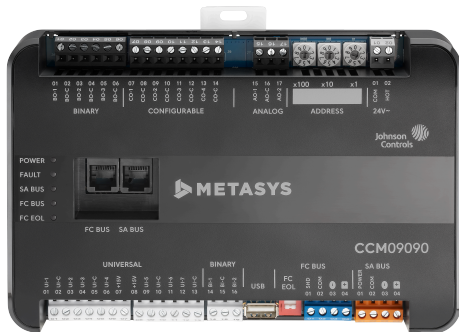




Critical Environment Equipment Controller

The CCM controller is part of an end-to-end system specifically designed for critical environments. The controller features a faster PID loop and analog input refresh rates to ensure laboratory and healthcare settings are safe for all occupants.

CCM controllers run pre-engineered and user-programmed applications. You can expand their input/output interfaces by connecting XPM or IOM series I/O expansion modules. CCM controllers include an integral real-time clock, which enables the controllers to monitor and control schedules, calendars, and trends, and operate for extended periods of time as standalone controllers when offline from the Metasys system network.

Features and benefits

Sleek and modern packaging and styling

Provides a modern, aesthetically pleasing industrial design.

Standard hardware and software platform

Uses a common hardware design throughout the family line to support standardized wiring practices and installation workflows. Also uses a common software design to support use of a single

tool for control applications, commissioning, and troubleshooting to minimize technical training.

High memory capacity and fast processing power

Provides application engineers with the horsepower to meet sophisticated control requirements.

Auto-Tuned Control Loops

Proportional Adaptive Control (P-Adaptive) and Pattern Recognition Adaptive Control (PRAC) delivers continuous control loop tuning, which reduces commissioning time, eliminates change-of-season re-commissioning, and reduces wear and tear on actuators.

Fast analog input updates and PID control loops

Faster control loops than standard temperature and humidity loops, with sub-second Universal Input updates and sub-second PID control periods, ensure tight control of the environment settings.

Standard BACnet protocol

Provides interoperability with other Building Automation System (BAS) products that use the widely accepted BACnet standard.

Models to support both BACnet MS/TP and N2, with streamlined workflow

Controller can support multiple communication protocols without the need to purchase a special model per protocol and without extra manual setup. If an application configured for N2 communication is loaded on the controller, it automatically communicates through N2. Controllers will otherwise default to MS/TP communication.

BACnet Testing Laboratories (BTL) listed and certified as BACnet Advanced Application Controllers (B-AAC)

Ensures openness and interoperability with other BTL-listed devices. BTL is a third-party agency, which validates that BAS vendor products meet the BACnet industry-standard protocol.

BACnet automatic discovery

Supports easy controller integration into a Metasys BAS.

Pluggable screw terminal blocks

Pluggable input/output wiring terminal blocks that can be removed from the controller provide electrical installers and field technicians the ability to quickly and easily install and service a controller without the need to disconnect and reconnect the input/output wiring.

Rotary switches for controller address

Easy-to-use rotary switches set the MS/TP address in decimal format.

Universal Inputs and Configurable Outputs

Allows multiple signal options to provide input/output flexibility.

End-of-Line (EOL) switch in MS/TP equipment controllers

Enables equipment controllers to be terminating devices on the communications bus.

Default for Input/Output wiring validation

Enables validation of the input and output terminals' wiring without having to download an application file.

Background transfer coupled with enable/disable logic options in Controller Configuration Tool (CCT)

Saves field technicians' time, enables productivity, and minimizes equipment disruption, since the controllers are operating while file updates take place in the background and the application can be left disabled until the system is ready to run.

SA Bus device provisioning improvements

Saves field technicians time when provisioning SA Bus devices by enabling an equipment controller to transfer and apply firmware files to all the SA Bus devices (IOM, XPM, NS8000) connected to it.

Mounting options

The CCM controller comes in three orderable mounting options.

Stand Alone

The stand alone controller is often used in hospital applications where the controller is installed in the plenum outside the controlled space. It can also be mounted horizontally or on a DIN rail.

❗ **Note:** Additional plenum rated enclosure is needed.

Valve Mounted

The valve mounted controller is factory mounted to save you installation time and cost and will also ensure full, reliable control of every air valve at your site. It is available on the full line of venturi and ultra low pressure air valves. For more information, refer to the *Venturi Air Valve Product Bulletin (LIT-12013206)*.

Panel Mounted

The controller panel option is shipped complete, mounted in a 16 in. x 20 in. (40.6 cm x 50.8 cm) NEMA steel enclosure. In addition to the controller, every assembly contains a power supply incorporating a 5 A circuit breaker, a 96 VA 120/24 VAC transformer, and two 120 VAC outlets. A five point 24 VAC distribution terminal block that allows for termination of additional field mounted devices is also included. For more information, refer to the *M4-CCM Series Standard Control Panel Assembly Catalog Page (LIT-1901192)*.

Pre-engineered control applications

Pre-engineered control applications are .CAF files that are pre-engineered to simplify and standardize set up for pressure control or volumetric offset with pressure override control. These pre-engineered applications can be customized to meet the needs of your specific requirements.

Start all programming with these applications as they have been tried and tested by engineering to improve compatibility with the faster PID and analog inputs.

See Table 3 for specific details on these applications.

CCM model information

Table 1: CCM information including point type counts

		CCM09090-0
Communication protocol	BACnet MS/TP, N2	
Supported Network Engines	All network engine model types Refer to the <i>Network Engines Product Bulletin (LIT-12012138)</i> for details.	
Modular Jacks	FC and SA Bus Modular Ports: RJ-12 6-Pin Modular Jacks	
Point Types	Signals Accepted	
Universal Input (UI)	15 VDC Power Source (Provide 100mA total current) Analog Input - Voltage Mode (0–10 VDC) Analog Input - Current Mode (4–20 mA) Analog Input - Resistive Mode (0–600k ohm), RTD (1k Nickel [Johnson Controls sensor], 1k PT, A998 SI), NTC (10k Type L, 2.252k Type 2) Binary Input, Dry Contact Maintained Mode Universal Input Common	7
Binary Input (BI)	Binary Input, Dry Contact Maintained Mode Binary Input - Pulse Counter/Accumulator Mode Binary Input Common	2
Binary Output (BO)	Binary Output - 24 VAC Triac (External Power Source) Binary Output Common	3
Configurable Output (CO)	Analog Output - Voltage Mode (0–10 VDC) Binary Output 24 VAC Triac Analog Output Signal Common Binary Output Signal Common	4
Analog Output (AO)	Analog Output - Voltage Mode (0–10 VDC) Analog Output - Current Mode (4–20 mA) Analog Output Signal Common	2
SA Bus	Supports up to 10 total wired SA Bus devices, including the XPM and IOM series expansion I/O modules and up to 4 NS series network sensors.	

Ordering information and accessories

The following tables provide the product code number and description for the CCM model and accessories.

Table 2: Ordering information

Product code number	Description
M4-CCM09090-0	18-point Critical Environment MS/TP Equipment Controller Includes: MS/TP and N2 communication; 18 points (7 UI, 2 BI, 4 CO, 2 AO, 3 BO); real-time clock; 24VAC input

Table 3: Accessories (order separately)

Product code number	Description
Room pressure control and volumetric offset control applications (.CAF)	The following pre-engineered and tested applications are available for download from the Johnson Controls® Licensing Portal: - Room Pressure Control Imperial - Room Pressure Control Metric - VOC with Pressure Override Imperial - VOC with Pressure Override Metric For information about these applications, refer to the <i>CCM Quick Start Guide (LIT-12014059)</i>.
XPM Series Expansion Modules	Refer to the <i>M4-XPM Expansion Modules Catalog Page (LIT-1901145)</i> for a complete list of available XPM series expansion modules.
IOM Series Expansion Modules	Refer to the <i>Metasys System Field Equipment Controllers and Related Products Product Bulletin (LIT-12011042)</i> for a complete list of available IOM series expansion modules
TL-CCT-0	License enabling Controller Configuration Tool (CCT) software for one user
MS-FCP-0	License enabling Metasys Equipment Controller Firmware Package Files required for CCT
Mobile Access Portal (MAP) Gateway	Refer to the <i>Mobile Access Portal Gateway Catalog Page (LIT-1900869)</i> to identify the appropriate product for your region.
NS8000 Series Network Sensors	Refer to the <i>Vertical Wallbox-Mounted or Surface-Mounted NS Series Network Sensors Product Bulletin (LIT-12013113)</i> for specific sensor model descriptions.
AS-CBLTSTAT-0	Cable adapter for connection to 8-pin TE-6700 Series sensors
NS-WALLPLATE-0	Network Sensor Wall Plate
Y64T15-0	Transformer, 120/208/240 VAC Primary to 24 VAC Secondary, 92 VA, Foot Mount, 72.2 cm (30 in.), Primary Leads and 76.2 cm (30 in.) Secondary Leads, Class 2
Y65A13-0	Transformer, 120 VAC Primary to 24 VAC Secondary, 40 VA, Foot Mount (Y65AS), 20.32 cm (8 in.), Primary Leads and 76.2 cm (30 in.) Secondary Leads, Class 2
Y65T31-0	Transformer, 120/208/240 VAC Primary to 24 VAC Secondary, 40 VA, Foot Mount (Y65AR+), 20.32 cm (8 in.), Primary Leads and Secondary Screw Terminals, Class 2
Y65T42-0	Transformer, 120/208/240 VAC Primary to 24 VAC Secondary, 40 VA, Hub Mount (Y65SP+), 20.32 cm (8 in.), Primary Leads and Secondary Screw Terminals, Class 2
ACC-TBKINOUT-0	Input and Output terminal block replacement kit. Kit includes 5 of each 2, 3, and 4 position Input and Output terminal blocks.
ACC-TBKPWFCSA-0	Power, FC Bus, and SA Bus terminal block replacement kit. Kit includes 5 of each terminal block type.
MS-FIT100-0	The Field Inspection Tool or (FIT) is a portable handheld device with a user interface that is used to test and troubleshoot the BACnet protocol MS/TP RS-485 communications bus that connects supervisory controllers and equipment controllers to field point interfaces. The FIT can be used to check out the wiring of the MS/TP RS-485 bus as well as verify proper communications of supervisory controllers and equipment controllers connected to the bus. The FIT can be used on both the FC Bus and SA Bus.
TL-BRTRP-0	Portable BACnet/IP to MS/TP Router
SWD100	Surface mount door switch. Refer to <i>SWD-100 and SWD-200 Door Switches Data Sheet (LIT-12013923)</i> for more information.
SWD200-2	Flush mount door switch. Refer to <i>SWD-100 and SWD-200 Door Switches Data Sheet (LIT-12013923)</i> for more information.
SWD200-1R	Flush mount door switch with rare earth magnet. Refer to <i>SWD-100 and SWD-200 Door Switches Data Sheet (LIT-12013923)</i> for more information.

Technical specifications

Table 4: Technical specifications

Specification	Description
Power requirement	24 VAC (nominal, 20 VAC minimum/30 VAC maximum), 50/60 Hz, Power Supply Class 2 (North America), Safety Extra-Low Voltage (SELV) (Europe)
Power consumption	14 VA maximum <i>ⓘ</i> Note: The USB feature is not currently supported. <i>ⓘ</i> Note: The VA rating does not include any power supplied to the peripheral devices connected to Binary Outputs (BOs) or Configurable Outputs (COs), which can consume up to 12 VA for each BO or CO; for a possible total consumption of an additional 84 VA (maximum).
Power source	+15 VDC power source terminals provide 100 mA total current. Quantity 2-located in Universal IN terminals for active (3-wire) input devices.
Ambient conditions	Operating: 0°C to 50°C (32°F to 122°F); 10% to 90% RH noncondensing Storage: -40°C to 80°C (-40°F to 176°F); 5% to 95% RH noncondensing
Network engines	All network engine model types
Communications protocol	BACnet MS/TP; N2.
Device addressing for BACnet MS/TP	Decimal address set via three rotary switches; valid controller device addresses 4-127
Device addressing for N2	Decimal address set via three rotary switches; valid controller device addresses 1-254
Communications bus	BACnet MS/TP (default); N2 3-wire FC Bus between the supervisory controller and equipment controllers 4-wire SA Bus between equipment controller, network sensors and other sensor/actuator devices, includes a lead to source 15 VDC supply power (from equipment controller) to bus devices.
Processor	RX64M Renesas® 32-Bit microcontroller
Memory	16 MB flash memory and 8 MB SDRAM
Real-time clock backup power supply	Super capacitor maintains power to the onboard real-time clock for a minimum of 72 hours when supply power to the controller is disconnected.
Input and Output capabilities	Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohms, or Binary Dry Contact Binary Inputs: Defined as Dry Contact Maintained or Pulse Counter/Accumulator Mode Configurable Outputs Defined as 0-10 VDC or 24 VAC @ 500mA Triac BO Analog Outputs: Defined as 0–10 VDC or 4–20 mA Binary Outputs: Defined as 24 @ 500mA VAC Triac (external power source only)
Universal Input (UI) resolution/ Analog Output (AO) accuracy	Input: 24-bit Analog to Digital converter Output: +/- 200 mV accuracy in 0–10 VDC applications
Terminations	Input/Output: Pluggable Screw Terminal Blocks FC Bus, SA Bus and Supply Power: 4-Wire and 2-Wire Pluggable Screw Terminal Blocks FC Bus and SA Bus Ports: RJ-12 6-Pin Modular Jacks
Mounting	Horizontal on single 35 mm DIN rail mount (recommended), or screw mount on flat surface with three integral mounting clips on controller
Housing	Enclosure material: ABS and polycarbonate UL94 5VB; Self-extinguishing Protection Class: IP20 (IEC529)
Dimensions (Height x width x depth)	150 mm x 190 mm x 44.5 mm (5-7/8 in. x 7-1/2 in. x 1-3/4 in.) including terminals and mounting clips <i>ⓘ</i> Note: Mounting space requires an additional 50 mm (2 in.) space on top, bottom, and front face of controller for easy cover removal, ventilation, and wire terminations.
Weight	0.5 kg (1.1 lb)
Compliance	United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Compliant to CFR47, Part 15, Subpart B, Class A

Table 4: Technical specifications

Specification	Description
	Canada: UL Listed, File E107041, CCN PAZX7 CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada Compliant, ICES-003
	Europe: Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive and RoHS Directive.
	Australia and New Zealand: RCM Mark, Australia/NZ Emissions Compliant
	United Kingdom: Johnson Controls declares that this product is in compliance with Electromagnetic Compatibility Regulations, the Electrical Equipment (Safety) Regulations, and the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations.
	BACnet International: BACnet Testing Laboratories™ (BTL) Protocol Revision 18 Listed and Certified BACnet Advanced Application Controller (B-AAC), based on ANSI/ASHRAE 135-2016

Repair information

If a controller, network sensor, or any related product fails to operate within its specifications, replace the product. For replacement products, contact the nearest Johnson Controls representative.

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Patents

Patents: <https://jccipat.com>

Single point of contact

APAC	EU	UK	NA/SA
JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA	JOHNSON CONTROLS VOLTAWEG 20 6101 XK ECHT THE NETHERLANDS	JOHNSON CONTROLS TYCO PARK GRIMSHAW LANE MANCHESTER M40 2WL UNITED KINGDOM	JOHNSON CONTROLS 5757 N GREEN BAY AVE. GLENDALE, WI 53209 USA

Contact information

Contact your local branch office:
www.johnsoncontrols.com/locations

Contact Johnson Controls:
www.johnsoncontrols.com/contact-us