



Why Blu2Light?

B2L is currently the only truly open system for IoT builders with future guarantee as all system parameters are provided via an open neutral interface on the Gateway - not only for lighting but also for IoT BMS parameters such as temperature, humidity, CO2 and the sending / receiving of Bluetooth beacon messages.

The Blu2Light open system promise

Our promise to the whole market – **Blu2Light is an open system** – at the LAN side of the VS Gateway you can build any customized solution you like you can download the whole documentation under the Gateway topic (final release planned for March 2022) , with the Blu2Light Connect Zero Plus modules you can build your individual Bluetooth mesh devices on prefabricated basis, the standard meshnet protocol itself you will find here: <https://github.com/mwaylabs>. Please note, however, that for security reasons all encryption/decryption and other security elements can only be provided after signing an NDA to protect the Blu2Light mesh network in any case.

The intelligent wireless lighting control solution

Blu2Light is the first completely open Bluetooth wireless technology system with mesh functionality for the professional lighting market, which, in addition to a variety of functions for lighting control, offers the luminaire manufacturer added IoT benefits with maximum system security. Our cloud free meshnet system without any central system controller!

General safety instructions:

- Only qualified persons are allowed to install and start up Blu2Light products.
- Prior to installing and commissioning the system, read these instructions carefully. Only this will guarantee correct and safe handling. Please keep these instructions as you may need them later.
- Before working on the devices, they must always be disconnected from the power supply.
- The applicable safety and accident prevention regulations must be observed.
- Opening by unqualified personnel of the products is prohibited: Risk of death from electric shock!
The devices must only be repaired by the manufacturer. Supply of external voltage to the DALI control line, e.g. 230 V mains voltage, may destroy the products.
- Product-specific instructions for the respective products can be found on our homepage.

General data security (cyber security):

Blu2Light is made for home, public and industrial lighting controls for use in combination with building management systems or smart home systems.

It is not allowed to use Blu2Light components for security relevant systems, aircraft, railway or ship systems. Or any kind of emergency system. The use on ships is permitted in individual cases if the DNVGL regulations are fulfilled. In this case, an individual approval must be requested.

In general, B2L is an offline working system, no data are stored, no personal rights / DSGVO rules are violated.

In case of Gateway use please make sure that 3rd party cloud data / BMS services are not violating these rules (This is not in the field of VS responsibility). Blu2Light is made for highest data security for 24 / 7 use in public spaces.

The whole system functionality is protected against any manipulation due to a bunch of combined encryption technologies:

- An **unique QR code** for every device – the owner of the QR code is the product owner (QR code should be removed from B2L device in operation mode)
- A **first moment** encryption due to QR-Code scan while commissioning – no sensor or luminaire hijacking possible, the whole system is safe from the first moment on.
- Plus **mesh connections** are encrypted
- Plus **Bluetooth communication** is encrypted
- On top there are several secret mechanisms against illegal network attacks.

Security notice for systems with connected Gateways:

The VS Gateway will deliver – decrypted RAW data at LAN side of the mesh Gateway (media converter) ready to use for any third-party application.

There are possible data tunnels from DALI bus / drivers and from Bluetooth beacon to the LAN side of the Gateway.

All these data tunnels, like the whole system functionality are protected with the listed measures against any manipulation.

But note that data stored due to any host system are NOT in the responsibility field of Vossloh-Schwabe.

For data security and DSGVO rules in that case please contact the responsible cloud / BMS partner.



General radio instructions

IMPORTANT: (All these items will lead to poor or non connectivity!)

- For best Bluetooth radiocommunication all Blu2Light devices must have a free field of communication, avoid all kind of metal shielding!
- Even concrete walls will influence the radio strengths!
- Mounting of B2L Sensor & Connect ME devices (XS, XL, XXL & ME): Please note that it is forbidden to mount these devices into metal and other cases which may damage the Bluetooth radio signal strength. Especially the whole dome of the XS Sensor must be mounted outside the case / luminaire.
- Keep all devices far away from other devices which can influence 2.4GHz communication like WIFI routers or access points!
- In case of luminaire integration you have to use radio friendly materials like thin plastic covers, nearby the integrated Blu2Light device. Please check your communication distance **before installation!** The LiNA Connect App allows you to check a detailed plan of the Bluetooth mesh connectivity. You can find detailed information on this topic at the end of this document!

Setup and operation:

- The Blu2Light light in-luminaire devices will be configured with the LiNA Connect App and can be operated via the LiNA Touch App.
- For the exact configuration procedure of the Blu2Light devices, please refer to the instructions or the corresponding documentation.
- For setup of the devices a **iOS tablet** is required. For operation both, tablets and smartphones, can be used. Both are not included. Neither tablet nor smartphone are included in the delivery.
- Free LiNA 2 Connect Commissioning App for iOS tablets (full graphic setup):



- Free LiNA Touch User App for iOS / ANDROID devices:



Communication:

Stand-alone systems:

- We recommend a maximum size for B2L systems up to 200 devices per mesh.
- For systems with high traffic (mostly sensors) we recommend not to use more than 100 devices per mesh.

Systems with Gateway communication: (with building management systems)

- the Blu2Light universal BMS Gateway (for more information see the Gateway datasheet).
- IoT Ready: Open protocol for IoT partners and cloud services.

The Number of the devices per mesh is the same as for Blu2Light systems without Gateway.

Update:

Full over the air update is possible.

Device integration:

- Live configuration over iOS tablets (QR Code reading).
- Offline QR code scanning possible.

Extra regulation for energy harvesting switches:

- Energy harvesting BLE switches per device: 4* (* not allowed with 2 connected Blu2Light devices).



Control functionality per device:

- Definable START UP behavior (dedicated value or scene).
- Up to 64 scenes per device (a scene is a dedicated light level or colour related to a luminaire).
- Up to 64 sequence's per device (a sequence is a series of scenes which can be looped).
- Up to 16 functional groups (the functional group is a main control element related to all lighting control function).
- Up to 6 sub-channels per functional group.
- When integrating an EnOcean button, it is recommended to use one Blu2Light repeater per button to separate the buttons from the rest of the mesh.
- A functional group can control the following Light level / modes:
 - Active
 - Passive
 - Basic value
 - **OFF with RTA (after power off, system goes back to the auto mode)**
 - **OFF with AUTO**
 - **OFF with SEMI AUTO**
 - **MANUAL mode**
 - Colour control (TW, RGB, RGBW)
 - DALI DT8 support: IEC62381-209 ED1 standard
 - From the -209 B2L system supports TC und X-Y only
 - DATI DT ED2 solutions for 209, 225 and 226 are not supported

Daylight & movement:

- **Daylight & movement control (only available for devices with integrated sensors).**
- **Follow me configuration.**

Time-switching, manual-switching and dimming functionality:

- Single press function (touch dim) for all input devices, incl. EnOcean switches.
- Time-switching.
- Up to 32 timer points (daily / weekly).
- PLEASE NOTE: (The precision of time-switching is related to the used gear)
 - Blu2Light stand-alone devices up to: ± 1 minute / day
 - Blu2Light Gateway up to: ± 1 minute / month
 - Blu2Light cloud server: accurate realtime behaviour

IMPORTANT NOTE:

We don't recommend the stand-alone device solution for switching time critical applications!

Supported DALI drivers:

- up to 64 (only for devices with DALI interface)

Supported DALI drivers:

- You can do a full backup and restore via the LiNA Connect 2 App.
- You can copy / paste all devices via the LiNA Connect 2 App.
- You can use LiNA 2 with luminaire profiles (luminaire profiles are templates for multiple use in your projects).




Blu2Light network analyses (Bluetooth connections & radio signal strength):

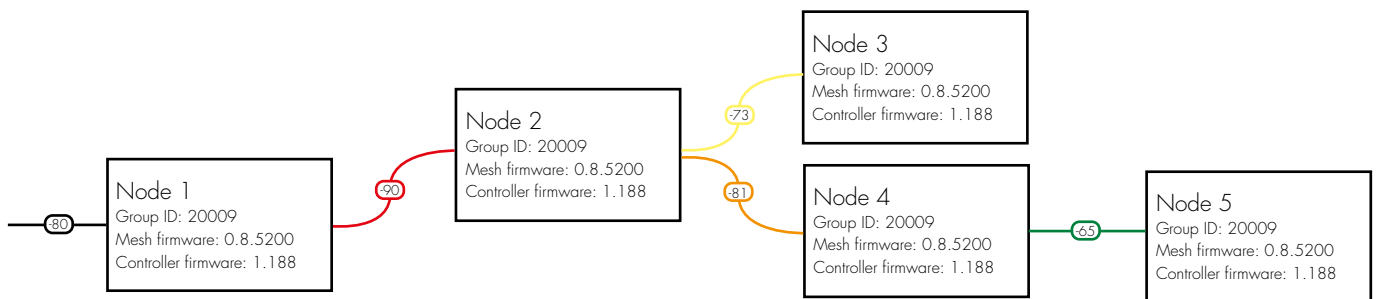
For normal communication a range up to -80 dBm is permissible!

If you find connections marked in orange or red, please check your installation and device positioning. Under those conditions you will not achieve a stable working system!

Please check your installation, device distances, radio interferences and any kind of shielding. If necessary, you can add a Blu2Light repeater for higher radio performance. To find in the LiNA Connect 2

-  $\geq -65\text{dBm}$
-  $\geq -70\text{dBm}$
-  $\geq -75\text{dBm}$
-  $\geq -80\text{dBm}$
-  $\geq -85\text{dBm}$
-  $> -85\text{dBm}$

For configuring a LiNA TOUCH profile it is mandatory to only create green or yellow connections as you see in the example below!



Red connections are not allowed unless the mesh can form otherwise. CHECK YOUR INSTALLATION!
For more information please see the LiNA Connect 2 manual.

Error codes for devices with signal LED:

Built-in devices LED:

- Always flashing with channel identify with.
- 1s on 2s off when system key is missing (XS, ME, XL, XXL, Industrial Sensor)
- 1s on, 1s off, with device identify
- Error flashing via B2L command
- 1s on, 1s off, at identify broadcast
- BL error

Both blink codes are interrupted if:

- Another channel goes to identify
- When a stop command is sent
- A node error occurs
- The system key is deleted (then possibly other blinking)
- A diagnosis is started
- (Restart / startup, it is unlikely that one of the two blink codes occurs before restart / startup)
- Power cycle

Important note:

All Blu2Light devices (ME, XS, XL, XXL, ...) that are supplied via DALI may only be connected to one DALI power supply! Therefore, it is not permissible to connect several Blu2Light devices to one power supply. In this case, malfunctions will occur.