 6 7 8	Miss This animation plays when an incorrect attempt is made. If one or more MP3s are in the MISS folder, one of those sounds will play along with this scene. Note that this scene will ONLY be played if your puzzle supports misses. For Input Sequence and Morse Code puzzle modes, one of the Miss options must be enabled. For Input State Match, a submit button must be used.
1 2 3 4 5 6 7 8	Success This animation plays when the puzzle is solved. If an MP3 file is in the SUCCESS folder, that sound will play along with this scene.
1 2 3 4 5 6 7 8	Failed This animation plays when the optional game timer expires or the players run out of attempts to solve the puzzle. If an MP3 file is in the FAILED folder, that sound will play along with this scene.

Recording Animation

1. Tap the red REC button to start recording. The light above the REC button should turn red. If there is a sound in the scene you selected, it should begin playing.
2. Use the 2 & 3 buttons to control the outputs. Anything you do with those outputs will be recorded.
3. When you're done, tap REC again to save your recording.
4. Tap button 3 if you'd like to preview the scene you just recorded.
5. If you'd like to record again start back at step 1.
6. When you're ready to exit record mode and start the puzzle hold button 3 for a few seconds.

Scene Recording Tip

- If you'd like an output to remain on after the animation is played make sure you are still holding the output button when you stop recording. This is useful if you want an output to stay on after the animation has finished playing.

Erasing a Scene's Animation

Select the scene for recording then tap record twice quickly.

How Much Animation can be Stored

The length of animation that can be stored in each scene varies with the activity on the outputs. The most you can get is 35 minutes per scene, but that's if the outputs only change state a few times. If you are constantly mashing on the output buttons it could be as little as a few minutes.

Which Scenes Currently Contain Output Animation

During the boot sequence the mode LED will change color a few times. It starts green, then turns yellow to show the version number, then if there are animation scenes it will turn red and show which scenes currently have animation on the input LEDs.

Adding Sounds (EscapeKeeper Only)

Sounds and the EscapeKeeper

You can have sounds play for pretty much every situation. When an input turns on or off, when the puzzle is solved, when the time runs out, etc. The EscapeKeeper will create a list of possible sound folders on the Micro SD card the first time it's inserted. Each folder represents a different state of the puzzle. If you want a sound to play for any of those states just drag an MP3 into the folder.

Creating your Sound Folders

There's no need to create the folders manually. When you first insert the SD card into the controller the mode light will turn red during the bootup sequence as it creates the folder structure. When that's done you can eject the card and put it in a computer to see the list of folders.

Sound Folder List

Inside each folder is a short README.TXT file explaining when sounds in that folder will play and how the files should be named. The contents of those files are shown in the table below.

ESTOP Any MP3 in here will play when an E-Stop event has been detected.

START Any MP3 in here plays when the game starts.

If you want this sound to be interruptible by the puzzle inputs create an empty folder named `_INT` inside this folder.

GAMEON You can put as many MP3s in here as you want. They will play during the game. If you need them to play in order, name them starting with a three-digit number, beginning at 001.

For example:
001-GoodSong.MP3 plays first.
002-SpookyTheme.MP3 plays second.

GAMEOVER You can put as many MP3s in here as you want. They will play once the game is over. If you need them to play in order, name them starting with a three digit number, beginning at 001.

For example:
001-GameOver.MP3 plays first.
002-ExitTheme.MP3 plays second.

MISS Any MP3 in here will play when a failed attempt to solve a puzzle is detected. If you want to play a specific sound based on how many times they've failed, use a two-digit number for the filename.

For this option to work in the Input Sequence or Morse Code puzzle modes one of the Miss options must be enabled.

For this option to work in the Input State Match puzzle mode, the Use Submit Button option must be enabled. It will not work in Number of Inputs puzzle mode.

For example:

01.MP3 plays after the first failed attempt.

10.MP3 plays after the tenth failed attempt.

SUCCESS Any MP3 in here plays once the puzzle is solved.

If you want music from the GAMEON folder to continue after this sound has played, create an empty folder named `_MOMUSIC` in this folder. If you want the success sound to play after the door unlocks create an empty folder named `_AFTER` in this folder.

If you want the success sound to loop over and over until the puzzle starts again, create an empty folder named `_LOOP` in this folder.

FAILED Any MP3 in here plays when they fail to solve the puzzle. This can only occur if you have set the Game Timer or Maximum Number of Tries. If you are using Output 1 Modes 1 or 2, and you want the fail sound to play after the door unlocks, create an empty folder named `_AFTER` in this folder.

PROGRESS Any MP3 in here will play as they make progress towards the solution. This will work with the following puzzle modes:

- Input Sequence & Morse Code, IF Fail on Bad Input is enabled
- Number of Inputs
- Mission Impossible, IF you employ must-break inputs
- Simon Says

You can use filenames starting with a two digit number if you want to play specific sounds for each step. You only need to include sound files for the steps you want to hear sounds for.

In Number of Inputs and Mission Impossible puzzle modes, the next sound plays when the number of inputs activated increases.

01.MP3 plays when one input turns on.
04.MP3 plays after the fourth input turns on.

In Input Sequence and Morse Code modes, a progress sound will play as they progress through the sequence. Note that a button press is TWO steps in the sequence, one step is the press, one is the release:

01.MP3 plays when the first correct button is pressed.
02.MP3 plays when that button is released.
03.MP3 plays when the next correct button is pressed.

In Simon Says mode, a progress sound plays as each round is completed:

01.MP3 plays after round 1 is solved.
02.MP3 plays after round 2 is solved.

ERROR Any MP3 in here plays when there was an error resetting the puzzle.

IN1ON Any MP3 in here plays when the input first turns on. Create an empty folder
IN2ON named _MOM if you want the sound to stop playing immediately when the input
etc. turns off. Don't put the sound in it, just leave it empty.

If you are using the Simon Says puzzle mode and would like the inputs to make different sounds for each round, name them 01.mp3 for round 1, 02.mp3 for round 2, etc.

IN1OFF Any MP3 in here plays when this input turns off.
IN2OFF
etc.

SIMONX In Simon Says modes 2 & 4 a random file from this folder is played as the clue. Each round has its own folder, so you can have separate groups of sounds at different difficulty levels. Each round can also have different input sounds in the INXON folders.

In mode 2, Repeat Sequence in Sound Filename, your filenames must be less than 13 characters long and contain only the characters 1-8. So 4321.mp3 and 1234123412345.mp3 are both valid. 1234.mp3 would require players to trigger inputs 1234 in sequence.

In mode 4, Match Random State in Sound Filename, your filenames must be 8 or less characters long and contain only 1 or 0. A 1 means that input must be on. For example, 111000.mp3 means inputs 1-3 need to be on, 4-6 off. 10100001 requires 1, 3 and 8 to be on, the rest off.

TIMELEFT Used when Game Timer is enabled. Name your sounds with a two digit number representing the number of minutes remaining when you want them to play. Do not use a 00 file for time expired, use the FAILED folder.

For example:
15.MP3 plays at 15 minutes remaining.
05.MP3 plays at 5 minutes remaining.

Operation

Boot Sequence

As the EscapeKeeper boots up it displays some useful information on the Mode and Input LEDs.

BOOT SEQUENCE	
Mode LED	Boot Sequence Step
	Step 1 - Firmware Check The Mode LED will turn green for a few seconds as it validates the installed firmware. If it detects a new firmware version on the SD card it will start flashing as it updates the firmware. Firmware updates take about 90 seconds.
	Step 2 - Current Version Display When the mode LED turns yellow the EscapeKeeper will indicate the current firmware version on the eight input LEDs. It will show two patterns. If it turns on the 1 LED, followed by the 2 & 3 LEDs, that would be version 1.23. If it flashes the 2 LED followed by just the 5 LED, that would be version 2.05.
 optional	Step 3 – Folder Creation and Memory Sync The Mode LED may or may not turn red at this point. If it does it's busy creating folders on the SD card, updating README files, or syncing files on the SD card to internal memory.
	Step 4 – Puzzle Mode The Mode LED will turn blue and indicate the current puzzle mode on the Input LEDs.
REC LED  or 	Step 5 – Recorded Scene Indication The REC LED above the REC button will turn red or green and the input LEDs will indicate scenes with valid animation. Refer to the Recording Animation section to see which scene each input LED represents. If the REC LED turns green the animation is write-protected. If it turns red the animation is NOT write-protected.

Operating States

1. Idle

In Idle mode the EscapeKeeper will wait for the game to be started. This can be done by tapping button 3 or by pulsing the Reset input. If the EscapeKeeper sees one of the inputs isn't ready for the game to start it will beep, blink the mode LED red and indicate which input is the problem. Once that issue is resolved you can attempt the reset again.

If the unit just powered up the Mode LED will be off, unless Auto-Reset is enabled, in which case it will start the game immediately.

If the game was previously played the Mode LED will indicate the pass (green) or fail (red) state of that game. If the auto-reset time is counting down you will also see a brief yellow flash.

2. Game On

During the game, the Mode LED will blink green. The game can be stopped and the door unlocked by tapping button 3 once, or the reset input twice.

3A. Success

The mode light will turn solid green to indicate the puzzle is in the success state. It will then return to Idle mode and start the Auto-Reset timer if it's enabled.

3B. Failure

The mode light will turn solid red to indicate the puzzle is in the failed state. It will then return to Idle mode and start the Auto-Reset timer if it's enabled.

Trouble Shooting

Error Codes

If the Mode LED blinks red continuously then it's displaying an error code on the input LEDs. See the table below for the meaning of the code.

ERROR CODES	
Which Input LEDs are Flashing	Error Description
3	Output 1 Current Limit Exceeded A current higher than 2.5 amps was detected.
4	Firmware Update Required The EscapeKeeper is trying to interpret a saved file that was saved by a future version of the firmware. You need to update the firmware on this unit.
5	Internal Memory Error There was an error syncing an SD card file with internal memory. Try a factory reset.
4 & 5	Simon Says Error There was an error reading sounds from the folders. Let us know if you see this.
1,4,5	Simon Says No Files There were no mp3 files found for the current Simon Says round.
2,4,5	Simon Says Bad Filename One of the filenames in a SIMONX round folder has an invalid character. Only 1 to 8 can be used in the random sequence mode. If you are using less puzzle inputs, for example 6, you can only use digits 1-6. If you are using the Random State in Filename mode, one of your filenames has a character other than 1 or 0.
2,3,4,5	Simon Says Invalid State One of the filenames did not specify enough inputs. For example, you have selected 6 puzzle inputs, but your filename is only 5 digits long – "11010.mp3".
7 & any	SD Card Error There was an error reading or writing to the SD card, or the card is formatted in a way the EscapeKeeper can't understand.
8 & any	Bootloader Error The boot loader detected an error and can't recover. Email us the error.
7,8 & any	SD Card Error in the Bootloader There was an error reading or writing to the SD card while in the Bootloader.

Factory Reset

Power up holding both the black 2 & 3 buttons. Let go when the REC LED starts flashing red. If you have been using a Micro SD card with your EscapeKeeper make sure it's inserted when you do this, otherwise the settings from the card will be loaded next time the card is inserted. The sounds on the card will NOT be deleted.