

December 2019

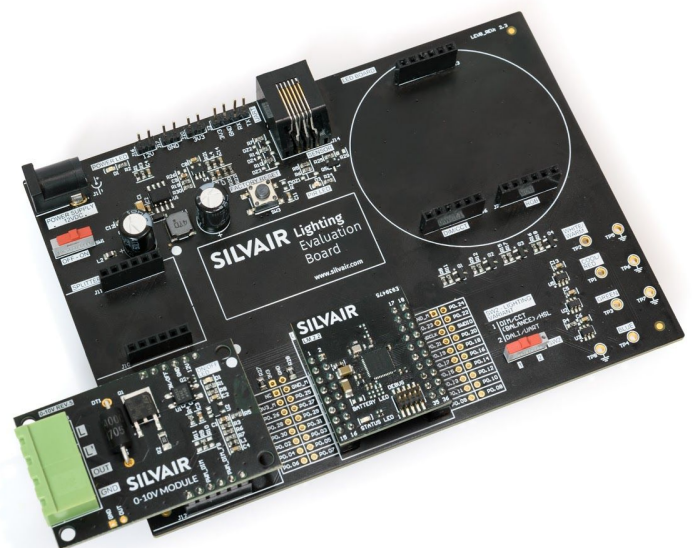
# Silvair Lighting Evaluation Kit

User manual

Date: 13. 12. 2019

Rev. 4

# SILVAIR



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SILVAIR Sp. z o.o.  
ul. Jasnogórska 44  
31-358 Kraków  
Poland

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# 1. Introduction

The Silvair Lighting Evaluation Kit is a modular development kit designed to help you develop your own smart lighting products based on qualified Bluetooth mesh technology. It contains a number of components that can be mounted onto the main evaluation board. Over time, we will be releasing more components that can be mounted in various configurations to build different types of circuits.

This manual gives information on how to set up and start working with the Silvair Lighting Evaluation Kit. The current version of the kit allows you to:

- Dim an on-board LED using a single channel PWM output
- Output a PWM dimming signal to an external driver
- Output a 0-10V or 1-10V analog dimming signal to control an external driver (not supplied)
- Use standard Bluetooth mesh features via the Silvair Platform
- Perform an over-the-air firmware update using Silvair mobile app, or Silvair DFU mobile app

All elements in the kit are configured and controlled from the Silvair Commissioning (mobile and web apps) which is available via our beta channel for iOS 10 or higher. At the moment, we do not support Android.

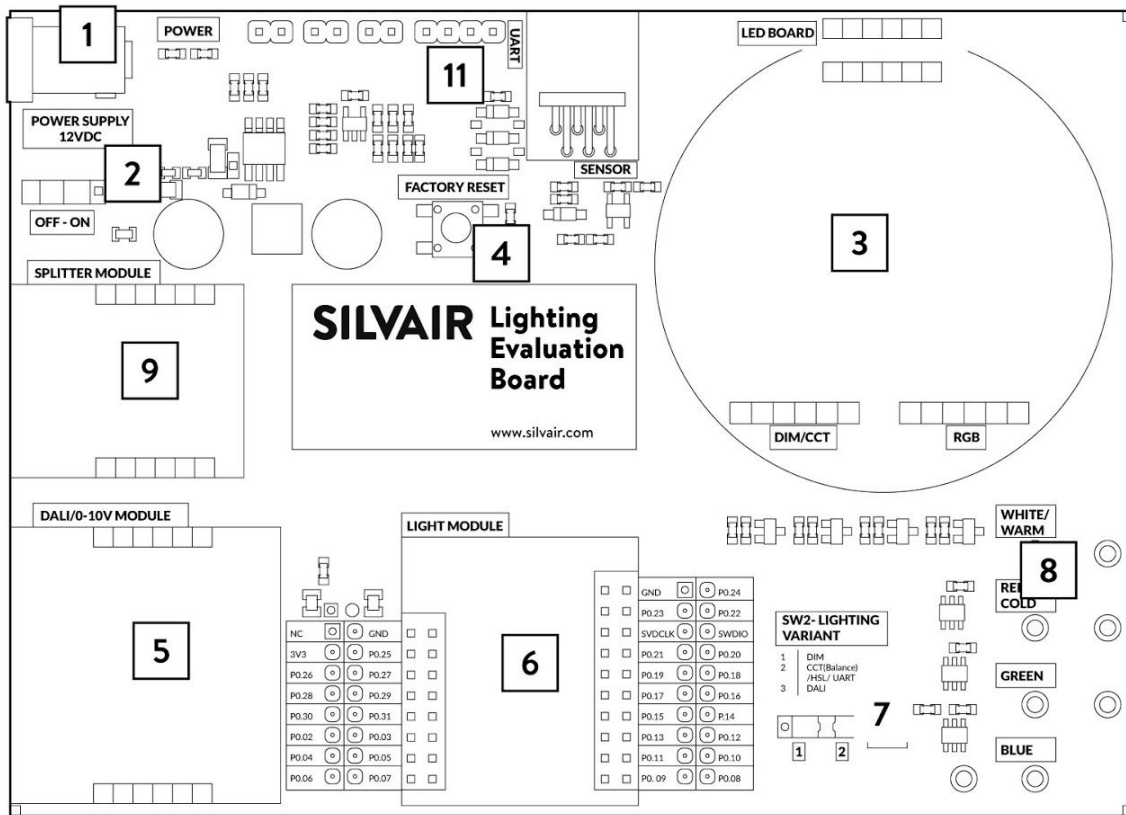
Please see [Chapter 4](#) for a full schematic of the Silvair Lighting Evaluation Kit.

## 2. Hardware

The Silvair Lighting Evaluation Kit consists of:

Description	Silvair reference	Quantity
Silvair Lighting Evaluation Board (main board - see Fig. 1)	[MAIB_LEVB2.2]	1
Silvair Light Module based on the Nordic nRF52 chip preloaded with dedicated firmware (see Fig. 2)	[LM2.2]	1
LED Board Single temperature (see Fig. 3)	[LED_BOARD]	1
0-10V Dimming Module with On/Off for connection of an external LED driver (see Fig. 4)	[0-10V_MODULE]	1
USB Power Supply Cable		1

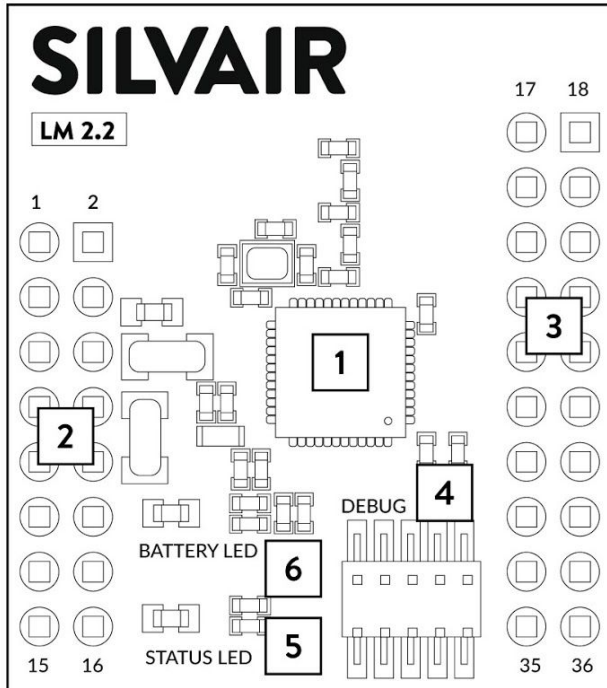
## Silvair Lighting Evaluation Board



### Legend:

1. Power supply connector
2. Power switch
3. Socket for LED Board
4. Factory reset button
5. Socket for DALI/O-10V Module
6. (DALI Module - not included)
7. Socket for Silvair Light Module (LM2.2)
8. Rotary switch to select lighting options (SW2)
9. PWM signal test points
10. (not used)
11. Sensor interface RJ-12

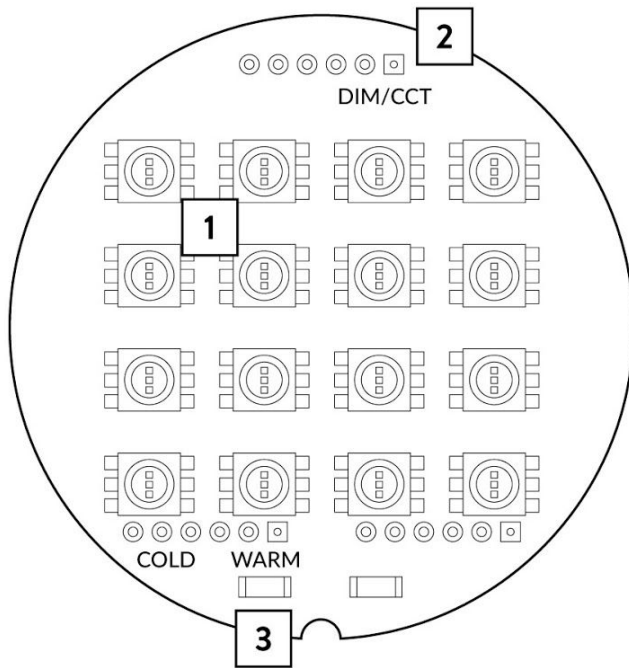
## Silvair Light Module



### Legend:

1. Nordic nRF52 system-on-chip
2. Lighting Evaluation Board connector
3. Lighting Evaluation Board connector
4. Debug connector
5. Status LED
6. Battery LED

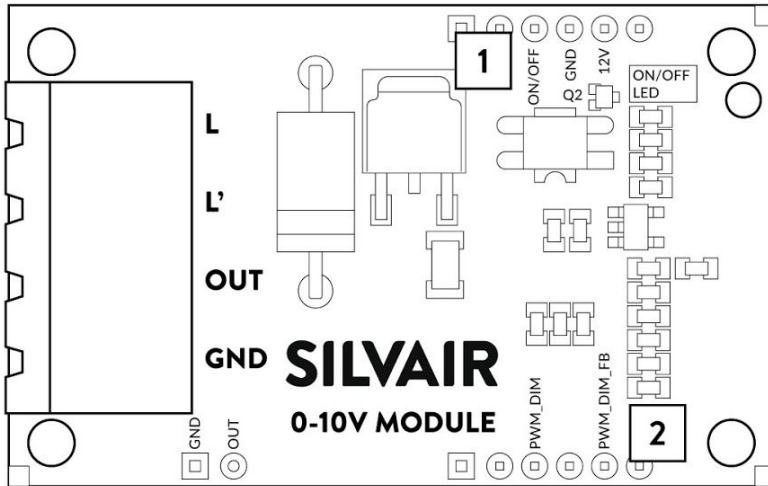
## LED Board



### Legend:

1. LEDs
2. Lighting Evaluation Board connector
3. Lighting Evaluation Board connector

## 0-10V Module



### Legend:

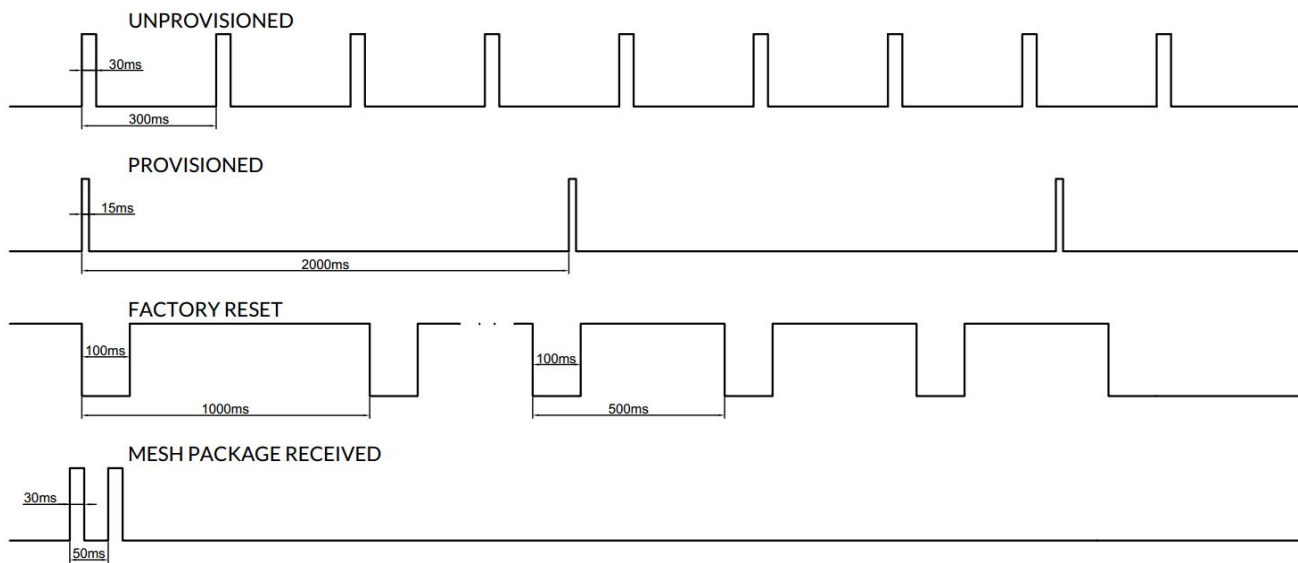
- 1. Lighting Evaluation Board connector
- 2. Lighting Evaluation Board connector
- L Input to connect mains voltage supply for external LED driver
- L' Output of main voltage to supply external LED driver (On/Off)
- OUT, GND Output to connect 0-10V Dimming Control of external LED driver

### 3. Configuration

The kit is designed to provide everything you need to test the Silvair technology, including a light source (LED Board for standalone mode). However, if you want to control your own 0-10V driver, insert the 0-10V Module into the appropriate socket (external device mode) and connect the driver to it.

Every time you power up the Silvair Lighting Evaluation Board, you will notice a specific starting sequence depending on the type of firmware and device state (i.e. whether it is already part of a Bluetooth mesh network or not).

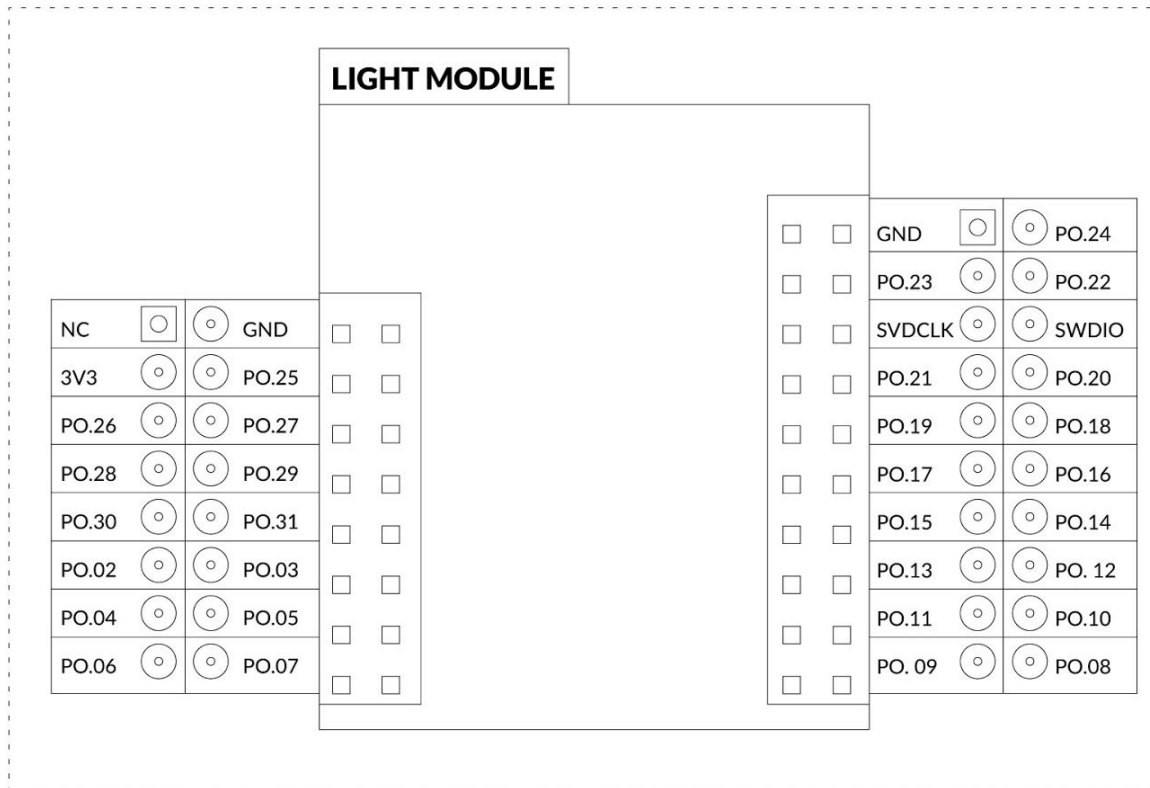
Status\_LED output provides an indication of the device state:



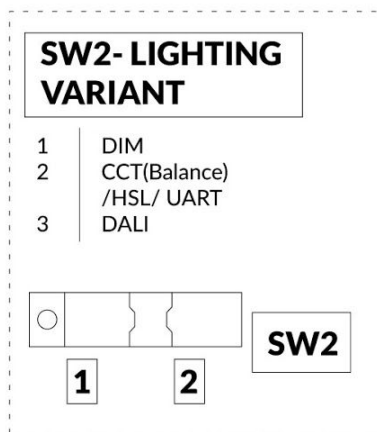
### 3.1 Basic hardware setup

These steps are common for all versions of firmware.

1. Insert the Silvair Light Module into the socket in the centre of the main board:

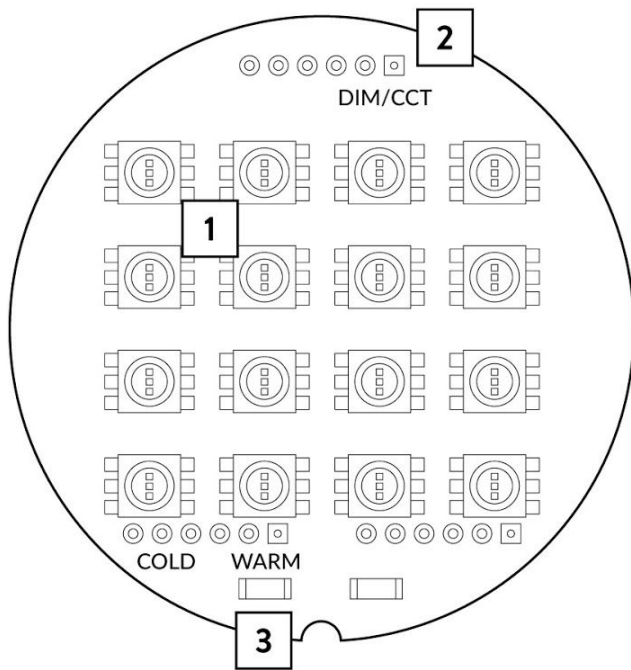


2. Select the lighting option [1 | DIM] using the linear switch (SW2). This allows the Silvair Lighting Evaluation Board to distribute the signals correctly for different firmware types. Currently, options 2 and 3 (UART and DALI) are available, HSL - is not available yet.



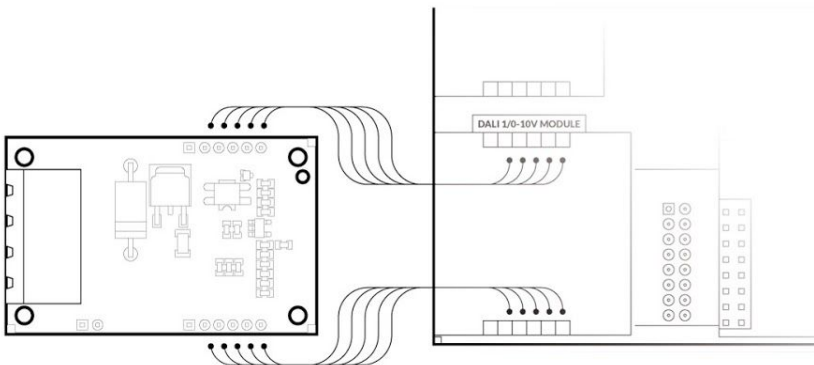
## 3.2 Standalone Mode

In standalone mode, the LED Board is controlled via the PWM signal generated by the Silvair Light Module. No external driver or light source is needed. To configure the Kit for standalone mode, insert the LED Board included in the Evaluation Kit firmly into the socket.



## 3.3 External Device Mode

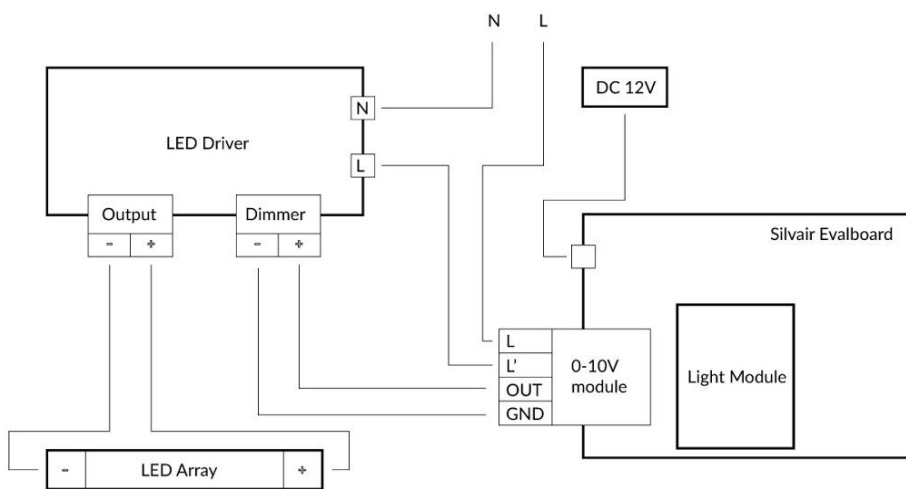
The Silvair Lighting Evaluation Kit can also be set up to operate an external single-channel constant current 0-10V LED driver via the 0-10V Module:



1. Insert the 0-10V Module into the DALI/0-10V socket.
2. Connect the driver and the LED light source as shown below:



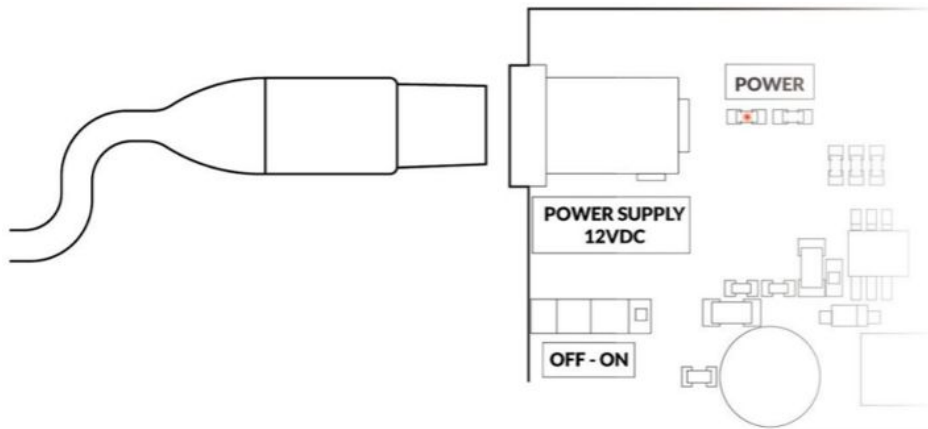
**WARNING:** This circuit in operation involves high voltage that can give lethal shock. **Handle with extreme caution!**



You can now use the Silvair Platform to commission the LED driver via the Silvair Lighting Evaluation Board. Please refer to the [Silvair Commissioning User Manual](#) for further instructions.

### 3.4 Connect the power

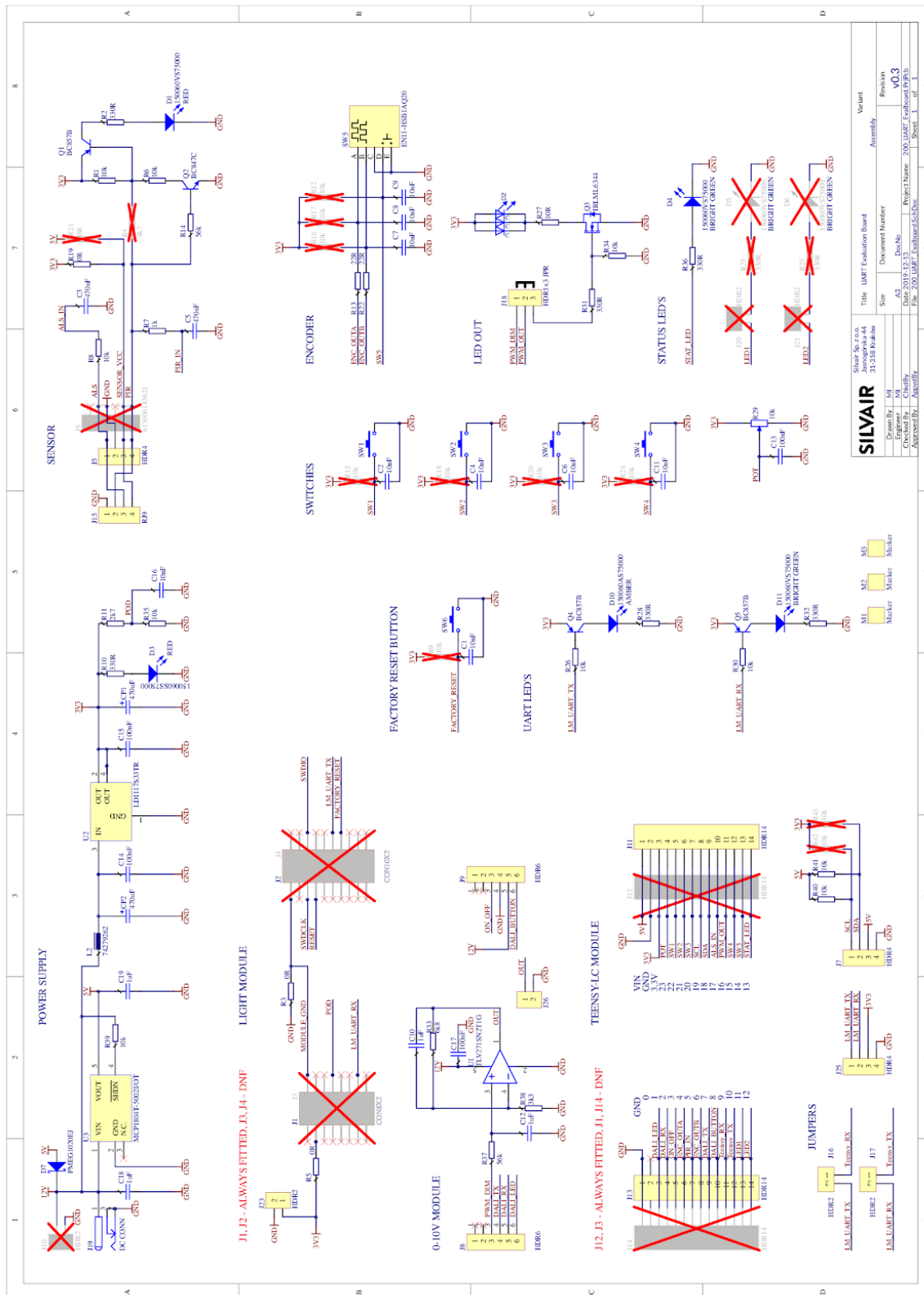
To power up the Silvair Lighting Evaluation Board, connect the USB power supply cable provided with the kit to the POWER SUPPLY 12VDC socket and turn on the OFF-ON switch. If the POWER LED is on, it indicates a properly supplied board and you can proceed to commissioning the device with the Silvair Commissioning mobile app.



### 3.5 Factory reset

Performing a factory reset restores the device to its default (factory) settings and removes it from a Bluetooth mesh network. A factory reset is performed by pressing and holding the Factory Reset button for 5 seconds after which the LED Board or connected driver/luminaire will blink rapidly to indicate a successful reset. Check the factory reset button position [here](#).

# 4. Silvair Lighting Evaluation Kit - schematic



## 5. Document revisions

Rev	Date	Editor	Changes
4	13.03.2019	IK	General graphic improvements, content enhancements.
3	01.12.2019	IK	Graphical improvements for the release purposes.
2	21.07.2018	MI	Added standalone mode reviews.
1	21.02.2018	MI	Initial release.

## 6. Contact Information

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Support:

[support@silvair.com](mailto:support@silvair.com)

Business development:

[business@silvair.com](mailto:business@silvair.com)

For more information please visit:

[www.silvair.com](http://www.silvair.com)

Our Offices:

### Europe

ul. Jasnogórska 44  
31-358, Kraków  
POLAND

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717 Market Street, Suite 100  
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