

CBR (Cylon BACnet Router)

CBR	CBR/MOD	CBR/MODex
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The Cylon BACnet[®] Router range connects BACnet MS/TP networks to a BACnet/IP network, and optionally acts as a Modbus gateway.

CBR Controllers are BTL Listed BACnet Application Specific Controllers.



- BACnet IP to BACnet MS/TP routing

- Optional Modbus Support

Serial RTU support, Master.

- BBMD support

Broadcasts messages from the local BACnet network to a device on a different BACnet network.

- Foreign Device Registration

Allows a remote device to temporarily connect to the local BACnet network.

- Networking

10/100 Mbs Ethernet

- MS/TP baud rates 9600, 19200, 38400 and 76800

- DIN rail mounted

- Configured via embedded web pages

Controller configuration can be adjusted using standard web browser

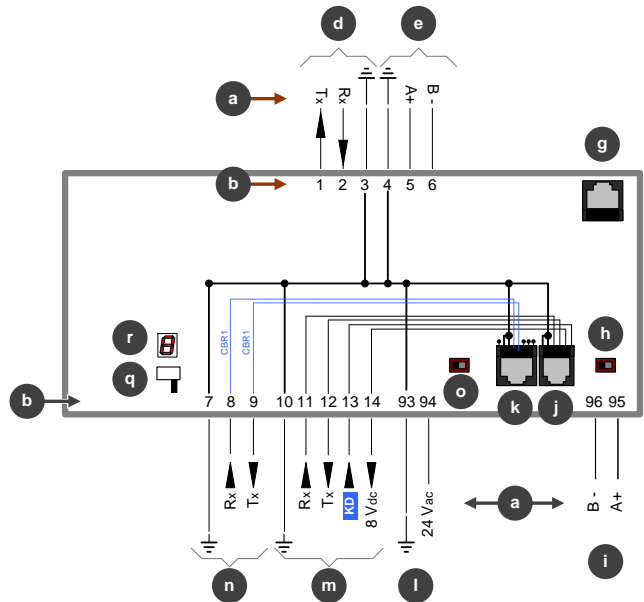
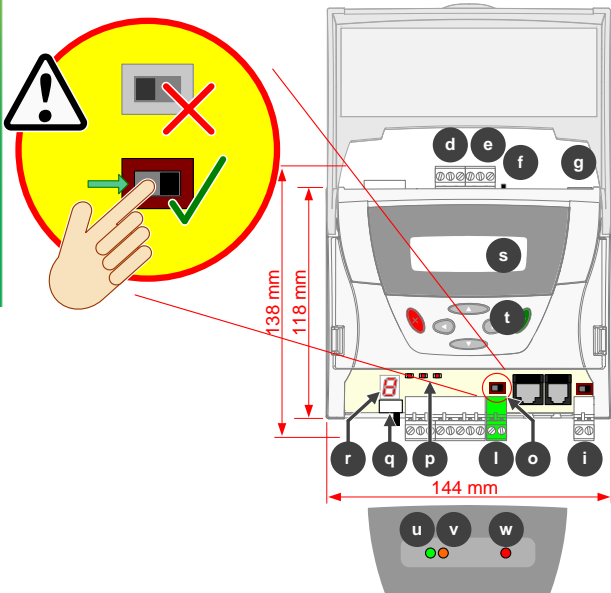
The Cylon BACnet[®] Router is part of the Cylon BACnet[®] range of products. The future-proof Cylon BACnet[®] range provides forward and backward compatibility, meaning an effortless upgrade path for existing Cylon systems.


HIGHLY RELIABLE DISTRIBUTED CONTROL

The Cylon BACnet[®] end to end solution offers a very robust Building Energy Management System by eliminating a single point of failure found on other systems. This is achieved through the distribution of logic, data and programming across controllers rather than locating all programming at the Router level.



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Important: The Battery Enable Switch (located above the Power 24 V AC connection) must be switched to the "Battery Enabled" position to ensure backup of controller settings such as Time Schedules and Globals when the device is powered down. Press the "up" key  on the keypad to check the battery status.



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.

KD Keypad Detect



Common

a Point Numbers

Point Numbers

b Terminal Numbers

Terminal Numbers

d Modbus RS232 (port 4) (modbus variants only)

Modbus RS232 (port 4) (modbus variants only)

e Modbus RS485 (port 4) (modbus variants only)

Modbus RS485 (port 4) (modbus variants only)

g Ethernet 10/100 Mb

Ethernet 10/100 Mb

h Fieldbus Terminator

Fieldbus Terminator



- ON (fieldbus terminated at this controller)
- OFF (fieldbus not terminated at this controller)

i Fieldbus Port

Fieldbus Port

j External Keypad port (RJ-12)


External Keypad port (RJ-12)

k Service port/Printer port (port 1) (quick-connect RJ-45)

Service port/Printer port (port 1) (quick-connect RJ-45)

l Power 24 V AC

Power 24 V AC

Important: Earth this controller by connecting the common wire (G₀ ) on the secondary side of the 24 V AC transformer to Earth at one point.

Factory Configuration Options:

	Maximum number of Modbus devices	Maximum no. of Modbus points
CBR	0	0
CBR/MOD	48	1600
CBR/MODex	122	1600

Note: Devices with a fractional (¼ or better) unit load will be required to reach the number of Modbus devices limit.

m External Keypad port (screw terminal)

External Keypad port (screw terminal)

n Service port/Printer port (port 1) (screw terminal)

Service port/Printer port (port 1) (screw terminal)

o Battery enable Switch

Battery enable Switch



- Battery Disabled
- Battery Enabled

p Ethernet Indicator LEDs

Ethernet Indicator LEDs

	Traffic	Collision	Link
LED on	Ethernet message received	Collision detected	Ethernet is connected
LED off	No incoming Ethernet messages	No collision detected	Ethernet is not connected

q Fieldbus port 2 Terminator

Fieldbus port 2 Terminator



- ON (fieldbus terminated at this controller)
- OFF (fieldbus not terminated at this controller)

r 7-segment LED display (controller status)

7-segment LED display (controller status)

u MS/TP Status


MS/TP Status

v Battery Status

Battery Status

w Power LED

- Red = on

⚠ Important: The Battery Enable Switch  must be switched to the "Battery Enabled" position to ensure backup of configuration settings, and to keep the real-time clock operating when the device is powered down.

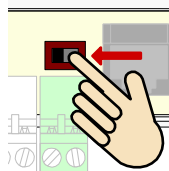
If the battery is disabled when the Cylon BACnet Router is powered up, the 7-segment display will display "b" alternating with "E" and the orange Status LED will flash.
During operation, if the battery is disabled the orange Status LED will turn on.

If power is maintained when the Battery is disabled then the configuration data and the real time clock will be maintained.

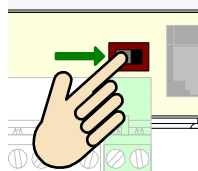
If the Battery is disabled when the Cylon BACnet Router is powered down, then the next time Power is applied the configuration and real time clock will be "wiped". Note that the Network Setup (IP Address etc.) will not be "wiped" after this procedure.

To restore the default Network Setup, power up the CBR with the Battery enabled, then disable it for between 3 and 4 seconds as follows:

1. Disable the Battery using the Battery Switch. (The orange Status LED will turn on)



2. Wait for 3 seconds, then ...
3. Within 1 second enable the battery. (The orange Status LED will turn off)



After a short delay (less than 10 seconds) the device will restart with the default Network Setup (IP address = 192.168.1.1).

Note: this procedure will only work when the Ethernet cable is disconnected

Specifications:

MECHANICAL

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

ENVIRONMENT

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

Ambient Temperature	0 °C ... 50 °C (32 °F ... 122 °F) ambient.
Ambient Humidity	0 % ... 90 % RH non-condensing
EMC Immunity	EN 50082-1
EMC Emission	EN 55011 Class B
Protection Class	IP20/DIN 40050
Approvals	BTL Listed – BACnet Application Specific Controller (B-ASC)

WIRING

Note: Use Copper or Copper Clad Aluminium conductors only.

Ethernet	Screened or Unscreened CAT5e
RS485 Fieldbus	2 core screened twisted pair (e.g. Belden 8132 up to 600m at max baud rate 76k, Belden 9841 up to 1200m at max baud rate 76k.)

ELECTRICAL

Supply Requirements	24 V AC ±20 % 50/60 Hz
Transformer Rating	10 VA
Power Rating	5 Watts maximum
Fuse Rating	1 A resettable

PROCESSOR

Type	ARM9, 150 MHz
Memory	16M RAM, 16M FLASH
Real-Time Clock	Battery backed for 6 months minimum

INTERFACE

Embedded Web Configuration Interface	
External Keypad	UCKRA420 Serial Text Keypad connected via RJ12 port (Maximum cable length 50 m)

SOFTWARE FEATURES

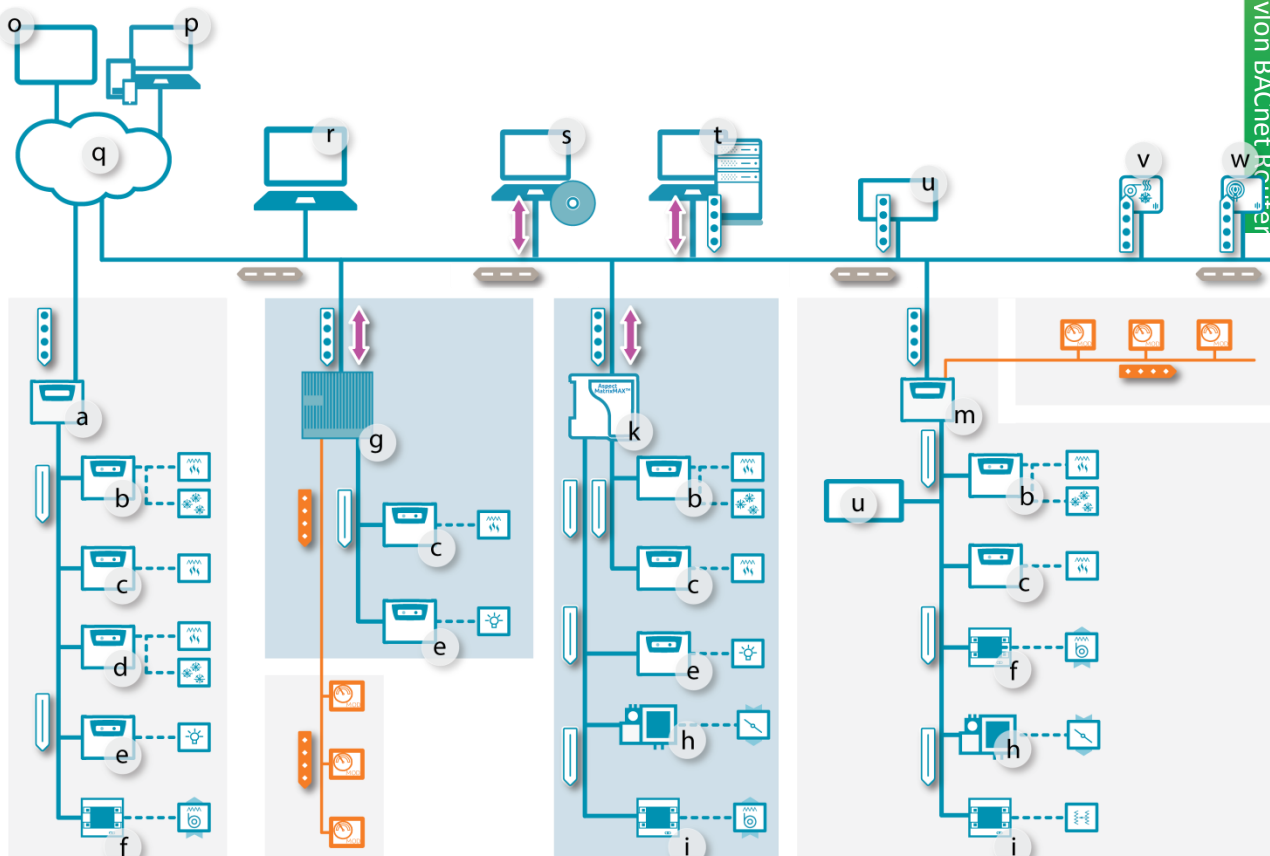
Keypad Configuration Mode	Network setup via External Keypad.
Embedded Web Configuration Interface	<ul style="list-style-type: none"> ▪ Network Setup ▪ BACnet/IP configuration ▪ BACnet MS/TP Configuration ▪ BBMD Configuration ▪ View Foreign Devices ▪ Status information ▪ Modbus points

Maximum Controllers per Fieldbus	99*
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**It is recommended for typical conditions that the no. of Main Plant controllers be limited to 16, or Unitary controllers limited to 32 on a CBR fieldbus. MSTP devices with a fractional (¼ or smaller) unit load will be required in order to extend a single fieldbus trunk beyond 32 devices. Both CBM and CBT controllers are ¼ unit load devices. Please refer to MAN0106 for recommendations on configuring a specific network for optimal comms speed.*

COMMUNICATION PORT SPECIFICATIONS

Port	Connector	Transmission type	Detail	Function		
MS/TP Port	2-pin plug terminal	RS485	RS485 @ 9K6, 19K2, 38K4 or 76K8 Baud (defaults to 38K4)	Fieldbus communications <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Terminating resistance</td> <td>internal 120 Ω switchable</td> </tr> </table>	Terminating resistance	internal 120 Ω switchable
Terminating resistance	internal 120 Ω switchable					
External Keypad Port	RJ12 / 5 way plug terminal	RS232	9K6 Baud	Keypad communications		
Ethernet Port	RJ45	Fast full-duplex Ethernet	10/100 BaseT	Network Link BACnet/IP HTTP		
Port 4 (modbus model options only)	6 way plug terminal	RS232 / RS485	@ 300, 600, 1K2, 2K4, 4K8, 9K6, 14K4, 19K2, 38K4, 57K6 or 115K2 Baud	Modbus-Master (RTU)		



	Aspect@-Network	b	HVAC Controller CBM24	h	Unitary Controller CBT12IVAV	q	Internet
	TCP/IP	c	Boiler Controller CBM16	i	Unitary Controller CBT14	r	Cylon Engineering Center
	BACnet IP	d	HVAC Controller CBM12	k	Aspect@ Matrix MAX	s	Aspect@ Studio
	Modbus RTU	e	Lighting Controller CBM08		<ul style="list-style-type: none"> • BACnet MS/TP • BACnet IP 	t	Aspect@ Enterprise
	BACnet MSTP	f	Unitary Controller CBT12	m	Cylon BACnet Router CBR/MOD	u	BACnet Touchscreen Supervisor
a	Cylon BACnet Router CBR	g	Aspect@ NEXUS 2	o	Active Energy Manager	v	BACnet IP AHU
			<ul style="list-style-type: none"> • BACnet MS/TP • Modbus RTU • BACnet IP • Modbus TCP 	p	Remote Web Browser	w	BACnet IP Lighting Controller