Bridgelux® Vesta® Flex
WiZ Control Module

Product Data Sheet DS 458

FIVE
YEAR
Warranty
™

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.

Figure 1: Vesta Flex Platform Block Diagram
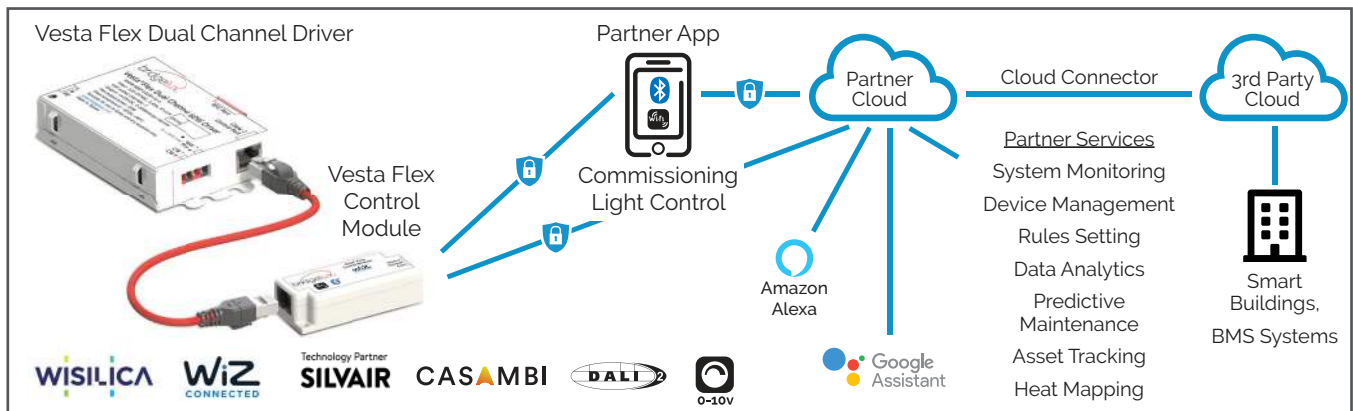
WiZ Lighting Control Platform

The Vesta Flex WiZ Control Module plug and plays out of the box with the WiZ connected lighting platform.

Features and Benefits of the WiZ Control Platform

- WiZ WiFi connects to existing WiFi infrastructures and eliminates the need for a hub
- WiZ Bluetooth Low Energy connects to Bluetooth enabled 3rd party devices and provides support for Bluetooth beacon technology
- iOS app, Android app, and web portal interface options
- Seamless device commissioning
- Rules setting and supervision
- Predictive maintenance
- Data gathering on usage, locations, users, time of day
- Automation based on users and sensors
- Firmware updates over the air
- Customizable and integration-ready APIs
- Ecosystem with sensors and switches, lamps and luminaires

Complete Security with End-To-End Encryption

- Robust AES encryption for edge to cloud connections
- Stronger authentication, each node has its own unique key
- Encryption of pairing process and configuration data on WiZified devices
- Regional cloud infrastructure, China cloud is separated from the cloud for the rest of the world
- Working in tandem with Signify cyber security experts

World Class Scalability

- On leading cloud provider AWS with load balancing architecture
- Massively scalable message driver stateless architecture
- Dual stack local/UDP and cloud/TCP keep the platform running when there is no internet
- Deployed in 52 countries with support from Signify innovation teams

For more information on the WiZ connected lighting platform, please visit wizconnected.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.
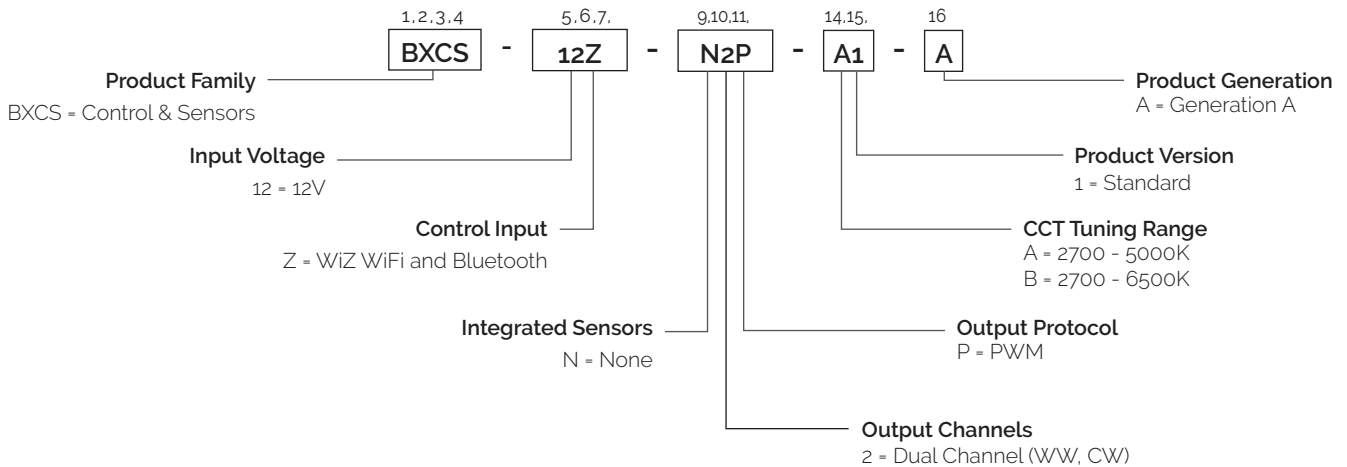
The control module receives its control inputs via a built-in radio that communicates with the WiZ platform.

Please visit www.bridgelux.com for more information on compatible Vesta Flex Dual Channel Driver and Vesta Series Tunable White arrays and modules.

Built in WiFi and BLE radio with pcb antenna

RJ45 control port compatible with Vesta Flex Dual Channel Driver

Mounting holes
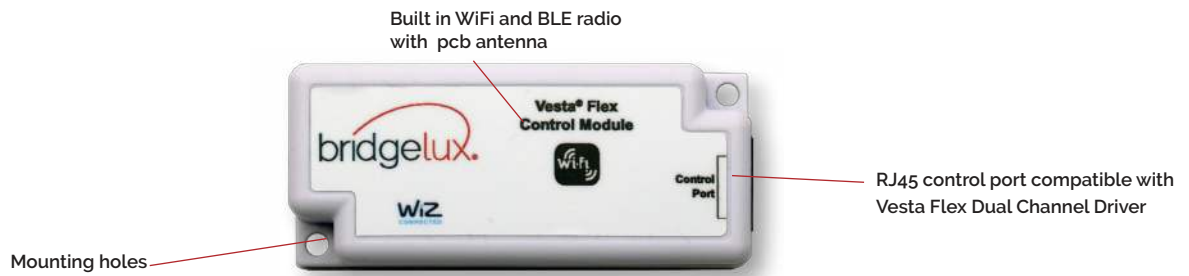
Product Nomenclature

The part number designation for Bridgelux Vesta Flex WiFi and BLE Control Module is explained as follows:

| 1,2,3,4 | 5,6,7, | 9,10,11, | 14,15, | 16 |
| BXCS | - | 12Z | - | N2P | - | A1 | - | A |

Product Family
BXCS = Control & Sensors

Input Voltage
12 = 12V

Control Input
Z = WiZ WiFi and Bluetooth

Integrated Sensors
N = None

Output Channels
2 = Dual Channel (WW, CW)

Product Generation
A = Generation A

Product Version
1 = Standard

CCT Tuning Range
A = 2700 - 5000K
B = 2700 - 6500K

Output Protocol
P = PWM

Table 1: Product Selection Guide

Part Number	CCT Tuning Range	Control Protocol
BXCS-12Z-N2P-A1-A	2700 - 5000K [1]	WiZ Dual Mode WiFi and Bluetooth Low Energy
BXCS-12Z-N2P-B1-A	2700 - 6500K [1]	WiZ Dual Mode WiFi and Bluetooth Low Energy

Notes for Table 1:
1. Please ensure that the CCT tuning range of the WiZ Control Module matches the CCT tuning range of the Vesta Series Tunable White Array product connected to a Vesta Flex Dual Channel Driver

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 of the WiZ Control Module**

Parameter	Specification
Power load in transmit and receive mode	0.6W (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 WiZ enabled Vesta Flex Control Module uses a dual band radio which supports Wi-Fi and Bluetooth Low Energy 4.2 (BLE) network protocols . The Wi-Fi protocol is used to connect to other WiZ enabled devices via a Wi-Fi router. The Bluetooth protocol is used for commissioning and connecting with Bluetooth enabled devices, e.g. sensors.

The typical range between a control module and a router is 15m to 20m in a typical indoor environment. Actual range is dependent on the lighting fixture RF design and the architecture of the area of deploymnent.

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
TX Output power	18 dBm (max)
RX receiver sensitivity	-70 dBm to -90 dBm, dependent on Router configuration
Standard for Wi-Fi network	IEEE 802.11 b/g/n
Standard for Bluetooth network	Bluetooth BLE 4.2
Wi-Fi network security protocol	IEEE 802.11i-2004 WPA2

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)	28
Ingress protection	IP 20
Connector type	RJ45 terminal block

Figure 1: Mechanical Drawing
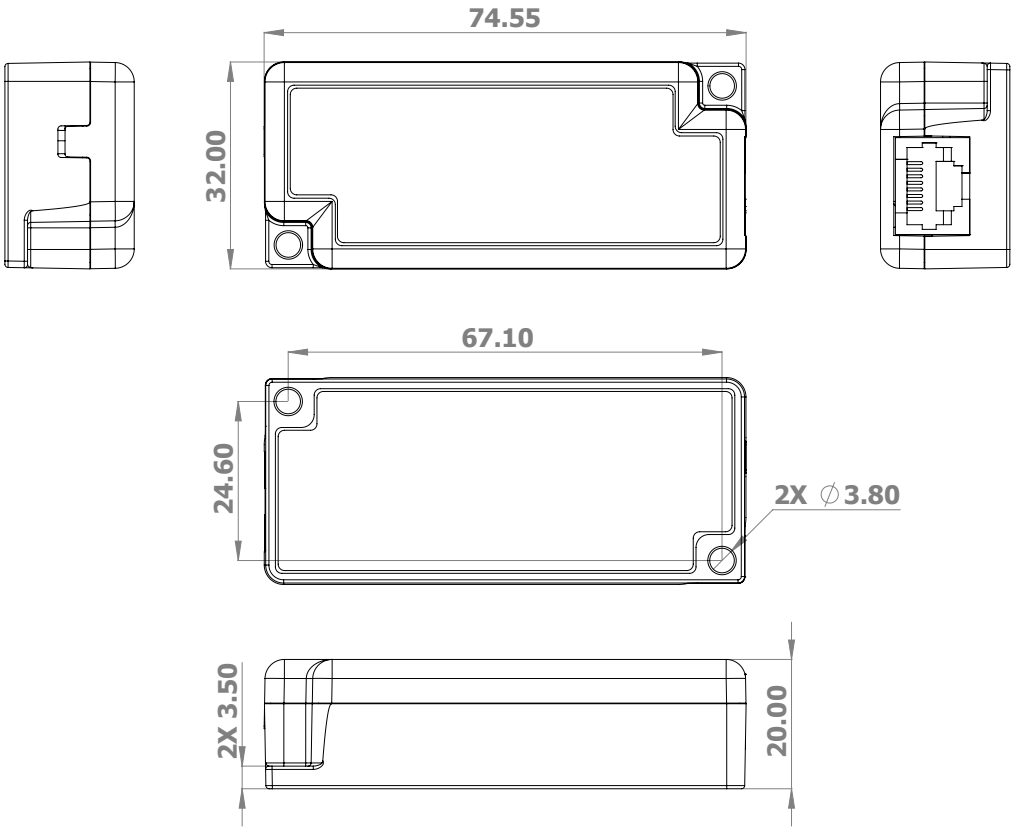
Notes for Figure 1:
1. Drawing dimensions are in millimeters.
2. Unless otherwise specified, all linear tolerances are +/-0.50mm.
3. Use #6, M3 or M3.5 fastener in the mounting slots for anchoring the control module in position.
4. Refer to Bridgelux assembly drawing 1030-000219 (2700-5000K) and 1030-000225 (2700-6500K) 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	International standard for safety of electrical controls; • Purpose of control: Operating Control, Lighting Control Module • Construction of control: Incorporated • Type 1 Action • Pollution Degree 2 • Impulse Voltage: 330 V
UL 2043	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	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	20	100
Dimensions (mm)	200 x 300 x 38.5	305 x 203 x 203
Weight (kg)	0.56	2.8

Figure 2: Tray Design
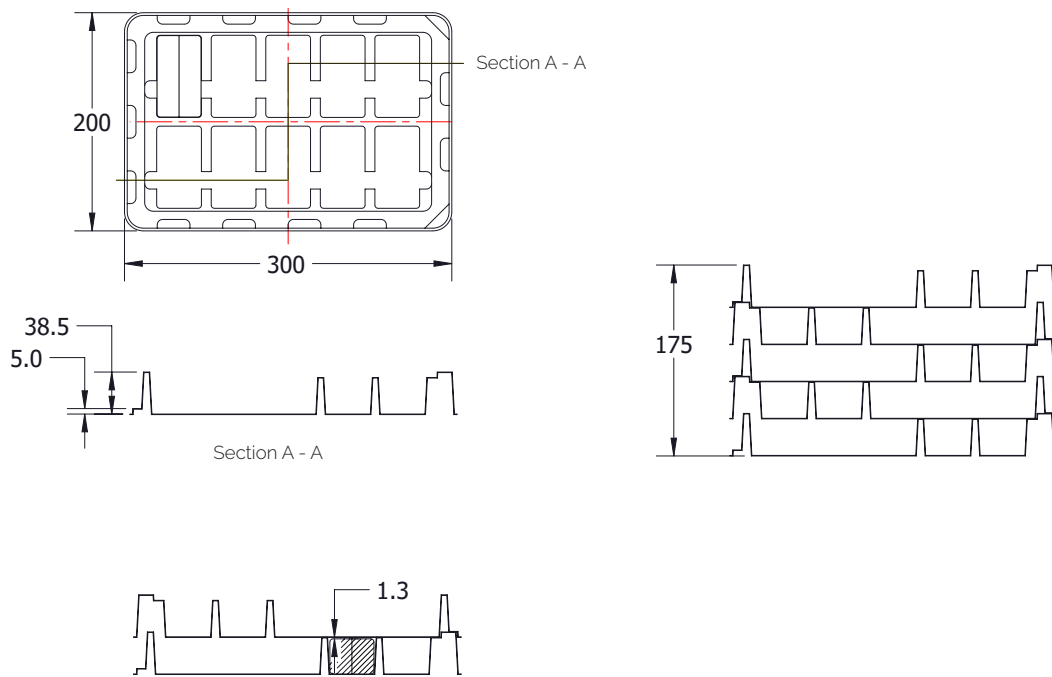
Notes for Figure 2:
1. Each tray holds 20 Control Modules. There are 10 pockets in each tray. Each pocket holds 2 Control Modules.
2. Five trays are stacked on top of each other and placed in a shipping box. Each shipping box holds 100 Control Modules.
3. Drawing dimensions are in millimeters.
4. Unless 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.

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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