CTL-ENOC-XX User's Guide

www.inventronics-co.com **Tel: 86-571-86632260** **Fax: 86-571-86601139** **sales@inventronics-co.com**

Content

Introduction

What is CTL-ENOC-XX?

CTL-ENOC-XX is a 0-10V wireless dimmer compatible with EnOcean wireless switches and sensors. It receives a signal from the wireless switch or sensor and converts it to a 0-10V dimming signal that you can use to control an LED Driver with 0-10V dimming interface. CTL-ENOC-XX is designed and manufacted by Inventronics. It is compatible with EnOcean ultra low power wireless protocol.

What is EnOcean Technology?

The basic idea behind the innovative technology stems from a simple observation: where sensors capture measured values, the energy state constantly changes. When a switch is pressed, the temperature alters or the luminance level varies. All these operations generate enough energy to transmit wireless signals. Instead of batteries, EnOcean consequently uses miniaturized energy converters to supply power: linear motion converters, solar cells and thermal converters. These allow wireless operation in very different surroundings. Intelligent software stacks enable straightforward and simple integration of EnOcean technology in a large variety of user applications.

The EnOcean wireless signal uses the 868 MHz, 902 MHz, 928 MHz and 315 MHz frequency bands, making it suitable for use worldwide. Telegrams are just one millisecond in duration and are transmitted at a rate of 125 kilobits per second. Plus, to eliminate transmission errors, a telegram is repeated twice in the space of 30 milliseconds. Data packets are transmitted at random intervals, so the probability of collision is extremely small. The range of EnOcean wireless sensors is about 300 meters in the open and up to 30 meters inside buildings. Each EnOcean module comes with a unique 32-bit identification number to exclude any possibility of overlap with other wireless switches.

The use of self-powered wireless technology enables businesses in different sectors to achieve savings of as much as 40 percent in energy and operating costs – for the same performance.

In 2012, IEC adopted EnOcean wireless communication standards as international standards "ISO / IEC 14543-3-10" [1]. This is the only international standard use of energy harvesting.

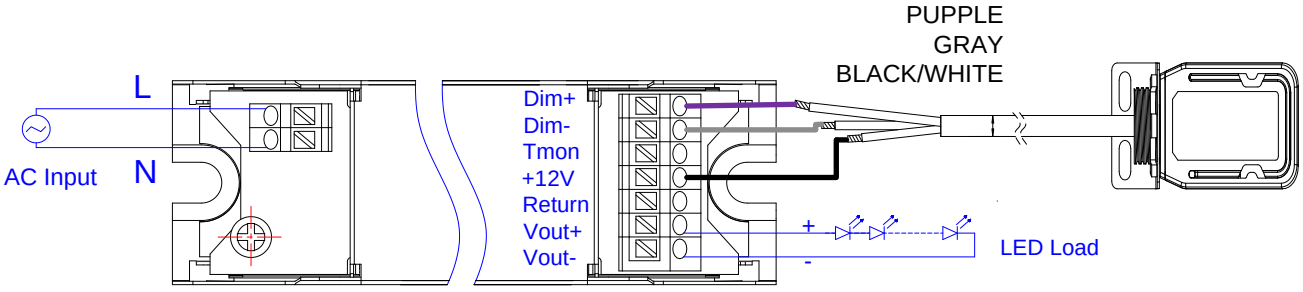
Supplies Needed for Setup

(1) An LED Driver with 0-10V diming interface and dim to off capability.
(2) An LED Engine match the LED Driver mentioned above.
(3) A CTL-ENOC-XX(XX could be NA or EU etc. depending on country)
(4) A Rocker switch from EnOcean, the P/N is ESRP (Let's start with the Rocker switch), click here see the details.
(5) A USB Dongle from EnOcean, the P/N is NWC-300U, click here see the details
(6) A PC (with WIN7 or above), Download the GUI setup from here.

See all the items you need in the picture below.

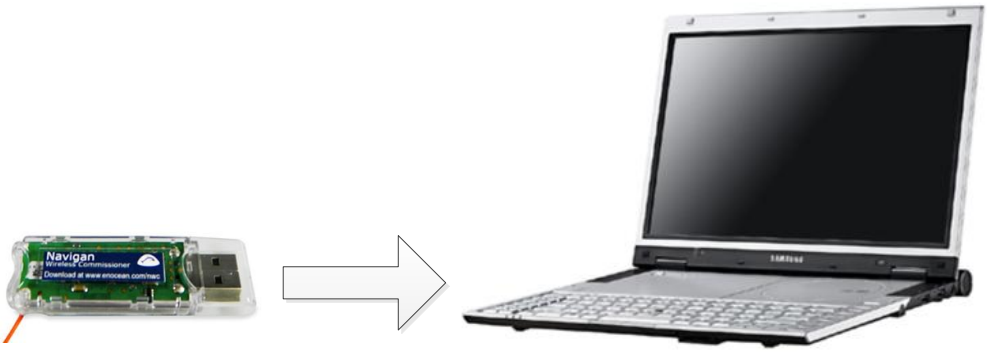
Installation Steps

(1) Connect the 3-wire cable to LED driver, and then turn on the AC



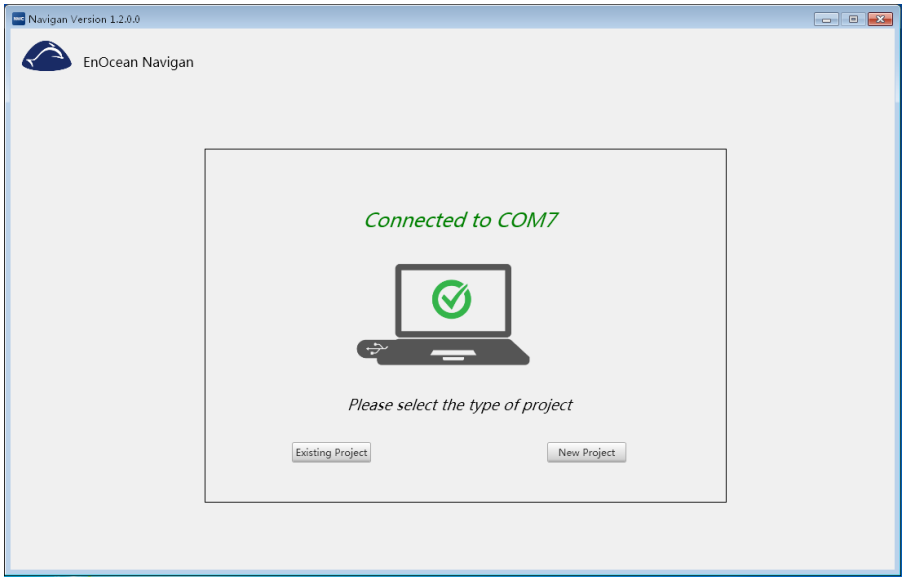
(2) Download and install "Navigan" from link here.

(3) Insert NWC-300U USB stick to PC, Launch "Navigan".

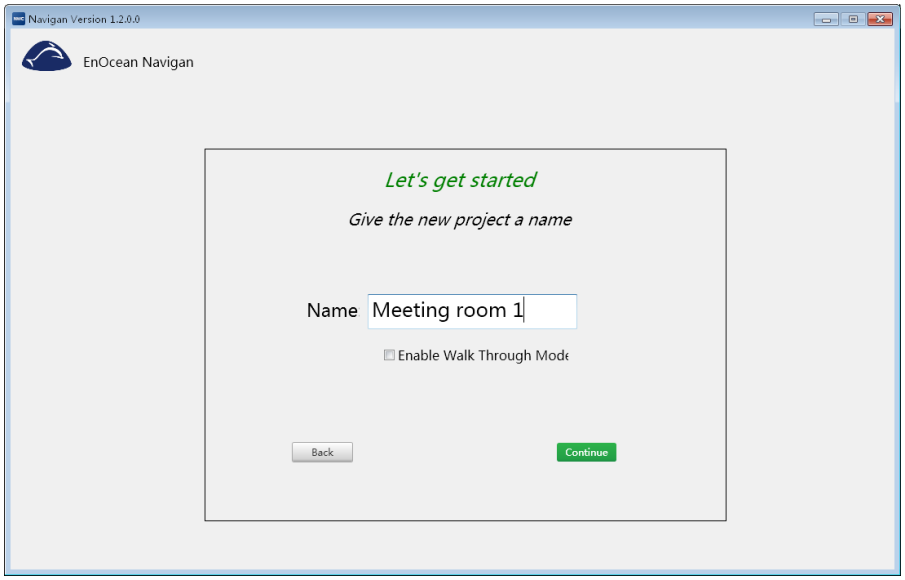


(4) Click New Project to start, then input a name for your project, click continue.

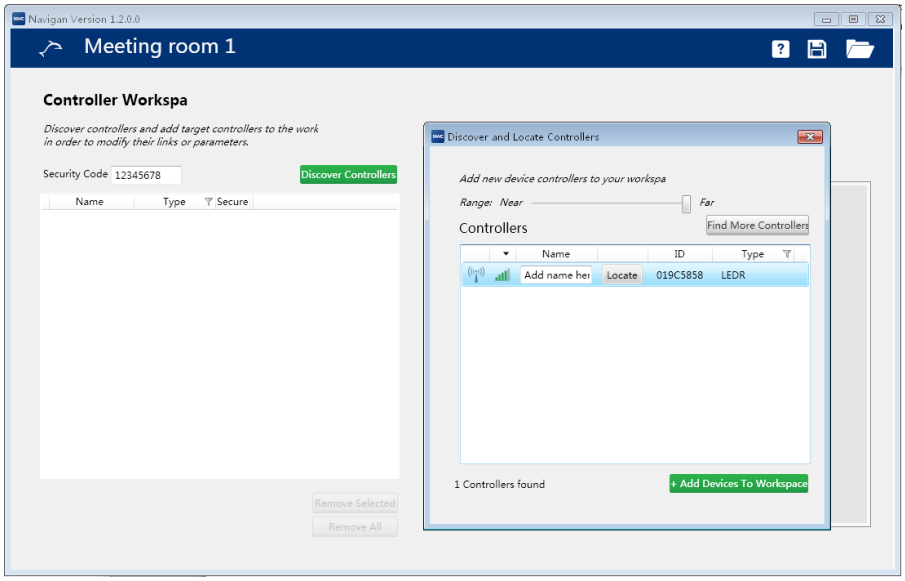
We recommend to Enable walk through if it is the first time use Navigan.



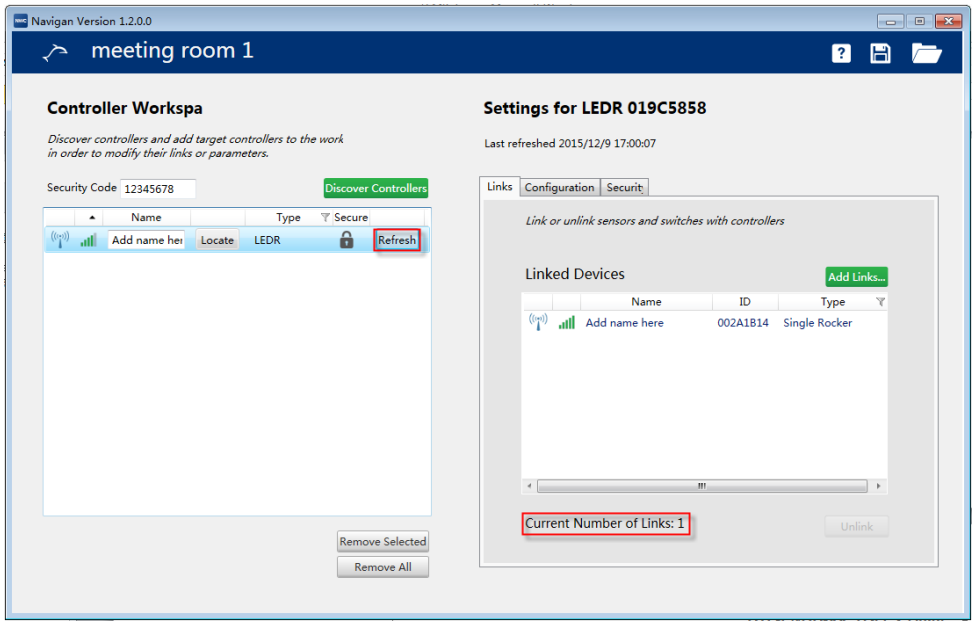
(5) Click on discover controllers in the controller workspace. If nothing was found, check if the CTL-ENOC-XX had been turned on, then try again.
If it is an empty module, leave security code bar to "Default".



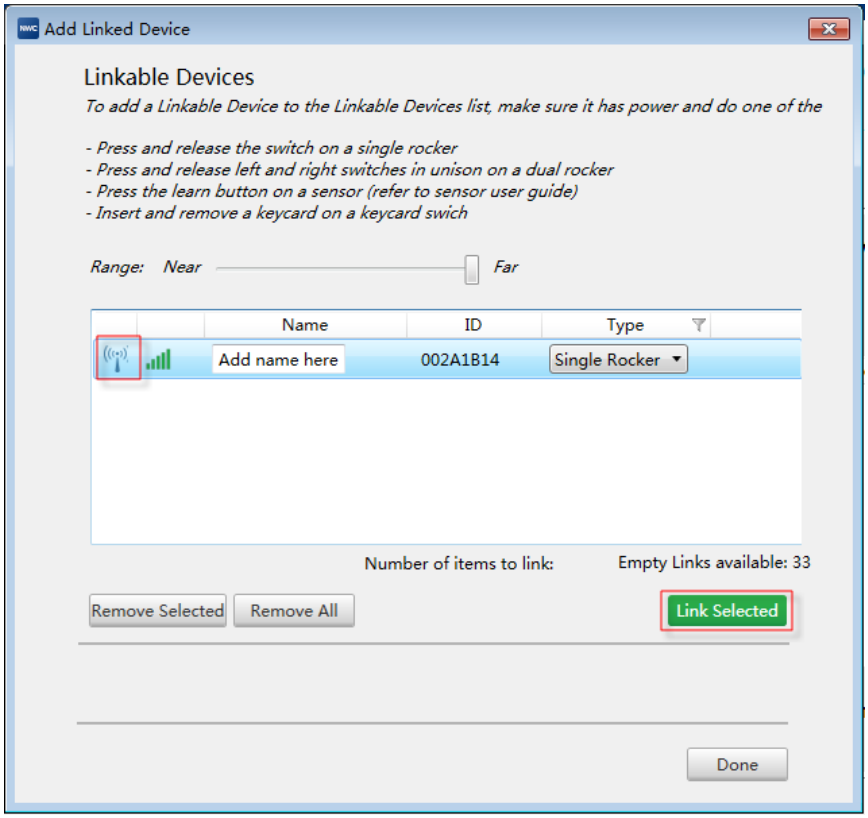
If CTL-ENOC-XX has been found, it will appear in the GUI. Click locate and the related luminary will blink 3 times showing you where it is. Select it, then Click "Add Devices To Workspace". Remember the ID if you want to link it to different Rocker switch in the same area.



(6) Click "Refresh" to update the info in the CTL-ENOC-XX. If nothing is linked you will not see anything in the Linked Devices list. Click "Add Links" so you can link a new sensor or switch to the CTL-ENOC-XX.

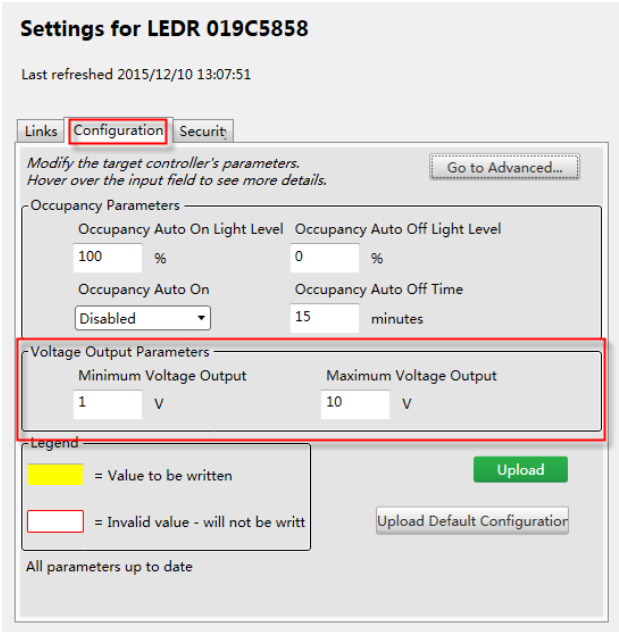


(7) Press and release the rocker switch and it will appear in the Linkable Devices list. The signal flag will blink when you click the rocker switch, select it and click "Link Selected" to finish the link operation. Now you can control the light on/off or dimming up/down by a single click or long push.



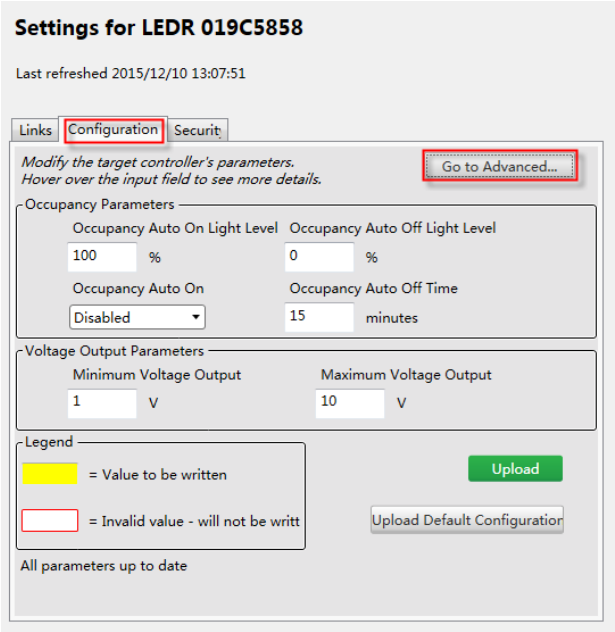
General Setting of Output Dimming Voltage

Click on the Configuration tab and you will see the Voltage Output Parameters group. Set the Minimum Voltage Output to limit the minimum dimming voltage to the value you set. However, it is not dim-to-off voltage, dim-to-off voltage will be always 0V.
Set the Maximum Voltage Output to limit the highest dimming level, it provide flexibility if you don't want to use the LED driver's full current output.



Rocker Switch Parameter Settings

Click Configuration Tab and Go to Advanced.



Each single Rocker switch contains two buttons: "Up" and "Down". Press and release each button less than 0.5 seconds is defined as a single click operation. A single click on "Up" will turn on the light to the memorized light level that was used the last time it was set. A single click on "Down" button will turn off the light.

Press the "Down" button and keep holding. After 1 second you will see the light level decrease slowly, then you can release the button. The light level will stop at the point you release the button. Usually you will need a slower ramp speed for dim up or dim down, see bar 4 and 5.

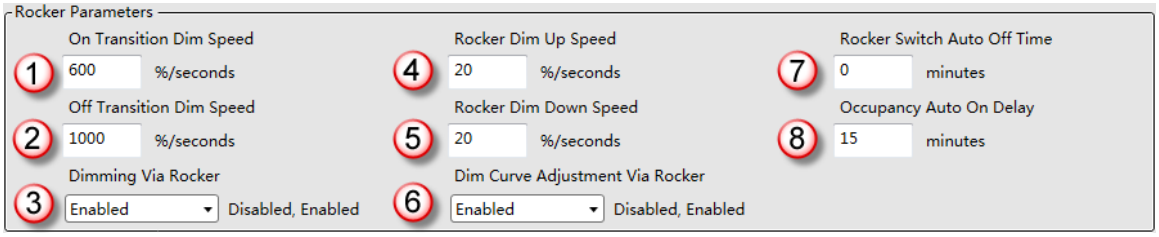
Press the "Up" button and keep holding. After 1 second, you will see the light level increase slowly, then you can release the button. The light level will stop at the point you release the button, see bar 1 and 2.

Double click the "Up" button similar to a mouse double-click. The light level will jump directly to the maximum dimming level.

If you don't need the ramp feature, use bar 3 and 6 to disable it.

Bar 7 allows the light to dim-to-off after certain minutes. If you already turned on the light, setting to 0 will disable Auto off.

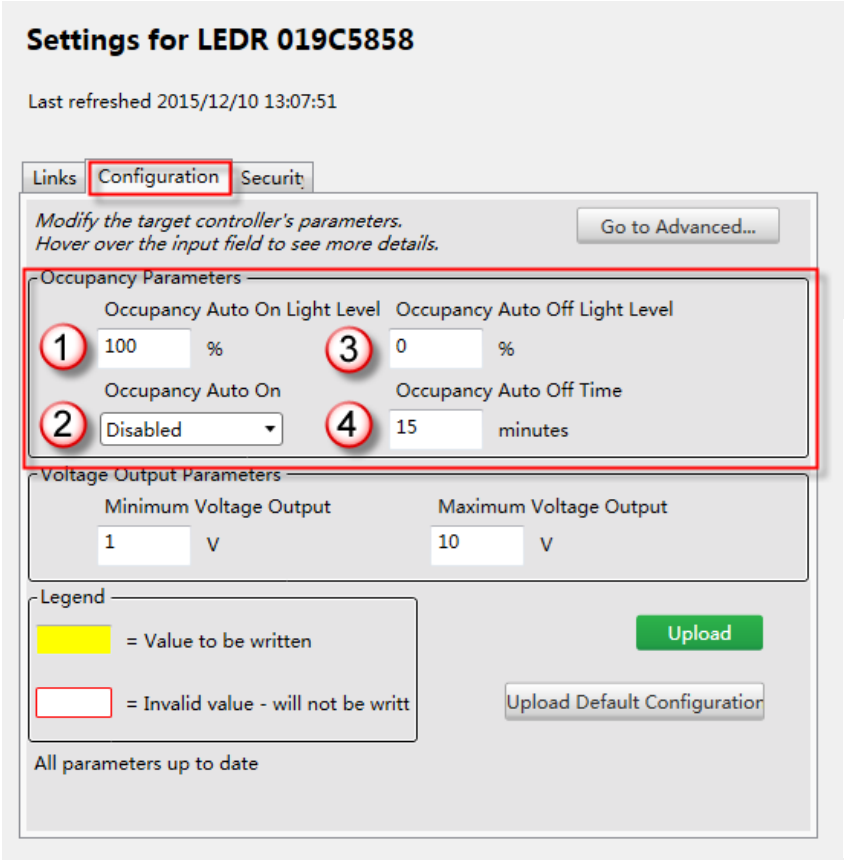
Bar 8 means the time an occupancy sensor can switch on the light after a manual off event.



Occupancy Sensor Parameter Settings

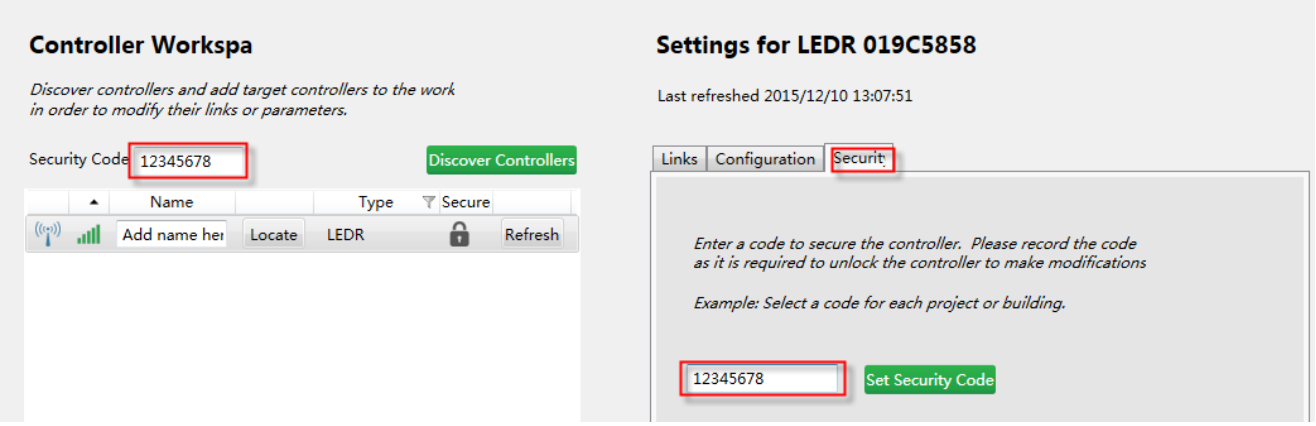
Click Configuration tab, see the Occupancy Parameters group.
Bar 1 sets the max Auto On light level triggered by the occupancy sensor.
Bar 2 disables or enables Auto On function.
Bar 3 sets the Auto Off light level (no body stay in the trigger area after certain minutes set by Bar 4). If you want to keep the lights on, but on a low level, set it to 10%. The light will stay at 10% even there is no body.
Click Upload to update the parameters to CTL-ENOC-XX

Note: Although you can set the Occupancy Auto Off Time as low as 0.1 minute (6 seconds) , if after 6 seconds no one triggers the Occupancy sensor, the light turns off. You will not be able to trigger the occupancy sensor because the occupancy sensor has a blind time of 5 minutes after one trigger in order to save power. We recommend to set Auto off time no less than 5 minutes.



Security Setting

Click the Security tab and input the 8 digit code, then click Set Security Code. Remember the code otherwise you cannot find the CTL-ENOC-XX without performing a hardware reset (short the dim+ to Vaux). If you need to reconfigure a CTL-ENOC-XX that has already been set, please enter the code in Security Code bar, then click on Discover controllers again.



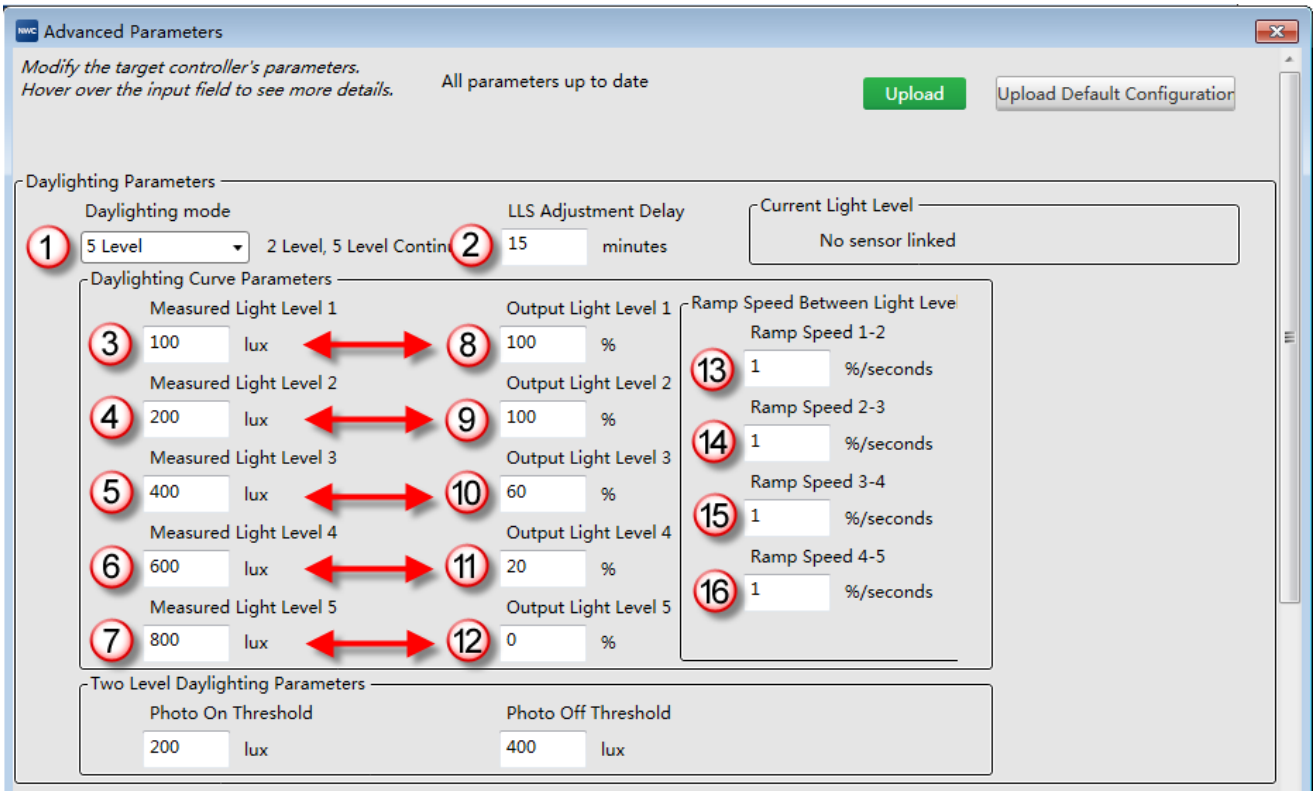
Light Level Sensor Parameter Settings

On Advance Parameters page, see Daylighting Parameters group.
Bar 1 allows you to set the Light level sensor to 2 level mode or 5 level mode. The 2 level mode will turn on or off the light according to the lux threshold. The 5 level mode will ramp the light to a certain level set in below picture. For example, if the sensor detects current light level is 96 lux, the output light level will be ramp to 100%. If the current light level is between 200 and 400 lux, the output light level will ramp to 60%. Setting the ramp speed lower will let the light level change very slow. This is preferable over a transient change.

Bars 13 to 16 are ramp speed parameters.

Bars 3 to 7 is the lux level setting and related output light level setting are bars 8 to 12.

Bar 2 is the time before the light level sensor can modify the light level set by user or occupancy sensor input.



Control Architectures

1. One to Multiple

One sensor can be linked to different CTL-ENOC-XX modules and control different lighting at the same time. In theory, one sensor can link to unlimited CTL-ENOC-XX modules because it is a one-way control. The sensor or switch can only send out control messages but never receive them.

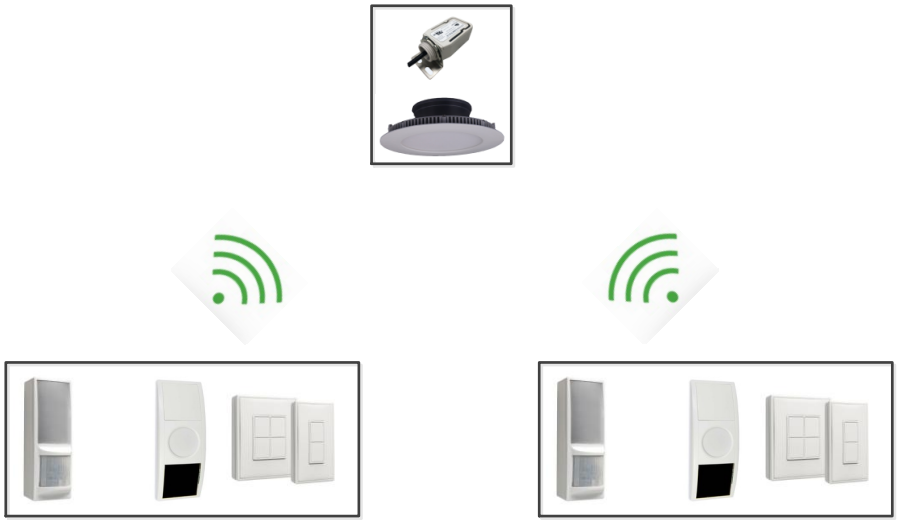
2. Parallel Mode

One controller can parallel the 0-10V dimming interface to different drivers. You can control up to 40 LED Drivers to react the same in this mode. You can use fewer CTL-ENOC-XX modules by using more dimming cables to connect all the driver's 0-10V dimming to the one CTL-ENOC-XX.

3. Multiple to one

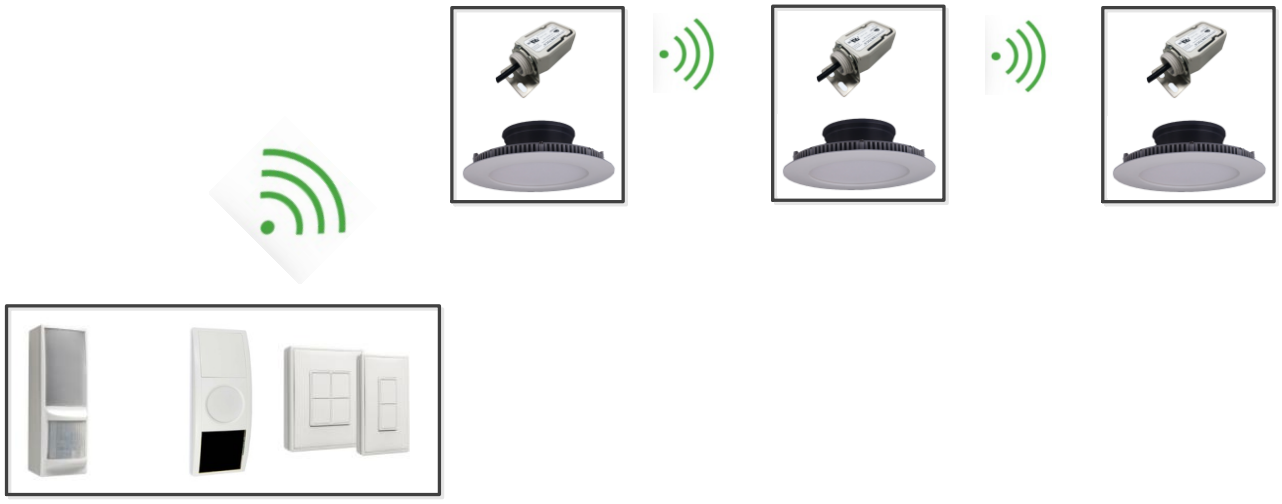
Link the sensors in different areas to control the same light. Each CTL-ENOC can link up to 32 sensors or switches. For example, you can control one light by two switches installed beside two different doors of one

room; one for entrance another one for exit. Switch on the light when you enter the room, switch off the light when you leave.



4. Repeat mode

Expending the control distance by repeat mode, you can enable the repeat mode in the Advance setting page of "Navigan"



Note

The CTL-ENOC-XX is considered as a component that will be operated in combination with final equipment. Since EMC performance will be affected by the complete installation, the final equipment manufacturers must re-qualify EMC Directive on the complete installation again.