Introduction

The RAPIX eHub, Xi Sensor, Xi Long Range Sensor and Xi Universal Switch Input (USI) can all act as a DALI Application Controller, allowing the Dry Contact inputs of those devices to perform advanced control functions in DALI or DALI-2 systems.

This Application Note describes how to use the Steinel *IR Quattro COM 2* or *IR Quattro HD COM 2* sensors with the RAPIX Xi DALI Universal Switch Input.

The Steinel IR Quattro COM 2/ IR Quattro HD COM 2 Sensor

This Steinel sensor is a Passive Infra-Red motion sensor optimised for a square detection pattern.

This sensor uses its PIR to detect movement and activate an output. Once movement is detected, the PIR will re-trigger the sensor, keeping the output activated.

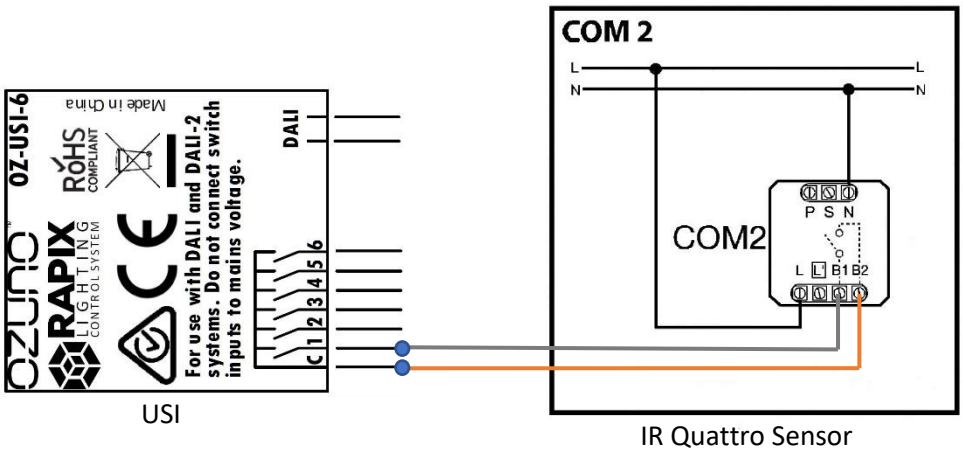
The ***COM2*** version can be used to directly switch a light load and link to an external system. This link is a relay contact, typically designed for HVAC, and which can be used with RAPIX input devices to interface to the RAPIX lighting control system.

> ***IMPORTANT: RAPIX CAN ONLY BE USED WITH THE COM2 VERSION, USING THE B1 & B2 TERMINALS.***

Wiring the Steinel IR Quattro COM 2 / IR Quattro HD COM 2 Sensor

Connect the Steinel sensor wiring to the USI (similar connection to eHub & Xi Sensor) as follows:

USI **C** Connect to IR Quattro **B2**
USI **1** Connect to IR Quattro **B1**

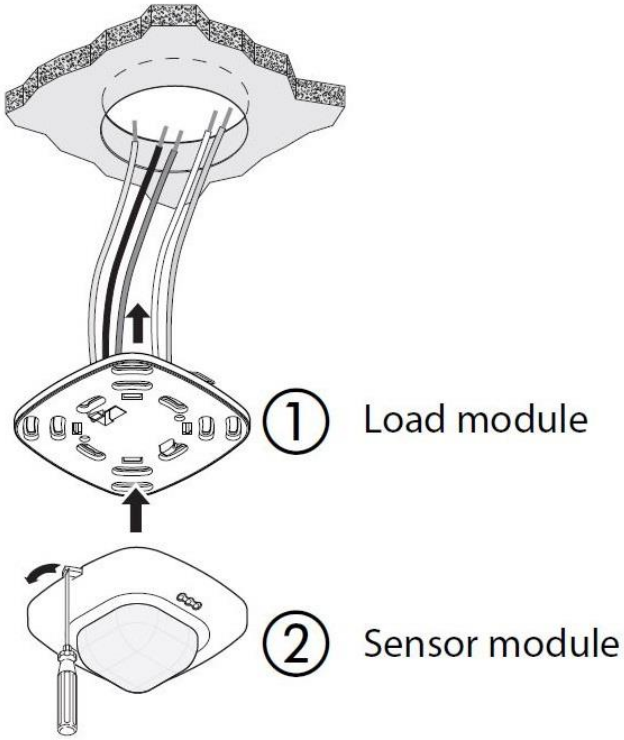


USI

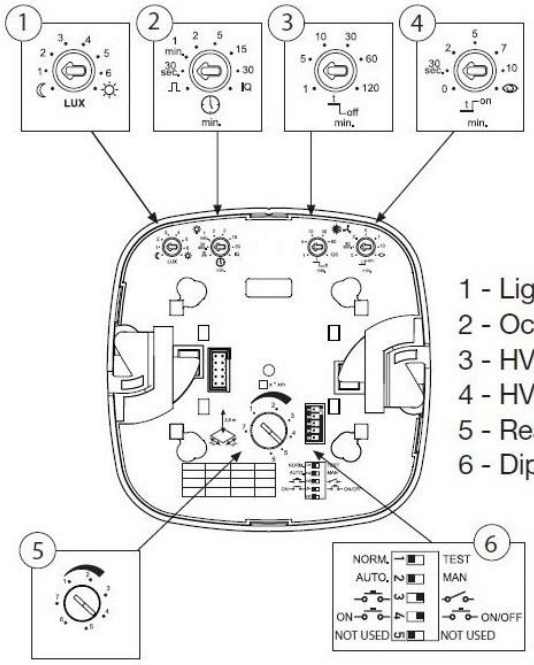
IR Quattro Sensor

Setting up the Steinel Sensor

Follow page 2 of the Steinel Information booklet for how to access the product setting:



The sensor module shows all of the settings that can be adjusted:



1 - Light level setting
2 - Occupancy time delay setting
3 - HVAC stay-'ON' time
4 - HVAC switch-'ON' delay
5 - Reach setting
6 - Dip switch settings

DIP 1 - Normal mode / Test mode (NORM / TEST)
DIP 2 - Manual ON mode (MAN) / Automatic mode (AUTO)
DIP 3 - Momentary / Maintained switch option
DIP 4 - 'ON' only / 'ON' & 'OFF' manual switching
DIP 5 - Not used

Follow pages 24-26 of the Steinel Information booklet to set the DIP Switch and potentiometers.

To use with RAPIX Dry Contact inputs, set the Steinel DIP switch as follows:

DIP 1	Normal Mode
DIP 2	Automatic Mode
DIP 3	Set according to desired operation of a switch or button on the “S” input terminal of the sensor
DIP 4	Set for ON/OFF Manual Switchingif required and a button or switch is wired to the “S” input terminal of the sensor
DIP 5	Not used

Set the potentiometers as follows

LUX	Set according to desired light level for operation
Occupancy Time Delay	Set to minimum
HVAC Stay On Time	Set to minimum
HVAC Switch On Delay	Set to minimum
Reach Setting	Set as required for detection range

Example and Settings

A typical case for a presence sensor is to detect occupancy of a space, such as a walled office, a corridor, or a portion of an open plan office space.

When an occupant is detected, the lighting should be turned on immediately. And when the occupant leaves the area, the lighting should be held on for a reasonable period and then be turned off.

This period after the space is vacated helps to avoid cases where the space is occupied, but the occupants are not moving and are quiet (no sensor detection).

That period also means the space remains lit during a time when the occupant might suddenly return.

Sometimes this time can also ensure a space (such as a corridor) remains lit to allow safe exit – for example for the last person leaving a space in a building or locking up at night.

In this example, we would like the following overall behaviour:

- Lighting turned on when a person enters the space.
- Lighting held on during occupancy.
- Lighting held on for 15 minutes after the space is vacated.
- After the 15-minute period:
  - The lighting should fade to 20% over 4 seconds.
  - After the fade there should be a dwell at 20% for 2 minutes
  - After the dwell, the lighting should fade to off over 8 seconds.

Settings Needed

The Steinel IR Quattro HVAC terminals are used to provide short pulses to the RAPIX system when movement is detected. The RAPIX system manages re-trigger, timing, fade-to-off, and so on.

To ensure this can be achieved, the Steinel IR Quattro sensor needs the HVAC settings set up to have no on-delay, and a short pulse output. The settings shown above give this.

The RAPIX system then manages all timing periods required for the lighting behaviour.

Sensor Wiring

The Steinel IR Quattro terminals **B1 & B2** are connected to one of the 6 input channels of the RAPIX DALI Universal Switch Input[1].

RAPIX System Software Settings

RAPIX Addressing or RAPIX Integrator software is used to set the input channel as required for this example:

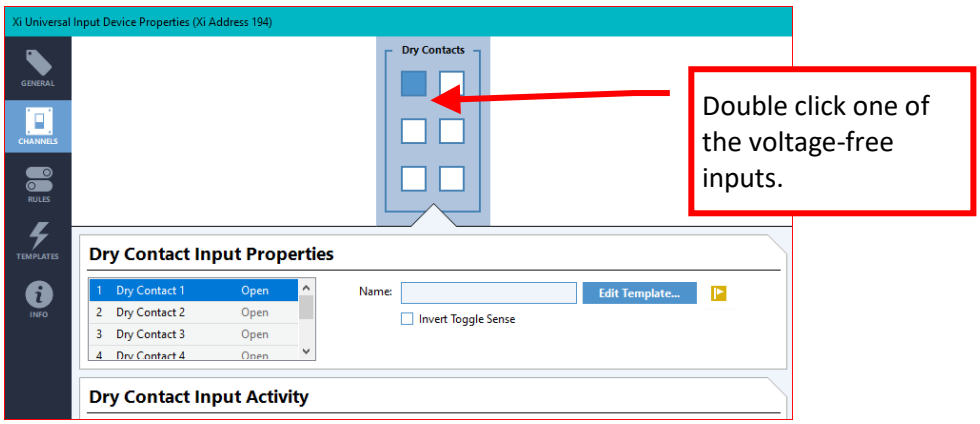
Template:	Motion Sensor
Voltage-free Input:	select the input where the sensor is connected
Control type:	Occupancy Mode
Zone / Members	The DALI Short Addresses, Groups, or Broadcast to be controlled by the sensor.
On Fade Time:	The time for lighting to come on when the space is entered. This should be small – either INSTANT, or up to about 1 second
Vacancy Delay:	15 minutes
Switch off behaviour:	Dwell then Off
Dwell Level:	20%
Dwell Duration:	2 minutes
Fade Time:	8 seconds

[1] A RAPIX eHub, or the switch inputs of the RAPIX Xi sensor or RAPIX Xi Long Range sensor can also be used.

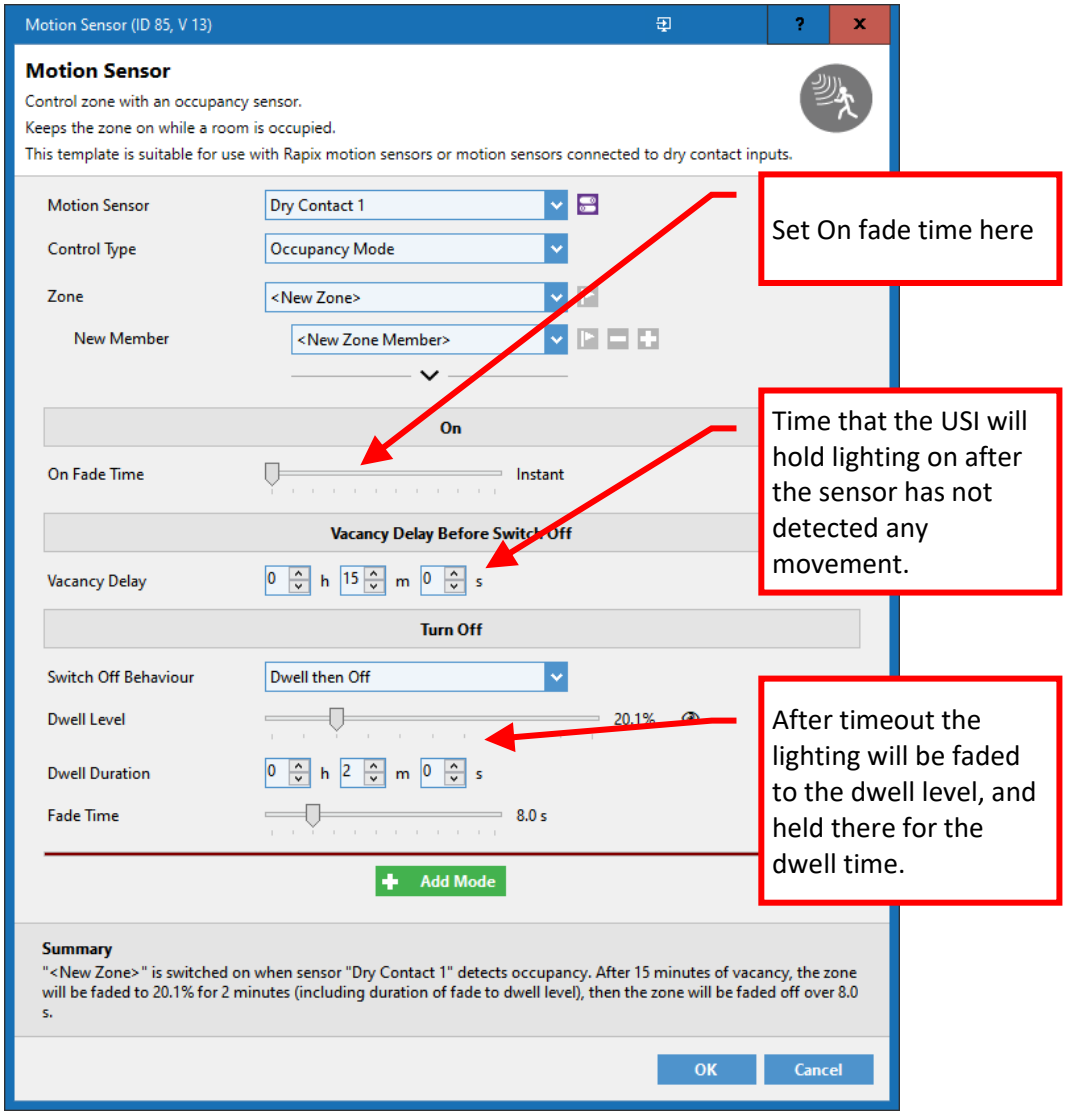
RAPIX Addressing – Voltage-free input settings for sensor

Scan the DALI line, and select the "Xi Universal Input" to be edited.

Then double click one of the voltage-free inputs, and select the template "Motion Sensor":



The settings page will appear allowing the setup of the sensor:



Change History

Rev	Date	Updated By	Comment
1	4 Mar 2021	T Vu	Version 1

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