# Bridgelux® Vesta® Flex
Dual 0-10V Control Module

Product Data Sheet DS 460

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
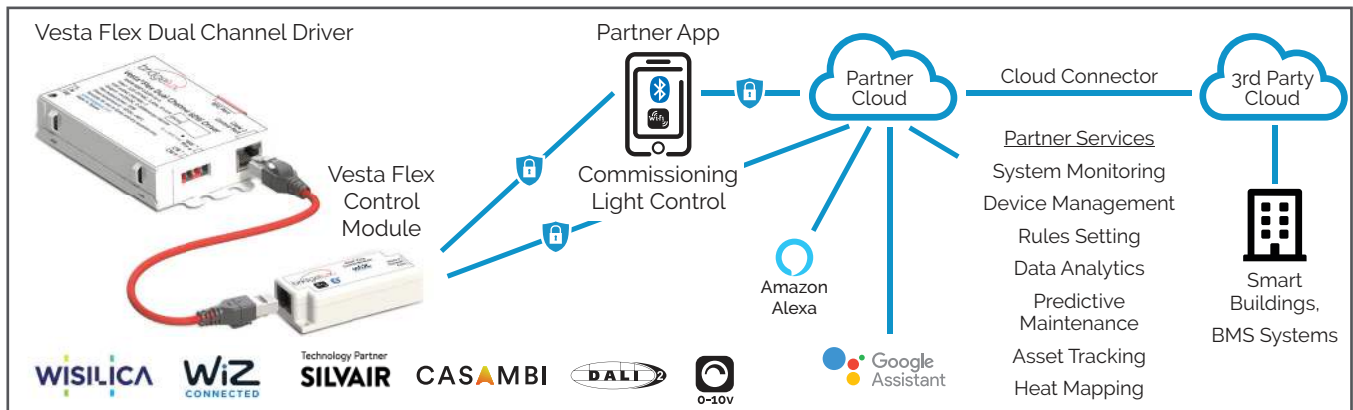
## Lighting systems with 0-10V wired control devices

The Vesta Flex Dual 0-10V Control Module is compatible with industry standard 0-10V, 1-10V current sourcing or current sinking wired control devices. The Control Module provides for two-channel control of color temperature and intensity.

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 two pairs of analog 0-10V signal wires, one pair for intensity dimming and one pair for CCT tuning.

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

Poke-in connector for 0-10V controls

Mounting holes

Control port compatible with Vesta Flex Dual Channel Driver
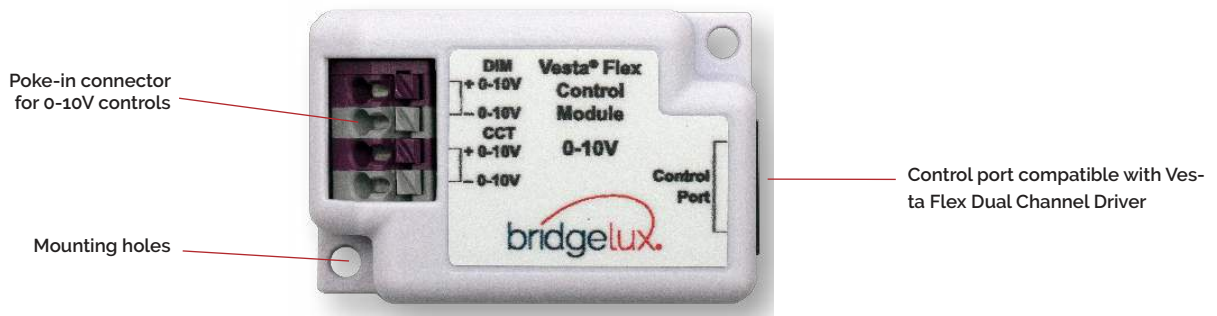
Product Nomenclature

The part number designation for Bridgelux Vesta Flex Dual 0-10V Control Module is explained as follows:

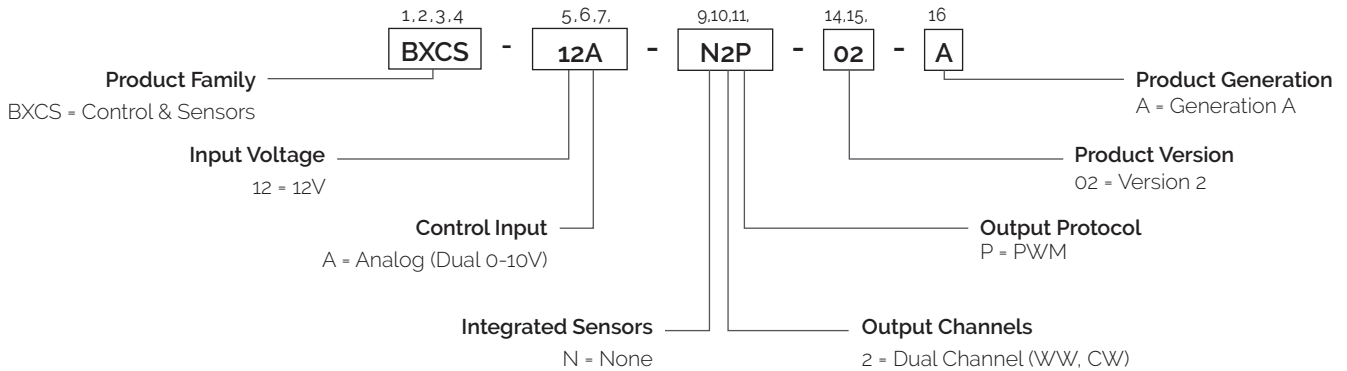| 1,2,3,4 | 5,6,7, | 9,10,11, | 14,15, | 16 |
| BXCS | - 12A | - N2P | - 02 | - A |

Product Family
BXCS = Control & Sensors

Input Voltage
12 = 12V

Control Input
A = Analog (Dual 0-10V)

Integrated Sensors
N = None

Output Channels
2 = Dual Channel (WW, CW)

Output Protocol
P = PWM

Product Version
02 = Version 2

Product Generation
A = Generation A

Table 1: Product Selection Guide

Part Number	Control Protocol
BXCS-12A-N2P-02-A	0-10V

Electrical 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	0.2W (max)
Start up time	< 0.3 sec from supply of input power to voltage output on RJ45 port

Control Characteristics

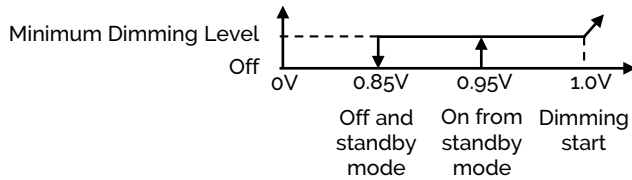**Table 3: Supported Control Specifications**

Supported Control Method	Specification
Current Sinking	IEC 60929 Annex E (0-10V)
Current Sourcing	ANSI E1.3-2001 (1-10V)

Table 4: Control Signal Characteristics

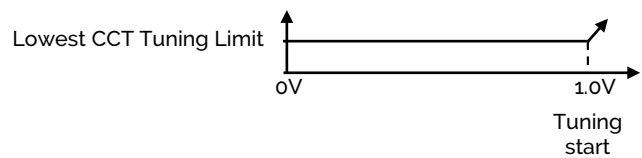| Control Method	Signal Parameter	Specification
0-10V	Current sink per channel	2mA (max)
1-10V	Current source per channel	10mA (max)
0-10V, 1-10V	Voltage for highest dimming level and CCT tune range	> 9.0V
	Voltage for lowest dimming level and CCT tune range	< 1.0V

Figure 1: Control Signal Dim-To-Off Hysteresis

Minimum Dimming Level

Off

0V 0.85V 0.95V 1.0V

Off and standby mode | On from standby mode | Dimming start

Figure 2: Control Signal at Lowest CCT Limit

Lowest CCT Tuning Limit

0V 1.0V

Tuning start

Notes for Figure 1:

1. When the Vesta Flex 0-10V Control Module is dimmed down and the signal voltage reaches 0.85V, then the Driver output power goes to zero and the Driver goes in standby mode. When the Control Module is dimmed up and the dimming control signal voltage reaches 0.95V, then the Driver exits standby mode and turns on its output power at minimum output current. That hysteresis prevents any potental flicker when the dimming control voltage drops below 1.0V.

Notes for Figure 2:

1. When the Vesta Flex 0-10V Control Module is tuned to its lowest CCT limit and the signal voltage drops below 1.0V, then Driver output maintains its current state resulting in a constant CCT at the lowest limit.

Terminal Configuration
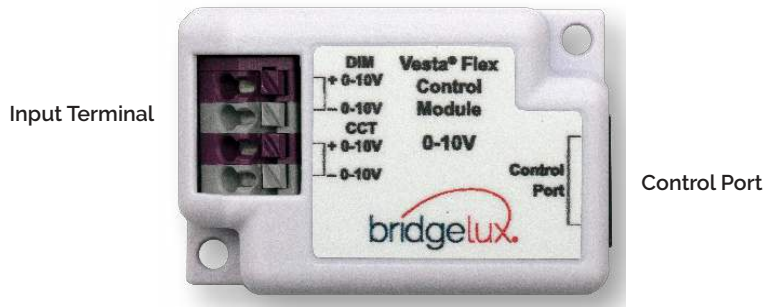
Figure 3: **Terminal Configuration**

Input Terminal

Control Port

Table 5: **Input Terminal Specification**

Item	Specification
Connector	Phoenix PTSA 1.5/4-3.5-F MC
Connector type	Push-in
Wire AWG	16-24
Wire type	solid or stranded copper
Wire strip length	9mm +/-1mm

Table 6: **Input Terminal Configuration**

| Input Terminal Label	Signal
+ 0-10V Dim	(+) 0-10V for intensity dimming
- 0-10V Dim [1]	(-) 0-10V for intensity dimming
+ 0-10V CCT	(+) 0-10V for CCT tuning
- 0-10V CCT [1]	(-) 0-10V for CCT tuning

Notes for Table 6:

1. The - 0-10V Dim and the - 0-10V CCT terminals are internally connected to a common ground.

Mechanical Characteristics

Table 7: **Control Module Mechanical Characteristics**

Characteristics	Specification
Dimensions (mm)	50 (L) x 32 (W) x 20 (H)
Enclosure material	Plastic
Weight (grams)	20.0
Ingress protection	IP 20

Figure 4: **Mechanical Drawing**
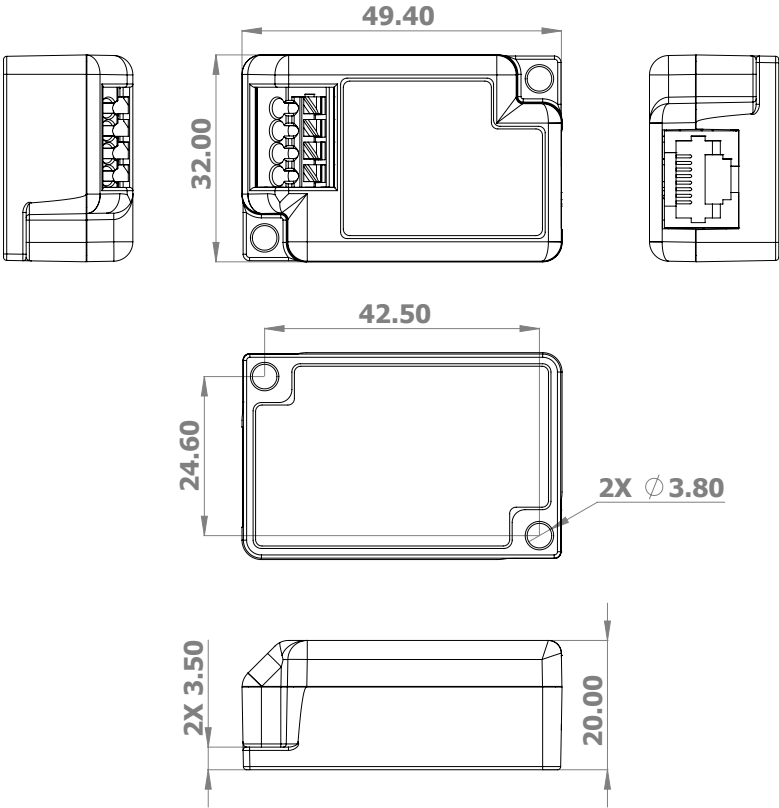
Notes for Figure 4:
1. Drawing dimensions are in millimeters.
2. Unless otherwise specified, all linear tolerances are +/-0.50mm.
3. Use #6, M3 or M3.5 fastener in the mounting holes for anchoring the control module in position.
4. Refer to Bridgelux assembly drawing 1030-000214 for complete product configuration.

Environmental and Regulatory Standards

Table 8: **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	> 1 Million hrs at maximum ambient temperature

**Table 9:** **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: 330V
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
RoHS 3	Restriction of hazardous substances directive

Packaging

Table 10: 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)	0.45	2.6

Figure 5: Tray Design
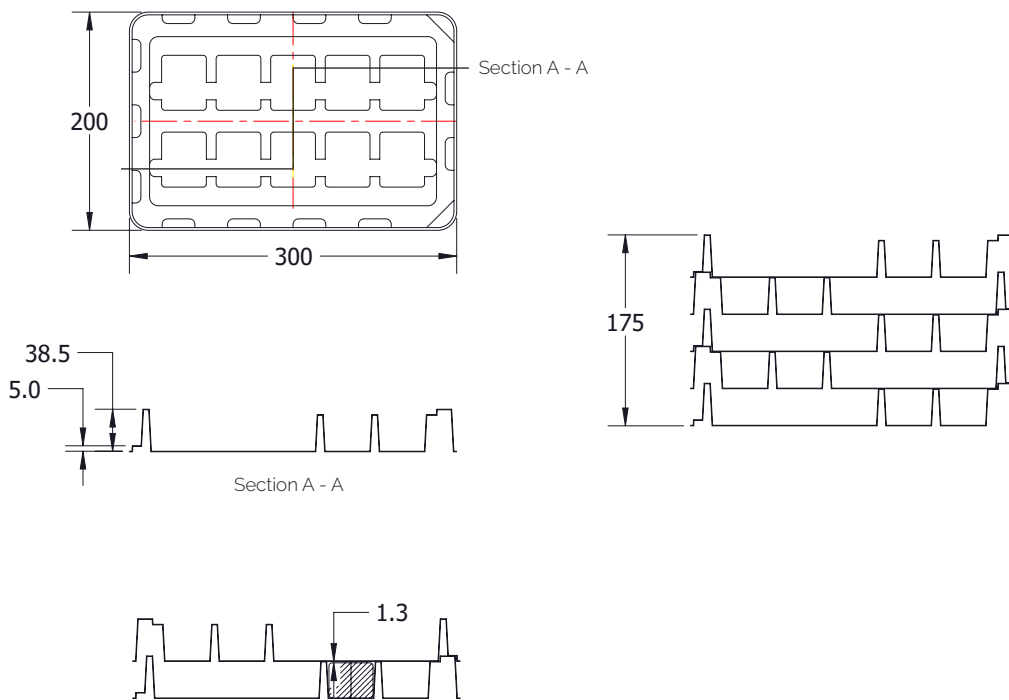
Notes for Figure 5:
1. Each tray holds 20 Control Modules. There are 10 pockets in each tray. Each pocket holds 2 Control Modules.
2. Five trays are stacked on top of each other and placed in a shipping box. Each shipping box holds 100 Control Modules.
3. Drawing dimensions are in millimeters.
4. Unless 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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