

AXIXLINK NETWORK

VEHICLE SMART CONTROLLER KIT SOFTWARE USER MANUAL



This User Manual describes the following software:

AXIXLINK_NETWORK_System_Configuration_Tool

The software supports the following models:

AC-MA100-D1	Main Console Unit 10 OUTPUTS
AC-MS80-D1	Main Console Unit 8 OUTPUTS
AI-PC80	Input Unit, 8+1BTN Control Panel
SDN212-R	200W Siren System w/ Remote Panel
SDN212-H	200W Siren System w/ Handheld Panel

Revision History

Date (YYYY-MM-DD)	Version	Summary
2025-08-26	1.0	Initial publication
2025-12-10	1.1	Add Audio / Output
2025-12-31	1.2	Fix description regarding Semi-sleep Mode
2026-01-07	1.3	Update description regarding Device setting for fuse and over current function.

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Download & Updates

• The latest firmware and user manual are available at:

<https://service.juluen.com.tw/Utility>

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CHAPTER 1. INTRODUCTION

1-1. System Overview

Model		Key Feature
Main Console Unit	AC-MS80-D1 Standard Main Console (10-IN & 10-OUT) 	• Supports 1-channel CANBus network for AXIXLINK connections • Operates as a standalone unit or in a multi-unit linked configuration • Equipped with fixed fuse sizes and customizable slow-blow fuse settings • Status LEDs for every input and output channel • Enables real-time diagnostics and monitoring, including voltage and current readings • Supports positive and negative switching inputs, as well as variable voltage range inputs
	AC-MA100-D1 Advanced Main Console (10-IN & 8-OUT) 	• Includes all features of the Standard model, with additional capabilities • Supports an extra CANBus channel for applications such as vehicle CAN network integration • Allows custom fuse sizing for each output channel • Supports special output modes, including PWM output and flash pattern output • Includes 4 configurable outputs, which can be set up as 2 motor control output sets
	SDN212 200W Siren System (5-IN & 12-OUT) 	• 12 Outputs and 1 dry contact relay output (w/ independent N.C and N.O). • 4 Positive or negative activated Logic Inputs and 1 voltage-variable Analogue Input. • 12-24VDC multi-voltage Class D amplifier for low amp draw and clean sound. • 200W amplifier supports one or two 100W speakers (11Ω). • Selectable tone including Wail, Yelp, Phaser (Piercer), Hi-Lo, Mechanical, European Tone and etc. • Radio Re-Broadcasting (RRB) for audio replay. • "Record-n-Play" function: Record instant replayable messages up to 30 seconds. • "DUAL TONE" function allows two speakers each plays different siren tone for a fanfare Effect
Input Unit	AI-PC80 (8+1 Pannel CNTLR) 	• 8+1 tactile buttons with beeping buzzer • Built-in ambient light sensor • Built-in temperature sensor • 8-LED TA indicator. • Full RGB LED indicators
	SDN-H (15-BTN Handheld CNTLR w/ PTT) 	• 15 tactile buttons with beeping buzzer & 14 RGB LED indicators. • 6-LED TA indicator. • Push-to-talk (PTT) button with built-in Condenser Microphone.
	SDN-R (19-BTN&Slide Panel CNTLR w/ PTT) 	• 19 tactile buttons with beeping buzzer & 18 RGB LED indicators. • 4-position slide switch • 6-LED TA indicator. • Include RJ45 Microphone socket.

Graphical User Interface (GUI)	AXIXLINK NETWORK System Configuration Tool	PC-based software for configuration, simulation, diagnostics, and firmware updates
--------------------------------	--	--

* All devices communicate over a single CAN-bus Network. One Main Console unit must be designated as a Master (ID 1) unit, up to five additional Main Consoles unit may be operated as Slaves (IDs 2 – 6) and up to four Control Panels may be added as nodes (IDs 1 – 4).

1-2. System Topology Overview

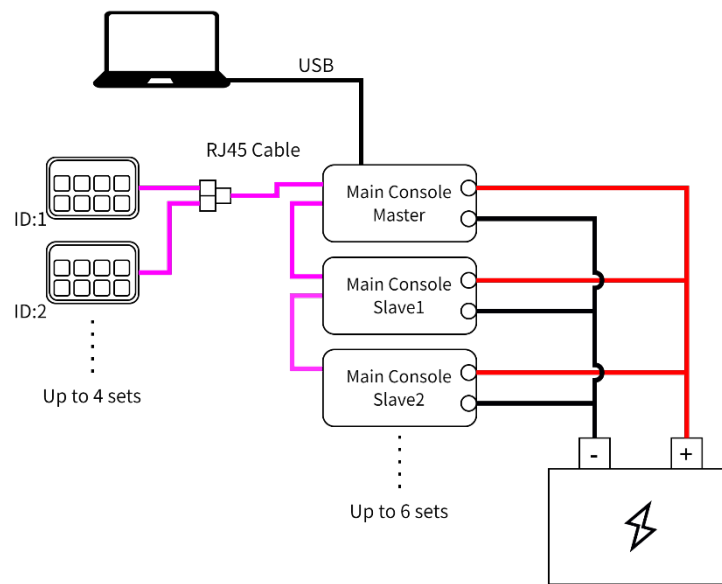


Figure 1-3-1 AXIXLINK High-Level Architecture

1-3. PC Requirements (Software & Hardware)

CPU: 1 GHz Processor or higher.

RAM: 1 GB RAM.

HDD: 256 MB available space.

OS: Microsoft Windows® 7, Windows® 8/8.1, Windows® 10 and Windows® 11

Screen Resolution: 1024 x 768 or higher (Recommend Resolution 1920 x 1080).

Others: .NET Framework 4.5

1-4. Installation

Administrator Privileges

When installing the client software, make sure that the user account has administrator privileges to correctly install the software. Otherwise, right-click on the software icon and then click "Run as administrator". When prompted for an administrator password, input an applicable administrator username and password before continuing. If the above case is not possible, contact your system administrator or IT personnel before installation.

Disabling Anti-Virus Programs

Before installing the client software, you should disable your anti-virus programs (e.g., Windows Defender) or allow exclusion before and during the installation.

Anti-virus programs will often detect false positives and will automatically quarantine or delete files that they suspect as malwares. If the anti-virus programs accidentally delete a part or a complete file during the installation, the client software may not be properly installed.

You can usually disable an anti-virus program by right clicking the taskbar icon and selecting "Disable" from the shortcut menu. For more information about disabling your anti-virus program, refer to the vendor of that software. After you have finished installing the client software, be sure to restart your anti-virus software.

If the above case is not possible due to system administration lock-down, contact your system administrator or IT personnel before installation.



1-5. Terminal Resistance & Unique Identifier

Terminal Resistance

To ensure reliable communication and prevent signal reflection in the AXIXLINK CAN-bus network, adjust the terminal resistor switch as follows:

- When working with one or two console units in a system network, set the terminal resistors switch to ON position.
- If more than two units are used in a system network, ensure that only two units have their terminal resistor switches set to ON. All other units must have their switches set to OFF.
- Do not add additional termination resistors unless specifically required by a technician.

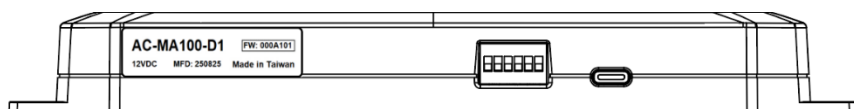
Unique Identifier

In the AXIXLINK CAN-bus network, each device must have a unique identifier to ensure proper communication and data routing.

- Follow the instruction to assign a unique ID to each input device.
- Confirm that the selected ID matches the system configuration and does not conflict with other input devices on the network.

1-6. Firmware Label

AC-MA100-D1



AC-MA100-D1 FW: 000A101

12VDC MFD: 250825 Made in Taiwan

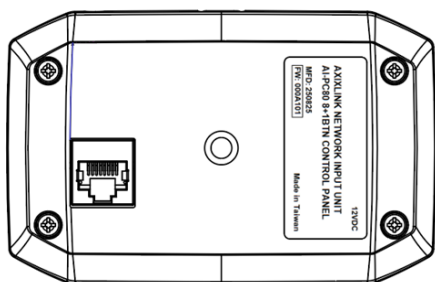
AC-MS80-D1



AC-MS80-D1 FW: 000A101

12VDC MFD: 250825 Made in Taiwan

AI-PC80



12VDC

AXIXLINK NETWORK INPUT UNIT
AI-PC80 8+1BTN CONTROL PANEL

MFD: 250825

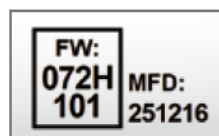
FW: 000A101

Made in Taiwan

SDN212



SDN-H



SDN-R



For use w/ SDN212 R
19-Btn w/ Slide Panel Controller

SAE EVS1

Made in Taiwan

FW: 0611101

MFD: 251216

CHAPTER 2. GUI OVERVIEW

Function	Reference
Hardware Condition Check	2-1
Welcome Window	2-2
Device Select	2-3
Main Interface	2-4
Main Menu	2-5
Input Source	2-6
Profile Setting	2-7
Device Configuration	2-8

2-1. Hardware Condition Check

When starting the Configuration Tool, the software will check current hardware condition. You may confirm the driver status in this page or continue without installing the driver.

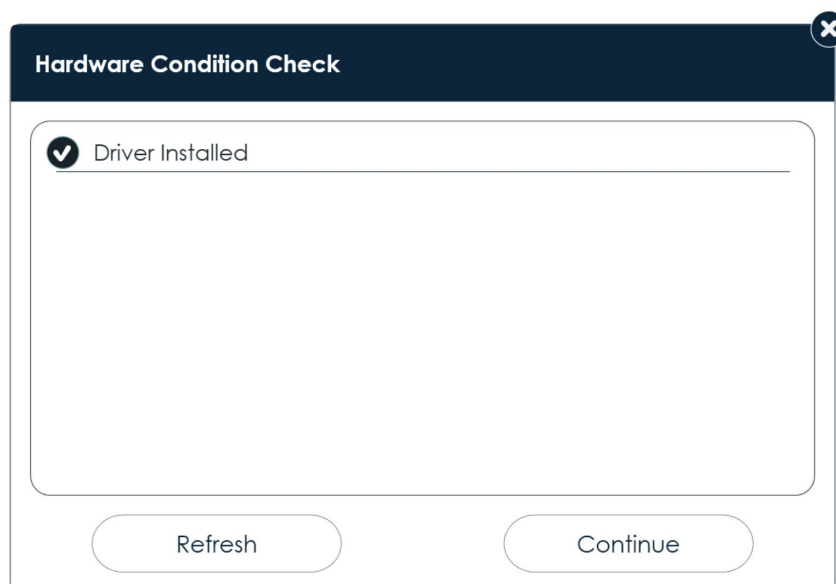


Figure 2-1-1 PC Environment Check

Driver Check

If applicable driver is not yet installed, **[INSTALL DRIVER]** button will be shown. User may require administrator permission on the PC in order to install the driver. Contact your IT administrator if you are unable to install.

- The **[INSTALL DRIVER]** button is not shown if the driver has been installed already.

2-2. Welcome Window

After proceeding from the Hardware Condition Check window, you will arrival in the Welcome Window. You will be prompted with three options:



Figure 2-2-1 Presetting Page

1. Create New Configuration

- Click to start with a new fresh configuration of a system.
- Continue to “Device Selection” page. (see [Chapter 2-3](#))

2. Open Existing Configuration

- Click to select an existing configuration and setting file from the host PC.

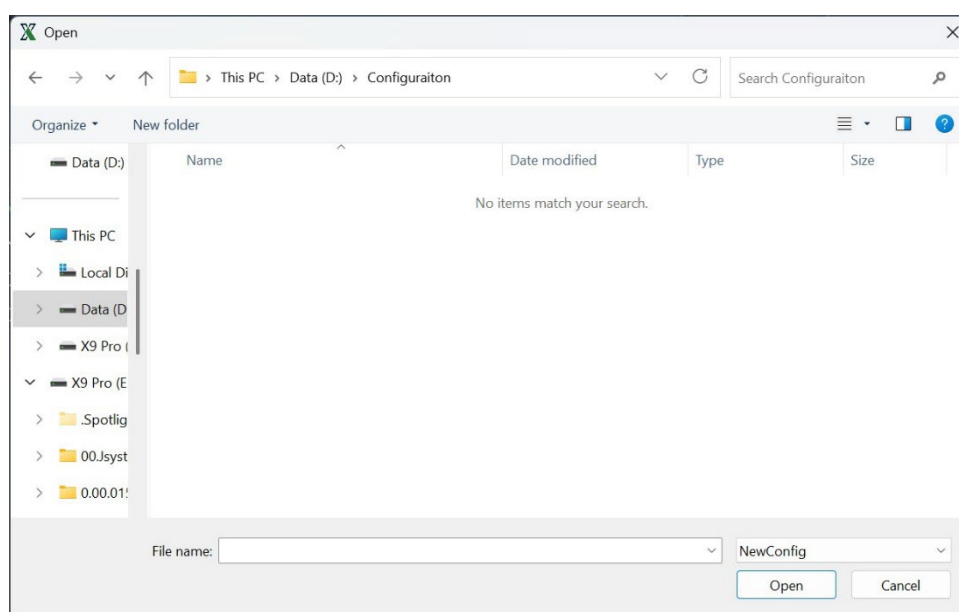


Figure 2-2-2 Open Existing Configuration

NOTE: Only the supported file format (.axn) is available for configuration.

- Continue to “Main Interface” page. (see Chapter 2-4)

3. Import from Device

- Since the system setting file is primarily stored in the Master unit, users may connect only the Master unit to the host PC without the present of other units.
- Click **[Import from Device]** to read and load its configuration / settings to the host PC.

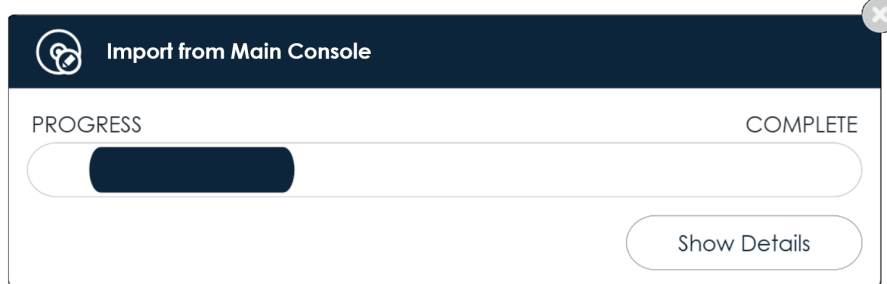


Figure 2-2-3 Import From Device

NOTE: DO NOT disconnect the USB cable during the process.

- Continue to “Main Interface” page. (see [Chapter 2-4](#))

2-3. Device Selection

To ensure proper system functionality, configure the system setup to match your actual hardware. Each unit must be assigned the correct **ID number**. Failure to align the settings with the physical setup may result in inconsistent performance.



Figure 2-3-1 Devices Selection

1. Select Input Device

- Click the “+” icon at the top right to add an input device to the system. Click the “x” icon on the left to remove a device.
- Use the **Device Type** drop-down menu to select an input device style that matches your actual hardware.
- Assign a **unique ID number** using the left-side drop-down menu. Ensure the ID matches the physical unit.
- Optionally, assign a **handy name** (up to 20 ASCII characters) for easier reference.
- The system supports **0 to 4 input units**.

2. Select Output Device

- Click the “+” icon at the top right to add a main console device to the system. Click the “x” icon on the left to remove a device.
- Use the **Device Type** drop-down menu to select a main console style that matches your actual hardware.
- Assign a **unique ID number** using the left-side drop-down menu. Ensure the ID matches the physical unit.
- The **Master unit** must be assigned **ID#1**.
- Optionally, assign a **handy name** (up to 20 ASCII characters) for easier reference.
- The system supports up to **6 main console units**.

3. Selected Devices

- All selected devices will be displayed on the **right-hand side**, showing their assigned **ID numbers** and **handy names**.

2-4. Main Interface

AXIXLINK NETWORK System Configuration Tool is a GUI software that empowered users to fully customize inputs and outputs, including mapping, logic processing, event scenarios, exclusivity, flash patterns, cycles and many more. The main interface of the program is shown below.

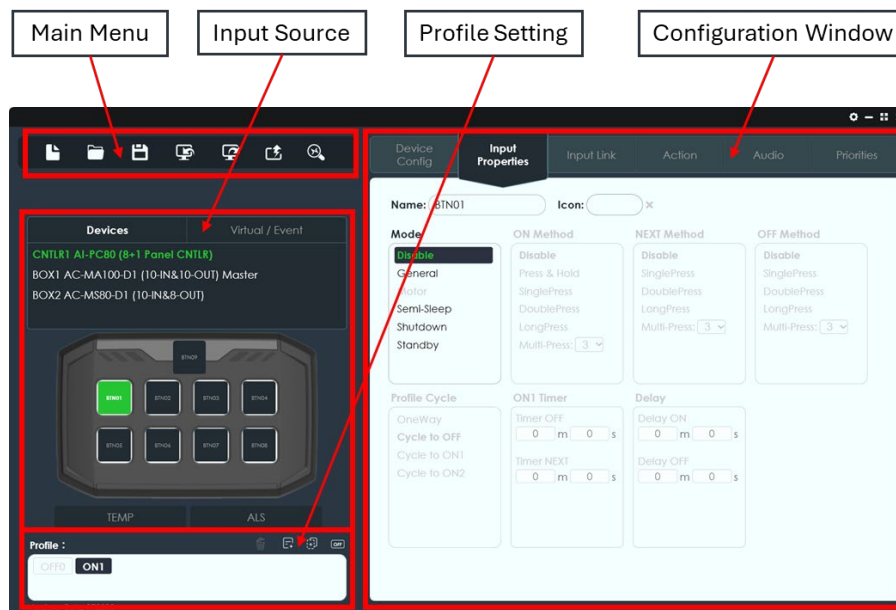


Figure 2-4-1 Main Interface

1. Main Menu

- Provides basic file operations such as **Create New**, **Save**, and more.
- For details, refer to **Chapter 2-5**.

2. Input Source

- Click on a desired **[Device]** to select a wire or button input for configuration (see **Chapter 2-6**).
- Click on **[Virtual /Event]** to select an event as an input source (see **Chapter 5**)

3. Profile Setting

- Displays a list of current profiles for the selected button or wire input (see **Chapter 2-7**).
- Each profile contains:
 - A set of **Input Links**
 - A set of **Output Actions**
- Profile switching is determined by the properties of the respective input (Button, Wire, Other, or Virtual /Event) — see **Chapter 2-7**.
- **Profile Management:**
 - Click the **plus icon** to add an additional ON profile (up to 9 ON profiles).
 - Click the **copy icon** to duplicate and add a new ON profile.
 - Click the **delete icon** to remove an ON profile.
 - Click the **OFF icon** to enable an OFF profile.
- **Note:** The first ON profile is mandatory and cannot be deleted.

4. Configuration Windows

- Displays current settings and variables for the selected button or wire input.

2-5. Main Menu



1. Create New Configuration

- Click to re-start with a new configuration and setting.

2. Open Existing Configuration

- Click to select an existing configuration and setting (.axn) from the host PC.

3. Save as...

- Click to save current configuration to the host PC.

4. Import Configuration from Device

- Connect the **Main Console** to the PC via a **USB cable**.
- Click to **read and load** the device's configuration into the host PC.
- This button will be **disabled** if the Main Console is not connected.
- **Do not disconnect** the Main Console while the import is in progress.

5. Export Configuration to Device

- Connect the **Main Console** to the PC via a **USB cable**.
- Click to **export the current configuration** to the connected device.
- This button will be **disabled** if the Main Console is not connected.
- **Do not disconnect** the Main Console during the export process.
- If the export fails, click **[Show Details]** to view the error message.

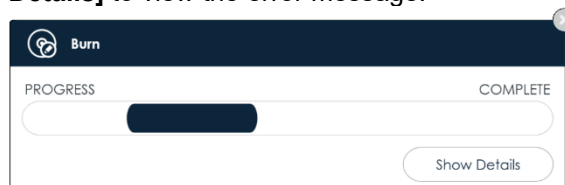


Figure 2-5-1 Buring Progress

6. Update Firmware

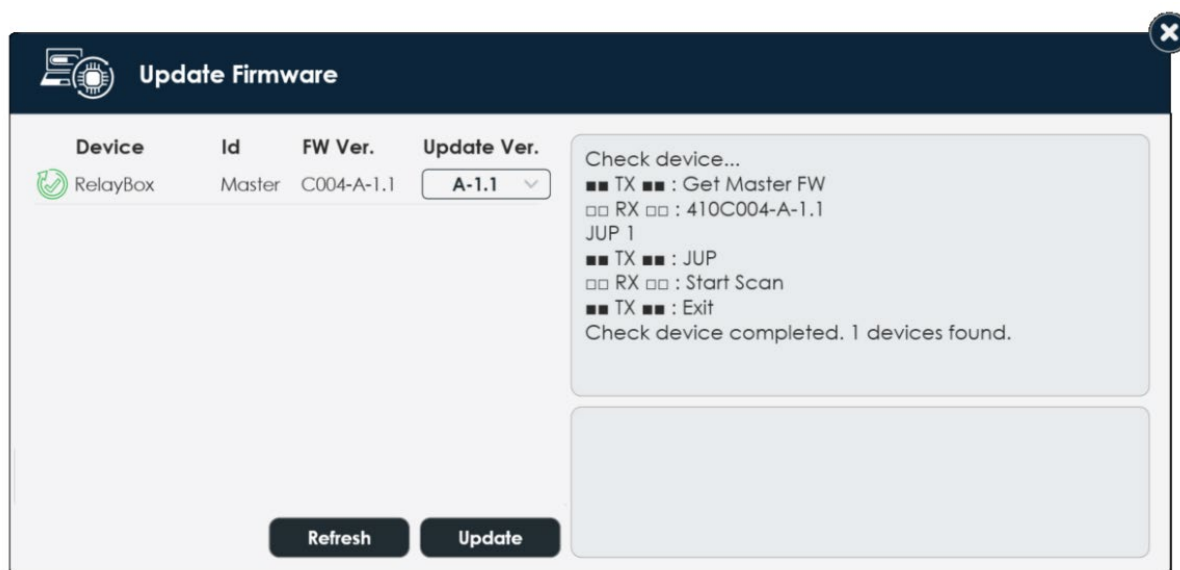


Figure 2-5-2 Updating Firmware Window

- 
- This button will be **disabled** if the Main Console is not connected.
 - Connect the Main Console to the PC via USB and **power on all devices**.
 - If the PC is connected to the internet, the program will **automatically search for updates**.
 - **Do not disconnect** the Main Console or any devices during the update process.
 - The program will **automatically detect** all connected devices.
 - Once detection is complete, select the desired firmware and click **[Update]**.
 - Users may also choose to flash an **older version** of the firmware if needed.

4. Diagnostic

- This page provides a **live overview** of the connected system's status.
- For more details, refer to **Chapter 8**.
- This button will be **disabled** if the Main Console is not connected.

2-6. Input Source

In the **AXIXLINK Network architecture**, all system **actions** are triggered by individual **Input Sources**. Users must build their applications and use cases based on these input sources. The system supports various types of inputs, each with unique behaviour and configuration options.

Input Source Types:

1. Panel Controller

- **Push-Button Input**
 - Supports one **OFF profile** and up to **nine ON profiles**.
 - By default, all push buttons start in the **OFF profile** upon system restart.
 - Profile switching is based on the defined **ON**, **NEXT**, and **OFF** methods.
- **Temperature Sensor (TEMP) Input**
 - Detects current temperature and switches profiles based on **ascending** and **descending trip points** (thresholds).
 - Supports one OFF profile and up to nine ON profiles, each with its own threshold settings.
- **Ambient Light Sensor (ALS) Input**
 - Detects ambient light brightness and switches profiles based on **lux value thresholds**.
 - Supports one OFF profile and up to nine ON profiles, each with its own ascending and descending trip points.



Figure 2-6-1 Input Source for AI-PC80

2. Console Box

- **Wire Input**
 - Supports one OFF profile and up to nine ON profiles.
 - Profile switching is based on the defined ON, NEXT, and OFF methods.
 - May be configured as:
 - ◆ **Variable Voltage Input**: switches profiles based on voltage thresholds.
 - ◆ **Variable PWM Input**: switches profiles based on PWM percentage thresholds.
- **Temperature Sensor (TEMP) Input**
 - Functions similarly to the Panel Controller TEMP input.
 - Detects temperature and switches profiles based on ascending and descending thresholds.
- **Power Source (PWR_IN) Input**
 - Monitors main input power voltage and switches profiles based on voltage thresholds.
 - Commonly used for **low-voltage battery protection**.
 - Supports one OFF profile and up to nine ON profiles.

Devices	Virtual / Event
CNTRL1 AI-PC80 (8+1 Panel CNTRLR)	
CNTRL2 AI-PC80 (8+1 Panel CNTRLR)	
BOX1 AC-MA100-D1 (10-IN&10-OUT) Master	
BOX2 AC-MS80-D1 (10-IN&8-OUT)	
WI01	WI02
WI03	WI04
WI05	WI06
WI07	WI08
WI09	WI10
TEMP	PWR_IN

Figure 2-6-2 Input Source for AC-MA100 / AC-MS80

3. Other Inputs

- **Virtual /Event Input**

- A special input type triggered by fulfilling a **defined logic condition**.
- Supports one OFF profile and up to nine ON profiles.
- Profile switching is based on both logic conditions and ON/NEXT/OFF methods.
- By default, starts in the OFF profile upon system restart.

NOTE:The availability and behaviour of input types may vary depending on the hardware unit. Please refer to your **hardware specification sheet** for compatibility and supported features.

2-7. Profile Setting

Show a list of current profiles for the selected button / wire input.

- Each profile can store a set of **INPUT LINK** and a set of **OUTPUT ACTIONS**.
- The method of changing the Profile is based on the property settings of the respective **Button Input**, **Wire Input**, **Other Input** or **Virtual / Event** settings (see Chapter 5).
- Click on  **[Add Profile]** to add an additional ON profile **up to nine ON profiles**.
- Click on  **[Copy Profile]** to copy and add an additional ON profile of the selected profile.
- Click on  **[Delete Profile]** to delete an additional ON profile.
- OFF profile may also be set, click on the  **[Enable OFF0 Profile]** to enable setting of OFF profile.
- The first ON profile may not be deleted. (at least one ON profile must be present)

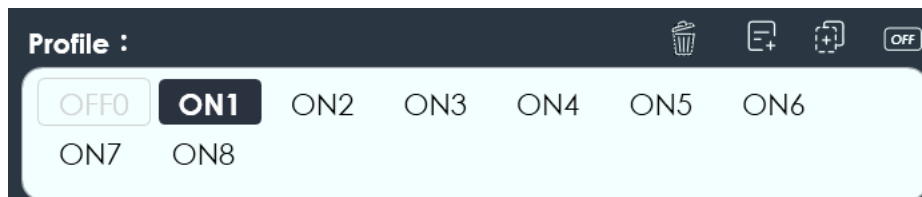


Figure 2-7-1 Profile Window

2-8. Device Configuration

Under the Input Source section, select a device in the **[Devices]** list and click on the **[Device Config]** tab in configuration window at the right-hand side, applicable setting and configuration for the selected device will be shown. Different devices may include different applicable parameter. User must refer to the hardware **specification sheet** for compatibility and supported features. Actual options may vary depending on the system devices.

Panel Controller

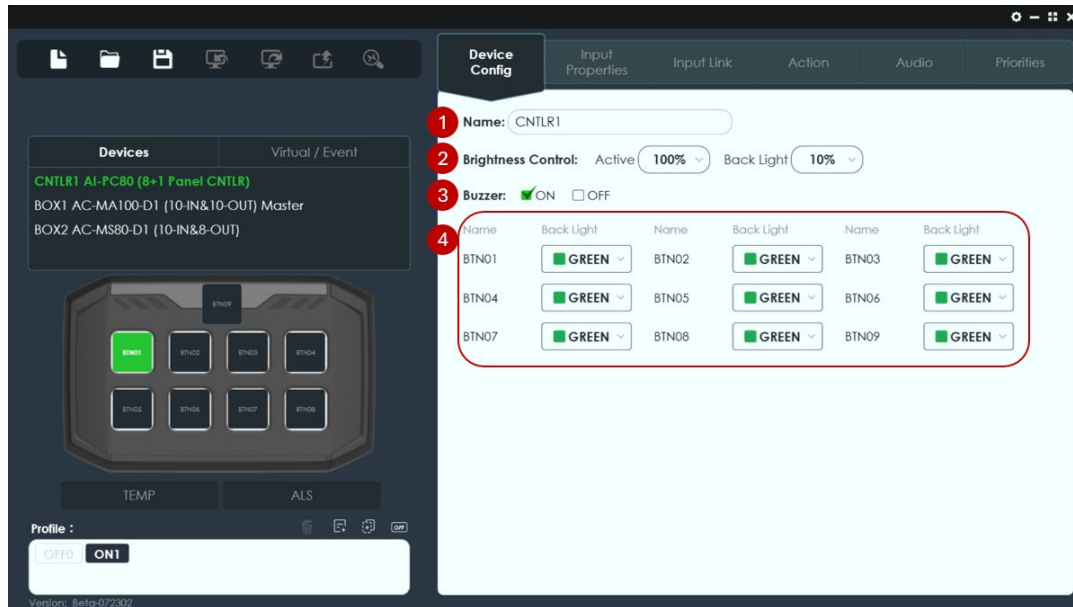


Figure 2-8-1 Device Configuration for AI-PC80

1. Handy Name

Name: ABCDEFGHIJKLMNOPQRST

- Allows the user to assign a custom name to this Control Panel unit. This name will be used to reference the device across all other settings.
- Supports up to **20 ASCII characters**.

2. Default Brightness Control

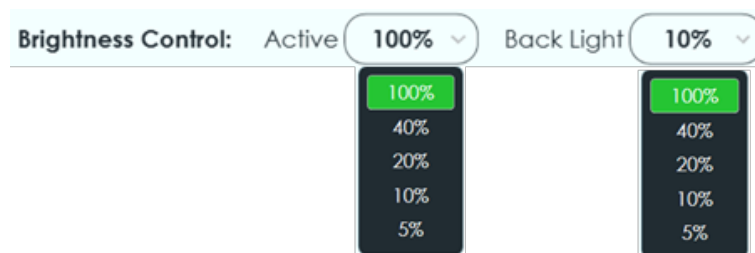


Figure 2-8-2 Back Colour Brightness

- Enables the user to set the **default illumination brightness** for all button inputs on the Control Panel.
- The **Active Brightness** value applies to buttons in the **ON** profile, while the **Backlight Brightness** value applies to buttons in the **OFF** profile.
- These values define the default brightness levels and can be further adjusted in other settings.

3. Buzzer

Buzzer: ☒ ON ☐ OFF

- Allows the user to enable or disable the unit's buzzer (beeper).
- When set to ON, pressing any button will trigger a high-pitched beep.

4. Default Back light Colour

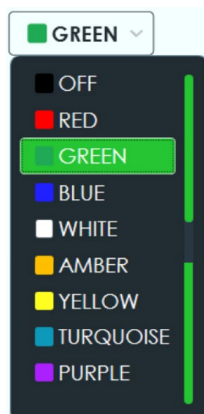


Figure 2-8-3 Back Light Colour

- Allows the user to set the default backlight colour for each button input on the Control Panel.
- These colours serve as default values and can be modified in other settings.

Main Console

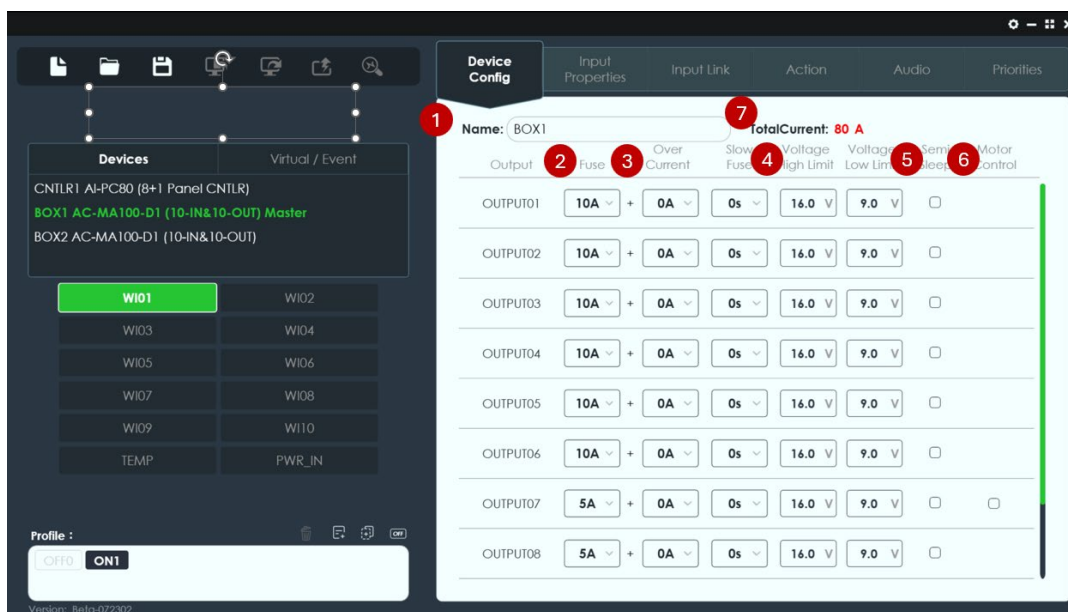


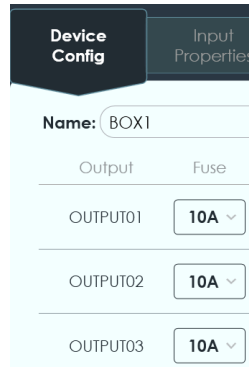
Figure 2-8-4 Device Configuration for Main Console

1. Handy Name

Name: ABCDEFGHIJKLMNOPQRST

- Allows the user to assign a custom name to this Control Panel unit. This name will be used to identify the device across all other settings.
- Supports up to **20 ASCII characters**.

2. Set Fuse



The screenshot shows a web interface for configuring a device. At the top, there are two tabs: 'Device Config' (selected) and 'Input Properties'. Below the tabs, the 'Name' is set to 'BOX1'. There are two sub-tabs: 'Output' and 'Fuse'. Under the 'Fuse' tab, there are three rows, each representing an output channel. Each row has a label (OUTPUT01, OUTPUT02, OUTPUT03) and a dropdown menu set to '10A'.

Output	Fuse
OUTPUT01	10A
OUTPUT02	10A
OUTPUT03	10A

Figure 2-8-5 Fuse

- The main console supports adjustable digital fuses, enabling users to set the fuse size for each individual output.
- The maximum allowable fuse current depends on the specific model of the main console (see Table 2-8-1).
- It is recommended to set the fuse size based on the expected output current load.
- The allowable fuse current setting **varies by models**; check your specification sheet for more information.

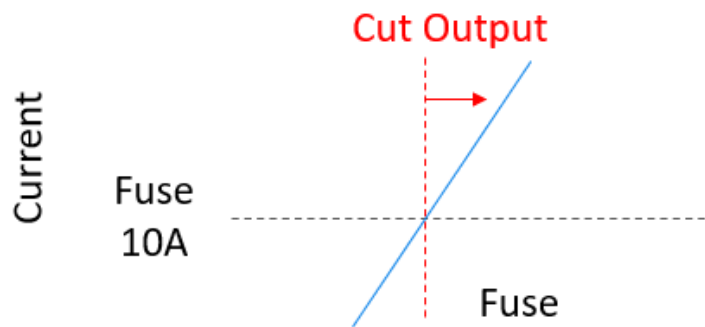


Figure 2-8-2 Fuse Setting

Function:

- **Overcurrent Protection**

When the current exceeds the set fuse value, the system immediately disables the output to protect the circuit and connected components.

- **Overcurrent Protection Indicator**

If an output is interrupted due to an overcurrent condition, the corresponding input button will briefly flash **amber**, indicating a fault. The output port's indicator will also flash amber to signal the issue.

- **Output Recovery Procedure**

To restore the output after an overcurrent cutoff, the user must manually reset the input by turning it OFF, then ON again. This action reinitializes the output and clears the fault indication.

3. Over Current & Slow Fuse

The screenshot shows a 'Device Config' window with tabs for 'Device Config', 'Input Properties', and 'Input Link'. The 'Device Config' tab is active, showing a configuration for 'BOX1'. The settings are organized into columns: Output, Fuse, Over Current, Slow Fuse, and Total. There are three rows for OUTPUT01, OUTPUT02, and OUTPUT03. Each row has a 'Fuse' dropdown set to '10A', an 'Over Current' dropdown set to '5A', and a 'Slow Fuse' dropdown set to '3s'.

Output	Fuse	Over Current	Slow Fuse	Total
OUTPUT01	10A	5A	3s	
OUTPUT02	10A	5A	3s	
OUTPUT03	10A	5A	3s	

Figure 2-8-6 Over Current & Slow Fuse

- **Selected** main console supports **Over-Current** and **Slow-Blow Fuse** (anti-surge fuse) settings. These features allow a temporary surge in current above the fuse setting without immediately triggering a shutdown.
- **Over-Current** can be set from **0A to 10A**.
- **Slow-Blow Fuse Timer** can be set from **0 to 5 seconds**.
- The allowable over current & slow fuse setting **varies by models**; check your specification sheet for more information.

Function:

Over Current Protection

• Over Current Buffer limit (Figure 2-8-7):

When the current exceeds the combined value of “Fuse + Overcurrent”, the system will immediately disable the output to protect the circuit and connected components.

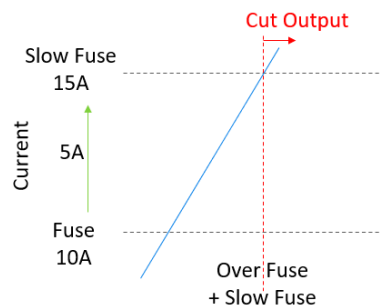


Figure 2-8-7 Overcurrent

• Over Time Buffer (Figure 2-8-8):

When the current exceeds the fuse value **after the Slow-Blow Timer** expires, the system will immediately disable the output to protect the circuit and connected components.

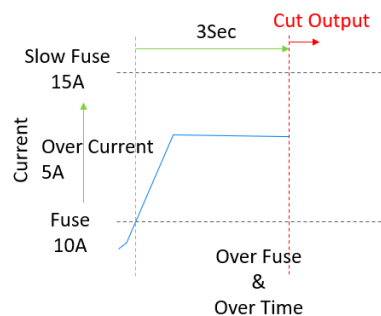


Figure 2-8-8 Over Timer Buffer

• Overcurrent Protection Indicator

If an output is interrupted due to an overcurrent condition, the corresponding input button will briefly flash **amber**, indicating a fault. The output port's indicator will also flash amber to signal the issue.

• Output Recovery Procedure

To restore the output after an overcurrent cutoff, the user must manually reset the input by turning it OFF, then ON again. This action reinitializes the output and clears the fault indication.

4. Voltage Limit

The screenshot shows the 'Device Config' tab for a device named 'BOX2'. The 'TotalCurrent' is set to 80 A. The interface includes a table for configuring output properties. The 'Voltage High Limit' and 'Voltage Low Limit' columns are highlighted with a red box.

Output	Fuse	Over Current	Slow Fuse	Voltage High Limit	Voltage Low Limit
OUTPUT01	15A	0A	0s	16.0 V	9.0 V
OUTPUT02	15A	0A	0s	16.0 V	9.0 V
OUTPUT03	15A	0A	0s	16.0 V	9.0 V

Figure 2-8-9 Voltage Limit

- The main console can automatically disable output if the **supply voltage falls outside a predefined range**, protecting connected devices from voltage irregularities.
- Both **High Limit** and **Low Limit** can be set between allowable voltage, with a resolution of **0.1V**.
- Ensure that the **Low Limit** is set **lower than** the **High Limit** to avoid configuration errors.

Function Overview

• Over Voltage / Under Voltage Protection

When the supply voltage falls outside the defined range, the system will immediately disable the output to protect the circuit and connected components.

• Over Voltage / Under Voltage Protection Indicator

If the output is interrupted due to a voltage fault, the corresponding **input button** will briefly flash **red**, indicating an overvoltage or undervoltage condition. The **output port's indicator** will also flash **amber** to signal the issue

• Output Recovery Procedure

To restore the output after a voltage fault cutoff, the user must manually reset the input by turning it OFF, then ON again. This action reinitializes the output and clears the fault indication.

5. Semi-Sleep

- Users can enable or disable Semi-Sleep mode by checking this option. This mode allows specific outputs to be quickly shut down via a selected input. (see Chapter 3-17).

6. Motor Control

- Allows users to activate or inactivate motor control for paired outputs (Outputs 7 & 8, and Outputs 9 & 10).

NOTE: This function is only supported by the AC-MA100-D1 (see Chapter 4-11).

7. Total Current

- This displays the total setting fuse current.
 - The maximum current is limited to 90A for the AC-MA100-D1 model.
 - The maximum current is limited to 80A for the AC-MS80-D1 model.
 - Check the specification sheet for other models.

CHAPTER 3. INPUT PROPERTIES

The Input Properties tab contains every setting that defines how a particular input switching between its profiles (**OFF0/ONx** status). The actual configurable parameter is based on the selected hardware and its selected input. Virtual / Event Input follow the similar principles but without the actual physical hardware.

- Digital inputs include control panel buttons, main console wire inputs, and virtual inputs.

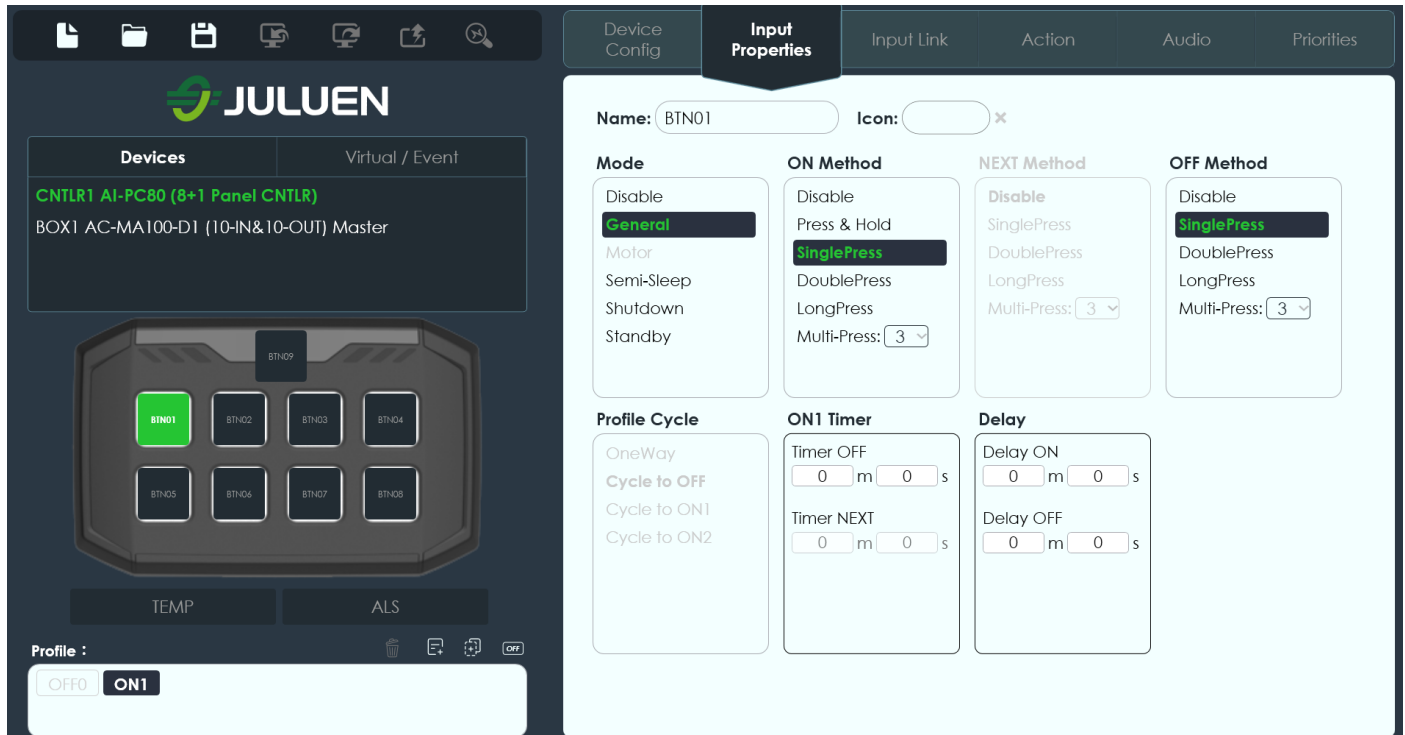


Figure 3-0-1 Input Properties for Digital input

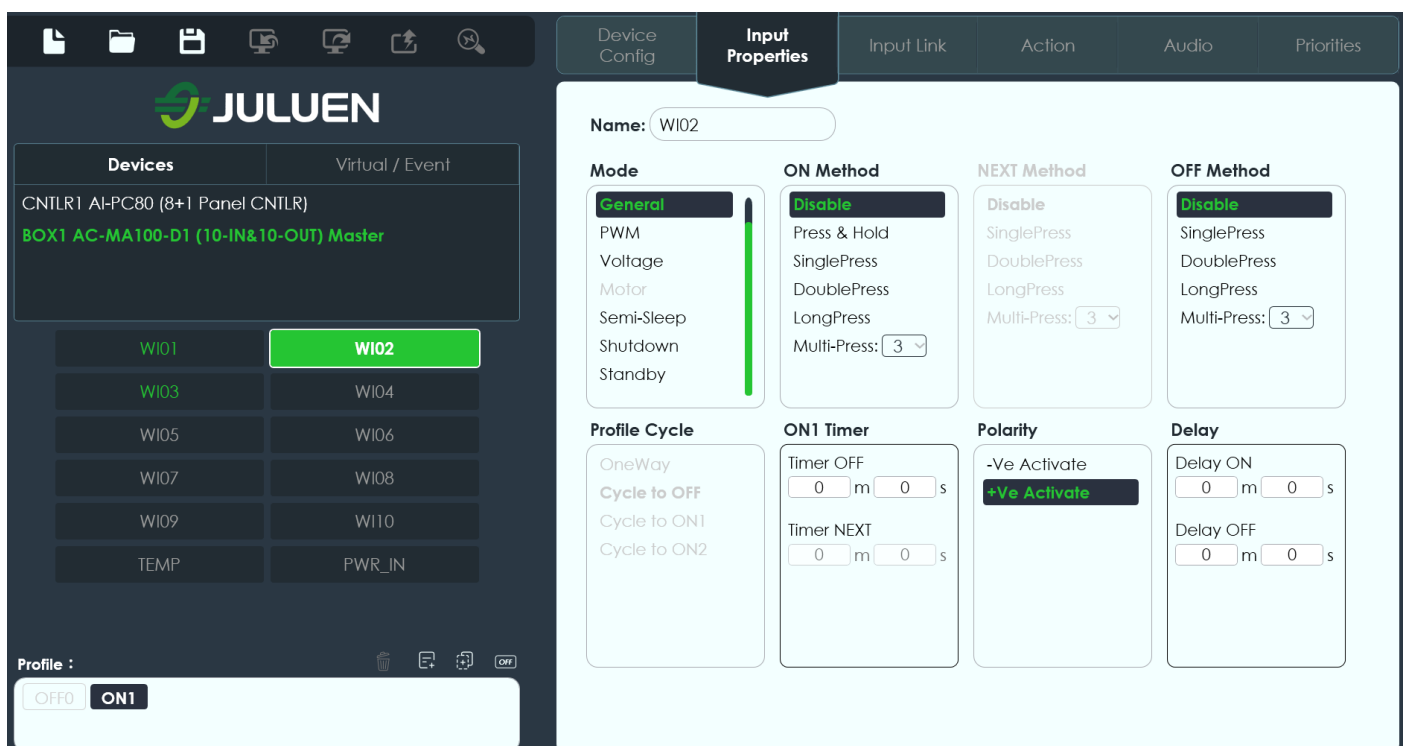


Figure 3-0-2 Input Properties for Digital Wire input

- Analogue inputs include built-in temperature and ambient light sensors in control panels, as well as wire input/ power-in voltage sensor, PWM detection and a built-in temperature sensor (AC-MA100-D1 only) in main consoles.

The screenshot displays the JULUEN software interface for configuring an input device. The sidebar on the left shows a list of devices under 'Virtual / Event', including 'CNTLR1 AI-PC80 (8+1 Panel CNTLR)' and 'BOX1 AC-MA100-D1 (10-IN&10-OUT) Master'. The main area is titled 'Input Properties' and shows the configuration for device 'WI02'. The 'Mode' section includes options for General, PWM, Voltage (selected), Motor, Semi-Sleep, Shutdown, and Standby. The 'Delay' section shows settings for 'Delay ON' and 'Delay OFF', both set to 0 m and 0 s. A diagram on the right illustrates the 'Ascending trip point : (threshold)' and 'Descending trip point : (threshold)' for the input, showing a 5V input and a 0V output.

Figure 3-0-3 Input Properties for Analogue Input Voltage / PWM / Temperature / Light Sensor

3-1. Overview

Mode	Function	Related Device	Reference
(Digital Input)	Introduction		3-2
	General	ON Method	Panel Controller, Main Console
		Next Method	Panel Controller, Main Console
		OFF Method	Panel Controller, Main Console
		Profile Cycle	Panel Controller, Main Console
		Timer	Panel Controller, Main Console
		Delay	Panel Controller, Main Console
		Polarity	Panel Controller, Main Console
Analogue Input	Analogue	Introduction	Panel Controller, Main Console
		PWM	Main Console
		Voltage	Main Console
		Temperature	Panel Controller, Main Console
		Light Sensor	Panel Controller
Special Mode	Shutdown	Panel Controller, Main Console	3-15
	Standby	Panel Controller, Main Console	3-16
	Semi-Sleep	Panel Controller, Main Console	3-17

3-2. Mode Introduction

The **Mode** is the first options that define the primary function of a selected input. The applicable mode varies depending on the selected **Input** as shown in the table below:

Push-Button Input	Wire Input	Virtual / Event Input	Temperature Sensor (TEMP) Input	Ambient Light Sensor (ALS) Input
Mode Disable General Motor Semi-Sleep Shutdown Standby	Mode Disable General PWM Voltage Motor Semi-Sleep Shutdown Standby	Mode Disable General Motor Semi-Sleep Shutdown Standby	Mode Disable Temperature Sensor	Mode Disable Light Sensor

Input Mode Types:

Regular Input Modes

- **[Disable]:**
 - Disables the input function entirely.
- **[General]:**
 - Functions as a standard switch.
 - Profile (OFF/ON status) switching is based on the defined **ON**, **NEXT**, and **OFF methods**.
- **[PWM]:**
 - Functions as a variable PWM sensor.
 - Profile (OFF/ON status) switching is based on the defined **PWM percentage thresholds**.
- **[Voltage]:**
 - Functions as a variable voltage sensor.
 - Profile (OFF/ON status) switching is based on the defined **voltage thresholds**.
- **[Temperature Sensor]:**
 - Functions as a temperature sensor.
 - Profile (OFF/ON status) switching is based on the defined **temperature thresholds**.
- **[Light Sensor]:**
 - Function as a brightness sensor.
 - Profile (OFF/ON status) switching is based on the defined **brightness thresholds**.
- **[Motor]**
 - Functions similarly to a standard switch, with additional **motor control options** (e.g., motor actions).
 - Available only if motor control is enabled in the **Device Configuration**
 - Profile (OFF/ON status) switching is based on the defined **ON**, **NEXT**, and **OFF methods**.
- **[Override Tone]**
 - Functions similarly to a standard switch, with additional triggering of “**Override Tone**” in Audio Output.
 - Profile (OFF/ON status) switching is based on the defined **ON**, and **OFF methods**.

Special Input Modes

- **[Semi-Sleep]:**
 - Allows the input to act as a trigger for entering or exiting the system's **Semi-Sleep** state.
 - In Semi-Sleep mode:
 - All **inputs** and **backlight** are suspended.
 - All **checked outputs** in the **Device Configuration** are disabled while the **unchecked output** remain not affected. (see Chapter 3-17).
 - The system draws only the minimum necessary amperage.
- **[Shutdown]:**
 - Allows the input to act as a trigger for **immediate system shutdown**.
 - When triggered:
 - All inputs and outputs are disabled.
 - The system can only be rebooted via the **IGN wire** or **IGN button input**.
- **[Standby]:**
 - Allows the input to act as a trigger for **immediate system Standby**.
 - When triggered:
 - All inputs and outputs disabled.
 - The system remains power on.
- **[Standby]:**
 - Allows the input to act as a trigger for **immediate system Standby**.
 - When triggered:
 - All inputs and outputs disabled.
 - The system remains power on.

3-3. ON Method



Figure 3-3-1 ON Method

This section defines how a standard switch changes its input profile from **OFF0** to **ON1**.

#	Method	Description	Graphics Visualization
1.	Disabled	<i>disable the input to change its own profile status to ON1; can only be change by other means (e.g. INPUT LINK).</i>	N.A.
2.	Press & Hold	<i>press & hold → ON1; release → OFF0</i>	Press & Hold 
3.	Single Press	<i>one press → ON1</i>	Single Press 
4.	Double Press	<i>two presses within 300 ms → ON1</i>	Double Press 
5.	Long Press	<i>press and hold for > 1 sec → ON1</i>	Long Press 
6.	Multi-Press	<i>press n times rapidly → ON1</i>	Multi-Press 3~10 

3-4. NEXT Method



Figure 3-14-1 Next Method

- This section defines how a standard switch changes its input profile status from **ON1 to ONx**.
- This option is only available if at least one extra profile status (ON2~ON9) is enabled in the profile list.
- This method must be different to the OFF method.

#	Method	Description	Graphics Visualization
1.	Disabled	<i>disable the input to advance to the next profile status; can only be advanced by other means (e.g. INPUT LINK).</i>	N.A.
2.	Single Press	<i>one press → ONx</i>	
3.	Double Press	<i>two presses within 300 ms → ONx</i>	
4.	Long Press	<i>press and hold for > 1 sec → ONx</i>	
5.	Multi-Press	<i>press n times rapidly → ONx</i>	

3-5. OFF Method



Figure 3-4-1 OFF Method

This section defines how a standard switch changes its input profile status from **ONx** to **OFFx**. This method must be different to the NEXT method.

#	Method	Description	Graphics Visualization
1.	Disabled	<i>disable the input to change its own profile status to OFF0; can only be change by other means (e.g. INPUT LINK).</i>	N.A.
2.	Single Press	<i>one press → OFF0</i>	
3.	Double Press	<i>two presses within 300 ms → OFF0</i>	
4.	Long Press	<i>press and hold for > 1 sec → OFF0</i>	
5.	Multi-Press	<i>press n times rapidly → OFF0</i>	

3-6. Profile Cycle

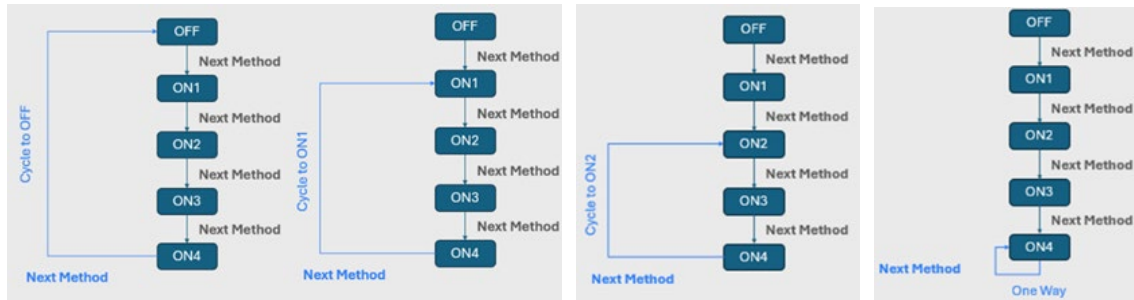


Figure 3-13 Profile Cycle (wrapping rules)

The Profile Cycle defines how a multi-profile switch cycle through its profiles between **OFF0** to **ONx**. This option is only available if at least one extra profile status (ON2~ON9) is enabled in the profile list.

#	Profile Cycle	Description	Graphics Visualization
1.	One Way	stop at the last ONx (no wrap)	
2.	Cycle to OFF	after the last ONx , return to OFF0	
3.	Cycle to ON1	after the last ONx , wrap to ON1	
4.	Cycle to ON2	after the last ONx , wrap to ON2	

NOTE:

- **OFF Method** only returns to **OFF0**, regardless of current profile.
- **NEXT Method** only advances forward, depending on Profile Cycle.
- **Timer NEXT / Timer OFF**: can be used to auto-advance or auto-turn-off after a defined time (see Chapters 3-7).

3-7. Timer

ON1 Timer

Timer OFF
 m s

Timer NEXT
 m s

Figure 3-5-1 Timer

The timer function allows automatic change of the profile status (i.e. OFF0, ON1, ON2, ...ONx) by the system built-in timer. Each profile status can set its own independent timer. Utilize the timer smartly to make user operation easier and effortless. The timer does not affect the manual operation. There are two types of timers (i.e. OFF Timer and NEXT timer) and both can be set independently.

#	Timer	Description
1.	OFF Timer	<i>After the countdown time, automatic switches to the OFF0 Profile.</i>
2.	NEXT Timer	<i>After the countdown time, automatic advances to the next Profile. May be affected by the Profile Cycle Setting.(Reference 3-14)</i>

NOTE: If Delay ON is configured, the countdown starts after the profile is actually switched.

3-8. Delay

Delay

Delay ON
 m s

Delay OFF
 m s

Figure 3-8 Delay ON / Delay OFF

The Delay timer function adds a time delay when changing the profile status (i.e. OFF0, ON1, ON2, ...ONx). There are two types of Delay timers (i.e. Delay ON and Delay OFF) and both can be set independently.

#	Delay Timer	Description
1.	Delay ON	<i>Delay and add additional pause time when the profile status is entering ONx profile.</i>
2.	Delay OFF	<i>Delay and add additional pause time when the profile status is entering OFF0 profile.</i>

3-9. Polarity

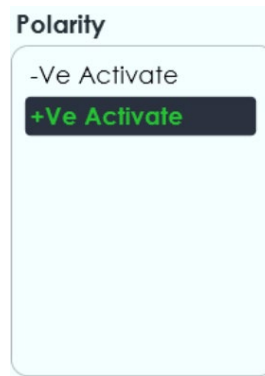


Figure 3-9 Polarity Selection

The main console inputs support triggering via either a **positive voltage signal** or an **earthing (ground) signal**.

- Select **" +Ve Activation "** when using a positive signal.
- Select **" -Ve Activation "** when using an earthing signal.

#	Polarity	Signal Type	Description
1.	-Ve Activate	Earthing (GND) signal	Triggered by a voltage drop from a high level to ground (0V).
2.	+Ve Activate	Positive (+VDC) signal	Triggered by a voltage rise from a low level to a positive voltage (e.g., 12V).

3-10. Analogue Input Introduction

The **Analogue Input Mode** supports various input types, including **PWM**, **Voltage**, **Temperature Sensors**, and **Light Sensors**. Each mode operates by switching its profile (ON/OFF status) based on predefined value thresholds.

These thresholds are categorized into:

- **Ascending Thresholds** – trigger profile activation when the input value rises above a set point.
- **Descending Thresholds** – trigger profile deactivation when the input value falls below a set point.

The profile status changes as the input value crosses its respective ascending or descending trip point.

NOTE: Profile transitions occur sequentially and do not skip intermediate states. Even if the input value changes rapidly, the profile will update step-by-step through each defined interval without skipping.

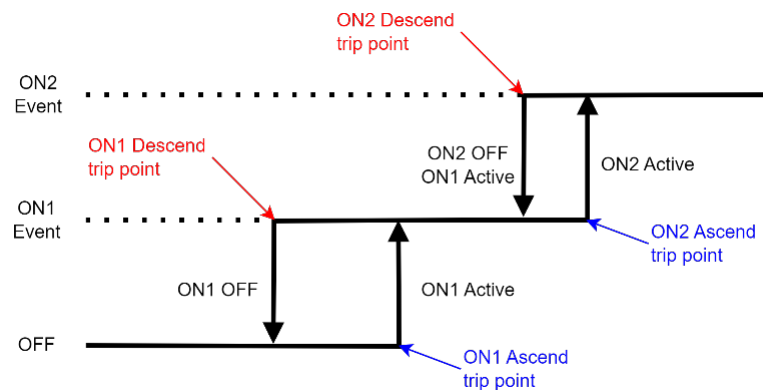


Figure 3-8-1 Analog Input

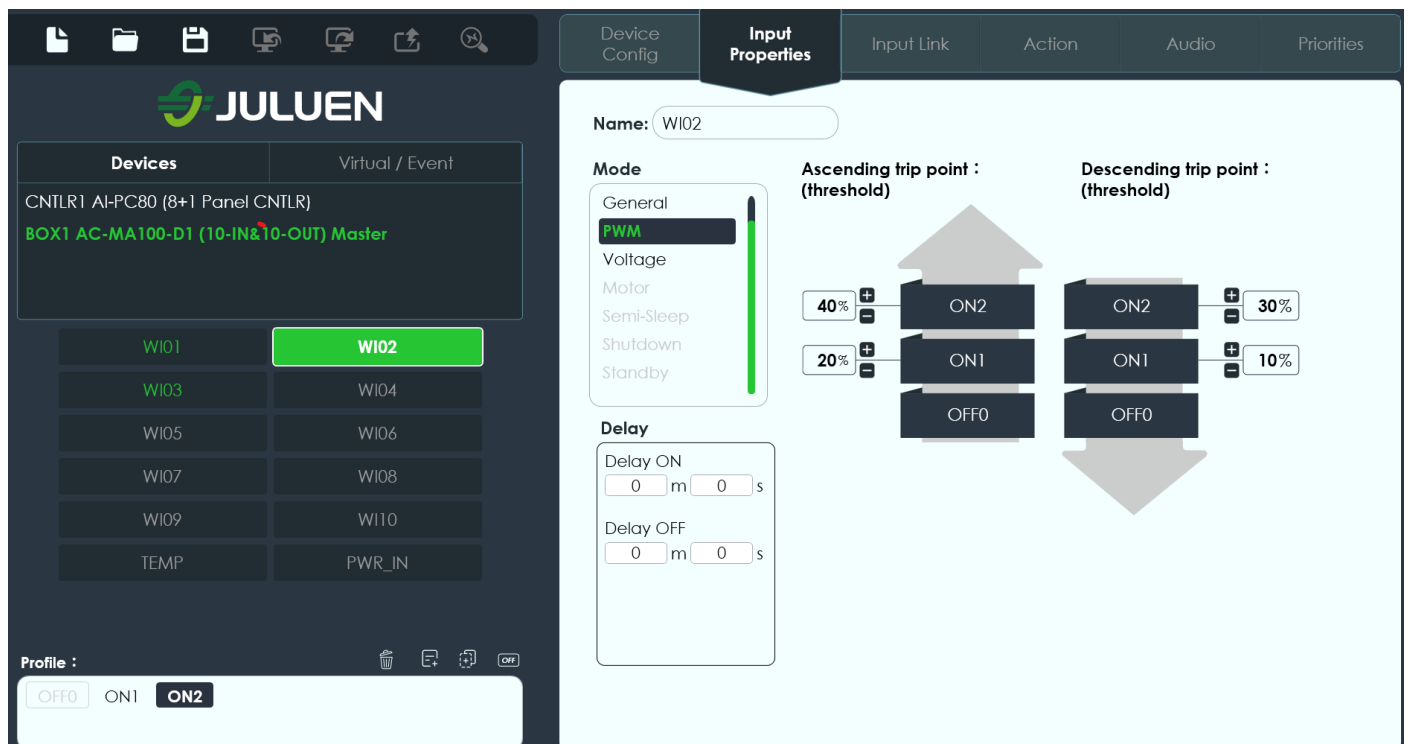


Figure 3-8-2 Input Properties for Analogue Input

Sections 3-9 to 3-12 describe the different types of analogue inputs.:

3-11. PWM Input

- Use PWM duty cycle (0–100%) as the input value.

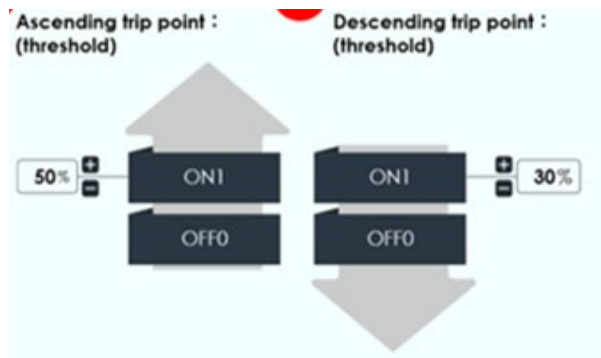


Figure 3-19: PWM input thresholds

3-12. Voltage

- Use voltage (analogue) as the input value.

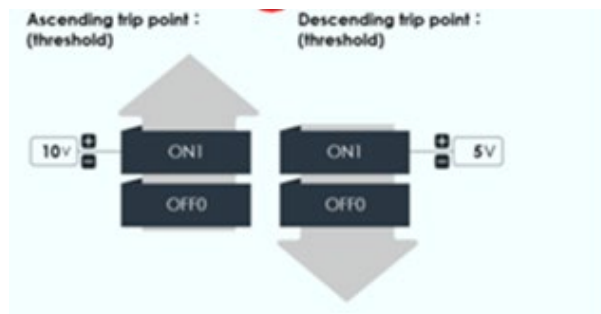


Figure 3-10-1 Voltage input thresholds

3-13. Temperature

- Use temperature (degrees Celsius) as the input value.

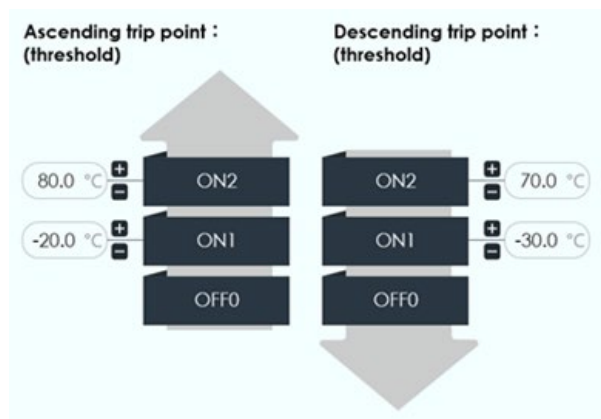


Figure 3-11-1 Temperature Input Threshold

3-14. Light Sensor

- Use illuminance (**lux**) as the input value.

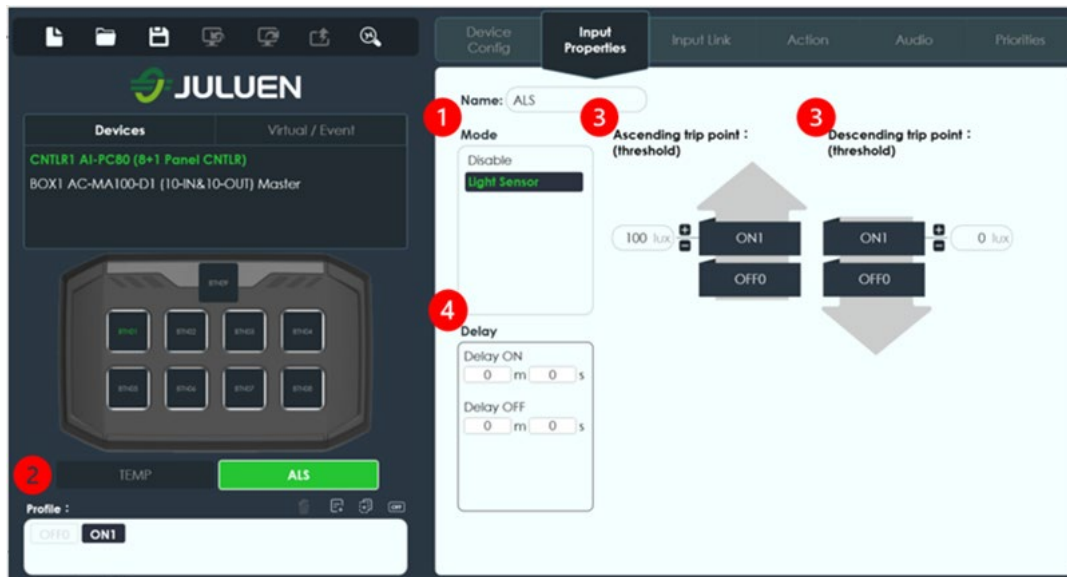


Figure 3-12-1. Illuminance input thresholds

NOTE: When using ambient light, avoid setting rising/falling thresholds too close; leave room for hysteresis. For complex light logic, consider building it first in Virtual/Event, then map the result via Profile.

3-15. Shutdown

The screenshot shows a configuration window with a dark header bar containing four tabs: "Device Config", "Input Properties" (which is active and highlighted with a dark background), "Input Link", and "Action". Below the tabs, the "Name" field is set to "BTN01" and the "Icon" field is empty with a clear button (X). The main content area is divided into two panels. The "Mode" panel on the left lists "Disable", "General", "Motor", "Semi-Sleep", "Shutdown" (highlighted with a dark background and green text), and "Standby". The "Shutdown" panel on the right lists "Disable", "Press & Hold", "SinglePress" (highlighted with a dark background and green text), "DoublePress", "LongPress", and "Multi-Press: 3" (with a dropdown arrow).

Figure 3-15-1: Shutdown setup.

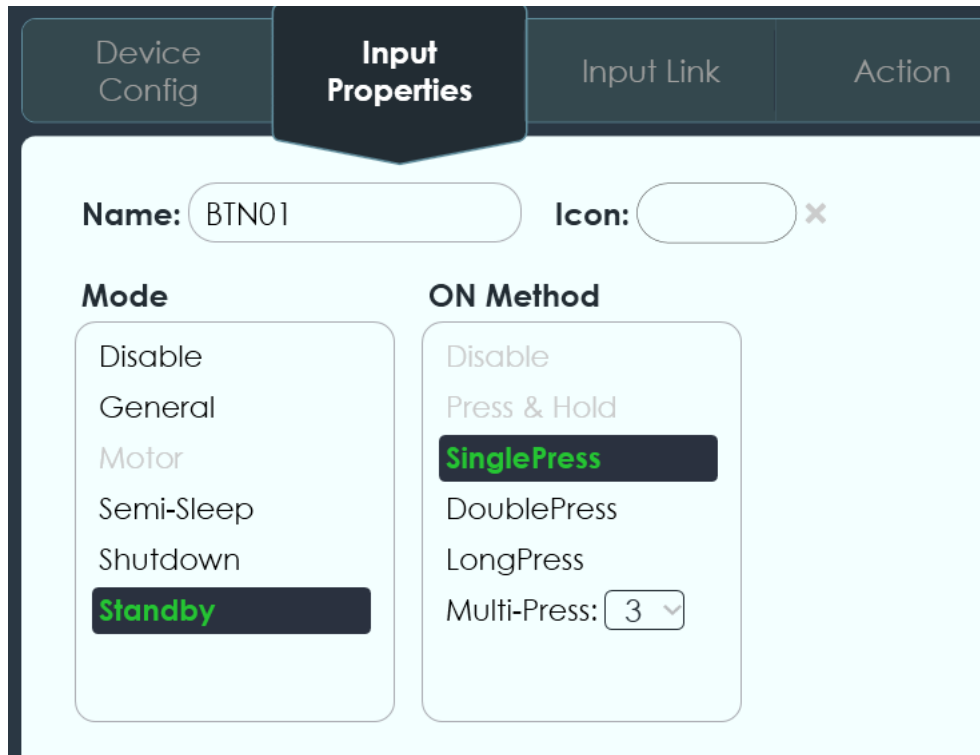
Shutdown Mode allows an input to act as a trigger for immediate system shutdown.

When triggered:

- All inputs and outputs are disabled.
- The entire system powers down.
- The system can only be rebooted via the IGN wire or IGN button input.

Refer to **Chapter 3-3: ON Method** for details on available operation methods.

3-16. Standby



The screenshot shows the 'Input Properties' configuration screen for a button named 'BTN01'. The screen is divided into four tabs: 'Device Config', 'Input Properties' (selected), 'Input Link', and 'Action'. Below the tabs, there are fields for 'Name' (BTN01) and 'Icon' (empty). The 'Mode' section has five options: 'Disable', 'General', 'Motor', 'Semi-Sleep', and 'Shutdown'. 'Standby' is selected. The 'ON Method' section has five options: 'Disable', 'Press & Hold', 'SinglePress', 'DoublePress', and 'LongPress'. 'SinglePress' is selected. Below 'LongPress' is a 'Multi-Press' dropdown menu set to '3'.

Figure 3-16-1 Shutdown setup.

Standby Mode allows an input to act as a trigger for placing the system into a standby state.

When triggered:

- All inputs are cleared to the OFF0 profile, deactivating all associated actions.
- If an action is linked to the OFF0 profile, it will be activated upon entering Standby.
- The system remains powered on.

Refer to **Chapter 3-3: ON Method** for details on available operation methods.

3-17. Semi-Sleep

Semi-Sleep is a low-power operational state designed to turn off most connected devices while keeping essential ones active. This mode helps conserve energy while maintaining minimal functionality.

When triggered:

- All **inputs** and **backlight** are suspended.
- All **checked outputs** in the **Device Configuration** are disabled while the **unchecked output** remain not affected.

Entering and Exiting Semi-Sleep

When an input configured for **Semi-Sleep Mode** is triggered:

- The system enters Semi-Sleep.
- To **exit** and resume normal operation, trigger the **same input** again.

NOTE: The method for entering and exiting Semi-Sleep can be defined independently.
Refer to **Chapter 3-3: ON Method** for details on available operation methods.

Figure 3-17-1: Semi Sleep ON Method

Figure 3-17-2: Semi-Sleep setup steps.

To configure which outputs remain active during Semi-Sleep:

1. Go to **Device Config**.
2. In the '**Semi-Sleep**' column, check the boxes for outputs you want to **suspend**.
3. Once Semi-Sleep is activated, the selected outputs will be disabled until exiting the Semi-Sleep state.

CHAPTER 4. ACTION /OUTPUT

The **Action** tab allows user to define “action” or “output” for activation during individual profile status (**OFF/ON**) of each input source. In other word, here defines the “Outcome” during different status of the “Input source”. This includes programming control panel indicator actions and brightness, as well as main console outputs.

Device	Port	Mode	Color
--------	------	------	-------

Device	Active	Backlight
--------	--------	-----------

Figure 4-0-1 Action Setting Page for Control Panel

No.	Device	Port	Mode	Delay (*0.1s)	Fade (*0.1s)	Indicator Mode	Indicator Color
-----	--------	------	------	---------------	--------------	----------------	-----------------

Figure 4-0-2 Action Setting Page for Main Console Outputs

1. CNTRL

- Indicator Action:
 - Click the “+” icon at the top right to add a button indicator. Click the “x” icon to remove.
 - This section defines button indicator or traffic arrow LED action and their colour. (see chapter 4-2).
 - The maximum number of indicators action for each profile status is eight.
- Indicator Brightness:
 - Click the “+” icon at the top right to add a control panel. Click the “x” icon to remove.
 - This section defines the brightness for all button indicators on the device. (see chapter 4-2).
 - The maximum number of indicators brightness control for each profile status panels is 2.

2. BOX

- Output Action:
 - Click the “+” icon at the top right to add an output. Click the “x” icon to remove.
 - This section defines output actions of the main console output port and their indicator colour.
 - The maximum number of output actions for each profile status is five.

4-1. Overview

Category	Function	Related Device	Reference
Control Panel	Button Indicator	Control Panel	4-2
	Brightness	Control Panel	4.2
Main Console	None / Output Indicator	Main Console	4-3
	Turn ON	Main Console	4-4
	Turn OFF	Main Console	4-5
	Flash	Main Console	4-6
	Pattern	Main Console	4-7
	PWM	Main Console	4-8
	Dimming	Main Console	4-9
	Earthing	Main Console	4-10
	Motor	Main Console	4-11

4-2. Control Panel Indicator

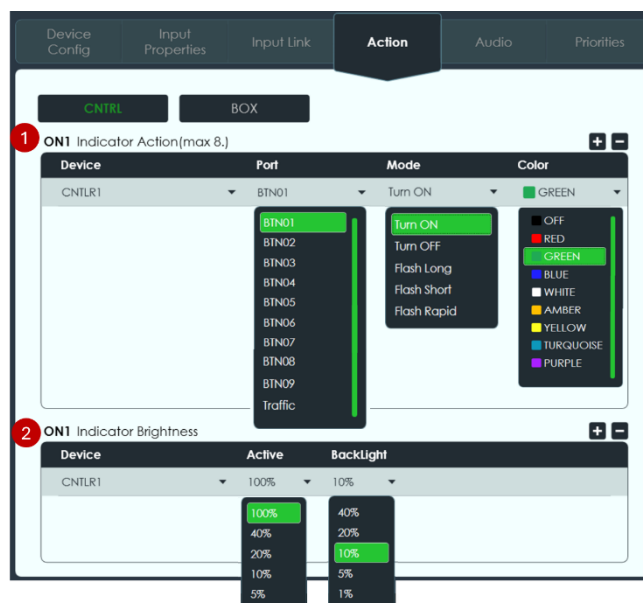


Figure 4-2-1 Control Panel Indicator

This section describes how to configure and interpret the indicator behaviour on the control panel.

1. Indicator Action

- Device
 - Click to select a control panel from the pre-configured input source list, (ID1 to ID4).
- Port
 - Click to select a button from available list.
 - The "Traffic" refers to the TA indicator, which is a set of RGB LEDs located on the upper area of the control panel.
- Mode

BTN Indicator Action:

#	BTN Mode	Description	Note
1.	Turn ON	LED turns Steady on	
2.	Turn OFF	LED turns OFF	
3.	Flash Long	LED flash at a rate of 0.5Hz	
4.	Flash Short	LED flash at a rate of 1Hz	
5.	Flash Rapid	LED flash at a rate of 2Hz	

TRAFFIC Indicator Action:

#	BTN Mode	Description	Note
1.	Left	LEDs flash sequentially from left to right	
2.	Right	LEDs flash sequentially from right to left	
3.	Center Out	LEDs flash sequentially from center outward	

- Colour
 - Click to select indicator's colour.

2. Indicator Brightness

This section defines brightness settings for the control panel indicators.

- Device
 - Click to select a control panel from the pre-configured input source list, (ID1 to ID4).
- Active
 - Click to set the **illumination brightness** value for all button inputs on this Control Panel.
 - The **Active Brightness** value applies to buttons in the **ONx** profile
- Backlight
 - Click to set the **illumination brightness** value for all button inputs on this Control Panel.
 - the **Backlight Brightness** value applies to buttons in the **OFF0** profile.

4-3. Box Output Mode- None / Output Indicator

The **NONE** mode does not trigger any output port action. However, users may use this option to modify output indicator's **action** and **colour** settings.

1. Output Action Mode - NONE

- Does not perform any action.

2. Indicator Mode

Output Indicator Action:

#	BTN Mode	Description	Note
1.	None	<i>No action will be performed.</i>	
2.	Turn ON	<i>LED turns Steady on</i>	
3.	Turn OFF	<i>LED turns OFF</i>	

- Colour
 - Click to select indicator's colour.

4-4. Box Output Mode- Turn ON

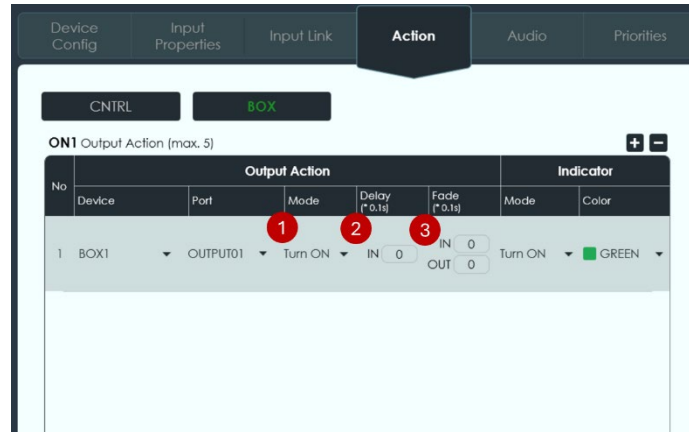


Figure 4-4-1 Output Mode: Turn ON

Sets the selected output to operate in **ON Mode**.

3. Turn ON

- Set the selected output to steadily **ON**.

4. Delay (*0.1s)

- Add a delay before the **ON** output is activated.
- This delay is **independent** from the **Input Delay** setting (see Chapter 3-8).
- Both delays can be stacked if desired.

Configuration:

- Enter a value from **0 to 20** to set the **Delay IN** timer.
- Each unit represents **0.1 seconds**, resulting in a delay range of **0 to 2 seconds**.

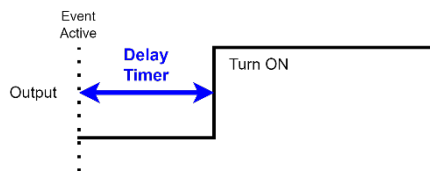


Figure 4-4-2 Delay Timer

5. Fade (*0.1s)

- Add a gradual **PWM slope** when the output is activated or deactivated.
- Useful for smooth transitions in lighting or motor control.

Configuration:

- **Fade IN:** Enter a value from **0 to 20** to set the fade-in duration (0 to 2 seconds).
- **Fade OUT:** Enter a value from **0 to 20** to set the fade-out duration (0 to 2 seconds).

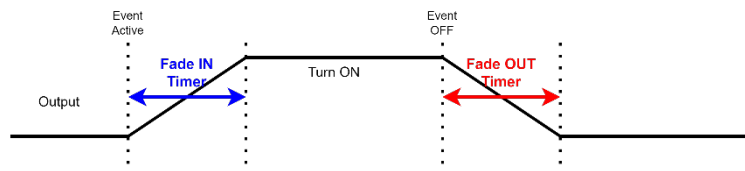


Figure 4-4-3 Fade In / Fade Out

4-5. Box Output Mode - Turn OFF

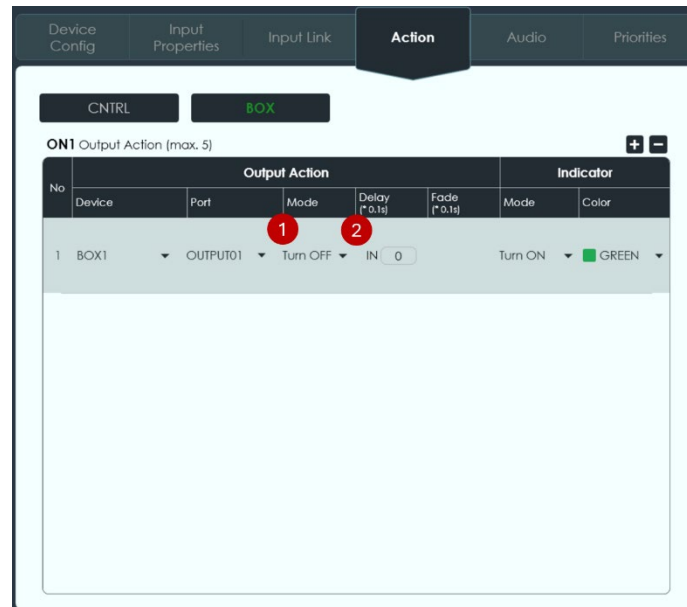


Figure 4-5-1 Output Mode: Turn OFF

Sets the selected output to operate in **OFF Mode**.

1. Turn OFF

- Set the selected output to stay in **OFF**.

2. Delay (*0.1s)

- Add a delay before the **OFF** output is activated.
- This delay is **independent** from the **Input Delay** setting (see Chapter 3-8).
- Both delays can be stacked if desired.

Configuration:

- Enter a value from **0 to 20** to set the **Delay IN** timer.
- Each unit represents **0.1 seconds**, resulting in a delay range of **0 to 2 seconds**.

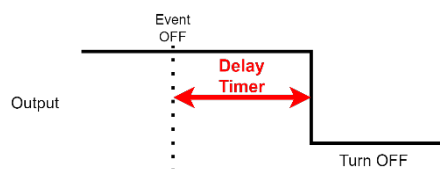


Figure 4-5-2 Output Mode: Delay OFF

4-6. Box Output Mode - Flash

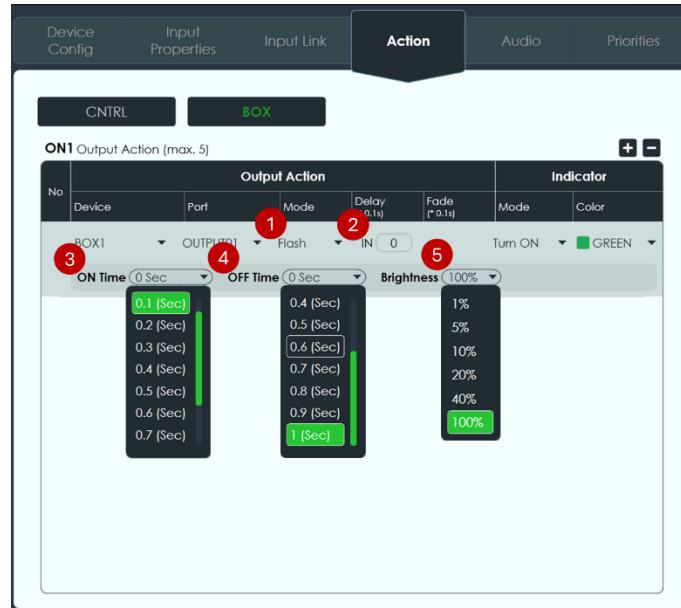


Figure 4-6-1 Flash — Output Mode: Flash.

Sets the selected output to operate in **Flash Mode**.

1. Flash

- Sets the selected output to operate in **Flash Mode**.

2. Delay (*0.1s)

- Add a delay before the **FLASH** output is activated.
- This delay is **independent** from the **Input Delay** setting (see Chapter 3-8).
- Both delays can be stacked if desired.

Configuration:

- Enter a value from **0 to 20** to set the **Delay IN** timer.
- Each unit represents **0.1 seconds**, resulting in a delay range of **0 to 2 seconds**.

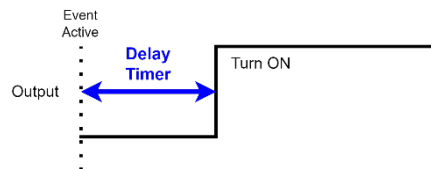


Figure 4-6-2 Delay Timer

3. ON Time

- Sets the duration for which the output remains ON during each flash cycle.
- From the drop-down manual, select a value from 0 to 1 second (in 0.1sec interval) to set a Flash ON TIME.

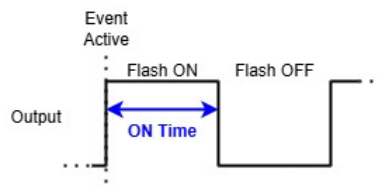


Figure 4-6-3 Flash ON time

4. OFF Time

- Sets the duration for which the output remains OFF during each flash cycle.
- From the drop-down manual, select a value from 0 to 1 second (in 0.1sec interval) to set a Flash **OFF Time**.

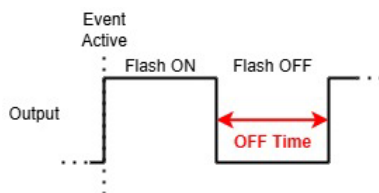


Figure 4-6-4 Flash ON time

5. Brightness

- Sets the Brightness level for the output during Flash Mode.
- From the drop-down manual, select a value from 1 to 100% to set the **Brightness** for this Flash mode.

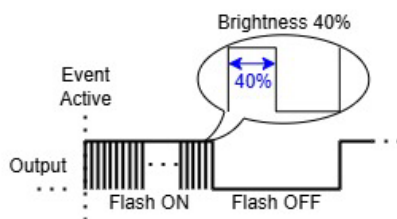


Figure 4-6-5 Brightness is 40%

4-7. Box Output Mode - Pattern

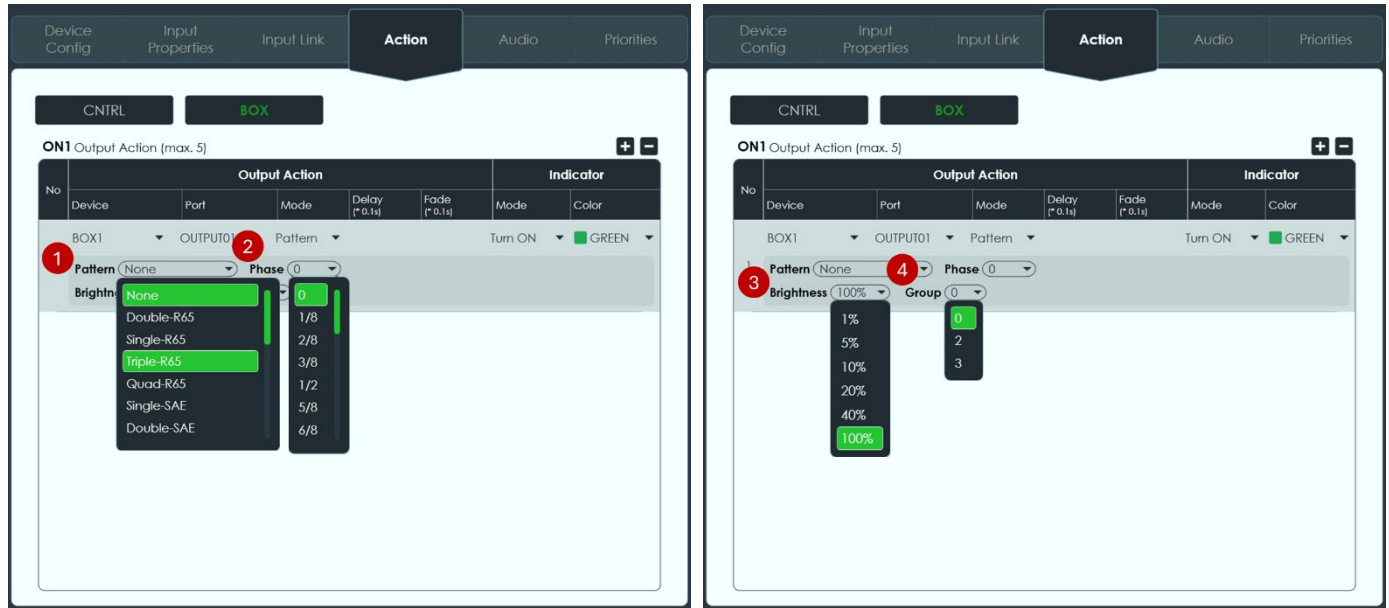


Figure 4-7-1: Output Mode – Pattern

This mode sets the selected output to operate using a **built-in flash pattern**. Various pre-configured patterns are available, such as **Single Flash**, **Double Flash**, and **ECE R65**. For the complete list of available patterns, refer to **Appendix A**.

1. Pattern

- From the drop-down manual, select a desired flashing pattern.

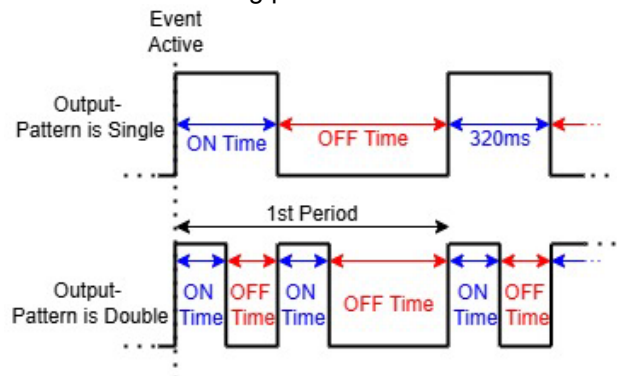


Figure 4-7-2: The flashing pattern is Single or Double

2. Phase

- Select a phase order (from 0 to 23/8) to adjust the timing offset of the flash pattern.
- Each phase step adds **1/8 of the activation time** to the output.
- To have a group of lightheads flashing left and right alternately, set one group to "0" and the other group to "4/8"
- The phase setting does not affect ending time when the output is deactivated.

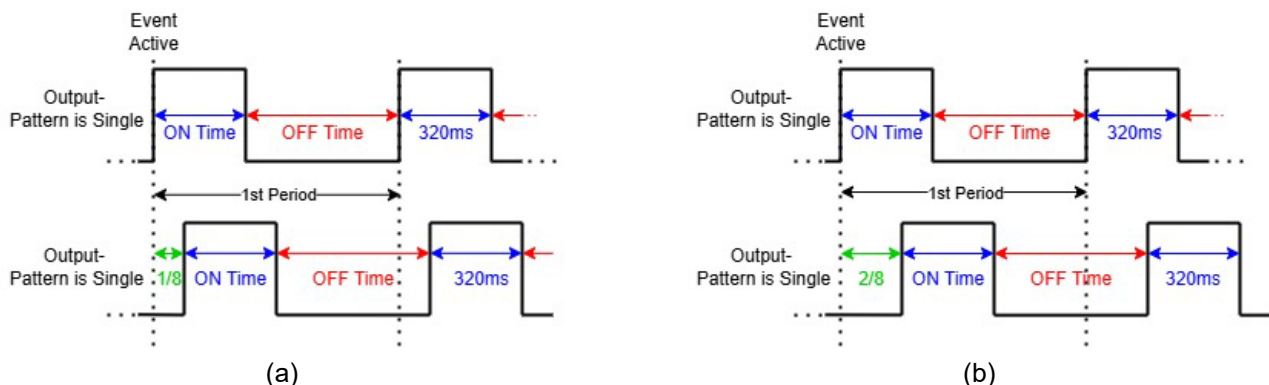


Figure 4-7-3: Phase of pattern, (a) Phase is 1/8, (b) Phase is 2/8.

3. Brightness

- Sets the **Brightness** level for the output during Flash Mode.
- From the drop-down manual, select a value from 1 to 100% to set the **Brightness** for this Pattern mode.

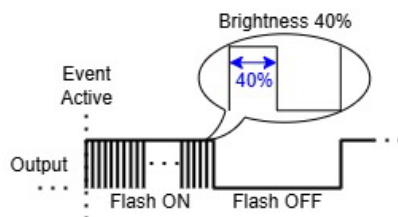


Figure 4-7-3 Brightness is 40%

4. Group

- The Group option allows quick setting for outputs connecting to the same device (i.e. multi-colour lighthouse) to flash patterns in sequential colour (where each colour is activated by each output wire).

To Configure:

Group Value	Description
1	Group disabled; outputs flash independently.
2	Two outputs grouped; second output is phase-shifted by one cycle.
3	Three outputs grouped; each output is phase-shifted by one cycle relative to the previous.

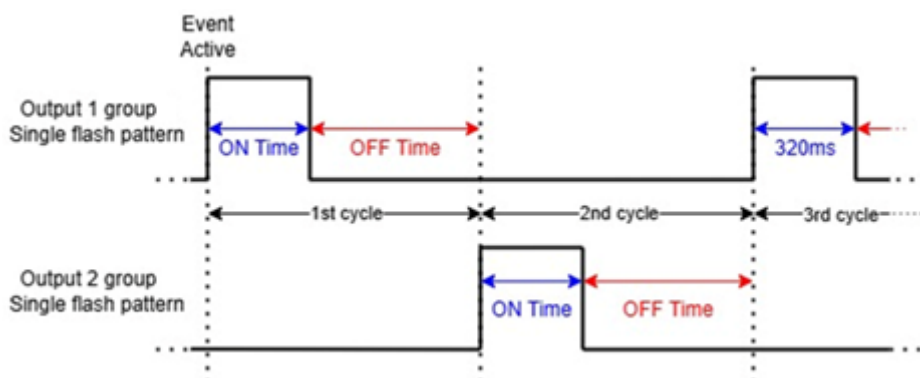


Figure 4-7-4 Group is 2

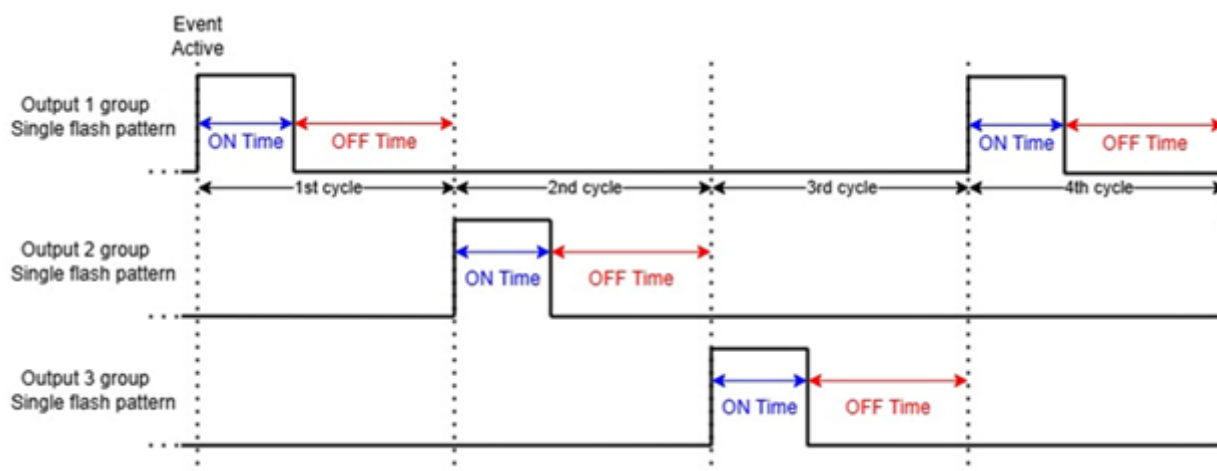


Figure 4-7-5 Group is 3

4-8. Box Output Mode - PWM (Pulse Width Modulation)

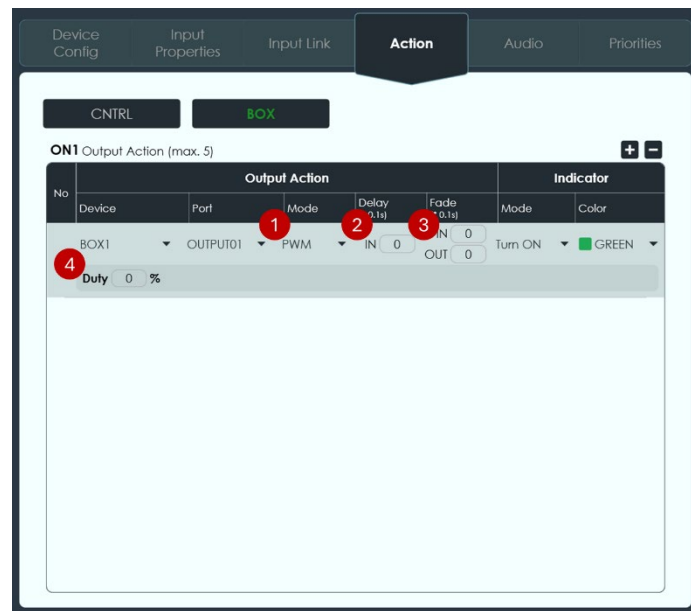


Figure 4-8-1: Output Mode – PWM

PWM Mode allows the selected output to generate a continuous series of high-speed switching signals, ideal for controlling devices like lights or motors.

1. PWM

- Sets the selected output to **PWM Mode**.
- PWM operates at a fixed frequency of **70Hz**, with a period of **14.4ms**.

2. Delay (*0.1s)

- Add a delay before the **PWM** output is activated.
- This delay is **independent** from the **Input Delay** setting (see Chapter 3-8).
- Both delays can be stacked if desired.

Configuration:

- Enter a value from **0 to 20** to set the **Delay IN timer**.
- Each unit represents **0.1 seconds**, resulting in a delay range of **0 to 2 seconds**.

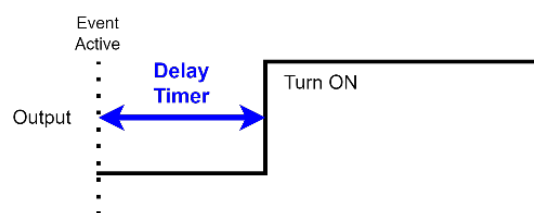


Figure 4-8-2 Delay Timer

3. Fade (*0.1s)

- Add a gradual **PWM slope** when the output is activated or deactivated.
- Useful for smooth transitions in lighting or motor control.

Configuration:

- **Fade IN:** Enter a value from **0 to 20** to set the fade-in duration (0 to 2 seconds).
- **Fade OUT:** Enter a value from **0 to 20** to set the fade-out duration (0 to 2 seconds).

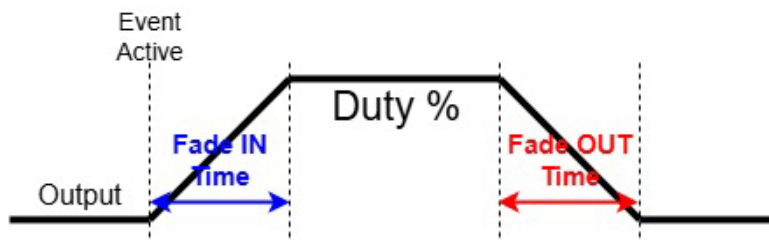


Figure 4-8-3 Fade In / Fade Out

4. Duty

- Sets the **Duty Cycle** for the PWM output.
- From the drop-down menu, select a value between **1%** and **99%** to define the output intensity during PWM operation.

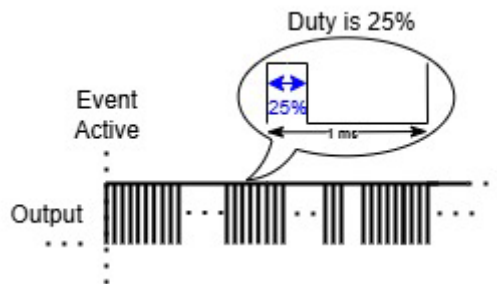


Figure 4-8-4 PWM Duty is 25%

4-9. Box Output Mode – Dimming

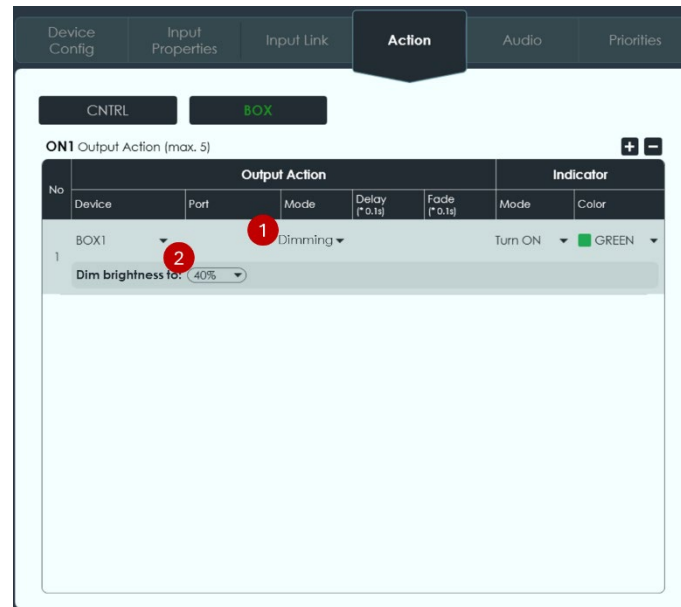


Figure 4-9-1 Box Output Mode – Dimming

The Dimming function allows brightness control by overriding lower-priority actions. This mode itself does not produce any output directly but modifies the behaviour of other output modes.

1. Dimming

- Limits the **maximum brightness** for light control output modes such as **FLASH**, **PATTERN**, and **PWM**.
- Must be set as a **high-priority action** to override brightness settings of lower-priority actions.
- Does **not** affect output modes such as **NONE**, **ON**, or **OFF**.

2. “Dim brightness to” Value

- Select a brightness level from the following options: **1%**, **5%**, **20%**, **40%**, or **100%**.
- This setting only **reduces** brightness; it cannot increase brightness beyond the lower-priority action's setting.

4-10. Box Output Mode - Earthing

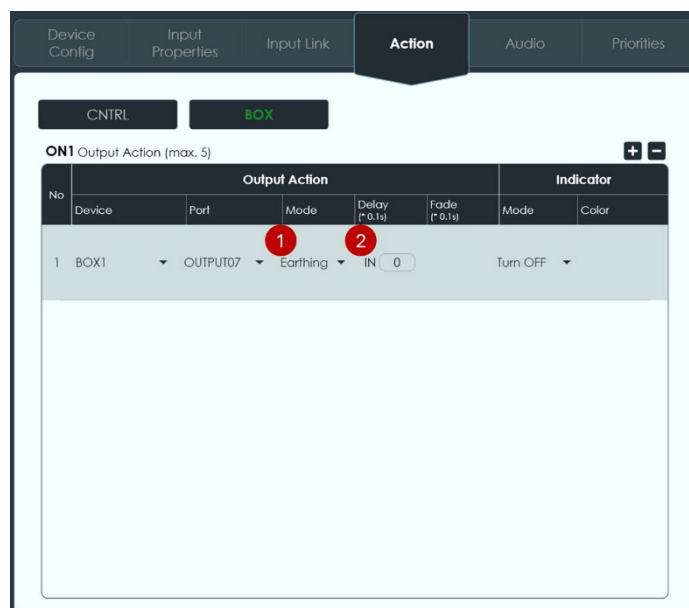


Figure 4-10-1 Box Output Mode – Earthing

The Earthing Mode allows an output port to connect directly to ground (GND), enabling grounding-based control for specific applications.

1. Earthing

- Sets the selected output to **Earthing Mode**.
- Only **specific ports** support Earthing Mode—please refer to the **device specifications** for compatibility details.

2. Delay (*0.1s)

- Add a delay before the **PWM** output is activated.
- This delay is **independent** from the **Input Delay** setting (see Chapter 3-8).
- Both delays can be stacked if desired.

Configuration:

- Enter a value from **0 to 20** to set the **Delay IN** timer.
- Each unit represents **0.1 seconds**, resulting in a delay range of **0 to 2 seconds**.

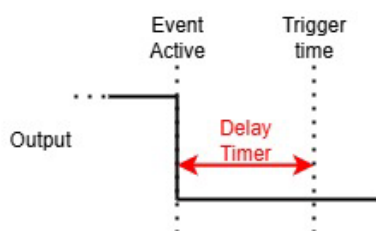


Figure 4-10-2 Delay Timer

4-11. Box Output Mode - Motor

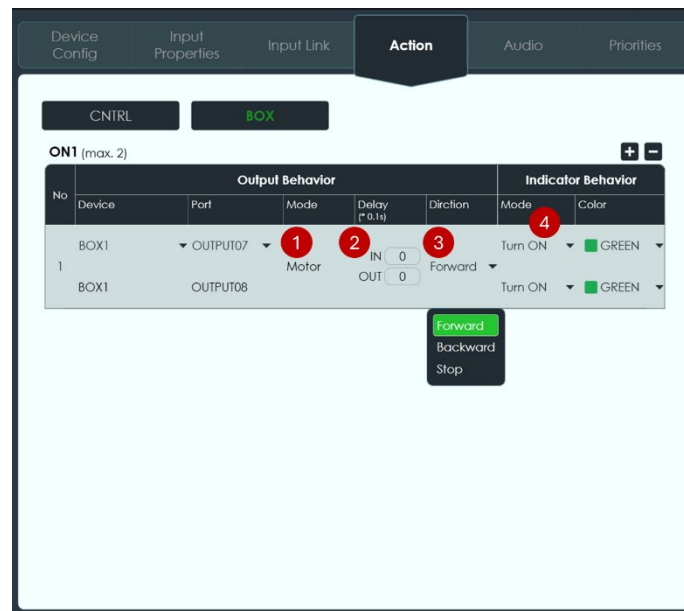


Figure 4-11-1 Box Output Mode – Motor

The Motor Mode is designed to control a motor in two directions—forward and backward—by alternating the polarity of a paired output. To enable Motor Mode:

- First, configure a pair of outputs as a motor control pair in Device Configuration (see Chapter 2-8).
- Then, set the input mode to Motor Mode in Input Properties (see Chapter 3-2).

1. Motor

- Set the selected output to **Motor** Mode.

2. Delay (*0.1s)

- Enter a value from 0 to 20 to set a **DELAY ON** timer (corresponding to 0s to 2s).

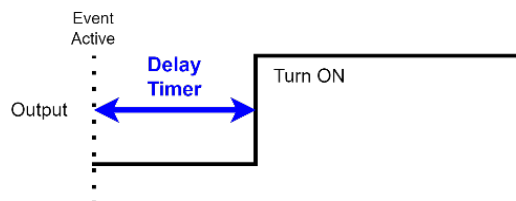


Figure 4-11-2 Delay ON

- Enter a value from 0 to 20 to set a **DELAY OFF** timer (corresponding to 0s to 2s).

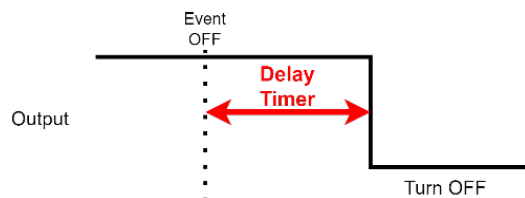


Figure 4-11-3 Delay OFF

3. Direction

- Click to select the spin direction of Motor, Forward, Backword, and stop.

#	Direction	Description	Graphics Visualization
1.	Forward	Forward polarity, motor spin clockwise.	
2.	Backword	Reversed polarity, motor spin anti-clockwise.	
3.	Stop	Neutral polarity, motor stop.	

CHAPTER 5. AUDIO / OUTPUT

The **Audio** tab allows user to define “audio action” or “siren output” for activation during individual profile status (**OFF/ON**) of each input source. In other word, here defines the “Audible Outcome” during different status of the “Input source”.

The total number of available siren/audio channels depends on the number of amplifier devices connected to the system bus.

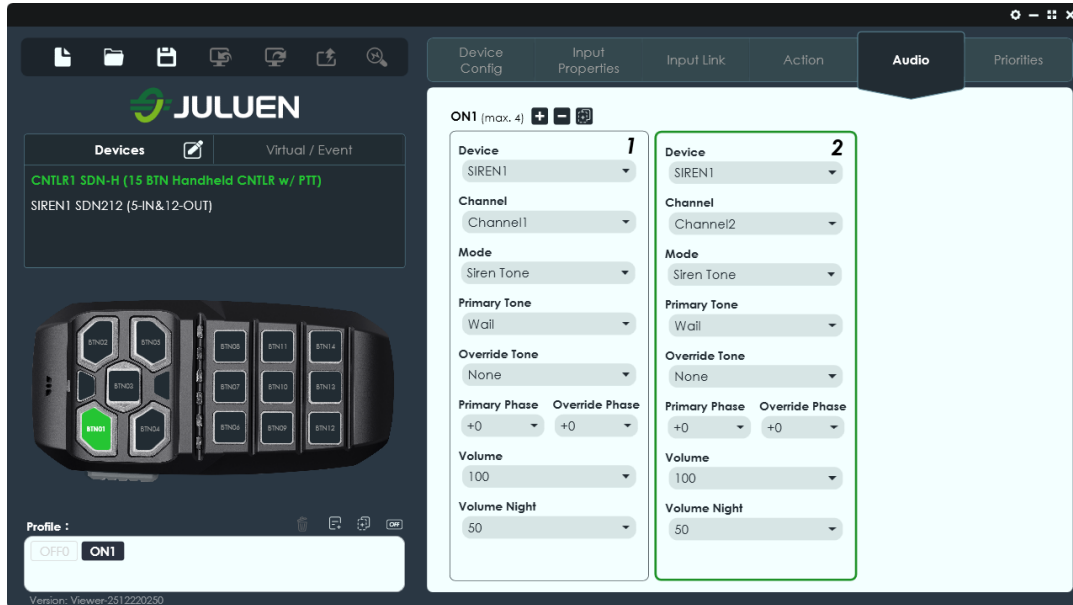


Figure 5-0-1 Audio Setting Page for Control Panel

- Click the **plus icon** to add an Audio Action (up to 4 actions per profiles).
- Click the **delete icon** to delete the selected Audio Action.
- Click the **copy icon** to duplicate and add a new Audio Action.

5-1. Overview

Category	Function	Related Device	Reference
Main Console (Mode)	Siren Tone	Main Console	5-2
	Siren Tone (Complete)	Main Console	5-3
	Park Kill (Source)	Main Console	5-4
	Radio Rebroadcast	Main Console	5-5
	Public Address (PA/MIC)	Main Console	5-6
	Record-n-Play (Rec)	Main Console	5-7
	Record-n-Play (Play)	Main Console	5-8
	Night Mode	Main Console	5-9
	Override Tone	Main Console	5-10

5-2. Siren Tone

The **Siren Tone** mode sets the selected device and audio channel to operate / play using a **built-in Siren Tone**. Available tones include **Wail**, **Yelp**, **Phaser**, and various European tones. For the complete list, refer to **Appendix B**.

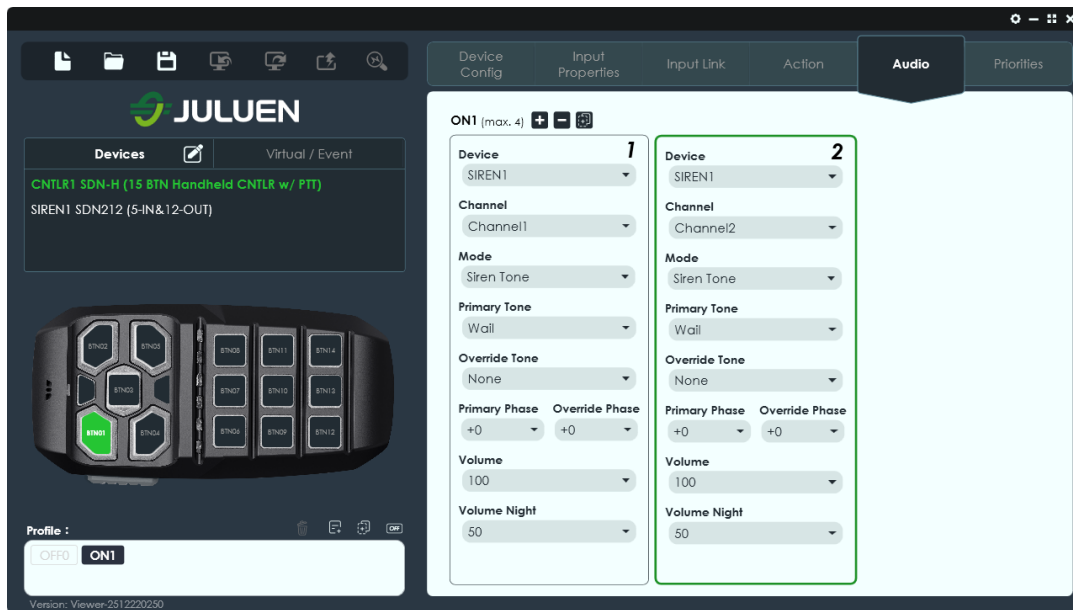


Figure 5-2-1 Audio Setting Page for Siren Tone Mode

1. Device

- Select desired device with at least one Audio Channel from the drop-down manual.

2. Channel

- Select desired Audio Channel from the drop-down manual.

3. Primary Tone

- From the drop-down manual, select a desired Siren Tone to be played by this Audio Channel.

4. Override Tone

- From the drop-down manual, select a desired Siren Tone to be played by this Audio Channel when “**Override Tone**” mode is triggered.

5. Primary Phase & Override Phase

- Select a phase order (0 or +1/2) to adjust the timing offset of the Tone cycle (during Primary Tone or Override Tone respectively)
- The **+1/2 phase** shift **1/2 of the tone time** when the tone is played.
 - By selecting two audio channels in different phase creates a dual-tone fanfare effect, even if both use the same tone.

6. Volume

- Specified Volume Levels (from 0~100) when the Tone is played by this Audio Channel.

7. Volume Night

- Specified Volume Levels (from 0~100) when the Tone is played by this Audio Channel when “**Night**” mode is triggered.

5-3. Siren Tone (Complete)

The **Siren Tone (Complete)** mode sets the selected device and audio channel to operate / play using a **built-in Siren Tone**. Various **Siren Tones** are available, such as **Wail**, **Yelp**, **Phaser** and various **European Tone**. Additionally, when the input source is cancelled, the audio channel forced the select Tone to finish playing its cycle before ending the playing. For the complete list of available tones, refer to **Appendix B**.

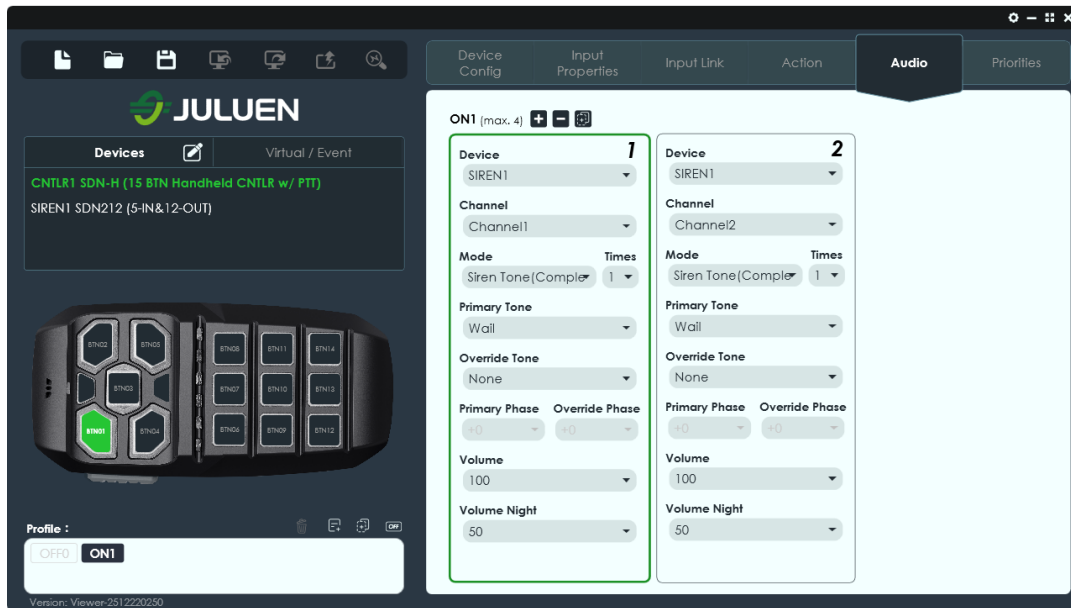


Figure 5-3-1 Audio Setting Page for Siren Tone (Complete) Mode

1. Device

- Select desired device with at least one Audio Channel from the drop-down manual.

2. Channel

- Select desired Audio Channel from the drop-down manual.

3. Times (Complete Times)

- Select a number of cycles need to be played before ending the playing when the input source is cancelled.

4. Primary Tone

- From the drop-down manual, select a desired Siren Tone to be played by this Audio Channel.

5. Override Tone

- From the drop-down manual, select a desired Siren Tone to be played by this Audio Channel when “**Override Tone**” mode is triggered.

6. Primary Phase & Override Phase

- Select a phase order (0 or +1/2) to adjust the timing offset of the Tone cycle (during Primary Tone or Override Tone respectively)
- The **+1/2 phase** shift **1/2 of the tone time** when the tone is played.
 - ° By selecting two audio channels in different phase creates a **dual-tone fanfare effect**, even if both use the same tone.

7. Volume

- Specified Volume Levels (from 0~100) when the Tone is played by this Audio Channel.

8. Volume Night

- Specified Volume Levels (from 0~100) when the Tone is played by this Audio Channel when “**Night**” mode is triggered.

5-4. Park Kill (Source)

The **Park Kill (Source)** mode allows any active Siren Tone to cease playing and additionally, forced the source input to revert to “OFF0” profile. This function allows a quick and easy way to disable any playing tone.

NOTE: If only temporary siren mute is needed, use the “Siren Tone” mode and under the primary tone, select “Mute” Tone.

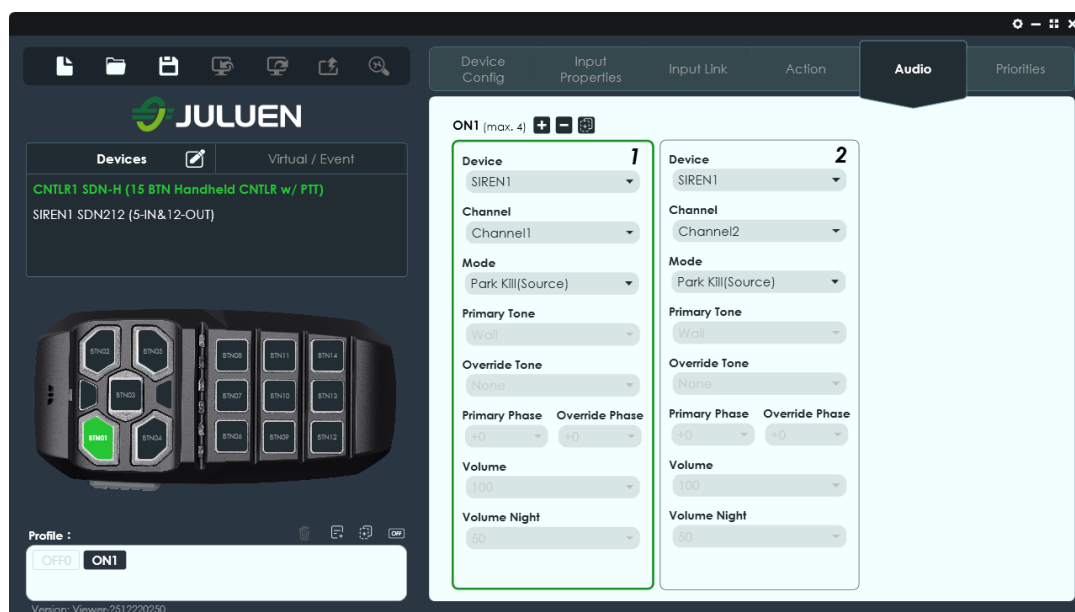


Figure 5-4-1 Audio Setting Page for Park Kill (Source) Mode

5-5. Radio Rebroadcast (RRB)

The **Radio Rebroadcast** mode allows the RADIO_IN audio input to be rebroadcasted through the speaker channel.

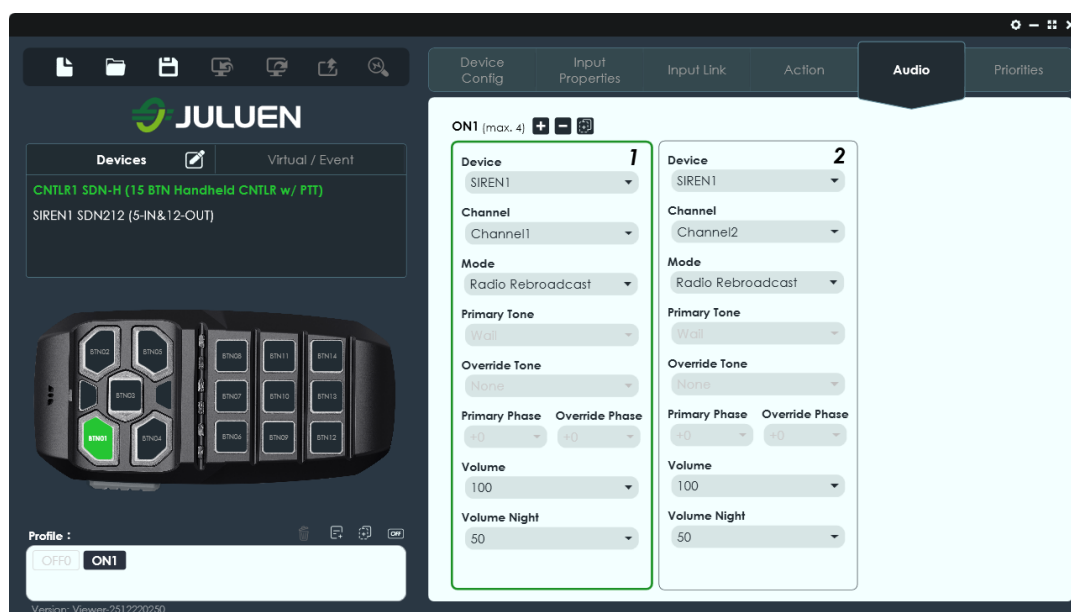


Figure 5-5-1 Audio Setting Page for Radio Rebroadcast (RRB) Mode

1. Volume

- Specified Volume Levels (from 0~100) when the **RRB** is played by this Audio Channel.

2. Volume Night

- Specified Volume Levels (from 0~100) when the **RRB** is played by this Audio Channel when “**Night**” mode is triggered.

5-6. Public Address (PA/MIC)

The **Public Address (PA/MIC)** mode allows the Microphone audio input to be rebroadcasted through the speaker channel.

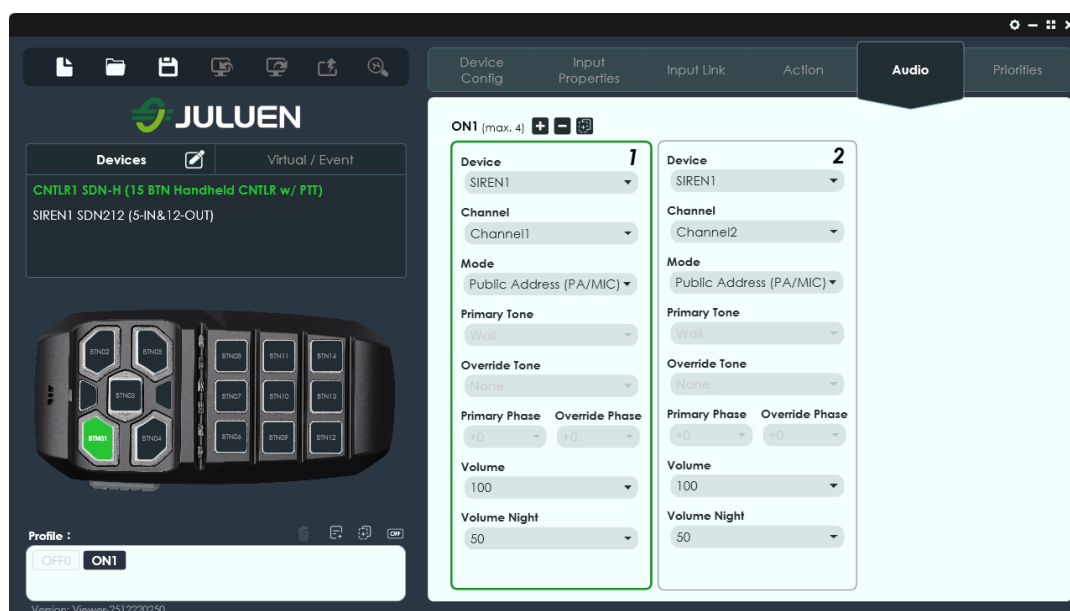


Figure 5-6-1 Audio Setting Page for Public Address (PA/MIC) Mode

1. Volume

- Specified Volume Levels (from 0~100) when the **PA/MIC** is played by this Audio Channel.

2. Volume Night

- Specified Volume Levels (from 0~100) when the **PA/MIC** is played by this Audio Channel when “**Night**” mode is triggered.

5-7. Record-n-Play (Rec)

The **Record-n-Play** modes allows a recording of a short voice message through the Microphone audio input and rebroadcasted through the speaker channel. Use the Record-n-Play (Rec) to Record the voice message (up to 30 seconds).

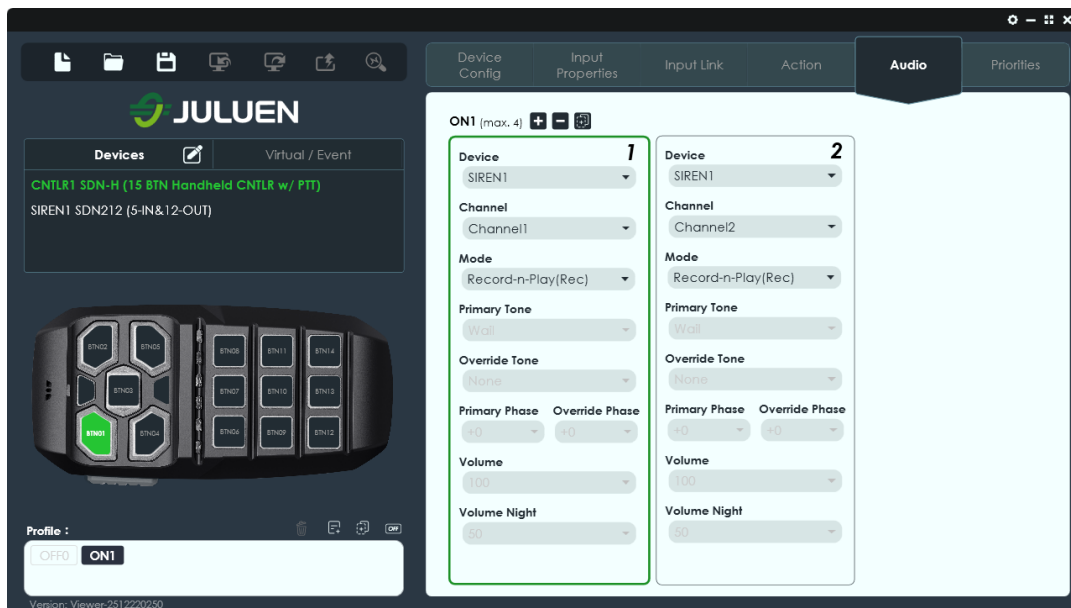


Figure 5-7-1 Audio Setting Page for Record-n-Play (Rec) Mode

To record, user must first define both “Record-n-Play (Rec)” and “Public Address (PA/MIC)” input to a controller. The “Record-n-Play (Rec)” **must** have priority precedence over “Public Address (PA/MIC)” input.

Recording Operation:

1. Enter the profile status with Record-n-Play (Rec) Audio Action.
2. Hold the microphone close to your mouth, then press the PTT input button to start recording (maximum 30 seconds).
3. Release the PTT input button to stop recording, then exit the profile status to save.

NOTE: if multiple recording is made, only the last recording will be saved.

5-8. Record-n-Play (Play)

The **Record-n-Play** modes allows a recording of a short voice message through the Microphone audio input and rebroadcasted through the speaker channel. Use the Record-n-Play (Play) to re-play the pre-record voice message.

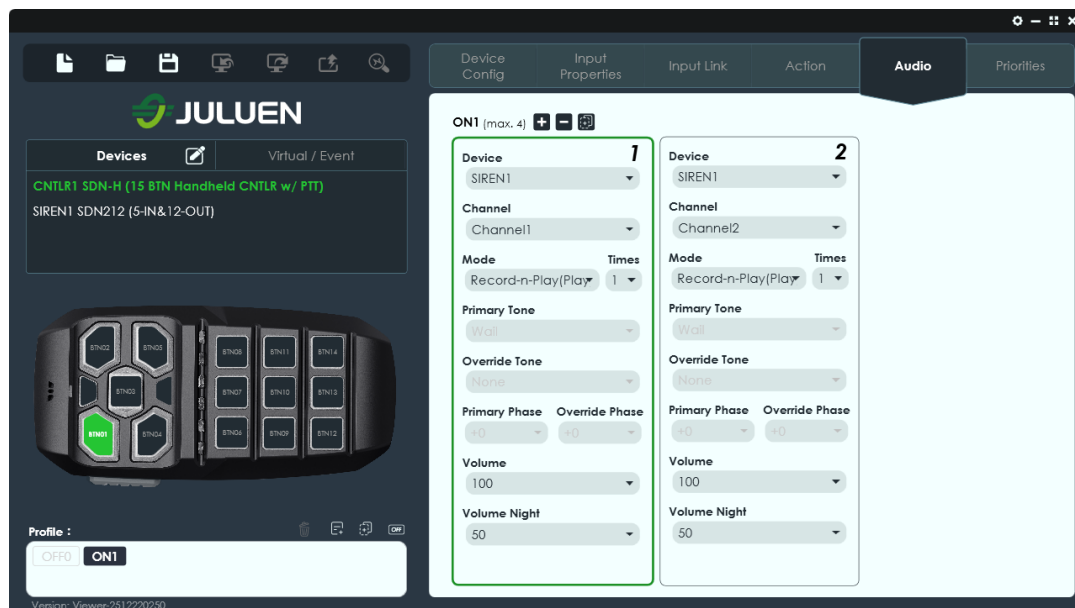


Figure 5-8-1 Audio Setting Page for Record-n-Play (Play) Mode

1. Volume

- Specified Volume Levels (from 0~100) when the **Voice Message** is played by this Audio Channel.

2. Volume Night

- Specified Volume Levels (from 0~100) when the **Voice Message** is played by this Audio Channel when “**Night**” mode is triggered.

3. Times (Complete Times)

- Select a number of cycles need to be played before ending the playing when the input source is cancelled. (max. 10 times)

5-9. Night Mode

The **Night** mode allows any playing Siren Tone functions to shift its set volume to the “**Night Volume**” levels. This function allows a quick and easy way to lower the overall volume level.

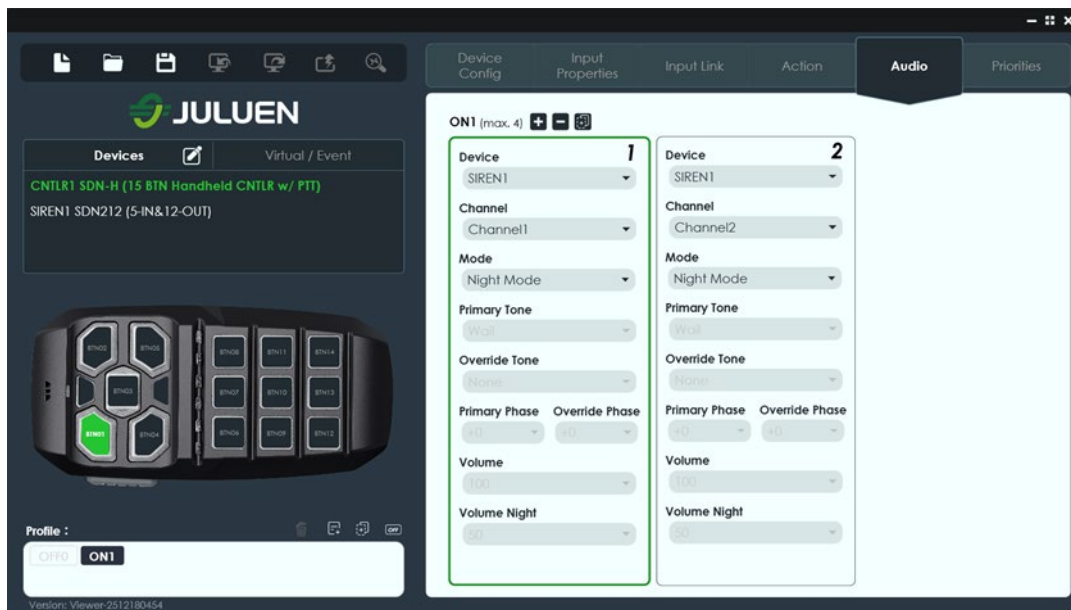


Figure 5-9-1 Audio Setting Page for Night Mode

5-10. Override Tone

The **Override Tone** mode, when triggered, allows any playing Siren Tone functions to shift its set Tone to the “**Override Tone**”. This function allows a quick and easy way to change in between the primary tone and the override tone.

To set Override Tone audio action, first set input properties as “**Override Tone**” Mode. The Audio Action will automatically set as **Override Tone** mode.

NOTE: If Override Tone is not set, when triggered Override Tone mode, the Siren Tone remain in Primary Tone.

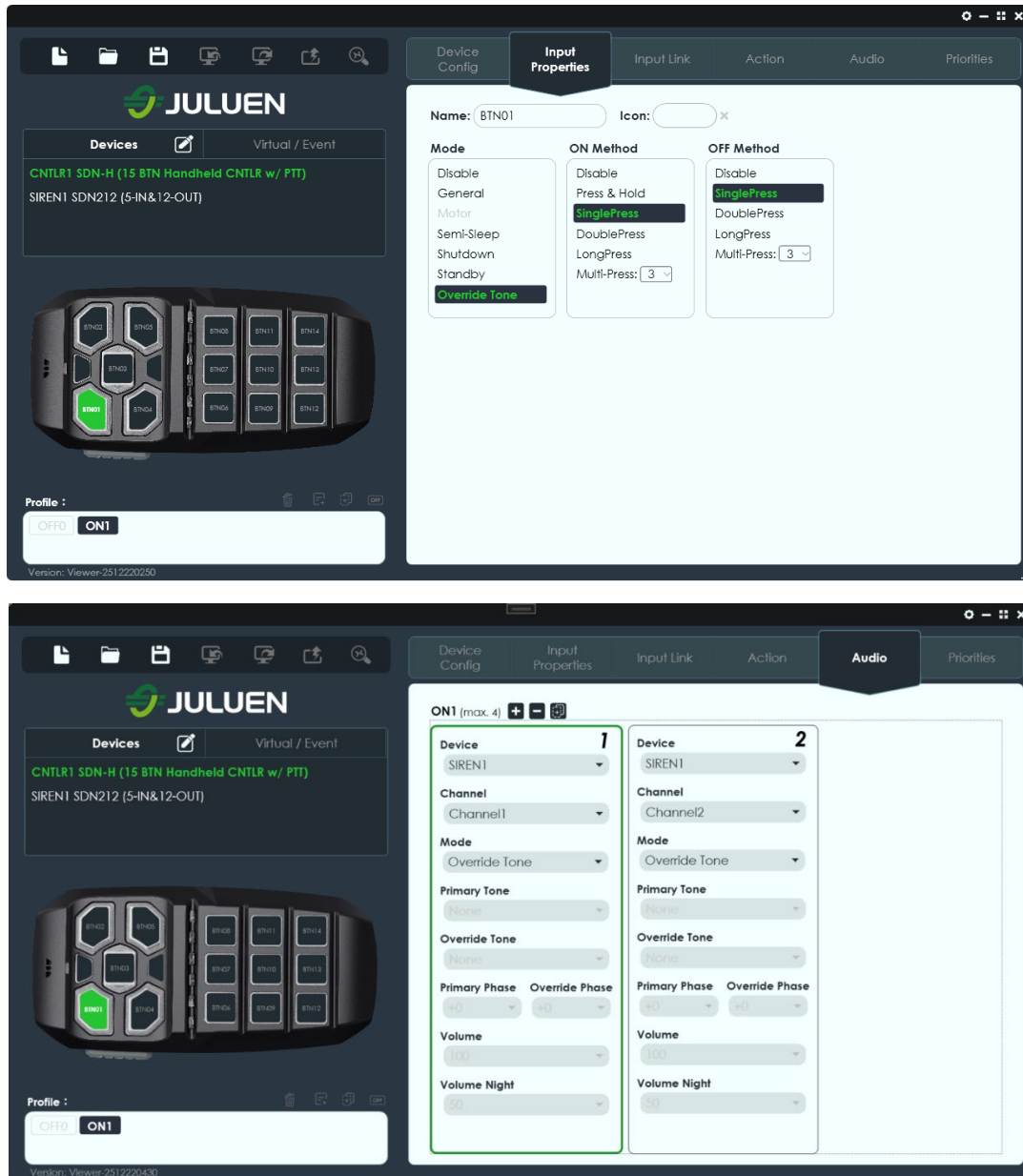


Figure 5-10-1 Audio Setting Page for Override Tone Mode

CHAPTER 6. INPUT LINK

The **Input Link** tab allows users to define relationships between one input and other input sources when entering or exiting a profile status (**OFF/ON**). Each input profile supports a set of **Input Links** that can modify the status of other inputs upon:

- **ENTER Link** – when the profile is activated.
- **EXIT Link** – when the profile is deactivated, regardless of whether it advances to the next profile or reverts to previous profile.

Each ENTER or EXIT Link can support up to **5 linked actions**.

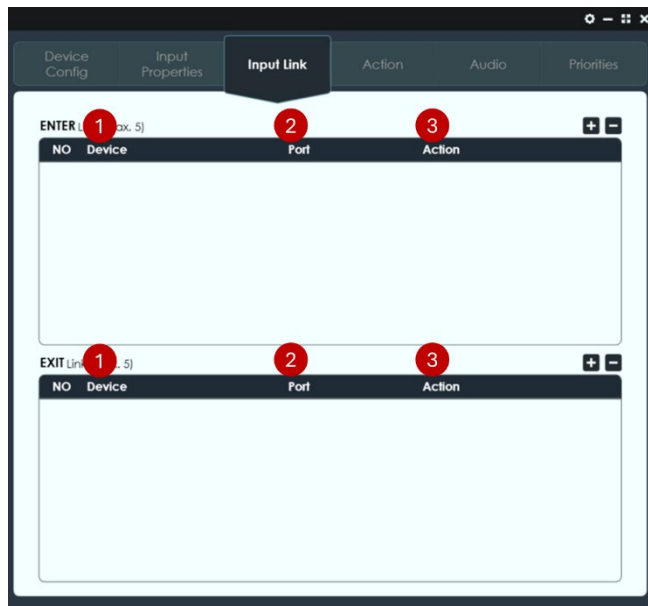


Figure 6-1-1 Input Link

1. Device

- Select a device from the Input Source list. Users may choose from one of the following options:
 - Control Panel
 - Main Console
 - Virtual / Event

2. Port

- Select the desired port. Users may choose a port using one of the followings:
 - Button selection from the Control Panel
 - Wired input from the Main Console
 - Virtual input from the Virtual/Event interface

3. Action

#	Direction	Description
1.	None	No action will be performed.
2.	Go to Next	Advances the target input profile to the next available profile.
3.	Go to Previous	Reverts the target input profile to the previous profile
4.	Go to OFF0	Sets the target input profile to OFF0
5.	GO to ON1	Sets the target input profile to ON1
6.	GO to ONx	Sets the target input profile to a specific ONx (ON2 to ON9)
7.	LOCK OFF	Force the profile of the target input to OFF0 . <i>The target input cannot change its profile out of OFF0 until this link action is lifted</i>
8.	LOCK ON	Force the profile of the target input to ON1 . <i>The target input cannot change its profile out of ON1 until this link action is lifted</i>

CHAPTER 7. VIRTUAL / EVENT

The **Virtual / Event Input** is a special type of input triggered by fulfilling a defined logic condition. By utilizing these logic functions, users can create complex scenarios tailored to specific application needs.

Accessing Virtual / Event Inputs

- Navigate to the **Input Source** section and click the **[Virtual / Event]** tab to view all virtual inputs.
- Use the **[+]** button to create a new virtual input or the **[-]** button to remove an existing one.

Configuring Logic Conditions

- Click the **[Config]** tab in the configuration window to define logic conditions.
- Once the logic is set, configure the rest of the input settings as you would for any other input source (see Chapter 3).

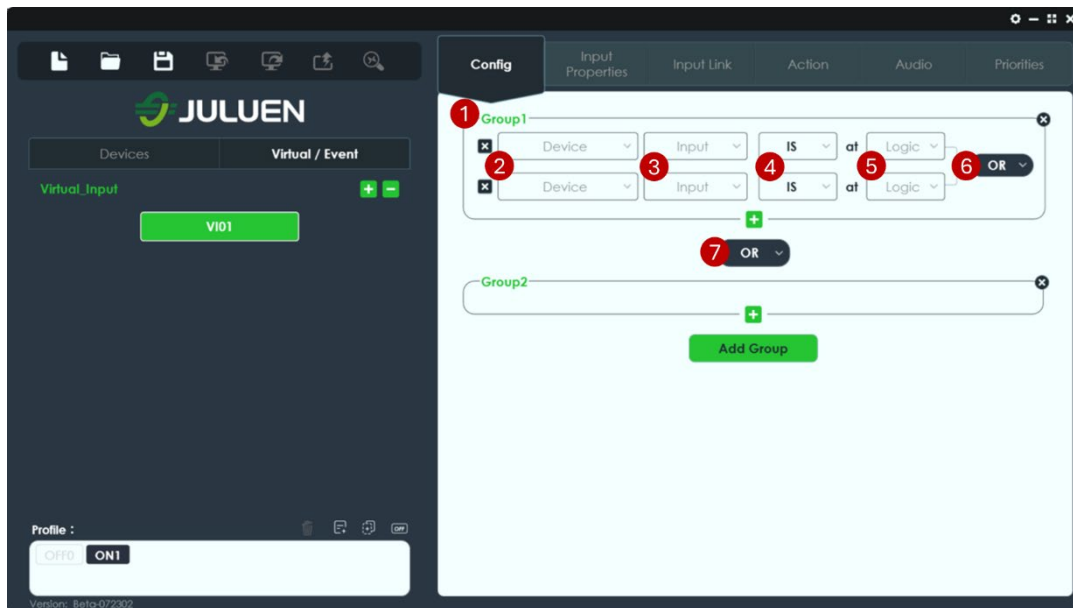


Figure 7-2-1 Virtual Input Config.

1. Logic Group

In the Virtual / Event configuration, users can define **Logic Groups** using up to **four input sources per group**. These inputs and their profile statuses are evaluated together to produce a single **Boolean value** (true or false) based on the defined conditions.

If condition required, user may create more than one Logic Group. Multiple logic groups will be evaluated again to produce the final logical (Boolean) value.

If the final logic value is **true**, the defined logic condition is fulfilled, and the virtual input is triggered. Otherwise, if the value is **false**, the defined logic condition is not met and the virtual input is not triggered.

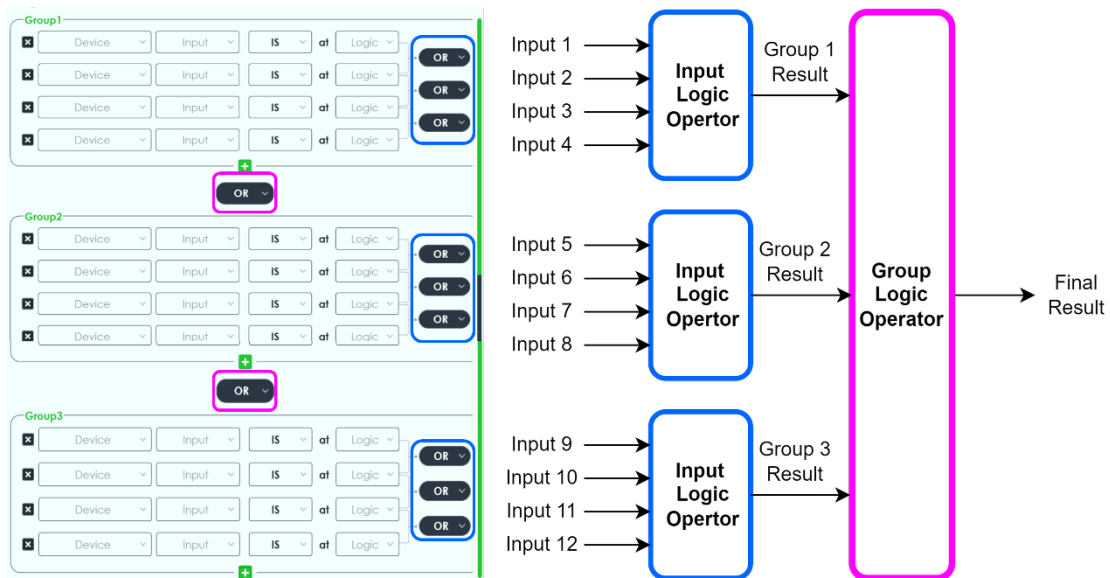


Figure 7-2-2 Concept of Logic group

2. Device

- Select a device from the input source list:
 - Control Panel
 - Main Console
 - Virtual / Event

3. Input

- Choose the desired port:
 - Button from Control Panel
 - Wired input from Main Console
 - Another virtual input

4. Declaration

- [IS]: Positive expression.
- [IS NOT]: Negative expression.

5. At Status

- [OFF0]: at OFF0 profile status.
- [ON1]: at ON1 profile status.
- [ONx]: at ONx profile status.
- [Press]: Input is actively pressed (button or wire)

6. Logic Operator

Select the operator between the inputs:

Operator	Description	Example Result
AND	True only if all inputs are true	A: True, B: True → Result: True
OR	True if any input is true	A: False, B: True → Result: True
NAND	Opposite of AND	A: True, B: True → Result: False
NOR	Opposite of OR	A: False, B: False → Result: True
XOR	True if inputs differ	A: True, B: False → Result: True

7. Group Logic Operator

Same with 6. Input Logic Operator

CHAPTER 8. PRIORITIES

When multiple inputs are activated simultaneously, all active profile actions are executed based on their **priority order**. Actions with **lower priority** will be **overridden** by those with **higher priority**, ensuring that the most important functions take precedence.

It is essential to review and configure priorities carefully to ensure the system operates as intended.

Priority Management

The **Priority** tab displays the current execution order for each input source—including **buttons**, **wired inputs**, and **virtual inputs**—from **highest to lowest priority**.

- A **smaller number** indicates a **higher priority**.
- Click the **priority menu**  to adjust the order as needed.

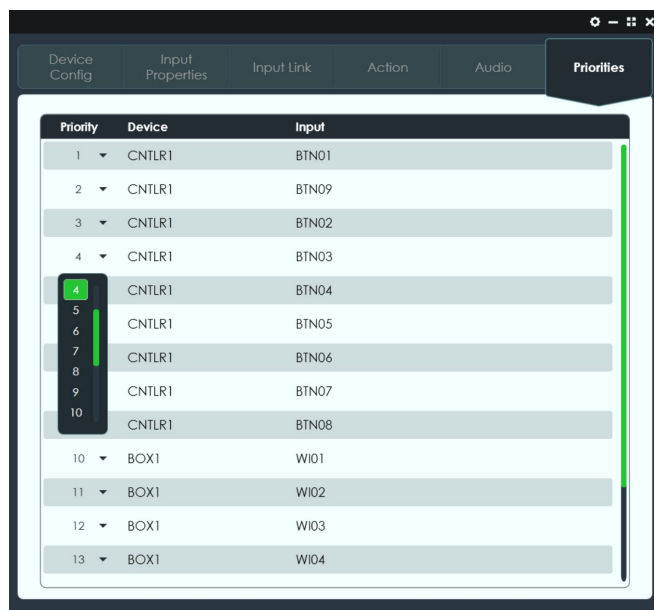


Figure 8-3-1 Priorities

CHAPTER 9. DIAGNOSTIC AND PROTECTION

Clicking the **Diagnostic** icon on the main menu opens the **I/O Dashboard** in a new window. The dashboard automatically scans all connected devices and provides **live updates** on their input and output status.

NOTE: Before activating the I/O Dashboard, ensure that all devices are powered on and the USB cable is properly connected to the master console.

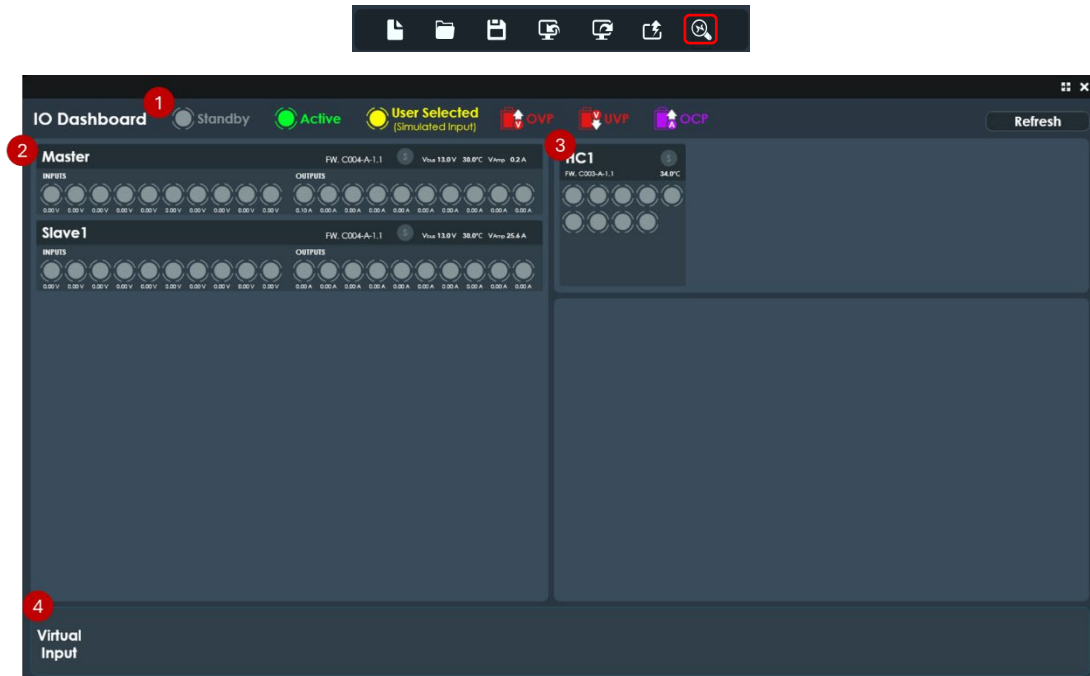


Figure 9-1 IO Dashboard

1. ICONS

#	Icon	Description	Note.
1.		Input/Output inactive or in standby	
2.		Input/Output active (normal operation)	
3.		Simulation signal	
4.		Output abnormal – Overvoltage protection triggered	
5.		Output abnormal – Undervoltage protection triggered	
6.		Output abnormal – Undercurrent protection triggered	

2. Main Consoles Information

- When multiple main consoles are connected, the GUI will display the following information for each device: Firmware version
- Supply voltage
- Device temperature
- Consumption current
- Input status
- Output status

3. Control Panels Information

When multiple control panels are connected, the GUI will display the following information for each device:

- Firmware version
- Device temperature
- Button status

4. Virtual Input Information

When a virtual input is configured and the master console is connected to the PC, the virtual input's status will be displayed in this section.

5. Hardware Indicator

Beside the Diagnostic I/O Dashboard, each hardware device also feature physical Diagnostic LED Indicator:

MAIN CONSOLE UNIT

PWR Status LED

Colour	Display Pattern	Status
Green	Steady	System ON, Normal
Red	Long Single Flash	Over Voltage Protection
Red	Short Single Flash	Over Temperature Protection
Red	Short Double Flash	Under Voltage Protection
Red	Short Triple Flash	Over Current Protection

CAN Status LED

Colour	Display Pattern	Status
Green	Steady	System ON, CAN Communication Normal, Master ID1
Blue	Steady	System ON, CAN Communication Normal, Slave ID2
White	Steady	System ON, CAN Communication Normal, Slave ID3
Amber	Steady	System ON, CAN Communication Normal, Slave ID4
Yellow	Steady	System ON, CAN Communication Normal, Slave ID5
Turquoise	Steady	System ON, CAN Communication Normal, Slave ID6
Red	Long Single Flash	CAN Communication Error

Output Status LED

Colour	Display Pattern	Status
-	Steady	Output Activated
Red	Short Single Flash	Over / Under Voltage Protection
Amber	Short Single Flash	Over Current Protection

Input Status LED

Colour	Display Pattern	Status
Green	Steady	Input Activated

PANEL CONTROLLER

Button Status LED

Colour	Display Pattern	Status	Action Required
-	Steady	System ON, Normal	-
Red	Short Single Flash	Output device Over or Under Voltage Protection	Eliminate possible abnormality and retry the button again.
Amber	Short Single Flash	Output device Over Current Protection	Eliminate possible abnormality and retry the button again.

APPENDIX A

A-1. Flash Pattern List

#	Name	Note:
1	Double-R65	
2	Single-R65	
3	Triple-R65	
4	Quad-R65	
5	Single-SAE	
6	Double-SAE	
7	Triple-SAE	
8	Quad-SAE	
9	Quint-SAE	
10	Mega	
11	Giga	
12	Ultra-SAE	
13	Single-Quad	
14	Single H/L	
15	Single-Triple-Quint	
16	Random	
17	Pulsing (Sinusoidal)	
18	Pulsing (Ramping-cut)	

APPENDIX B

B-1. Siren Tone List

#	Tone Name	Note:
1	Air Horn	
2	Air Horn S06	
3	Air Horn Hi-Lo	
4	Alternate Wail	
5	Comp Phaser (Piercer)	
6	Comp Wail	
7	Comp Yelp	
8	Hi-Lo	
9	Mechanical Wail	
10	Phaser	
11	Wail	
12	Wail Yelp Phaser (Piercer)	
13	Yelp	
14	Austria Ambulance	
15	Austria Fire Brigade	
16	Austria Magistrate	
17	Austria Police	
18	France Ambulance	
19	France Gendarmerie	
20	France Police	
21	France Pompiers	
22	France UMH	
23	Germany Land	
24	Germany Stardt	
25	Italy Ambulance	
26	Italy Police	
27	Italy Wail	
28	Italy Yelp	
29	Netherlands Police	
30	Netherlands Police 2	
31	STD Manual	This tone will ramp up to sustain a specific pitch until released (stops immediately)
32	Belgium Hi-Lo	
33	Belgium Brussels	
34	Mute	Mute the Siren when played.

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