CRE

Climate Ready® Engineering Zone Intelligence Unit for user centred occupant and space management system powered by Enigma.

CONTENTS

Climate Ready ® Engineering has designed a unique Zone Intelligence Unit (ZIU CUBE). It incorporates the sophisticated ZIOS - Zone Intelligence Operation System - powered by Enigma.

Enigma represents the latest machine and artificial intelligence. The artificial or self learning algorithms assure intuitive operation of occupant management systems. The software aims to predict user comfort level expectations by using past condition preferences. These preferences include internal and external light, temperature and glare and other environmental factors.

Enigma acts like a brain. It is similar to a central nervous system that senses changing comfort factors and requests. Its skills include reacting to sensors and talking to hardware devices that are activated to make desired changes, which include individual human comfort preferences.

The entire CR-Zone Intelligence Operation System resembles a three dimensional tiered Ethernet (WiFi or wired) network. The System can form one control cluster when multiple hardware and software segments are added to further enhance individual user comfort levels in isolated control zones.

The CR Zone Intelligence Operation System is unique. A Shading or Facade Automation System in a commercial application can operate in response to an individual's predicted comfort levels within a zone without affecting the operation of another system in an adjacent zone. Other applications include residential, education and hospitality.

A user centred zone control system offers intelligent comfort options.

System
Operates Occupant Management Systems

System
Is future proof.

System
Has scalable complexity.

System applications
Include Shading and Facade Automation Systems.

APPLICATIONS

- Basic shading control with user override.
- High performing shading control with sun tracking and facade performance.
- Zone control including shading, cross ventilation, light air conditioning etc.
- Zone comfort optimization using Human Comfort Sensor.
- Building performance tuning.

BENEFITS

- Open Ethernet platform, WiFi, wired or a combination of both,supporting adaptable software algorithms.
- Add on hardware connects to Ethernet control devices using WiFi or wired.
- Scalable three dimensional system -
  1 Individual segments - add input, output, sensor, interfaces
  2 Local Cluster - incorporate all multiple ZIU CUBES to operate as one.
  3 Global Cluster - create global portfolio control network.
- Easy to add functionality.
- Future proof system
  - unlimited cluster additions
  - incorporate new skills and languages
  - global or portfolio network control via CR Cloud.
- Ethernet connectivity means minimum installation requirements using existing network infrastructure.
- Simple network extension using Ethernet WiFi access points.
- Fast access to CR-CUBE Control platform.

INSTALLATION OPTIONS

- New building.
- Retrofit.
- Refurbishment
- Zone optimization.

COMPONENTS

Hardware

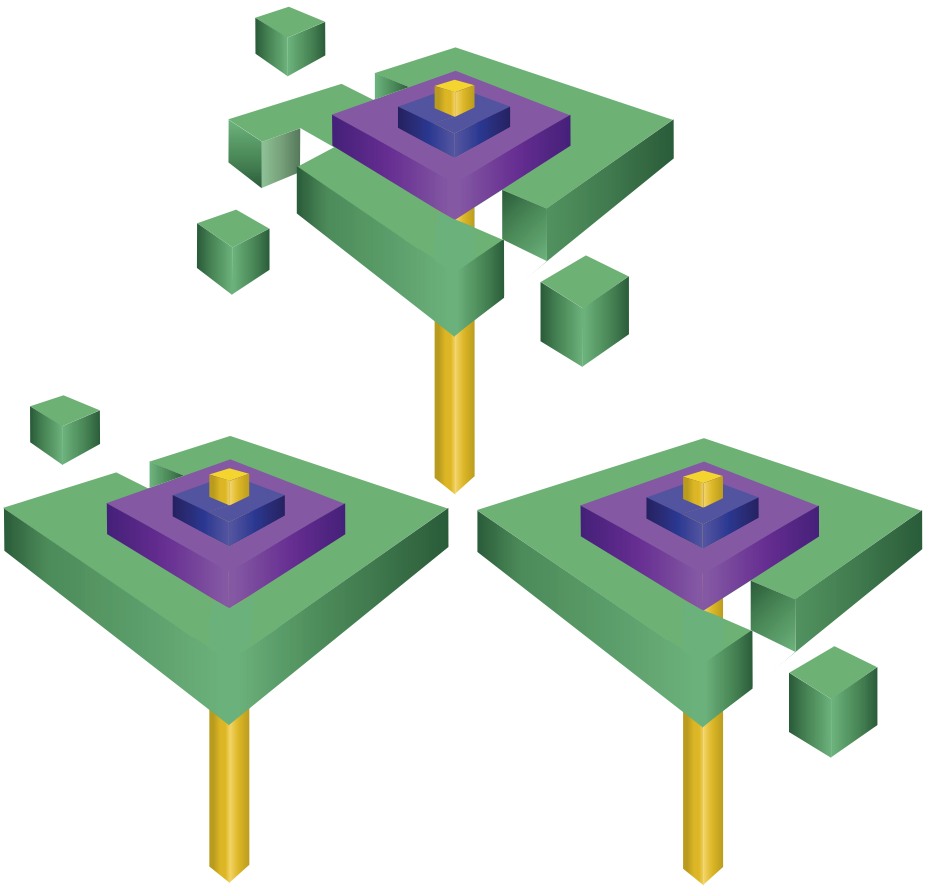
- CR-CUBE - Segment Cluster Server.
- CR-CUBE + - CUBE+ 8 x DI
  8 x DO.
- DUO - 2 motor controllers.
- 6 DI - 6 channel dry contact input.
- 4 DO - 4 channel dry contact output.
- AI - Analogue Input 0 -10 VDC.
- CR Intel-Drive Interface.

Software

- CR Zone Intelligence Operation System - ZIOS.
- Skills - BACnet
  - Sun Tracking
  - Facade performance
  - Over shadowing
  - Internal glare zones
  - Intelligence.
- Family - Cluster Service Operation International or portfolio wide.
- Talk - User Interface on smart phones, tablets, PCs etc.
  - Reporting tools.

CONFIGURATIONS

- One layer - Local ZIU Network zone
- Local Cluster - Local ZIU Network zone and multi segment zones.
- Family - Independent of location with ZIU CUBE and CR Cloud connecting all zones in cluster.



Isometric diagram above depicts the centred ZIU CUBE and tiered Ethernet network, (WiFi or wired) updated with additional hardware and software when required. Connected Clusters create a Family, a global portfolio control network.

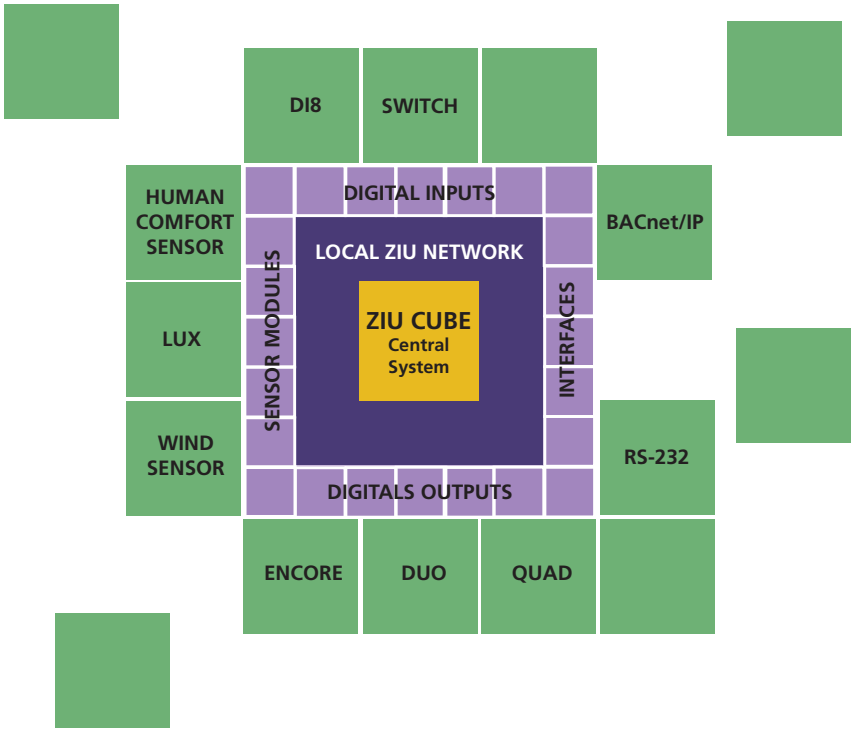


Diagram above depicts added hardware and software to the ZIU CUBE.

CR-ZIU CUBE - Zone Intelligence Cluster Server

Product	Type	Item
Cluster Server	CR Zone Intelligence	Product Information

Description

The Climate Ready® ZIU CUBE is a Cluster Server with Ethernet IP connectivity. The CR-ZIU CUBE is the basic platform to run the CR-ZIOS (Zone Intelligence Operation System - powered by *Enigma*) and create the local CR Zone Intelligence Network within a zone or space utilizing an Ethernet IP network. This network can either be an existing office network, in a wired or wireless (Wi-Fi) setup, or a project specific setup using wired Ethernet or Wi-Fi access points. The unique and occupant specific algorithms, which utilise the latest machine and artificial intelligence technology, assure intuitive operation of occupant comfort management systems. Due to its future proof architecture, the CR-ZIOS offers a fully scalable complexity and user centered approach. The CR-ZIU CUBE acts like a brain. The created network structure (Ethernet IP) is like a central nervous system that senses changing comfort factors and user requests. The *Enigma* software modules include, but are not limited to, skills (BACnet/IP, KNX, Modbus, sun tracking, over shadowing, building and facade performance modelling, energy optimization, user comfort and wellbeing), talk (interaction with user, smartphone and tablet use, reporting), and family (global connection of local zones and spaces on enterprise level).

The CR-ZIU CUBE network architecture resembles a three-dimensional tiered Ethernet network and can be easily extended by adding sensors, actuators, and interfaces on a local segment; add multiple CUBES to form a Local Cluster and can even be extended by connecting multiple Local Clusters to form a Global Cluster.

Applications

Operation of High Performing Facade Elements, such as shading, louvers, blinds, shutters, solar panels.

Optimization of existing Building Management and Occupant Comfort Management Systems.

New built, refurbishment and retrofit of commercial dwellings, hospitality and education, shopping centers and residential complexes.

The Climate Ready® ZIU-CUBE offers three major levels of networking:

1 Local Single Zone - application in residential zones (house, apartment) or local zone optimization.

2 Local Cluster - application in commercial multi-level buildings.

3 Global Cluster - application in multi-national or global portfolios.

The Climate Ready® ZIU-CUBE can interact with all CR-ZIU Ethernet devices such as:

CR-DUO	Duo Motor Controller (240 VAC or dry contact output)	2 x hardwired motors
CR-DATA	CR-Data Motor Controller	16 x data motors
CR-DI8	Dry Contact Input Module	
CR-AI4	Analog Input Module (0 - 10 VDC).	

CR-ZIU CUBE+ - Zone Intelligence Cluster Server including DI/DO

Product	Type	Item
Cluster Server	CR Zone Intelligence	Product Information

Description

The Climate Ready® ZIU-CUBE+ is a Cluster Server with Ethernet IP connectivity and additional dry contact input/output for easy system upgrades. In addition to the basic functionality of the ZIU-CUBE – see further down in this specification – the upgraded ZIU-CUBE+ version is designed to integrate with older, relay operated control systems and allow full access to the capabilities of the CR-Zone Intelligence. Main applications are refurbishment projects and cost efficient fit-out works with older infrastructure.

The ZIU-CUBE is the basic platform to run the CR-ZIOS (Zone Intelligence Operation System - powered by *Enigma*) and create the local CR Zone Intelligence Network within a zone or space utilizing an Ethernet IP network. This network can either be an existing office network, in a wired or wireless (Wi-Fi) setup, or a project specific setup using wired Ethernet or Wi-Fi access points. The unique and occupant specific algorithms, which utilize the latest machine and artificial intelligence technology, assure intuitive operation of occupant comfort management systems. Due to its future proof architecture, the CR-ZIOS offers a fully scalable complexity and user centered approach. The ZIU-CUBE acts like a brain. The created network structure (Ethernet IP) is like a central nervous system that senses changing comfort factors and user requests. The *Enigma* software modules include, but are not limited to, skills (BACnet/IP, KNX, Modbus, sun tracking, over shadowing, building and facade performance modelling, energy optimization, user comfort and wellbeing), talk (interaction with user, smart phone and tablet use, reporting), and family (global connection of local zones and spaces on enterprise level).

The ZIU-CUBE network architecture resembles a three-dimensional tiered Ethernet network and can be easily extended by adding sensors, actuators, and interfaces on a local segment. Adding multiple ZIU-CUBES form a Local Cluster, and can be extended by connecting multiple Local Clusters to form a Global Cluster.

Applications

Operation of High Performing Facade Elements, such as shading, louvers, blinds, shutters, solar panels.

Optimization of existing Building Management and Occupant Comfort Management Systems.

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The Climate Ready® ZIU-CUBE can interact with all CR-ZIU Ethernet devices, such as:

CR-DUO	Duo Motor Controller (240 VAC or dry contact output)	2 x hardwired motors
CR-DATA	CR Data Motor Controller	16 x data motors
CR-DI8	Dry Contact Input Module	
CR-AI4	Analog Input Module (0 - 10 VDC).	

Technical data

Supply voltage	USB DC via Micro USB/240 VAC
Dimensions	Length - 145 mm / Width - 75 mm / Height - 35 mm
Data network	WiFi IEEE 802.11 11 / Ethernet IP
Data backbone	Ethernet via RJ45
Input	8 x dry contact, opto-isolated
Output	8 x dry contact NO solid state
Rating	UL Certified
Environmental	0 - 55˚C at 0 - 95% RH (non-condensing)
Operation System	CR-ZIOS powered by *Enigma*. *Enigma*© Copyright of Enigma Algorithms Pty Ltd

Connectors

Connector	Connector Type	Cable Required
Power input	Power plug	No
Data network	RJ45	CAT6e
DI/DO	Screw termination	
External Monitor	USB HDMI	USB HDMI

CR-ZIU DUO - Zone Intelligence Dual Motor Controller

Product	Type	Items
Controller	CR Zone Intelligence	Product Information and installation

Description

The Climate Ready® ZIU DUO is a dual motor controller designed specifically for the control of motorized shades. It is compatible with roller, venetian and louver style shading products. The controller connects via Ethernet IP (wired or Wi-Fi) to the zone network, and the Zone Cluster Server (CR-ZIU CUBE). The CR-ZIU DUO controller can host various operation profiles, such as the unique and shading specific ST[a]ARS (for roller blinds) and ST[a]ATS (for venetian blinds and louvers) which allow a highly precise adjustment of the shading system according to an astrophysical Solar Path Calculus. Another optional operation mode is the Facade Performance module which combines the 'Sun Tracking' ability with a sophisticated 3D mapping of the target building section and its surrounding objects to detect overshadowing incidents. Additional CR-ZIU modules allow for the addition of sensors and A/V system integration. The CR-ZIU DUO Motor Controller operates as a part of a CR Zone Intelligence network and can connect through the CR-ZIU CUBE to a vertical backbone. The communication protocol on the backbone can be setup to integrate with third-party systems i.e. network devices using BACnet/IP.

Application

The CR-ZIU DUO Motor Controller positions facade element/s based on input from:
Users - WiFi Smart Switch or Climate Ready® Building Manager Software.
Solar Path Calculus with FIM (Facade Intelligence Modelling) - solar tracking based on building location, distance, height and facade orientation.
Skills - User defined, or standard skills developed by *Enigma.*
Sensors - including sun, wind, temperature and occupancy.
Digital inputs - Dry-Contacts from relays, switches, etc.
Analog inputs - Environmental Sensors (Lux, Wind, Temperature, etc.).
External feeds - Bureau of Meteorology (BOM Feed).
BMS or A/V Systems - BACnet/IP, Ethernet IP, or dry contact via USB hub.
Scheduling - any operational parameter can be scheduled to meet specific shading needs.

Technical data

Supply voltage	110 - 240 VAC at 50 / 60 Hz (power lead with Australian plug)
Dimensions	Length - 145 mm / Width - 75 mm / Height - 35 mm
Output (240 VAC)	2 x 240 VAC - max. 3A (4 core cable with inline connector)
Output (dry contact)	4 x dry contact NO relay max. 3A
Input (dry contact)	2 x dry contact NO
Data network	WiFi IEEE 802.11 / Ethernet IP hardwired (RJ45)
Rating	UL Certified
Environmental	0 - 55˚C at 0 - 95% RH (non-condensing)
Power connection	Wired supply cable with Australian plug
Operation System	CR-ZIOS powered by *Enigma*. *Enigma*© Copyright of Enigma Algorithms Pty Ltd

Connectors

Connector	Connector Type	Cable Required
Power input	Hardwired to internal Screw terminals	3 conductor (2+ ground) 14 AWG max.
Motor output 2	Hardwired to internal Screw terminals.	4 conductor (3+ ground) 14 AWG max.

Product	Type	Items
Controller	CR Zone Intelligence	Product Information

Description

The Climate Ready® ZIU ENCORE is a dual channel drapery controller designed specifically for the control of motorized curtains and roller shades. The controller connects via Wi-Fi Ethernet IP to the zone network, and to the zone cluster server (CR-ZIU CUBE). The CR-ZIU ENCORE controls a single roller, a single curtain, two curtains, or one roller shade and one curtain requiring only a dual power outlet.

The CR-ZIU ENCORE controller can host various operation profiles, such as the unique and shading specific ST[a]ARS (for roller blinds) and ST[a]ATS (for venetian blinds and louvers) which allow a highly precise adjustment of the shading system according to an astrophysical Solar Path Calculus. Another optional operation mode is the Facade Performance module which combines the 'Sun Tracking' ability with a sophisticated 3D mapping of the target building section and its surrounding objects to detect overshadowing. Additional CR-ZIU modules allow for the addition of sensors and A/V system integration. The CR-ZIU ENCORE Motor Controller operates as a part of a CR Zone Intelligence network and can connect through the CR-ZIU CUBE to a vertical backbone. The communication protocol on the backbone can be setup to integrate with third-party systems i.e. network devices using BACnet/IP.

Application

The CR-ZIU ENCORE Motor Controller positions shades based on input from:

Users - WiFi Smart Switch or Climate Ready® Front End Software.

Solar Path Calculus with FIM (Facade Intelligence Modelling) - solar tracking based on building location, distance, height and facade orientation.

Skills - User defined, or standard skills developed by *Enigma*. Human Comfort Sensors.

Sensors - including sun, wind, temperature and occupancy.

Digital inputs - Dry contacts from relays, switches, etc.

Analog inputs - Environmental sensors (lux, wind, temperature, etc.).

External Feeds – Bureau of Meteorology (BOM Feed).

BMS or A/V Systems - BACnet over ZigBee PRO WiFi, or dry contact via USB hub.

Scheduling - any operational parameter can be scheduled to meet specific shading needs.

Technical data

Supply voltage	110 - 240 VAC at 50 / 60 Hz (power lead with Australian plug)
Dimensions	Length - 105 mm / Width - 45 mm / Height - 25 mm
Output (240 VAC)	1 x 240 VAC - max. 3A (4 core cable with inline connector)
Output (dry contact)	4 x dry contact NO relay to Forest Shuttle Drives
Data network	WiFi IEEE 802.11
Rating	UL Certified
Environmental	0 - 55˚C at 0 - 95% RH (non-condensing)
Power connection	Wired supply cable with Australian plug
Operation System	CR-ZIOS powered by *Enigma*.

Connectors

Connector	Connector Type	Cable Required
Power input	Hardwired to internal Screw terminals	3 conductor (2+ ground) 14 AWG max.
Motor output 2	Hardwired to internal Screw terminals.	4 conductor (3+ ground) 14 AWG max.
Curtain Drive Output	RJ45	Straight through RJ45 patch lead.

Product	Type	Items
Interface	CR Zone Intelligence	Product Information

Description

The Climate Ready® INTEL-DRIVE INTERFACE is designed specifically for the control of motorized shades with CR Intel-Drives (please refer to the CR Intel-Drive manual for further details). It is compatible with roller, venetian and louver style shading products.
The interface connects via Ethernet IP (wired or Wi-Fi) to the zone network, and to the Zone Cluster Server (CR-ZIU CUBE). The CR INTEL-DRIVE INTERFACE controls up to sixteen (16) daisy-chained drives, individually or in groups. The interface can host various operation profiles, such as the unique and shading specific ST[a]ARS (for roller blinds) and ST[a]ATS (for venetian blinds and louvers) which allow a highly precise adjustment of the shading system according to an astrophysical Solar Path Calculus.
Another optional operation mode is the Facade Performance module which combines the 'Sun Tracking' ability with a sophisticated 3D mapping of the target building section and its surrounding objects to detect overshadowing incidents. Additional CR-ZIU modules allow for the addition of sensors and A/V system integration. The CR INTEL-DRIVE INTERFACE operates as a part of a CR Zone Intelligence network and can connect through the CR-ZIU CUBE to a vertical backbone. The communication protocol on the backbone can be setup to integrate with third-party systems i.e. network devices using BACnet/IP.

Application

The CR INTEL-DRIVE INTERFACE positions facade element/s based on input from:
Users - WiFi Smart Switch or Climate Ready® Front End Software.
Solar Path Calculus with FIM (Facade Intelligence Modelling) - solar tracking based on building location, distance, height and facade orientation.
Skills - User defined, or standard skills developed by *Enigma*.
Sensors - including sun, wind, temperature, occupancy and Human Comfort Sensors.
Digital inputs - Dry contacts from relays, switches, etc.
Analog inputs - Environmental sensors (lux, wind, temperature, etc.).
External feeds - Bureau of Meteorology (BOM Feed.)
BMS or A/V Systems - BACnet/IP, Ethernet IP, or dry contact via USB hub.
Scheduling - any operational parameter can be scheduled to meet specific shading needs.

Technical data

Supply voltage	110 - 240 VAC at 50 / 60 Hz (power lead with Australian plug)
Dimensions	Length - 145 mm / Width - 75 mm / Height - 35 mm
Output (240 VAC)	240 VAC - max. 20A (5-core Bus-Bar)
Output (DATA)	2-core embedded in Bus-Bar
Data network	WiFi IEEE 802.11 / / Ethernet IP hardwired (RJ45)
Rating	UL Certified
Environmental	0 - 55˚C at 0 - 95% RH (non-condensing)
Power connection	Wired supply cable (Bus-Bar)
Operation System	CR-ZIOS powered by *Enigma*.

Connectors

Connector	Connector Type	Cable Required
Power input	Hardwired to internal Screw terminals.	3 conductor feed
Motor output	Hardwired to internal Screw terminals.	5 conductor Bus-Bar

CR-ZIU DI6 - Zone Intelligence Digital Input Module

Product	Type	Items
Module	CR Zone Intelligence	Product Information and installation

Description

The Climate Ready® ZIU DI6 is a digital input module with up to six (6) opto-isolated dry contact inputs. The CR-ZIU DI6 interfaces with sub-systems using dry contact outputs (Low-Level Integration), or connects to wall switches or similar input devices. Additional CR-ZIU modules cater for the addition of sensors and A/V system integration. The CR-ZIU DI6 Input Controller operates as a part of a CR Zone Intelligence network and can connect through the CR-ZIU CUBE to a vertical backbone. The communication protocol on the backbone can be setup to integrate with third-party systems i.e. network devices using BACnet/IP.

Application

The CR-ZIU DI6 Digital Input Module adds digital inputs to a CR-ZIU system:
Users - WiFi Smart Switch or Climate Ready® Front End Software.
Solar Path Calculus with FIM (Facade Intelligence Modelling) - solar tracking based on building location, distance, height and facade orientation.
Skills - User defined, or standard skills developed by *Enigma.*
Sensors - including sun, wind, temperature and occupancy. Human Comfort Sensors.
Digital inputs - Dry contacts from relays, switches, etc.
Analog inputs - Environmental Sensors (Lux, wind, temperature, etc.).
External feeds - Bureau of Meteorology (BOM Feed).
BMS or A/V Systems - BACnet/IP, Ethernet IP, or dry contact via USB hub.
Scheduling - any operational parameter can be scheduled to meet specific shading needs.

Technical data

Supply voltage	110 - 240 VAC at 50 / 60 Hz (power lead with Australian plug)
Dimensions	Length - 145 mm / Width - 75 mm / Height - 35 mm
Input (dry contact)	6 x opto-isolated dry contact
Data network	WiFi IEEE 802.11 / Ethernet IP hardwired (RJ45)
Rating	UL Certified
Environmental	0 - 55˚C at 0 - 95% RH (non-condensing)
Power connection	Wired supply cable with Australian plug
Operation system	CR-ZIOS powered by *Enigma*.

Connectors

Connector	Connector Type	Cable Required
Power input	Hardwired to internal Screw terminals.	3 conductor (2+ ground) 14 AWG max.
Data input	Screw terminals.	

Product	Type	Items
Module	CR Zone Intelligence	Product Information

Description

The Climate Ready® ZIU DI2-SI is a digital input module which offers two (2) opto-isolated dry-contact inputs, as well as one (1) RS 232 and one (1) RS 485 Serial Interface. The CR-ZIU DI2-SI allows to interface with sub-systems using dry-contact outputs (Low-level Integration), or serial communication devices. Additional CR-ZIU modules allow for the addition of sensors and output drive integration. The CR-ZIU DI2-SI Input Controller operates as a part of a CR Zone Intelligence network and can connect through the CR CUBE to a vertical backbone. The communication protocol on the backbone can be setup to integrate with third-party systems i.E. network devices using BACnet/IP.

Application

The CR-ZIU DI2-SI Digital Input Module adds digital and serial inputs to a CR-ZIU system:
Users - WiFi Smart Switch or Climate Ready® Front End Software.
Solar Path Calculus with FIM (Facade Intelligence Modelling) - solar tracking based on building location, distance, height and facade orientation.
Skills - User defined, or standard skills developed by *Enigma.*
Sensors - including sun, wind, temperature and occupancy. Human Comfort Sensors.
Digital inputs - Dry contacts from relays, switches, etc.
Analog inputs - Environmental Sensors (Lux, wind, temperature, etc.).
External feeds - Bureau of Meteorology (BOM Feed).
BMS or A/V Systems - BACnet/IP, Ethernet IP, or dry contact via USB hub.
Scheduling - any operational parameter can be scheduled to meet specific shading needs.

Technical data

Supply voltage	110 - 240 VAC at 50 / 60 Hz (power lead with Australian plug)
Dimensions	Length - 145 mm / Width - 75 mm / Height - 35 mm
Input (dry contact)	2 x opto-isolated dry contact
Input (serial	RS 232 & RS 485
Data network	WiFi IEEE 802.11 / Ethernet IP hardwired (RJ45)
Rating	UL Certified
Environmental	0 - 55˚C at 0 - 95% RH (non-condensing)
Power connection	Wired supply cable with Australian plug
Operation system	CR-ZIOS powered by *Enigma*.

Connectors

Connector	Connector Type	Cable Required
Power input	Hardwired to internal Screw terminals.	3 conductor (2+ ground) 14 AWG max.
Data input	Screw terminals Sub-Min 9.	

CR-ZIU AI4 - Zone Intelligence Analog Input Module

Product	Type	Items
Module	CR Zone Intelligence	Product Information

Description

The Climate Ready® ZIU AI4 is an Analog Input Module with up to four (4) analog inputs. The CR-ZIU AI4 interfaces with meteorological sensors such as lux, wind velocity, wind direction, temperature and similar input devices. Additional CR-ZIU modules cater for the addition of dry contacts, interfaces and motor output drivers. The CR-ZIU AI4 operates as a part of a CR Zone Intelligence network and can connect through the CR CUBE to a vertical backbone. The communication protocol on the backbone can be setup to integrate with third-party systems i.e. network devices using BACnet/IP.

Application

The CR-ZIU AI4 Analog Input Module adds analog inputs to a CR-ZIU system:

Users - WiFi Smart Switch or Climate Ready® Front End Software.

Solar Path Calculus with FIM (Facade Intelligence Modelling) - solar tracking based on building location, distance, height and facade orientation.

Skills - User defined, or standard skills developed by *Enigma.*

Sensors - including sun, wind, temperature, occupancy and Human Comfort Sensors.

Digital inputs - Dry contacts from relays, switches, etc.

Analog inputs - Environmental sensors (lux, wind, temperature, etc.)

External feeds - Bureau of Meteorology (BOM Feed).

BMS or A/V Systems - BACnet/IP, Ethernet IP, or dry contact via USB hub.

Scheduling - any operational parameter can be scheduled to meet specific shading needs.

Technical data

Supply voltage	110 - 240 VAC at 50 / 60 Hz (power lead with Australian plug)
Dimensions	Length - 145 mm / Width - 75 mm / Height - 35 mm
Input	4 x opto-isolated 0 – 10 VDC
Data network	WiFi IEEE 802.11 / Ethernet IP hardwired (RJ45)
Rating	UL Certified
Environmental	0 - 55˚C at 0 - 95% RH (non-condensing)
Power connection	Wired supply cable with Australian plug
Operation System	CR-ZIOS powered by *Enigma*.

Connectors

Connector	Connector Type	Cable Required
Power input	Hardwired to internal Screw terminals	3 conductor (2+ ground) 14 AWG max.
Data input	Screw terminals.	

Product	Type	Items
Sensor	CR Zone Intelligence	Product Information

Description

Climate Ready® Human Comfort Sensors are an array of sensors to provide a metric for human experience and comfort in a space. The CR-HCS array is integrated with the CR-ZIU network, to measure a variety of environmental conditions. This information provides insight to the occupant experience of a space, mimicking human senses and more. Distributed Human Comfort Sensor arrays, connected via networked control units can provide a campus-wide real time map of occupant experience over multiple zones or sites.

Human Comfort Sensors monitor direct impacts on an occupant's senses: such as light, temperature, humidity and noise. Furthermore, the CR-HCS array can also incorporate advanced sensors to measure other important quantities not directly observable by the occupant, such as ultraviolet light, air quality or gas.

The CR-HCS data serves as a trigger for the CR-ZIU CUBE, which in turn can connect with existing Building Management Systems to take practical steps to address the comfort issues identified.

Technical data

Supply voltage	5 V or USB power
Dimensions	Various
Data output	Dry contacts or relay / CR-ZIU Ethernet IP network
Data management	Connects to the CR-ZIU network
Sensors options	Eyes - light levels Ears - ambient noise Nose - off-gassing, CO, gas sensors Skin - UV, temperature, humidity, air-flow
Processing options	Glare detection Noise disturbance functions Air quality analysis.
Operating system	CR-ZIU powered by *Enigma*.

CRE

To discuss your Occupant and Space Management System contact

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