HDL®

User Manual

Logic Timer Module

SB-DN-Logic960

buspro

www.hdlautomation.com

Document updates:

Version	Date	Description
V1.0	2015.01.26	Finish new document

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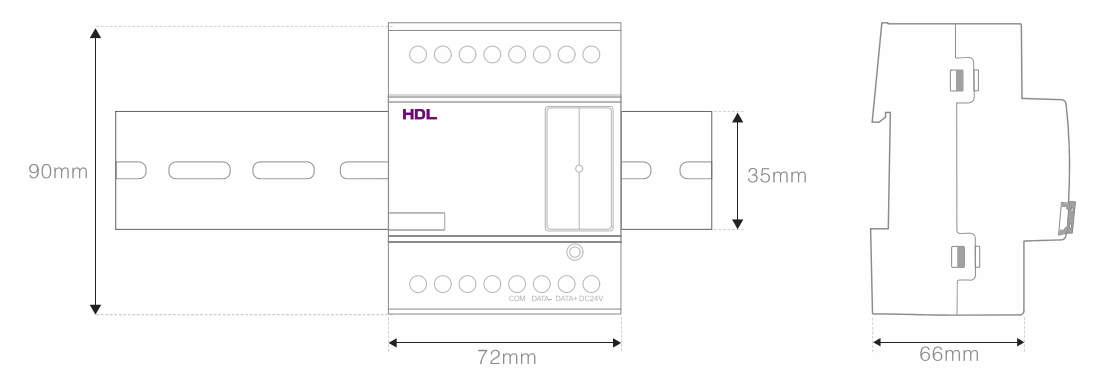
1. Overview

1.1 General Information

1.1.1 Description

HDL SB-DN-Logic960 is an intelligent programmable logic controller. The module is able to automatically control scenes, channel status, input status, date, time, etc. The SB-DN-Logic960 also has AND, OR, NAND and NOR logic blocks that can be used for a variety of applications. With the modules real time clock, schedules can also be created.

1.1.2 Mounting

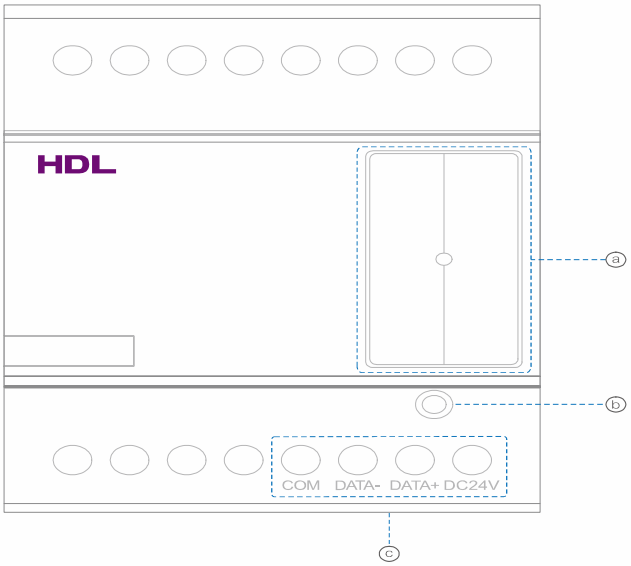


- Standard 35mm Din Rail Installation
- Inside Distribution Box(DB)

1.2 Functions

- Supports 12 logic groups with each group having 20 logic tables.
- Each logic table can set 4 logic input conditions and 20 input targets.
- Logic input conditions are as follows: time, date, year, week, scene working status, external device input status, wall panel status, and security status.
- The supported logic relations are: AND, OR, XOR, NAND

1.3 Device Description



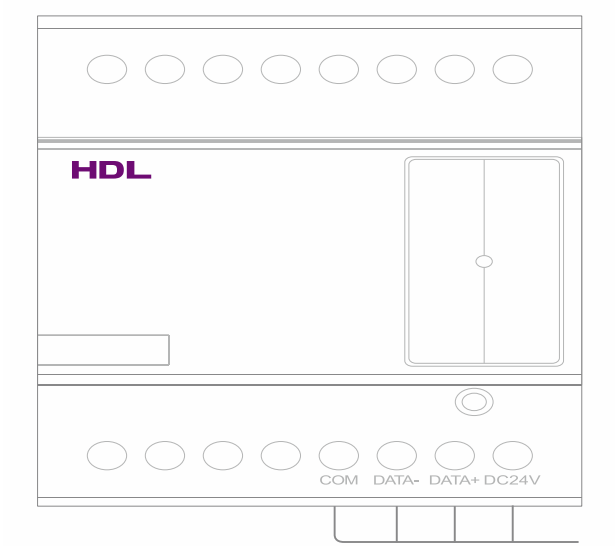
a. LED indicator
b. Programming button
c. HDL Buspro interface

2. Technical Data

Electric Parameters	
Bus power	DC12~30V
Bus power consumption	15mA/DC24V
Environmental Conditions：	
Working temperature	-5℃~45℃
Working relative humidity	Up to 90%
Storage temperature	-20℃~+60℃
Storage relative humidity	Up to 93%
Approved	
CE	
RoHS	
Production information	
Dimensions	72×88×66 (mm)
Installation	35mm Din Rail installation
Protection degree	IP20

3. Wiring

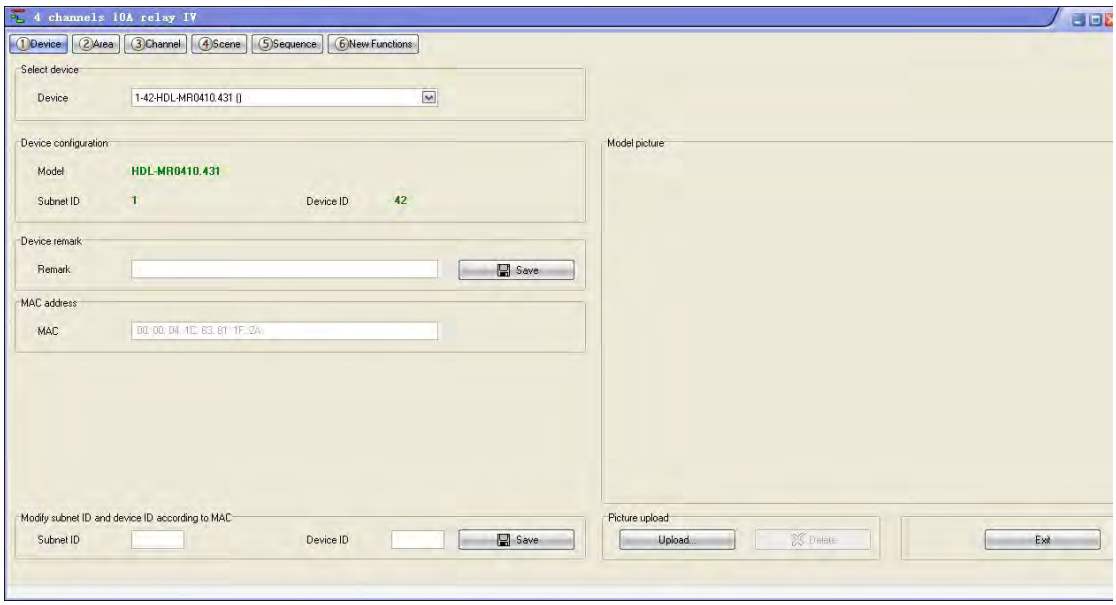
Please strictly follow the wiring diagram shown below.



HDL Buspro

4. Software Configuration

4.1 Basic settings



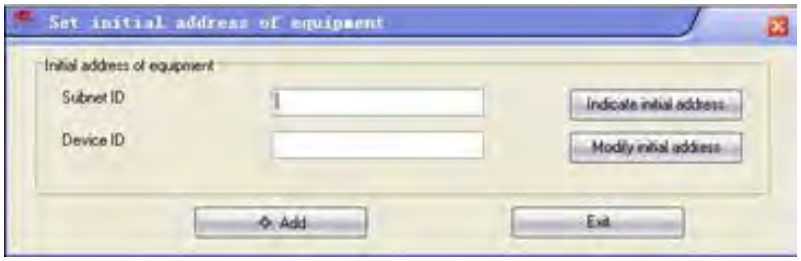
4.1.1 Changing the device ID

Every HDL-BUS device has one Subnet ID, and one Device ID. The device ID should be

unique in its subnet, and be kept consistent with the Gateway (typically the SB-DN-1IP or HDL-MBUS01IP.431).

Method One:

1. Open the HDL-BUS Pro Setup tool software.
2. Press the programming button for 3 seconds, the LED status indicator will then turn red.
3. Using the software, click the “Address management” tab, and select the “Modify address (when device button is pressed)”, the window shown below will then appear:



4. Click on “Indicate initial address”, the device ID will then be shown. If you wish to change the address, enter your modification and click “Modify initial address”. Clicking on the “+Add” tab will include the device in the online devices list.

Method Two:

1. Open the HDL-BUS Pro Setup tool software.
2. Click the search button, and a new window will appear. From this window click “Search the online devices”, then click the “Add all” tab. The device will then be included in the online devices list.

4.1.2 Remark

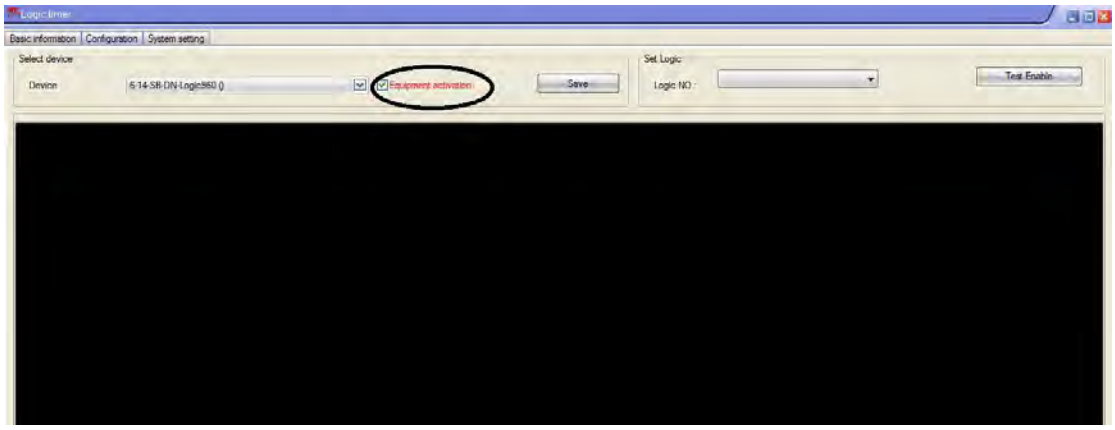
It is recommended that you name the module in order to differentiate it from other similar devices.

4.2 Configuration

As previously mentioned, the logic module is used to automate other HDL modules. In the following units setting up a logic table with input conditions will be explained.

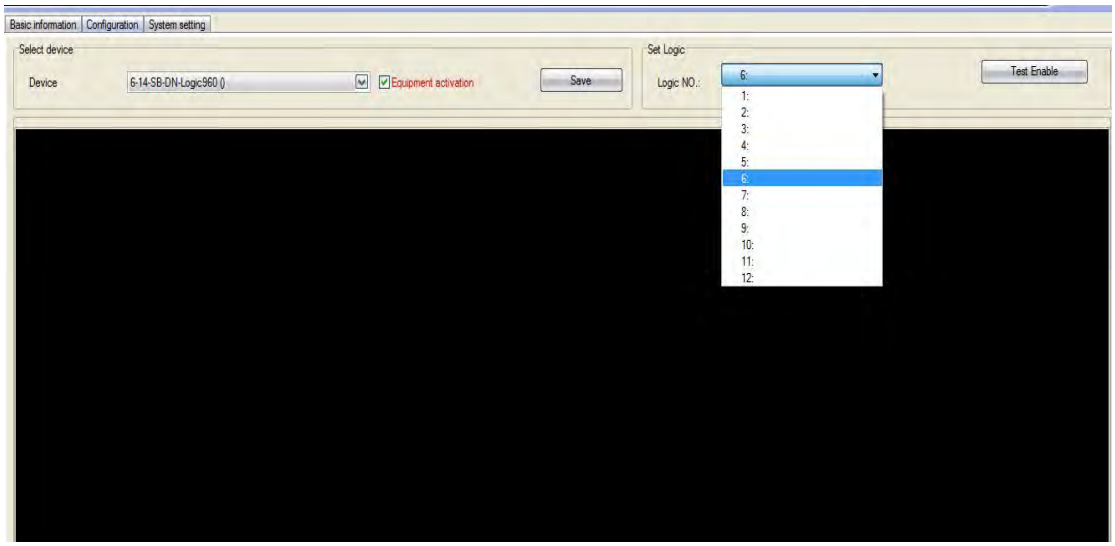
4.2.1 Equipment activation

If the Equipment activation tick box remained unchecked, then the logic module will be disabled.



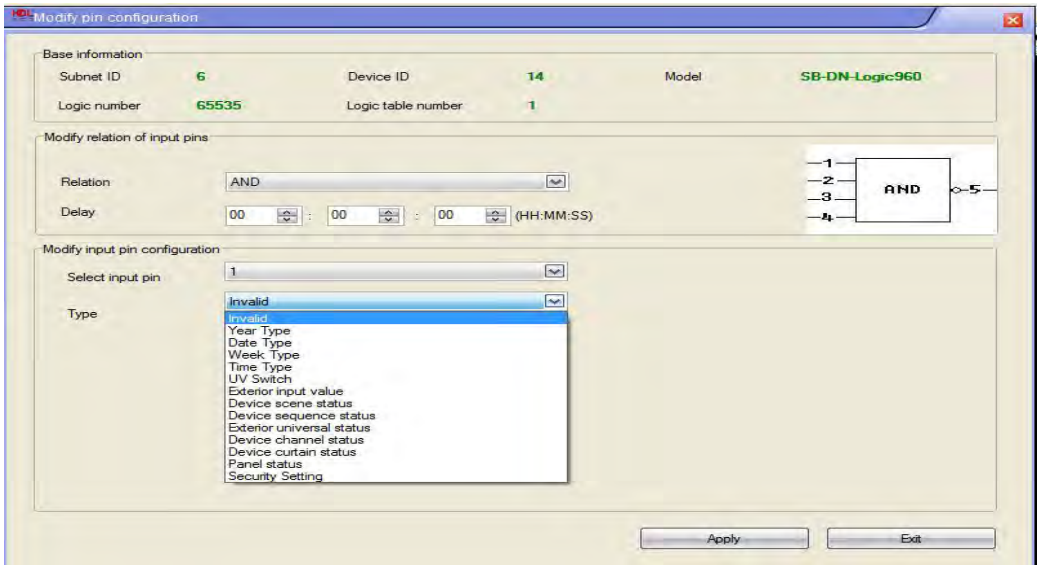
4.2.2 Input conditions

It is necessary to first select a logic table from the “logic No” drop down box, after this is done clicking on the black area will start the configuration. A logic relation (AND, OR, XOR, NAND) must be selected according to your requirements.



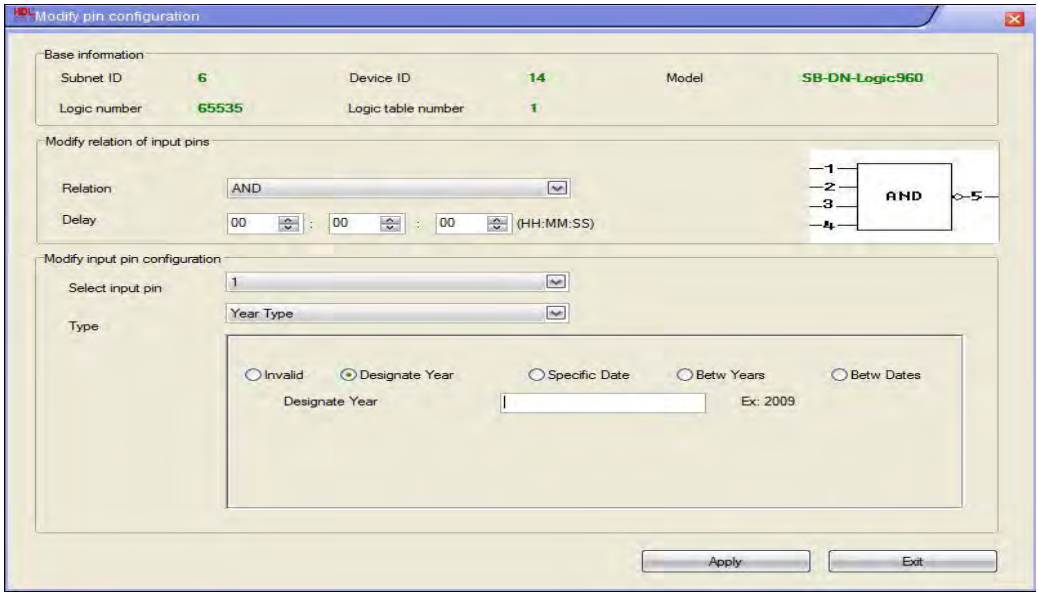
The logic module is an adaptable and flexible automation device, as such there are multiple input conditions that can be used to achieve different logic states. Each logic table can have a maximum of four input conditions.

Below the four logic inputs are explained:



a) Year type:

This input enables the specific year, date, or between years and dates to be selected.



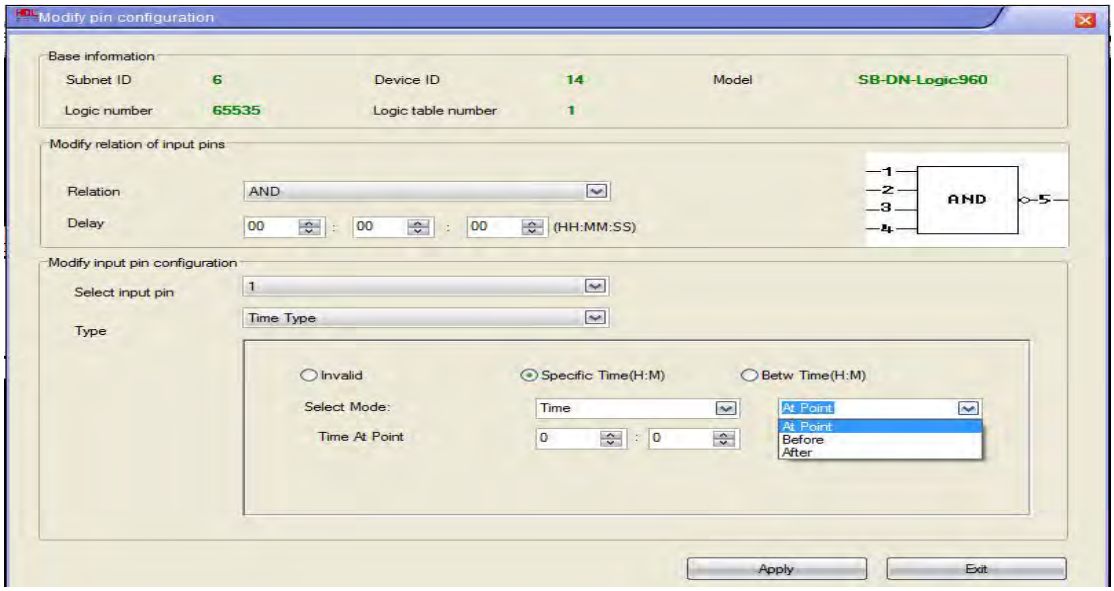
b) Date type: This input allows the date with and month to be specified.

Options:-

-At date point: Select or designate a specific date for example: June 4th

-Date period: Select the date or time interval, for example: Oct 7th-Nov 30th

-Every month: Select this to apply the settings to the whole year.



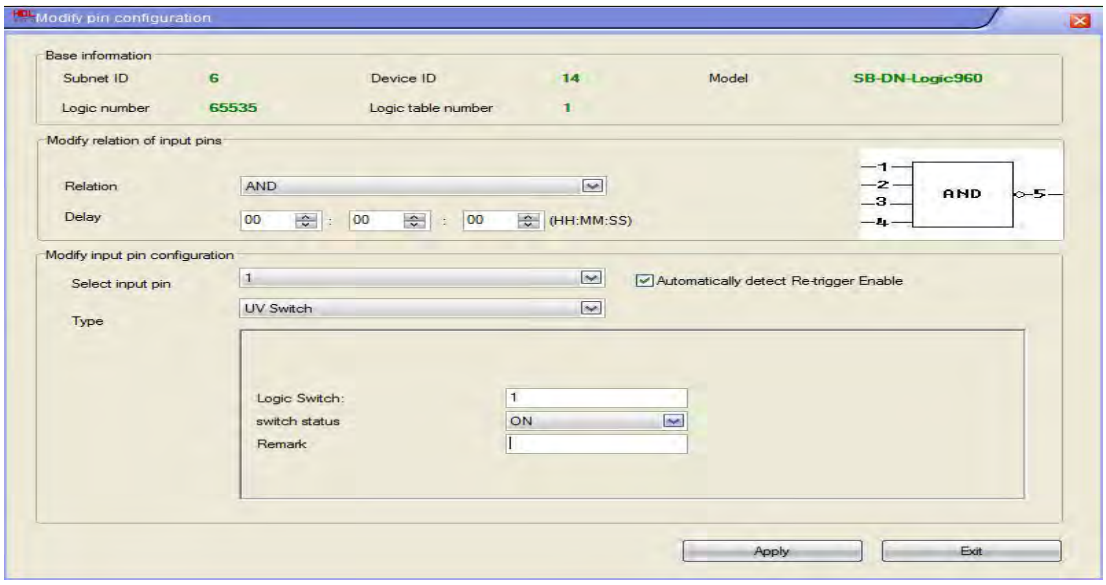
c) Week type: Select a specific day of the week, or between weekdays (from one specific day to another) e.g.: Monday- Friday

d) Time type: Select a particular time of day, or before and after a specific time.

-specific time: select a particular time, you can also set the specific time as sunrise or sunset (you need to set the time for sunrise and sunset on the system settings tab)

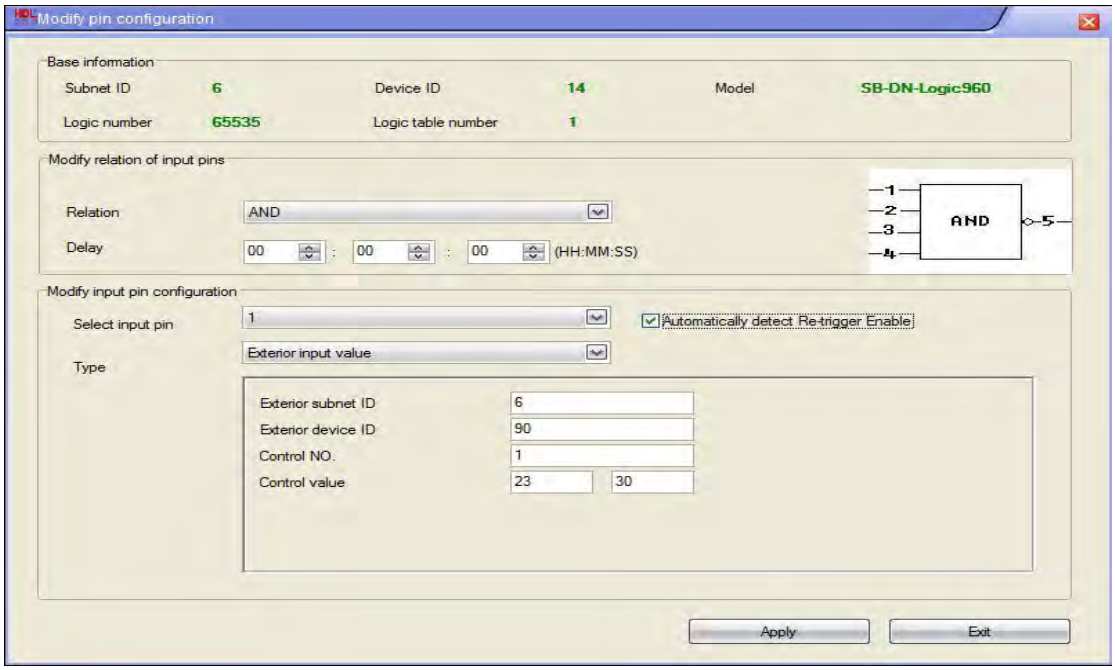
e) Universal switch:

Enables general communication between all modules, some devices can send out a UV switch to the logic module, allowing a UV switch to be used as an input condition.



f) Exterior input value

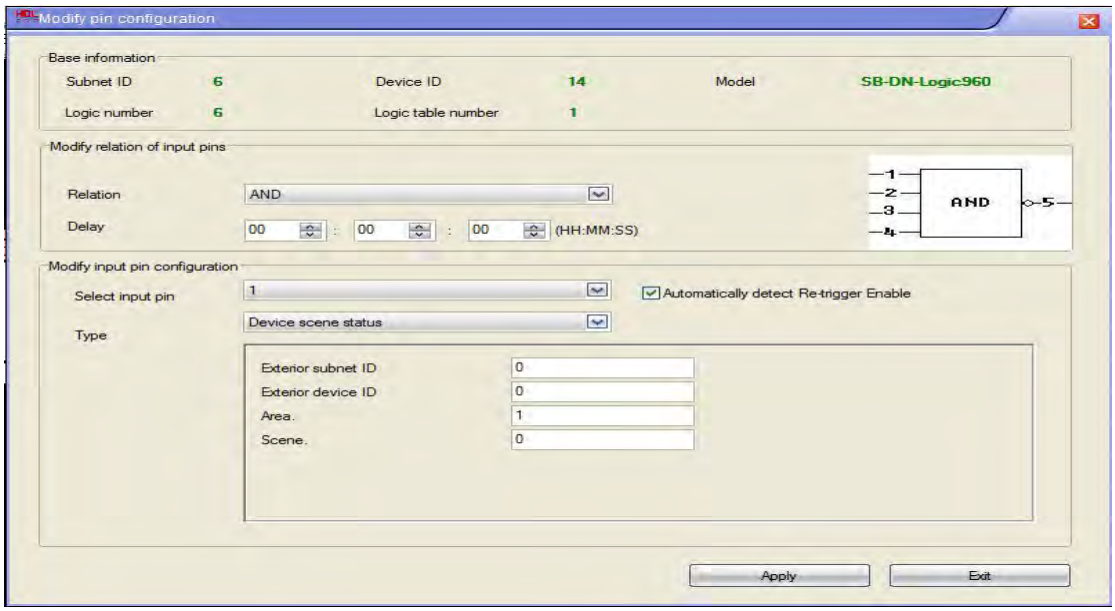
This function allows the detection of an output value, currently it is solely used for temperature.



g) Device scene status:

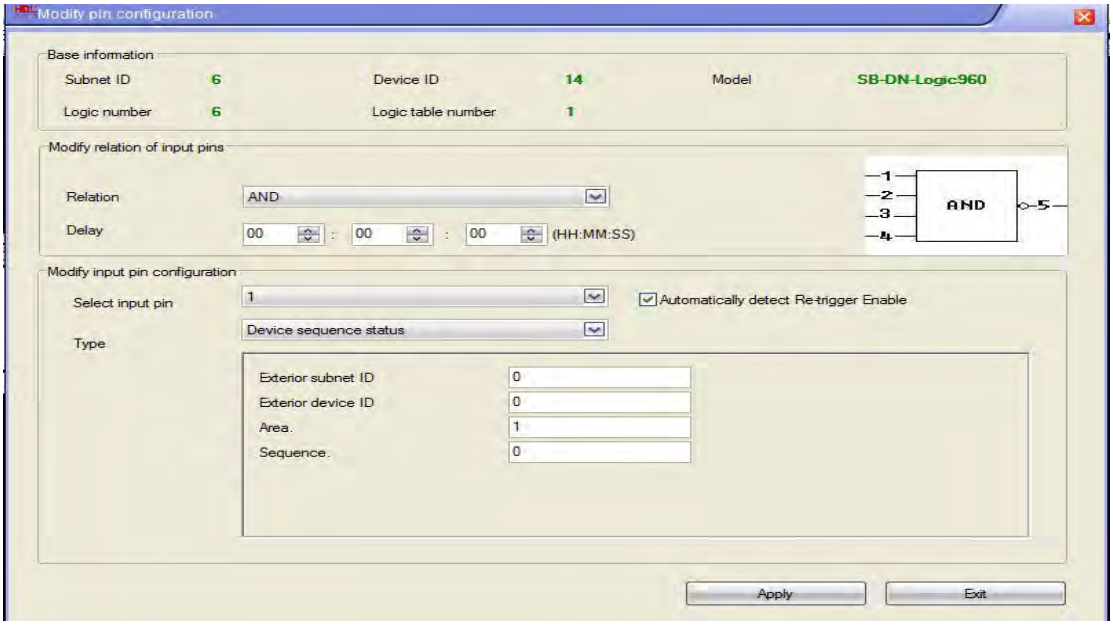
The device scene status enables the scene status from a dimmer or relay to be used as a logic condition. This allows a target to be triggered when a scene is being triggered.

- Enter the subnet/device ID of the target module, as well as the area and scene number.



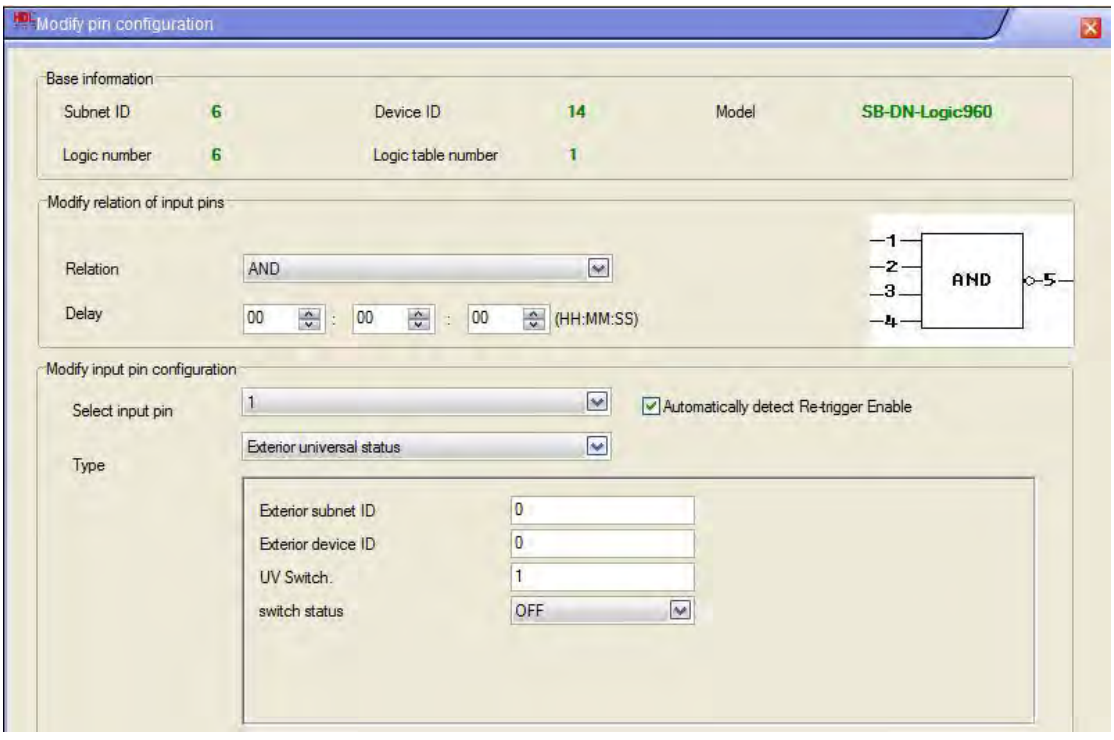
h) Device sequence status:

The dimmer and relay sequence status can be set as a logic condition, This allows a target to be triggered when a sequence is being triggered.



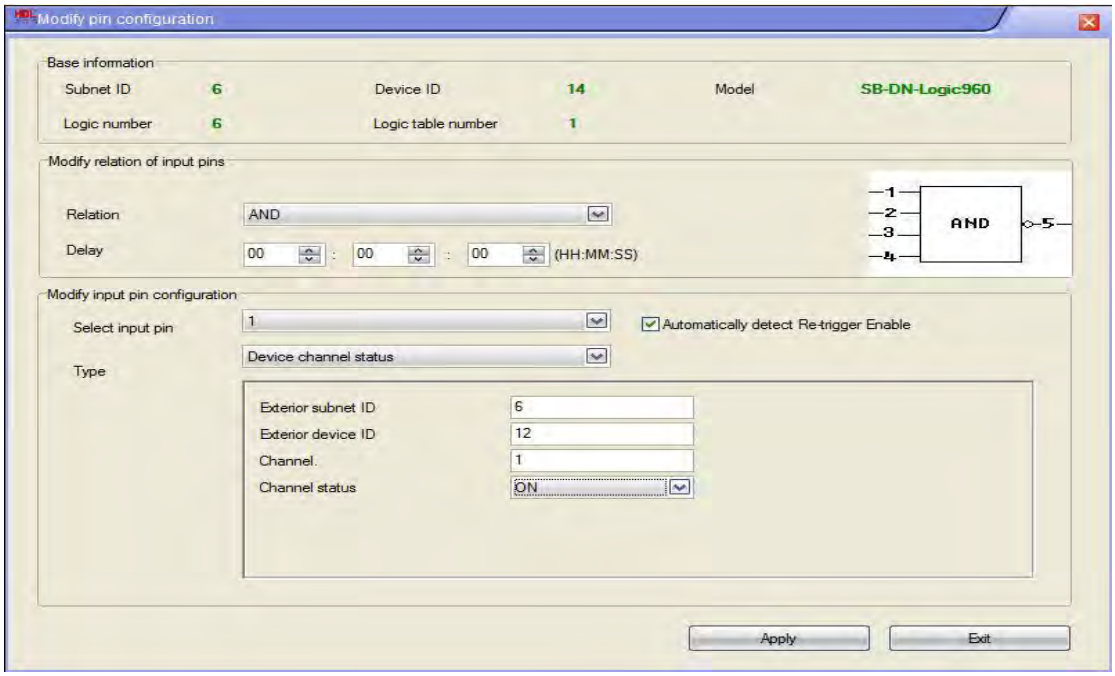
i) Exterior universal status:

This allows the monitoring of an external universal switch, and the sending of commands according to the UV switch status.



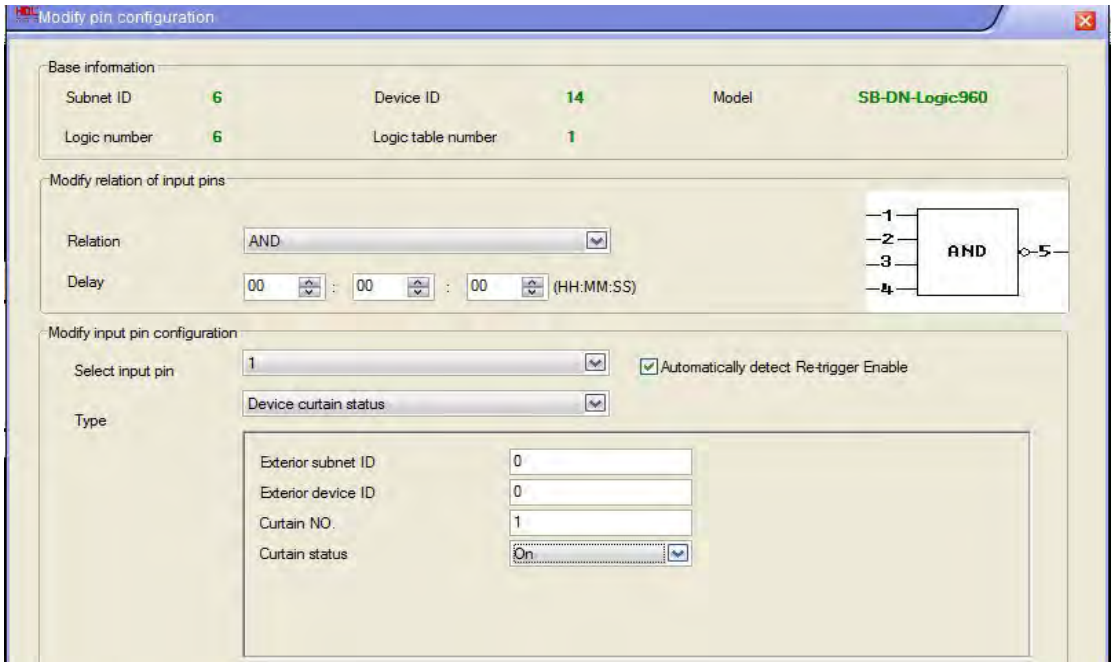
j) Device channel status:

This is used to read the dimmer/relay channel status, when the channel is ON or OFF a logic command can be sent to trigger a target.



k) Device curtain status:

The curtain status can be used as a logic condition, this enables a target to be triggered when the curtain is ON or OFF.

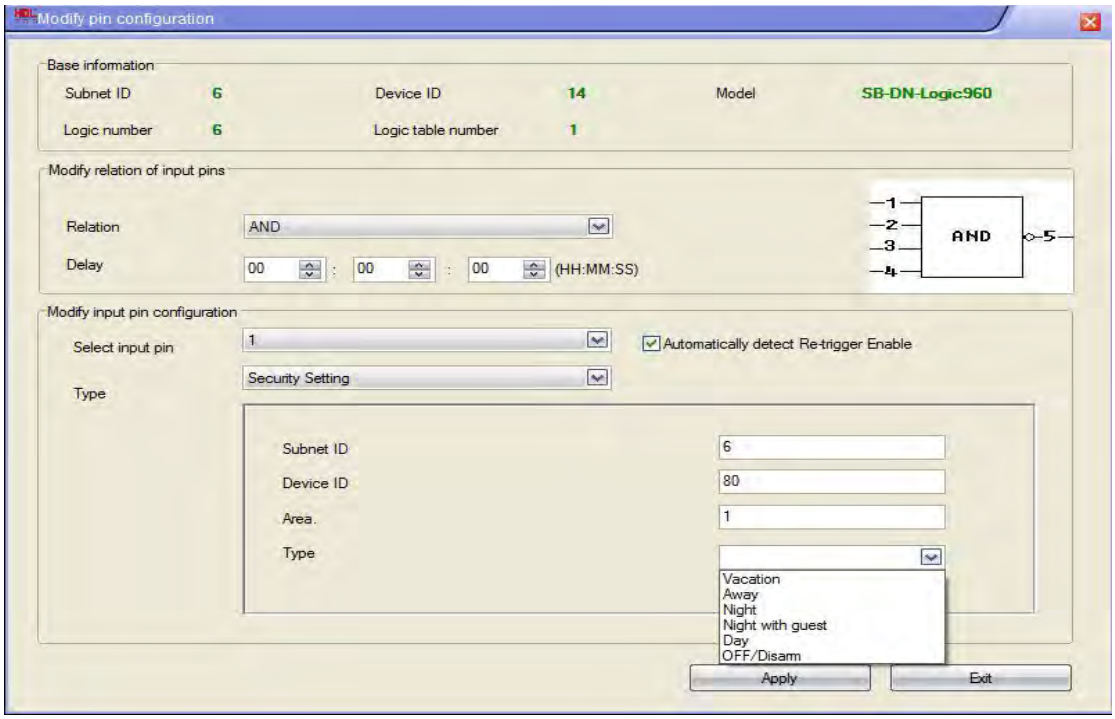


l) Panel status:

The logic module can read the status of the panel, among the features it can monitor are IR status, lock status, temperature status, and AC mode.

m) Security settings:

This is to read the status of the security module arming situation.



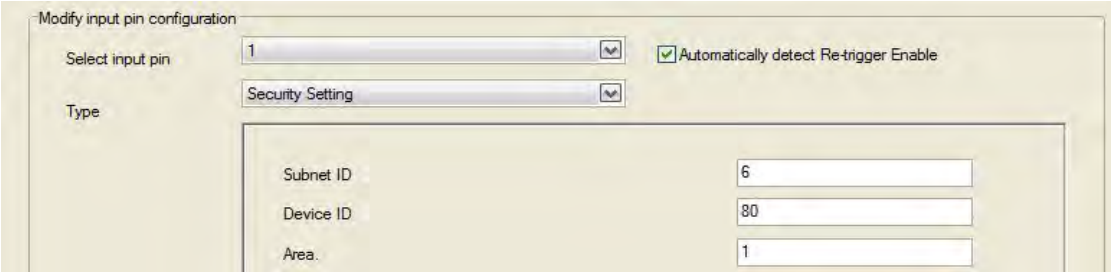
4.2.3 Additional settings

a) Setting a time delay

If a time delay has been set, and a trigger is activated, the output will be delayed according to the delay time set in the logic table.

b) Automatically detect re-trigger enable

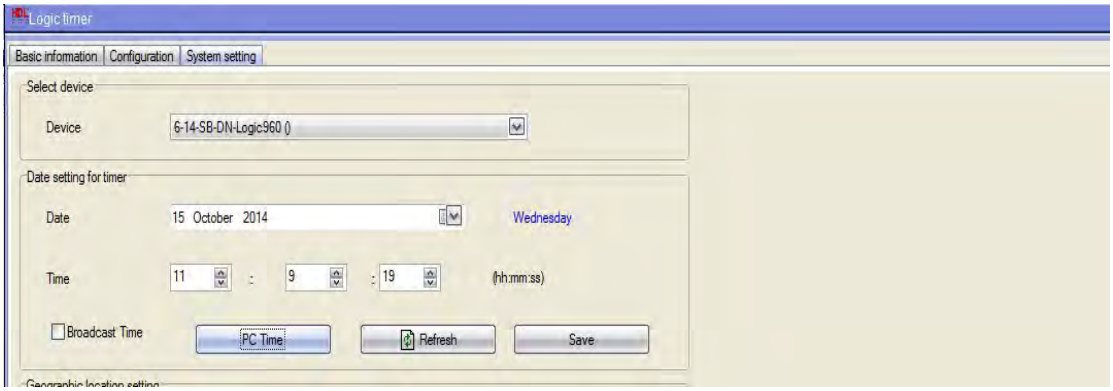
If this option is selected it will enable the logic module to re-trigger the target after it receives a command, no matter the target is already triggered or not.



4.3 System settings

4.3.1 Setting the timer

The logic module must be configured with the correct time and date; this can be done automatically via a PC by simply clicking on “PC time” and then clicking “save”. The correct date and time is essential as they are used as the standard time settings for functions that require a date and time signal.



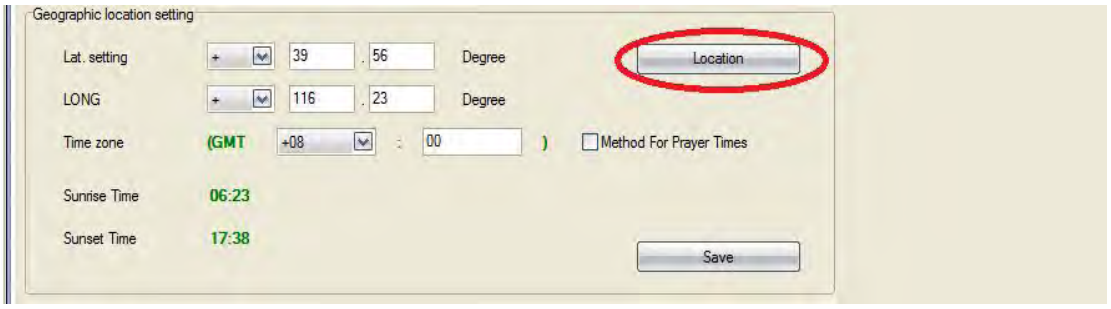
- The date and time settings from the logic module can also be broadcast to other devices in the HDL Buspro network; this is made possible by simply ticking the “Broadcast Time” check box.

4.3.2 Geographic location settings

The geographic location of the module can be set in two ways. Firstly, the latitude and longitude can be input manually, and secondly the “Location” can be selected from a list of countries and their major cities.

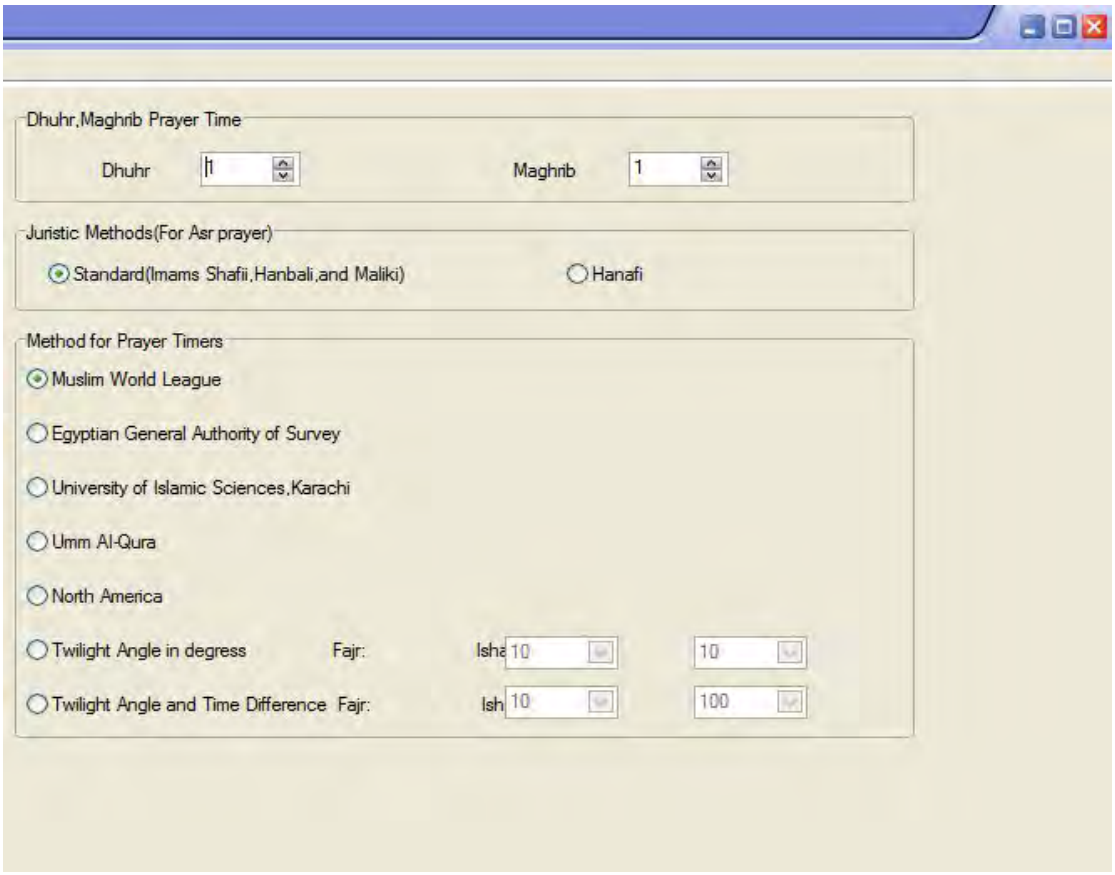
Accurately inputting the location is essential as it enables the system to calculate the

sunrise and sunset times.



4.3.3 Call to prayer

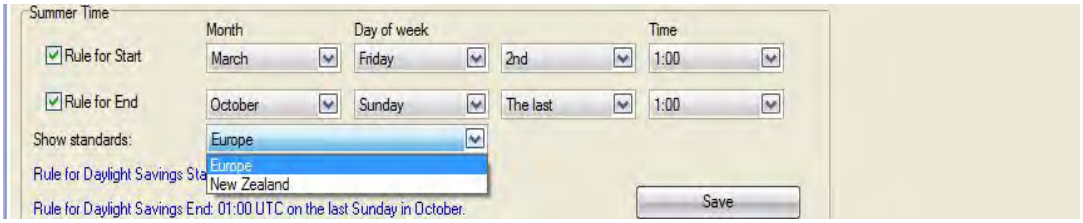
Due to the differing methods employed to determine the Adhan, you can set the prayer times method according to your country here.



4.3.4 Summer time settings

Due to some countries using summer time settings, the module is programmed to take

into account the country it is located in to provide an accurate time. An end user needs only to input their region to ensure 'local time' is implemented.



5. Applications

5.1 Application 1 – Irrigation scheduling

Requirement

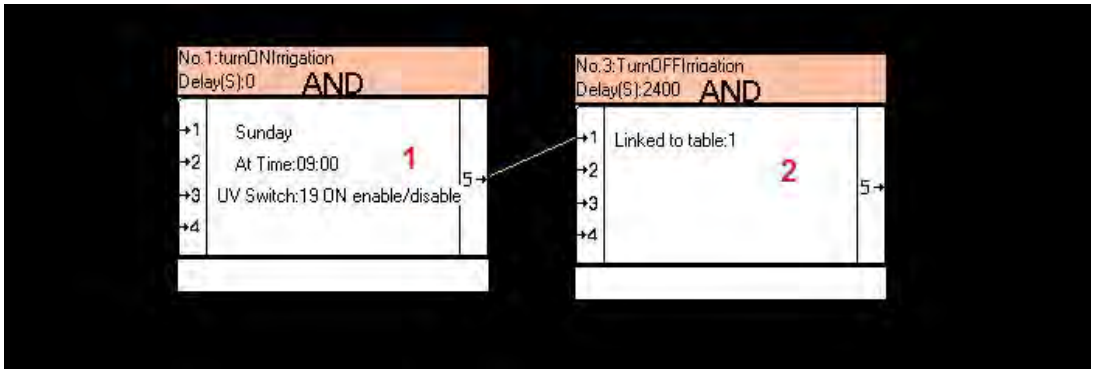
If for instance a user wished to turn on their irrigation system at 9 am every Sunday for 40 minutes they would follow the below example.

Note

The end user is able to disable or enable the logic schedule by simply pressing a button.

The relay module via a relay channel controls the water valve.

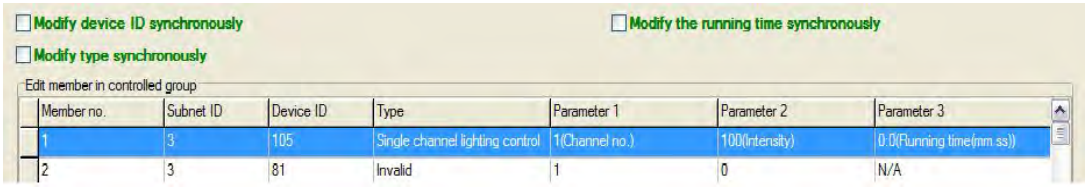
Configuration – Logic module



Logic (1):- There are three conditions:

1-week type (Sunday), 2-time type (9am) and 3- UV (19) should be ON,

Target (output):- The target relay must set as ON



Logic (2):-

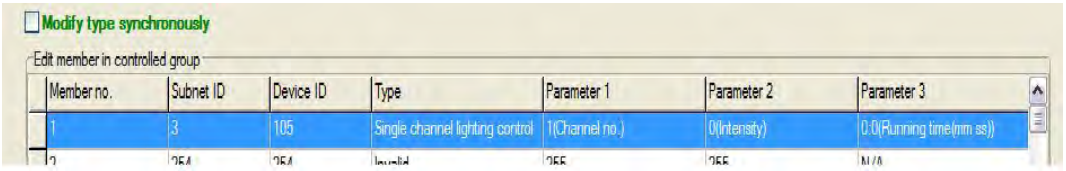
Logic 2 is linked with logic 1, to enable logic 2 a user should:

a) Right click on logic(1) and select " confirm start point"

then

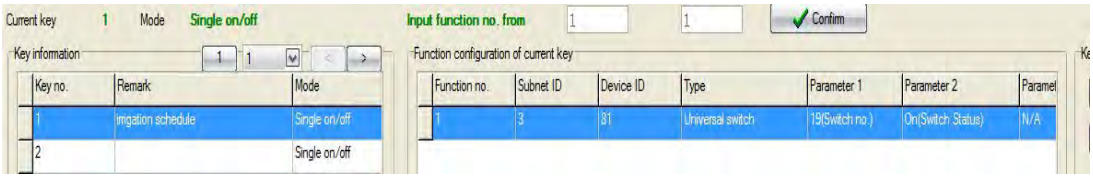
b) Right click on Logic(2) and select "confirm end point"

Target (output):- The target must be set as OFF



Panel configuration –

A user should assign one button to send the specified UV switch to the logic module, this allows the panel to enable or disable the schedule. To do this the mode should be set as Single ON/OFF.



5.2 Application 2 – Birthday remainder

Requirement: A user wishes to set a reminder

If a user wishes to set a reminder for birthdays or other special occasions, a voice reminder can be given by the SB-Z-Audio or HDL-MZBOX.20.

Note

The voice reminder files must be in .mp3 format, and should be put on the SD card in a folder named “special”.

As an example of the naming system used for files, below are three examples:

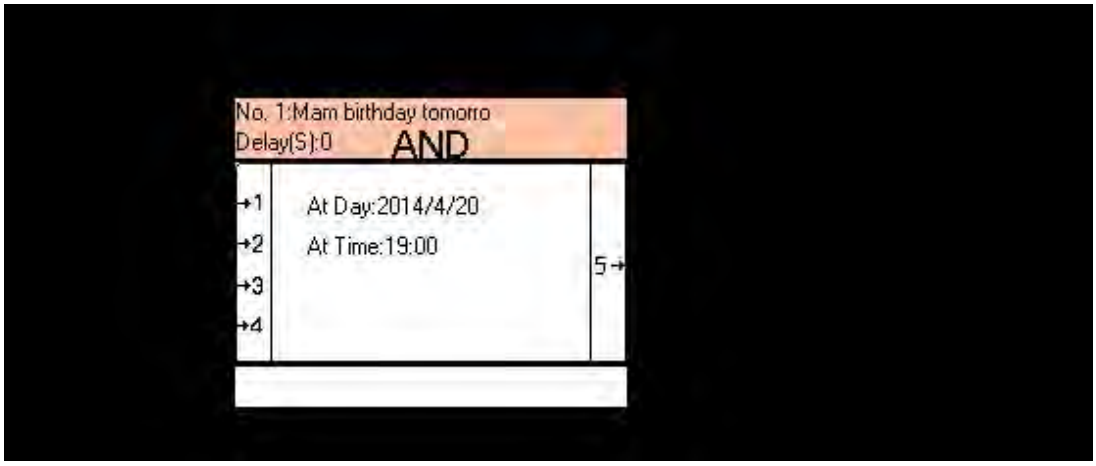
- 015 birthday-grandma.mp3
- 016 birthday-me.mp3
- 017 birthday-wife.mp3

If the universal switch number is 20815015, then:

- 208 is to select the SD card
- 150 is to select the folder “special”
- 15 is to select “015 birthday-grandma.mp3”

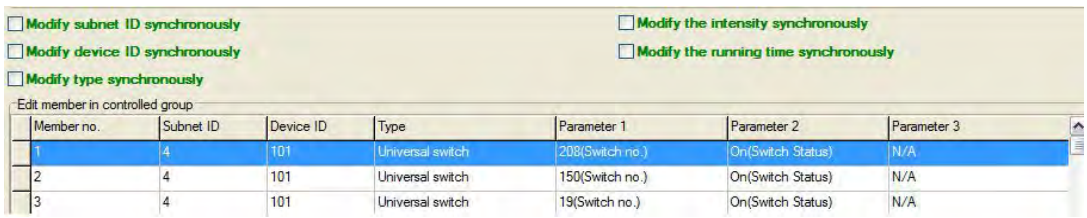
For more information concerning the Universal Switch, please refer to the “Z-Audio list.pdf”. ftp://59.41.255.150/HDL-BUS/HDL-BUS%20Products/SB-Z-Audio/

Configuring the Logic module



Set the pin as “year type”, then select “specific date”.

Target (output):-



5.3 Application 3 – Cooking timer

Requirement- A user wishes to time a specified event

Multiple timers can be set using the logic 960 module, the timing of 1 minute, 3 minutes, 5 minutes, 10 minutes and 30 minutes is possible. When the countdown reaches 30 seconds, an mp3 voice file will countdown the remaining time.

Note

The countdown voice file must be in .mp3 format, and should be mounted on the SD card in a folder named “special”.

As an example of the naming system used for files, below are three examples:

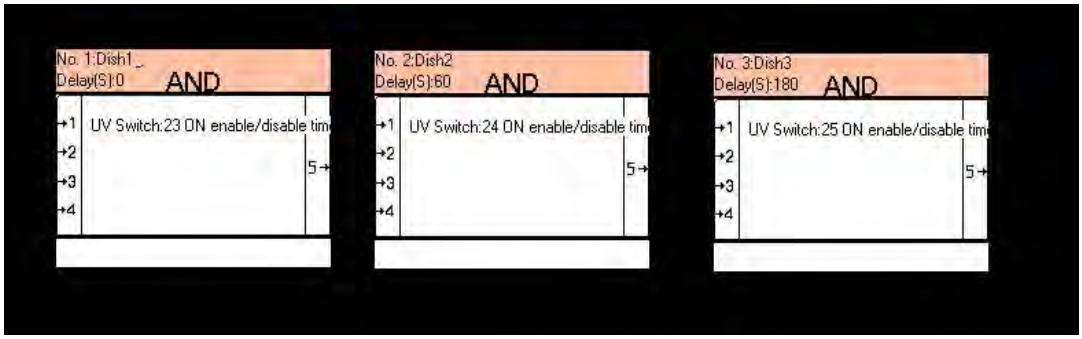
- 019 timer-1m.mp3
- 020 timer-3m.mp3
- 021 timer-5m.mp3

If the universal switch number is 20815019, then:

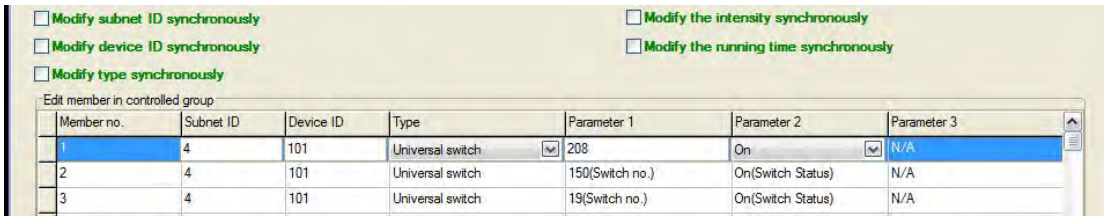
- 208 is to select SD card,
- 150 is to select the folder “special”
- 19 is to select “019 timer-1m.mp3”

For more information concerning the Universal Switch, please refer to the “Z-Audio list.pdf”. ftp://59.41.255.150/HDL-BUS/HDL-BUS%20Products/SB-Z-Audio/

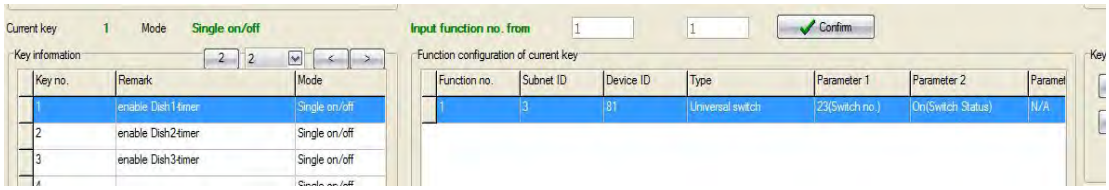
Configuring the logic module



Target (output)



Configuring the panel



5.4 Application 4 - Wake up scene

Requirement- Alarm clock

If a user wishes to wake up every weekday at 8 am, and every weekend at 10 am, the system can be programmed to open the curtains and play a specific song.

The end user is able to enable/disable the wake up scene the night before it is scheduled, and stop the music with a press of a button.

Note

The song used by the alarm must be in .mp3 format, and should be mounted on the SD card in a folder named “special”.

An example of the naming system that must be used is “025 wakeup.mp3”.

To activate the alarm song the universal switch number must first trigger it. If the universal switch number is 20815025, then:

- 208 is to select the SD card
- 150 is to select the folder “special”
- 25 is to select “025 wakeup.mp3”

For more information concerning the Universal Switch, please refer to the “Z-Audio list.pdf”. ftp://59.41.255.150/HDL-BUS/HDL-BUS%20Products/SB-Z-Audio/

Note:-

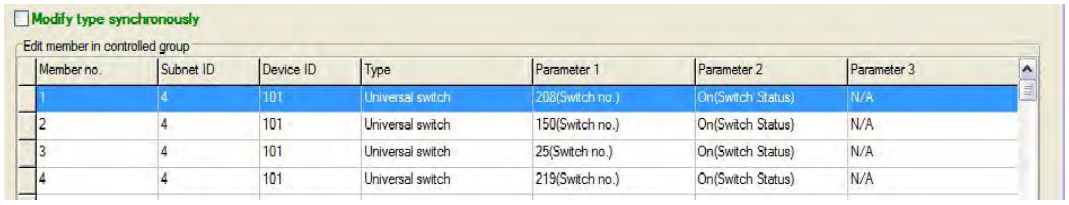
215 to 224 is for volume control, minimum to maximum, respectively.

Each table/scene has three conditions:

a) Week type (between weekdays) b) time type (specific time) c) UV switch

The tables can be connected to the first table; this enables a delay to be set which can increase the song volume gradually.

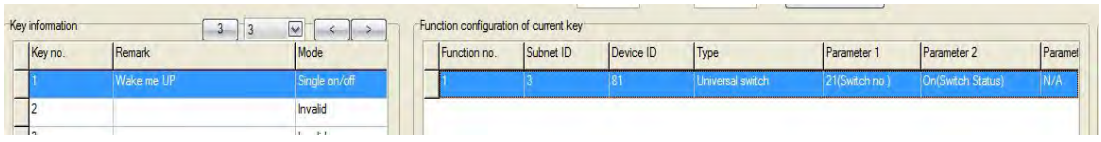
Targets (output):-



This is for the first table; it causes the starting volume to be “voice28” UV-219,

Configuring the panel

Using the panel users are able to send the UV switch command to the logic module to enable/disable the scene.

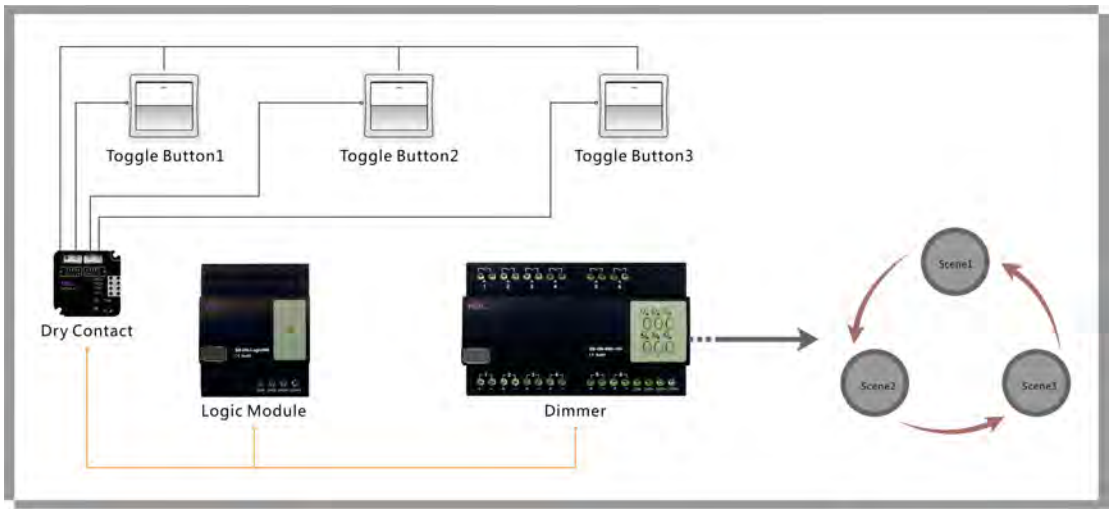


5.5 Application 5 – Triggering the next scene when a switch is toggled

Requirement- Triggering a scene

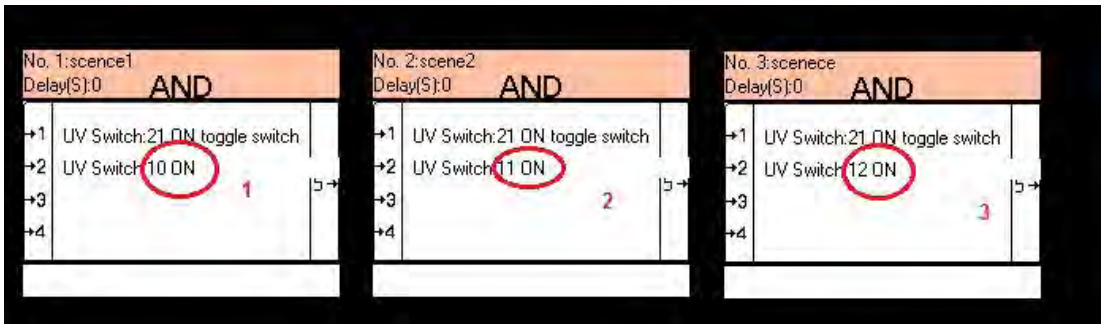
Existing switches can be used to trigger the dimmer scenes. To do so a switch should be turned on or off, this will then activate the next scene.

>Switch toggled -> scene2 -> Switch toggled -> scene3 -> Switch toggled -> scene1…



Configuring the logic module

Setup the logic tables with the desired outputs, each logic should have two pins (two conditions), and both of them should be set as the UV switch.



N.B:- The “Automatically detect re-trigger enable” option should be ticked (selected) in each logic table

Targets (output)

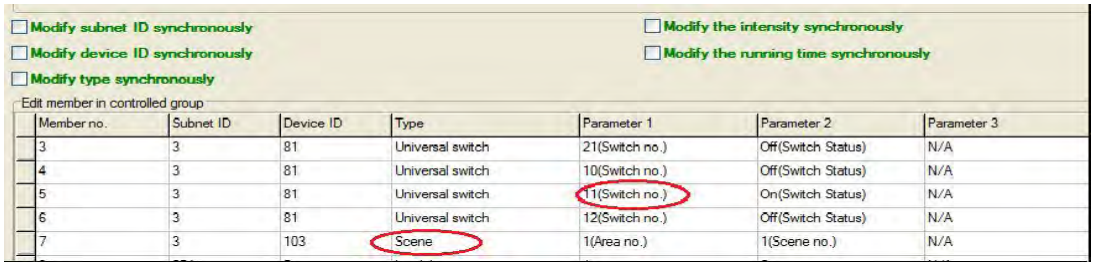
Each logic table will send the following:

a) OFF command to UV-switch (21) {common UV switch for all the three tables}…

b) ON command to the next table (UV switch) and off to the other 2 tables

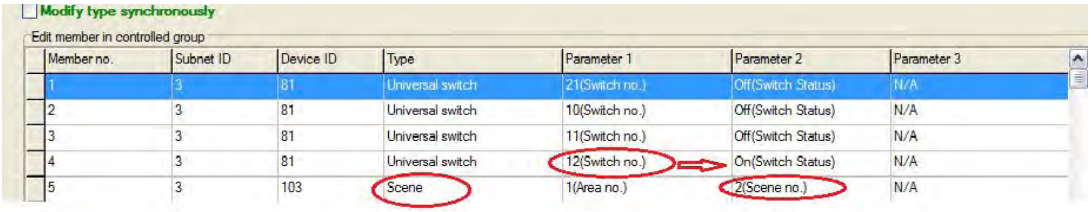
c) Also turn ON a specific scene…

Below the output from table 1 is shown.



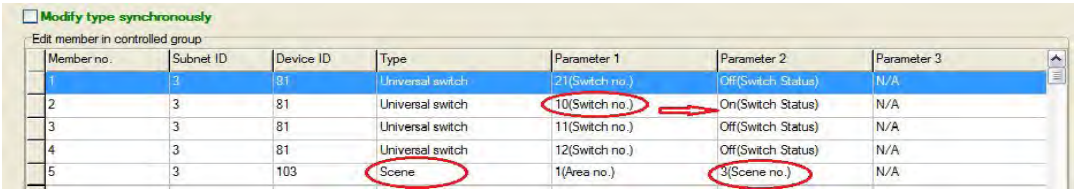
Member no.	Subnet ID	Device ID	Type	Parameter 1	Parameter 2	Parameter 3
3	3	81	Universal switch	21(Switch no.)	Off(Switch Status)	N/A
4	3	81	Universal switch	10(Switch no.)	Off(Switch Status)	N/A
5	3	81	Universal switch	11(Switch no.)	On(Switch Status)	N/A
6	3	81	Universal switch	12(Switch no.)	Off(Switch Status)	N/A
7	3	103	Scene	1(Area no.)	1(Scene no.)	N/A

Table **(2)** output



Member no.	Subnet ID	Device ID	Type	Parameter 1	Parameter 2	Parameter 3
1	3	81	Universal switch	21(Switch no.)	Off(Switch Status)	N/A
2	3	81	Universal switch	10(Switch no.)	Off(Switch Status)	N/A
3	3	81	Universal switch	11(Switch no.)	Off(Switch Status)	N/A
4	3	81	Universal switch	12(Switch no.)	On(Switch Status)	N/A
5	3	103	Scene	1(Area no.)	2(Scene no.)	N/A

Table **(3)** output



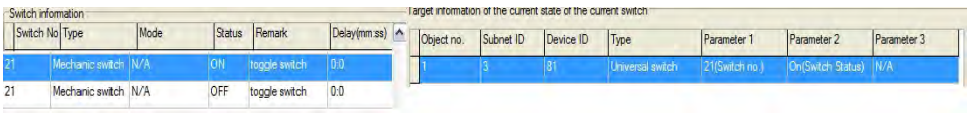
Member no.	Subnet ID	Device ID	Type	Parameter 1	Parameter 2	Parameter 3
1	3	81	Universal switch	21(Switch no.)	Off(Switch Status)	N/A
2	3	81	Universal switch	10(Switch no.)	On(Switch Status)	N/A
3	3	81	Universal switch	11(Switch no.)	Off(Switch Status)	N/A
4	3	81	Universal switch	12(Switch no.)	Off(Switch Status)	N/A
5	3	103	Scene	1(Area no.)	3(Scene no.)	N/A

Configuring the dry contact

The dry contact uses three switches (channels) to send commands to the logic module, via the UV switch. In the example UV(21) is set, this means that the dry contact can send commands to all three tables because they all share the designation UV(21).

N.B:-

Two mechanical switches should be used, one mechanical switch for ON and one mechanical switch for OFF. The output UV switch status from both should be ON.



Switch No	Type	Mode	Status	Remark	Delay(mm:ss)
21	Mechanic switch	N/A	ON	toggle switch	0:0
21	Mechanic switch	N/A	OFF	toggle switch	0:0

Object no.	Subnet ID	Device ID	Type	Parameter 1	Parameter 2	Parameter 3
1	3	81	Universal switch	21(Switch no.)	On(Switch Status)	N/A

6.NOTES