

# CBM Range: CBM08 | CBM12 | CBM 16 | CBM24

The CBM (Cylon BACnet Main Plant) range of controllers are ideally suitable for main plant control, including AHUs, Boilers, Rooftop Units, Lighting, etc.

CBM Controllers are BTL Listed BACnet Advanced Application Controllers.

The CBM range of products offers the following benefits:

## Unique Flexibility with UniPuts™

The CBM range has all the benefits of the Cylon BACnet range which uniquely presents UniPuts™ – a revolutionary answer to flexible point configuration, offering maximised utilisation of controller capacity along with flexibility in strategy changes. Built on a modern web-based architecture, it has a wide application scope with the flexibility of being stand-alone or network enabled.

## Cost Effective, low entry point for building control

The CBM range offers reduced costs in terms of training, implementation, rollout and maintenance. Modular, extendible packages along with low installation costs mean a low entry point for building control.

## Highly programmable and extendable through web-enabled HVAC technology

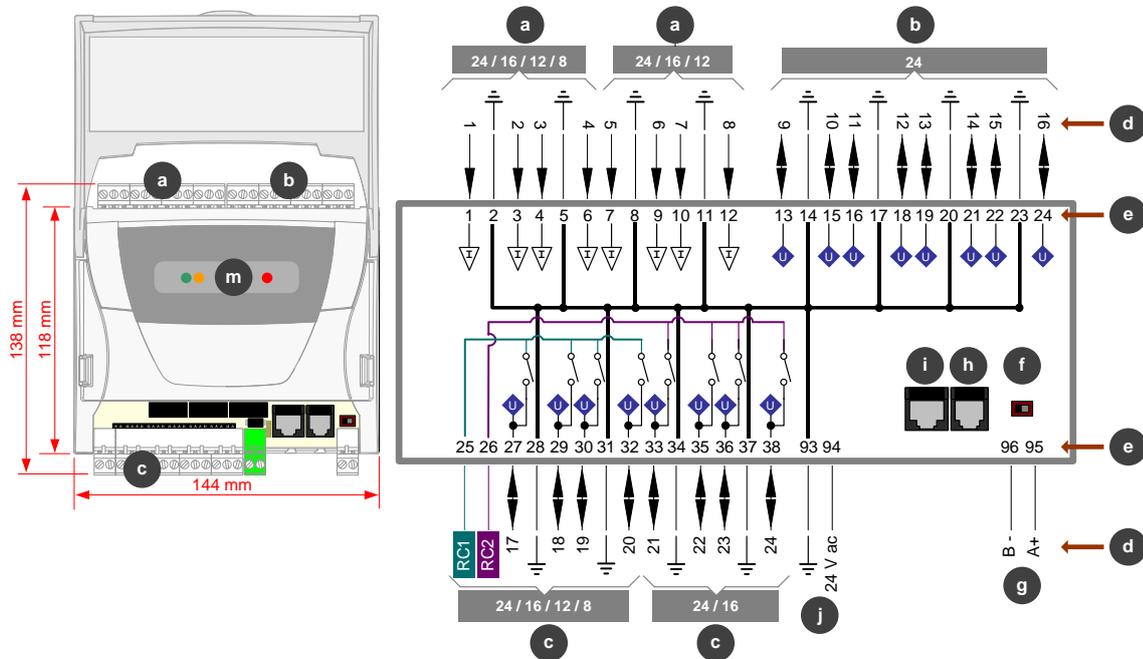
The CBM range offers an advanced web-based 32-bit architecture, with advanced programmability. Inbuilt diagnostics, along with expanded data logging and strategy storage, is further enhanced by UniPuts™, offering up to 8 Universal inputs, up to 8 UniPuts™ (AI/DI/AO/DO) and up to 8 UniPuts™ with relays.



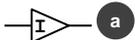
	CBM08	CBM12	CBM16	CBM24
• UniPuts™				8
• UniPuts™ + Relays hardware connections that can be used as inputs, outputs or relays (software selectable)	4	4	8	8
• Universal Inputs hardware connections that can be used as analog or digital inputs (software selectable)	4	8	8	8
• Controllers per fieldbus – up to	32	32	16	16



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**CAUTION** - DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER. DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.



Universal Input



Uniput™



Uniput™ + Relay  
 • When these outputs are configured as 'relay' they use either terminal 25 <sup>RC1</sup> or terminal 26 <sup>RC2</sup> as their common point. Otherwise they use 28, 31, 34, or 37 (⊥) as their common point.



Relay Common



Common



Point Numbers



Terminal Numbers



Fieldbus Terminator



• OFF (fieldbus not terminated at this controller)



• ON (fieldbus terminated at this controller)



Fieldbus Port



External Keypad Port



Service Port

**Note:** Service Port must not be connected until after the device is powered on.



Power 24 V AC



Indicator LEDs



**Red LED**  
 Continuous: Battery is healthy.  
 Flash once a second: Indicates no battery/battery is low.



**Green LED**  
 Continuous: Strategy servicing and no comms.  
 Flash rapidly (every 100 ms): Strategy not servicing.  
 Flash once a second: MSTP comms, and Strategy servicing.  
**Note:** when Service Port is in use, the Green LED blinks off as Service Port comms are received.



**Orange LED**  
 Off: Normal operation.  
 On: One or more hardware points in override, by external BACnet Client or by the Cylon Engineering Center.  
**Cycle left to right** (green - orange - red): Controller is in terminal mode.



**Cycle right to left** (red - orange - green): Upgrade in progress while Controller is in terminal mode  
**Note:** The strategy is not serviced while in upgrade mode.



**Cycle green to orange**  
 Global communication/setup problem



**Green and orange flash simultaneously**  
 Global communication/setup problem and Priority Array is set above 16 by external BACnet Client, or by the Cylon Engineering Center.

## Specifications:

### MECHANICAL

Size (excluding terminal plugs)	144 x 118 x 65 mm (5.7 x 4.7 x 2.6")
Enclosure	Injection molded ABS
Mounting	DIN rail

### ENVIRONMENT

**Note:** This equipment is intended for field installation within another enclosure.

Ambient Temperature	0° - 50°C (32° - 122°F) ambient.
Ambient Humidity	0% - 90% RH non-condensing
EMC Immunity	EN 50082-1
EMC Emission	EN55011 Class B
Approvals	BTL Listed – BACnet Advanced Application Controller (B-AAC)

### WIRING

**Note:** Use Copper or Copper Clad Aluminium conductors only.

Termination	PCB mounted plug terminal connections.
Conductor Area	Max: AWG 12 (3.09 mm <sup>2</sup> ) Min: AWG 22 (0.355 mm <sup>2</sup> )

### ELECTRICAL

Supply Requirements	24 V AC +/- 20% 50/60 Hz
Transformer Rating	with UCKRA420: 25 VA without UCKRA420: 20 VA
Power Rating	10 Watts maximum
Fuse Rating	1 A resettable

### PROCESSOR

Type	Hitachi (Renesas) SuperH SH17034 32-bit RISC
Clock Speed	20 MHz
Operating System Memory	512K flash
User Programmable Memory	System Memory 768KB Flash & 128KB RAM (Battery backed for two years)
Real-Time Clock	Battery backed for 2 years minimum

### INPUTS/OUTPUTS

**Note:** Screened cable is recommended for all input connections.

	CBM24	CBM16	CBM12	CBM08	
Universal Inputs 	8 (Pts 1-8)	8 (Pts 1-8)	8 (Pts 1-8)	4 (Pts 1-4)	(Software selectable Interfaces) Active Input 0 – 10 V @ 182 KΩ. 12 bit resolution. Passive Input for a large range of temperature sensors, 12 bit resolution. 10K3A1 sensors are recommended. <b>Note:</b> It is not recommended using Sensors with a heating dissipation constant (K factor) < 2 as this will lead to an offset error. Active Current Input 0 – 20 mA @ 390 Ohms. 12 bit resolution. Digital Volt-Free contact @ 1 mA continuous. Pulse Counting up to 20 Hz, minimum pulse width 25 ms. Potentiometer input (0 KΩ - 10 KΩ, 1 KΩ - 11 KΩ etc).
UniPuts™ 	8 (Pts 9-16)	0	0	0	(Software selectable interfaces) Active Input 0 – 10 V @ 40 KΩ. 9 bit resolution. Active Output 0 – 10 V @ 20 mA max load. Digital Volt-Free contact @ 25 mA not continuous. 24 V AC Detect.
UniPuts™+Relays 	8 (Pts 17-24)	8 (Pts 17-24)	4 (Pts 17-20)	4 (Pts 17-20)	(Software selectable interfaces) Active Input 0 – 10 V @ 40 KΩ. 9 bit resolution. Active Output 0 – 10 V @ 20 mA max load. Digital Volt-Free contact @ 25 mA not continuous. 24 V AC Detect. NO 24 V AC Relay contacts, 2 A continuous / 15 A inrush.

## COMMUNICATIONS

RS232 service port	@ 1.2k, 2.4k, 9.6k, 19.2k or 38.4k Baud (defaults to 38.4k) [cable: CC20/CAB]
BACnet MS/TP Fieldbus port	RS-485 @ 9.6k, 19.2k, 38.4k, 76.8k and 115.2k Baud (defaults to 38.4k)
Keypad port	@ 9.6k Baud, RJ11 socket

## INTERFACE

Software	Cylon Engineering Center BACnet Operator Workstation
Remote Keypad	UCKRA420 Serial Text Keypad connected via RJ11 port Maximum cable length 50m

*Please refer to MAN0117 for details on configuring and using custom keypad menus.*

## SOFTWARE FEATURES

Configuration Mode (accessible via External Keypad/Display device.)	
Firmware upgrading	Remotely over BACnet, or locally via Service Port
Maximum Number of Analog Points	1024
Maximum Number of Digital Points	1024
Maximum number of strategy blocks	1024
Maximum number of trend log modules	32
Maximum internal entries per trendlog	1024
Maximum Controllers per Fieldbus	99*
<i>* It is recommended for typical conditions that the no. of Main Plant controllers on a main plant fieldbus be limited to 16. MSTP devices with a fractional (1/4 or smaller) unit load will be required in order to extend a single fieldbus trunk beyond 32 devices. Both CBM and CBT controllers are 1/4 unit load devices. Please refer to MAN0106 for recommendations on configuring a specific network for optimal comms speed.</i>	
Maximum Time Schedules	10
Maximum entries per Weekly Schedule day	14
Maximum Exceptions per Schedule	5
Maximum entries per Exception	14