



# Bridgelux<sup>®</sup> Vesta<sup>®</sup> Flex Control Module

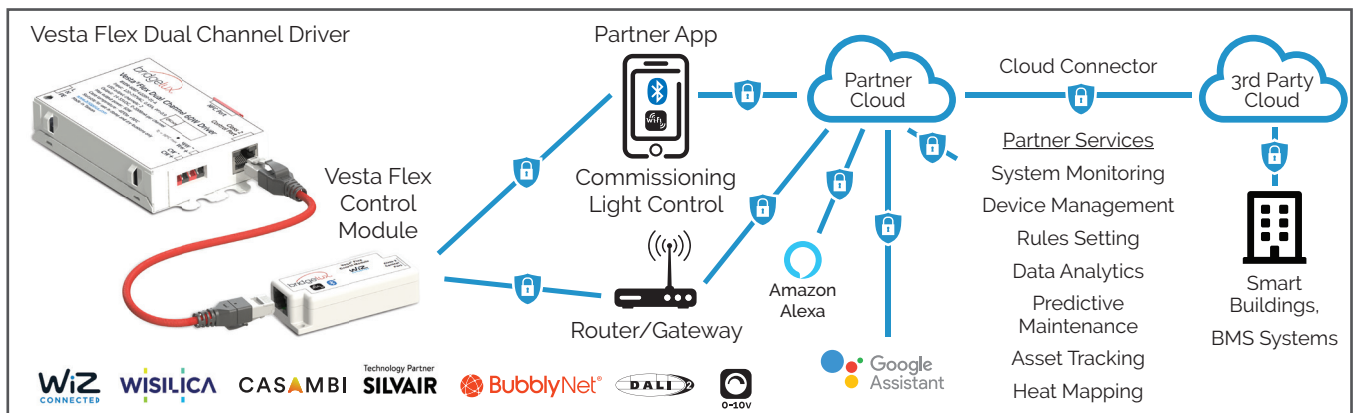
Product Data Sheet DS 463



# Vesta Flex Platform

The Bridgelux Vesta Flex Dual Channel Driver and Control Module family is a bundled system, guaranteed to work together out of the box, that enables seamless control of the Bridgelux Vesta Series Tunable White Arrays and Modules. The Driver's high resolution dimming and tuning algorithm provides for smooth and flicker-free CCT tuning, dimming to 0.1%, and dim-to-off. These specification grade drivers and control modules are separate devices which, when connected via an ethernet cable, form a smart and flexible lighting control system. These Vesta Flex Control Modules are intended for use with a Vesta Flex Dual Channel Driver and to be factory installed as incorporated products. The platform offers a number of driver and control module options to choose from, enabling application flexibility and interoperability with third party systems. These different control modules support wired control protocols such as DALI-2 DT8 and 0-10V as well as wireless control protocols with WiFi and Bluetooth mesh. These platforms come with ready-built iOS and Android apps and web portals which provide for commissioning, light management, and services designed to expand the capability of modern lighting systems. Vesta Flex is a future-ready solution, designed to quickly adapt to new control systems without requiring luminaire recertification.

## Vesta Flex Platform Overview



## Lighting Systems based on BubblyNet technology

The Vesta Flex Control Module uses BubblyNet technology which has been certified to be compliant with the standard Bluetooth mesh protocol.

## Features and Benefits of the BubblyNet Enabled Technology

- Wireless lighting system built on standard Bluetooth mesh protocol
- Fast growing eco system of 3rd party standard BLE mesh certified devices, e.g. sensors, switches, controller and driver
- Perceived lightness dimming scales in accord with CIE (International Commission of Illumination)
- Programmable CCT ranges and programmable fixed CCT presets
- Warm dim curves presets for daylight and hospitality user friendliness
- Built-in automation, scheduler, scenes and group controls
- User friendly app for all your Bluetooth mesh qualified devices
- Ready for GPS synchronization for location based sunset and sunrise scheduling
- Ready for remote control and energy monitoring
- Firmware updates over the air
- Reliable security architecture protects devices and network from 3rd party attacks

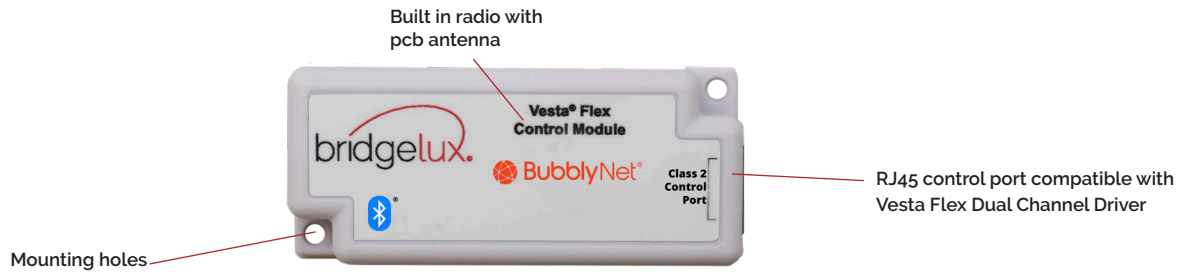
For more information on the BubblyNet wireless lighting platform, please visit [bubblynet.com](http://bubblynet.com)

# Product Feature Map

Bridgelux Vesta Flex Control Module features a control port with an RJ45 terminal which enables plug-and-play connectivity with any Vesta Flex Dual Channel Driver control port. The Control Module receives auxiliary power from the Driver via the RJ45 control port and communicates with the Driver via a dual channel PWM signal.

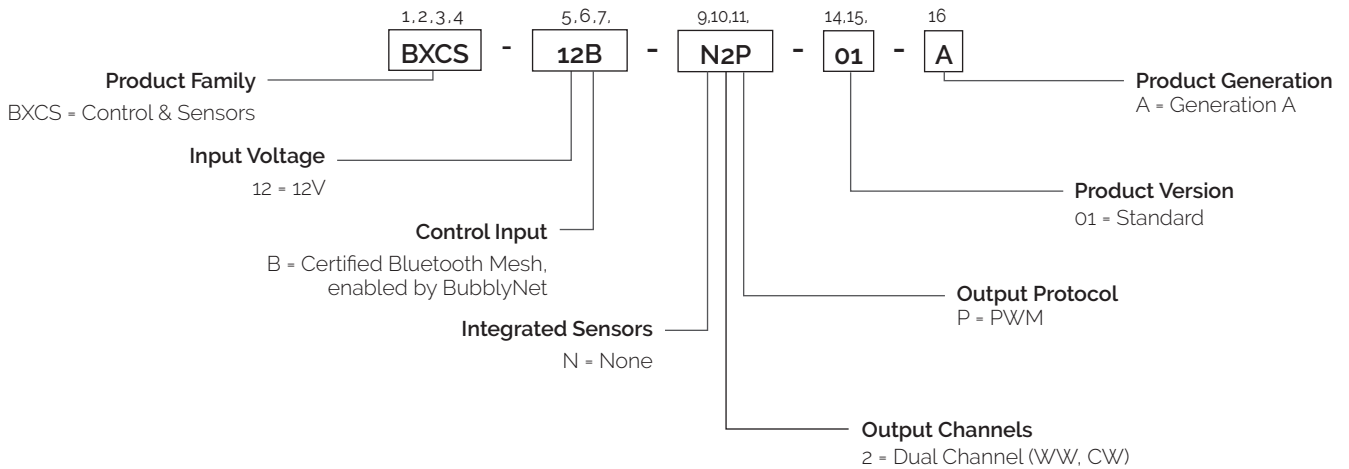
The control module receives its control inputs via a built-in radio that communicates with the BubblyNet platform.

Please visit [www.bridgelux.com](http://www.bridgelux.com) for more information on compatible Vesta Flex Dual Channel Driver and Vesta Series Tunable White arrays and modules.



## Product Nomenclature

The part number designation for the Bridgelux Vesta Flex Control Module is explained as follows:



**Table 1: Product Selection Guide**

Part Number	Control Protocol
BXCS-12B-N2P-01-A	Bluetooth mesh profile



# Electrical and Wireless Characteristics

## Control Port Connection

Vesta Flex Control Modules are designed to connect and communicate with all Vesta Flex Dual Channel Drivers out of the box. Any 8P8C category ethernet cable with RJ45 connectors may be used to connect the Control Module and the Driver via the RJ45 port. The communication between the control module and the driver is asymmetric. The Vesta Flex Dual Channel Driver will not work without this asymmetric communication signal from the Vesta Flex control module.

The Vesta Flex Driver automatically detects which control module is connected to it and adjusts its settings accordingly. This feature allows to simply plug-and-play any Vesta Flex Control Module with any Vesta Flex Dual Channel Driver regardless of the chosen communication protocol on the Vesta Flex Control Module.

Bridgelux recommends the use of an ethernet cable that is commonly available and recognized by the Telecommunications Industries Association (TIA), e.g. Cat 5e, Cat 6 and Cat 6a cables.

The maximum length of such an ethernet cable is 300m.

**Table 2: Electrical Characteristics**

Parameter	Specification
Power load in transmit and receive mode	0.4W (max)
Power load in standby mode	0.2W (max)
Start up time	< 0.3 sec from supply of input power to voltage output on RJ45 port

## Radio Connectivity

The BubbyNet enabled Vesta Flex Control Module uses a radio module which supports standard Bluetooth mesh network protocol.

The typical range between two control modules is 10m to 15m in a typical indoor environment. Actual range is dependent on the lighting fixture RF design and the architecture of the area of deployment.

Vesta Flex Wireless Control Modules are separate from the Vesta Flex Driver and therefore provide additional design flexibility by enabling the Control Module to be located away from the driver in the lighting fixture such that RF connectivity may be optimized.

Bridgelux recommends to conduct thorough range testing in each deployment to ensure reliable RF connectivity.

**Table 3: RF Characteristics**

Parameter	Specification
Operating frequency	2.4 GHz
Output power	+4 dBm
RX receiver sensitivity	-96 dBm
Standard for Bluetooth network	Bluetooth Mesh Profile 1.0 and Bluetooth Mesh Model 1.0 <sup>1</sup>

Notes for Table 3:

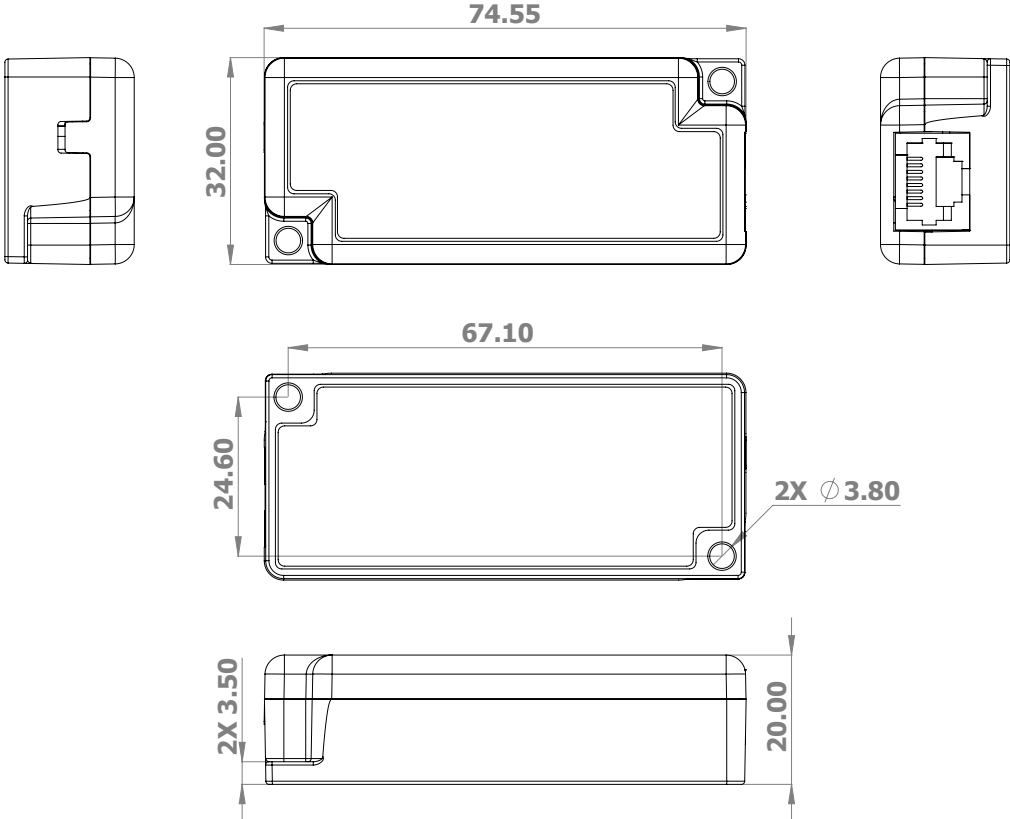
1. Bluetooth mesh profile is compatible with devices that are compliant with Bluetooth 4.0, 4.2 and 5.0 standards.

# Mechanical Characteristics

**Table 4: Control Module Mechanical Characteristics**

Characteristics	Specification
Dimensions (mm)	75 (L) x 32 (W) x 20 (H)
Enclosure material	Plastic
Weight (grams)	26
Ingress protection	IP 20
Connector type	RJ45 terminal block

**Figure 1: Mechanical Drawing**



Notes for Figure 1:

1. Drawing dimensions are in millimeters
2. Unless otherwise specified, all linear tolerances are +/-0.50mm
3. Use #6, M3 or M3.5 fastener in the mounting slots for anchoring the control module in position
4. Refer to Bridgelux assembly drawing 1030-000234 for complete product configuration

# Environmental and Regulatory Standards

**Table 5: Environmental Conditions**

Parameter	Specification
Ambient Operating Temperature	-20°C to +45°C
Humidity Ratings	Maximum 85% Relative Humidity, non condensing
Operating Environment	For indoor use only
Storage Temperature	-20°C to +70°C
MTBF	> 100,000 hrs at maximum ambient temperature

**Table 6: Regulatory Approvals and Compliance**

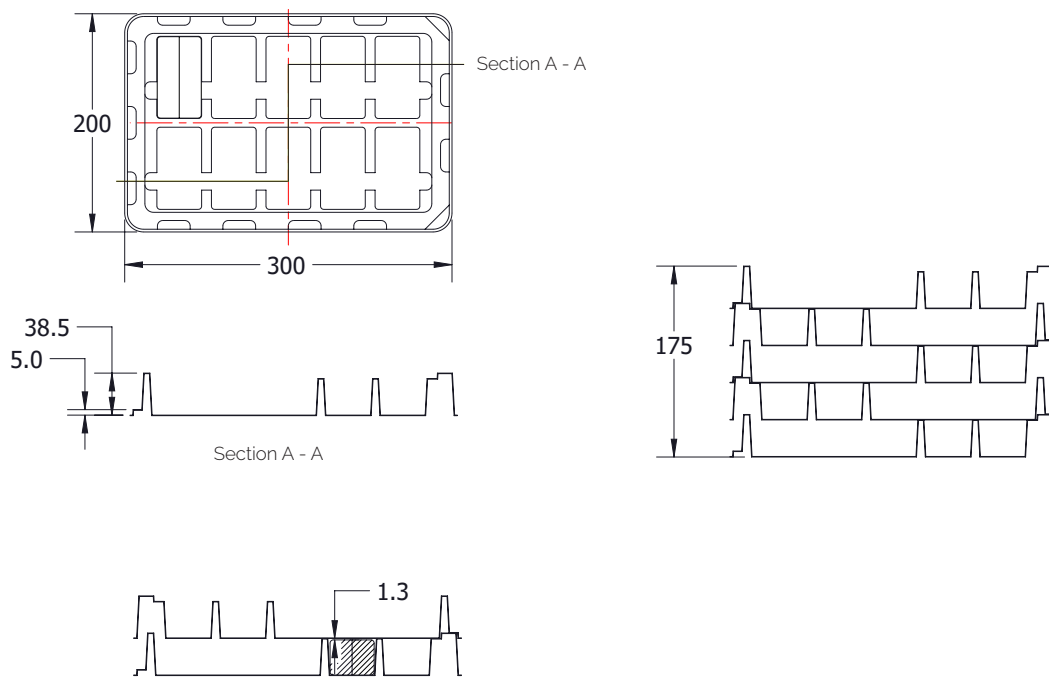
Specification	Description
UL/IEC 60730-1, file number E503792  Note, certification testing commences soon	International standard for safety of electrical controls; <ul style="list-style-type: none"> <li>• Purpose of control: Operating Control, Lighting Control Module</li> <li>• Construction of control: Incorporated</li> <li>• Type 1 Action</li> <li>• Pollution Degree 2</li> <li>• Impulse Voltage: 330 V</li> </ul>
UL 2043  Note, certification testing commences soon	Standard for fire test for heat and visible smoke release for discrete products and their accessories installed in air-handling spaces, e.g. plenums
EN 300 328  Note, certification testing commences soon	Demonstrates compliance with Section 3.2 of the European Union's Radio Equipment Directive (RED), covering wideband data transmission equipment, such as WiFi, Bluetooth and Zigbee devices, which operate in the unlicensed 2.4 GHz ISM band
FCC Part 15, subpart C and RSS-210	RF compliance testing
FCC Part 15, subpart B, ICES005, EN55015/EN61547/EN 301 489-17	EMC compliance testing
RoHS 3	Restriction of Hazardous Substances directive

# Packaging

**Table 7: Packaging Configuration**

	Tray	Box
Quantity (pcs)	20	100
Dimensions (mm)	300 (L) x 200 (W) x 38.5 (H)	315 (L) x 215 (W) x 220 (H)
Weight (kg)	0.61	3.4

**Figure 2: Tray Design**



Notes for Figure 2:

1. Each tray holds 20 Control Modules. There are 10 pockets in each tray. Each pocket holds 2 Control Modules.
2. Five trays are stacked on top of each other and placed in a shipping box. Each shipping box holds 100 Control Modules.
3. Drawing dimensions are in millimeters.
4. Unless otherwise specified, all tolerances are +/-1.0mm.

# Design Resources

## Application Notes

Please contact your Bridgelux sales representative for assistance on obtaining application support when designing with the Bridgelux Vesta Flex Dual Channel Driver and Control Modules. For a list of available resources, visit [www.bridgelux.com](http://www.bridgelux.com).

## 3D CAD Models

CAD models depicting the Vesta Flex Wireless Control module are available in both IGES and STEP formats. Please contact your Bridgelux sales representative for assistance.

# Precautions

## CAUTION: PRODUCT HANDLING

Handle the Vesta Flex Control Module with care to prevent any damage from mechanical shock.

It is recommended to handle this module in a static-free environment.

Do not open or disassemble the product.

To maintain product warranty, the installer is responsible for ensuring that the module's operating conditions do not exceed the maximum conditions stated within this data sheet.

## CAUTION: PRODUCT INSTALLATION

Incorrect installation of the Vesta Flex wireless control module can cause irreparable damage to the module, connected Vesta Flex Driver and/or connected LEDs.

When connecting the Vesta Flex wireless control module with the Vesta Flex Dual Channel Driver, make sure that the RJ45 connectors are locked in the RJ45 ports.

The product is intended for factory installation in a panel or into a controlled equipment.

# Disclaimers

## MINOR PRODUCT CHANGE POLICY

The rigorous qualification testing on products offered by Bridgelux provides performance assurance. Slight cosmetic changes that do not affect form, fit, or function may occur as Bridgelux continues product optimization.



# About Bridgelux: Bridging Light and Life™

At Bridgelux, we help companies, industries and people experience the power and possibility of light. Since 2002, we've designed LED solutions that are high performing, energy efficient, cost effective and easy to integrate. Our focus is on light's impact on human behavior, delivering products that create better environments, experiences and returns—both experiential and financial. And our patented technology drives new platforms for commercial and industrial luminaires.

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Bridgelux Vesta Flex Control Module, enabled by BubblyNet Data Sheet DS 463 Rev. A (02/2021)