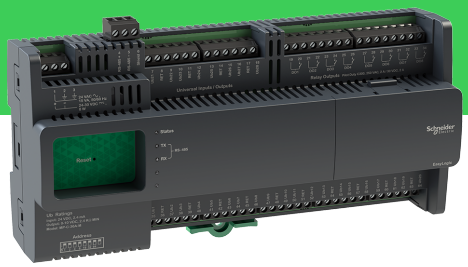
EcoStruxure™
Innovation At Every Level

EasyLogic MP-C

Plant Room Controllers

EcoStruxure™ Building



Introduction

EasyLogic™ MP-C is a multi-purpose, fully programmable, BACnet MS/TP based field controller. The MP-C models offer a flexible mix of I/O point types that suit a wide range of HVAC applications. MP-C can either be used as a standalone field controller or as part of an EcoStruxure BMS with a SpaceLogic AS-P or AS-B server or an Enterprise Server as the parent server.

The MP-C has the following features:

- Native BACnet MS/TP support
- Full range of controller models
- Versatile onboard I/O point mix
- Advanced monitoring
- EasyLogic living space sensors
- Full EcoStruxure Building Operation software support, providing efficient engineering tools

Native BACnet MS/TP support

The EasyLogic range of RP and MP controllers and RP-IO I/O modules natively communicate with automation servers and field devices using the BACnet MS/TP protocol.

The RS-485 port with 3-pole screw terminal block is used for connection to the BACnet MS/TP network.

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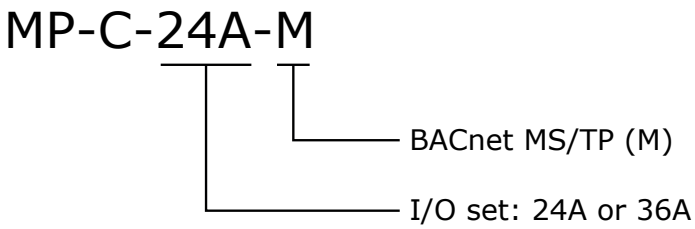
Full range of controller models

The EasyLogic MP-C range of BACnet MS/TP based controllers includes two different models, which offer two different sets of I/O point types, named 24A and 36A. The two models support 24 VAC/DC power supply.



Models with a versatile mix of I/O points

The MP-C-24A and -36A models provide 24 or 36 I/O points, consisting of two different sets of I/O point types. The versatile mix of I/O point types match a wide variety of applications. The universal inputs/outputs are highly flexible and can be configured as either inputs or outputs.

I/O Point Types by MP-C Models

I/O Point Types	MP-C-24A	MP-C-36A
Universal I/O Type Ub	20	28
Relay outputs Form A	4	8

Configurations by I/O Point Types

Configurations	Universal I/O Type Ub	Relay Outputs Form A
Digital inputs	yes	-
Counter inputs	yes	-
Supervised inputs	yes	-
Voltage inputs (0 to 10 VDC)	yes	-
Current inputs (0 to 20 mA)	yes	-
Temperature inputs	yes	-
Resistive inputs	yes	-
Voltage outputs (0 to 10 VDC)	yes	-
Digital outputs	-	yes
Digital pulsed outputs	-	yes
PWM outputs	-	yes
Tristate outputs	-	yes
Tristate pulsed outputs	-	yes

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Universal inputs/outputs

The universal inputs/outputs are ideal for any mix of temperature, pressure, flow, status points, and similar point types in a building control system.

As counter inputs, the universal inputs/outputs are commonly used in energy metering applications. As supervised inputs, they are used for security applications where it is critical to know whether or not a wire has been cut or shorted. These events provide a separate indication of alarms and events in the system.

For all analog inputs, maximum and minimum levels can be defined to automatically detect over-range and under-range values.

The universal inputs/outputs are capable of supporting analog outputs of type voltage outputs. Therefore, the universal inputs/outputs support a wide range of devices, such as actuators.

Only devices with safe extra low voltage equipment (SELV/PELV) inputs/outputs should be connected to the universal inputs/outputs.

Relay outputs

The relay outputs support digital Form A point types. The Form A relays are designed for direct load applications.

I/O expansion

For applications that require more I/O resources, the EasyLogic RP-IO modules provide a versatile mix of I/O points for any application. For more information, see the EasyLogic RP-IO Specification Sheet.

Advanced monitoring

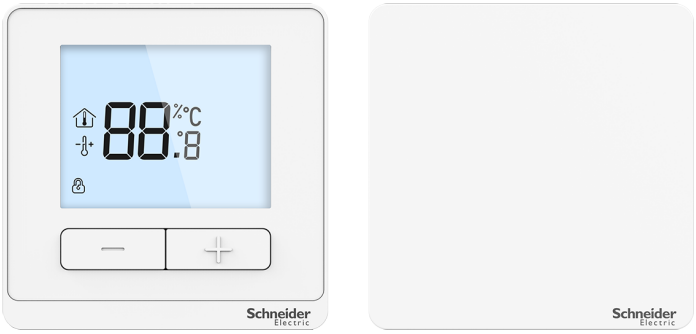
The RP and MP controllers support local trends, schedules, and alarms, enabling local operation when the controller is offline or used in standalone applications.

The battery-free power backup of the memory helps prevent data loss and allows seamless and quick recovery after a power disruption.

In WorkStation, you update the firmware of multiple RP and MP controllers at the same time and with minimum down time. The EcoStruxure BMS server keeps track of the installed firmware to support backup, restore, and replacement of the controllers and sensors. The server can host controllers of different firmware versions.

EasyLogic living space sensors

The EasyLogic Sensor provides a cost-effective solution to measure, control, and communicate the temperature. The sensors are connected to analog inputs of the RP or MP controller. The EasyLogic Sensor is available in two models with different user interfaces, a blank cover or an LCD display with buttons for setpoint control. For more information, see the EasyLogic Sensors - Temperature Sensors – Analog - Specification Sheet.



EasyLogic Sensor devices

Full EcoStruxure Building Operation software support

The power of the RP and MP controllers is fully realized when it is part of an EcoStruxure BMS, which provides the following benefits:

- WorkStation/WebStation interface
- Script and Function Block programming options
- Device discovery
- Engineering efficiency

WorkStation/WebStation interface

WorkStation and WebStation provide a consistent user experience regardless of which EcoStruxure BMS server the user is logged on to. The user can log on to the parent EcoStruxure BMS server to engineer, commission, supervise, and monitor the I/O modules and RP and MP controllers. For more information, see the WorkStation and WebStation specification sheets.

Script and Function Block programming options

The fully programmable RP and MP controller models have both Script and Function Block programming options. Existing programs can easily be reused between the EcoStruxure BMS server and the controller.

Device discovery

The enhanced Device Discovery in WorkStation enables you to easily identify RP and MP controllers on a BACnet network and to associate the controllers with their parent server.

Engineering efficiency

The engineering and maintenance of RP and MP controllers can be done very efficiently using the EcoStruxure Building Operation reusability features. With these features, you can create library

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items (Custom Types) for a complete controller application that contains programs and all necessary objects such as trends, alarms, and schedules. The controller application in the Custom Types library is reusable across all controllers of the same model. You can use the controller application as a base for creating new controllers intended for similar applications. You can then edit the controller application, and the changes are automatically replicated to all controllers, while each controller keeps its local values.

WorkStation supports both online and offline engineering of RP and MP controllers. You can make the configuration changes online or use database mode to make the changes offline. In database mode, the changes are saved to the EcoStruxure Building Operation database so that you can apply the changes to the controllers later.

Project Configuration Tool enables you to perform all the engineering off site, without the need for physical hardware, which minimizes the time you need to spend on site. You can run the EcoStruxure BMS servers virtually and engineer the RP and MP controllers before you deploy your server and controller applications to the servers and controllers on site. For more information, see the Project Configuration Tool specification sheet.

Part Numbers for EasyLogic MP-C

Product	Part number
MP-C-24A-M	SXWMPC24AM10001
MP-C-36A-M	SXWMPC36AM10001

Part Numbers for MP-C Accessories

Product	Part number
DIN-RAIL-CLIP, DIN-rail end clip package of 25 pieces	SXWDINEND10001

For more information on part numbers for Network Connectivity Accessories, see the Product Selection Guide - EcoStruxure Building.

Specifications

EasyLogic MP-C	
AC input	
Nominal voltage	24 VAC
Operating voltage range	+/- 20 %
Frequency	50/60 Hz
Maximum power consumption (MP-C-24A-M)	10 VA
Maximum power consumption (MP-C-36A-M)	12 VA
Power input protection	MOV suppression and internal fuse
DC input	
Nominal voltage	24 to 30 VDC
Operating voltage range	21 to 33 VDC
Maximum power consumption (MP-C-24A-M)	5 W
Maximum power consumption (MP-C-36A-M)	6 W

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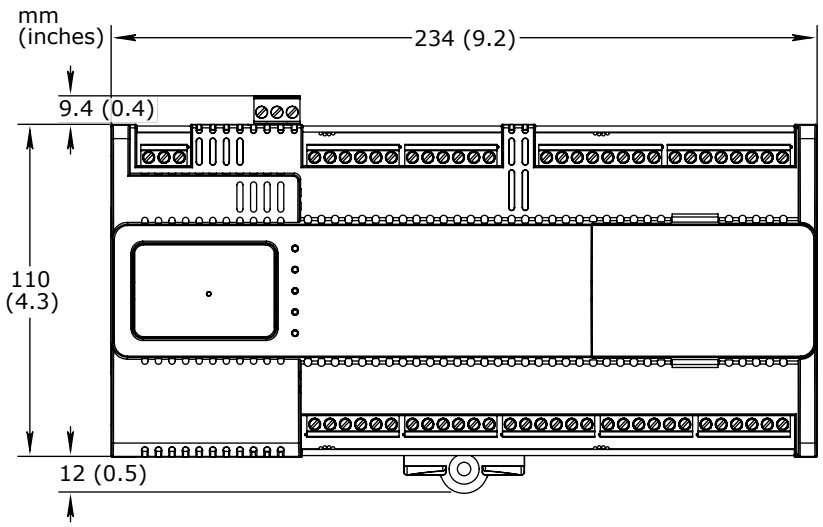
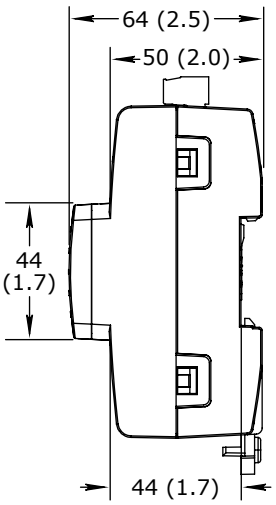
Power input protection	MOV suppression and internal fuse
Environment	
Ambient temperature, operating	0 to 50 °C (32 to 122 °F)
Ambient temperature, storage	-40 to +70 °C (-40 to +158 °F)
Maximum humidity	95 % RH non-condensing
Material	
Plastic flame rating	UL94 V-0
Ingress protection rating	IP 20
Mechanical	
Dimensions	234 W x 110 H x 64 D mm (9.2 W x 4.3 H x 2.5 D in.)





Weight, MP-C-24A-M	0.446 kg (0.983 lb)
Weight, MP-C-36A-M	0.488 kg (1.076 lb)
Recommended installation a) It is recommended to install the device in an enclosure (cabinet), unless local regulations allow an exception.	DIN rail or flat surface in a cabinet[a]
Terminal blocks	Power and I/O: Fixed BACnet MS/TP communications: Removable
Compatibility	
EcoStruxure BMS server communication EcoStruxure Building Operation	version 5.0.1 and later
Agency compliances	
Emission	RCM; BS/EN 61000-6-3; BS/EN IEC 63044-5-2; FCC Part 15, Sub-part B, Class B
Immunity	BS/EN 61000-6-2; BS/EN IEC 63044-5-3
Safety standards a) The MP-C-24A and -36A models are marked “Open Energy Management Equipment”.	BS/EN 60730-1; BS/EN 60730-2-11; BS/EN IEC 63044-3; UL 916 C-UL US Listed[a]

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Real-time clock	
Accuracy, at 25 °C (77 °F)	+/-1 minute per month
Backup time, at 25 °C (77 °F)	7 days minimum
Communication ports	
RS-485 port	RS-485 (3-pole screw terminal block) Transient voltage suppressors on communication signals
RS-485 transceiver characteristics	
Transceiver type	Failsafe Non-isolated
External biasing	None required
Total Unit Load (UL) per device	Maximum 0.5 UL
Communications	
BACnet	BACnet MS/TP, maximum bus length: 1200 m (4000 ft), maximum baud rate: 76800 BTL B-AAC (BACnet Advanced Application Controller)[a]

a) See the BTL Product Catalog for up-to-date details on BTL listed firmware revisions on BACnet International's home page.

CPU	
Frequency	500 MHz
Type	ARM Cortex-A7 dual-core
DDR3 SDRAM	128 MB
NOR flash memory	32 MB
Memory backup	128 kB[a], FRAM, non-volatile

a) MP-C-24A-M and MP-C-36A-M with hardware version earlier than 03/02 have a FRAM memory with a size of 8 kB. For these hardware versions, the use of Script programs is recommended to save FRAM memory space.

Universal inputs/outputs	
Channels, MP-C-24A-M	20 Ub, Ub1 to Ub20
Channels, MP-C-36A-M	28 Ub, Ub1 to Ub28
Absolute maximum ratings	-0.5 to +24 VDC
A/D converter resolution	16 bits
Universal input/output protection	Transient voltage suppressor on each universal input/output
Digital inputs	
Range	Dry contact switch closure or open collector/open drain, 24 VDC, typical wetting current 2.4 mA
Minimum pulse width	150 ms
Counter inputs	
Range	Dry contact switch closure or open collector/open drain, 24 VDC, typical wetting current 2.4 mA
Minimum pulse width	20 ms
Maximum frequency	25 Hz

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Supervised inputs	
5 V circuit, 1 or 2 resistors Monitored switch combinations	Series only, parallel only, and series and parallel
Resistor range For a 2-resistor configuration, each resistor must have the same value +/- 5 %	1 to 10 kohm
Voltage inputs	
Range	0 to 10 VDC
Accuracy	+/-(7 mV + 0.2 % of reading)
Resolution	1.0 mV
Impedance	100 kohm
Current inputs	
Range	0 to 20 mA
Accuracy	+/-(0.01 mA + 0.4 % of reading)
Resolution	1 µA
Impedance	47 ohm
Resistive inputs	
10 ohm to 10 kohm accuracy R = Resistance in ohm	$+/-(7 + 4 \times 10^{-3} \times R)$ ohm
10 kohm to 60 kohm accuracy R = Resistance in ohm	$+/-(4 \times 10^{-3} \times R + 7 \times 10^{-8} \times R^2)$ ohm
Temperature inputs (thermistors)	
Range	-50 to +150 °C (-58 to +302 °F)
Supported thermistors	
Honeywell	20 kohm
Type I (Continuum)	10 kohm
Type II (I/NET)	10 kohm
Type III (Satchwell)	10 kohm
Type IV (FD)	10 kohm
Type V (FD w/ 11k shunt)	Linearized 10 kohm
Satchwell D?T	Linearized 10 kohm
Johnson Controls	2.2 kohm
Xenta	1.8 kohm
Balco	1 kohm

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Measurement accuracy	
20 kohm	-50 to -30 °C: +/-1.5 °C (-58 to -22 °F: +/-2.7 °F) -30 to 0 °C: +/-0.5 °C (-22 to +32 °F: +/-0.9 °F) 0 to 100 °C: +/-0.2 °C (32 to 212 °F: +/-0.4 °F) 100 to 150 °C: +/-0.5 °C (212 to 302 °F: +/-0.9 °F)
10 kohm, 2.2 kohm, and 1.8 kohm	-50 to -30 °C: +/-0.75 °C (-58 to -22 °F: +/-1.35 °F) -30 to +100 °C: +/-0.2 °C (-22 to +212 °F: +/-0.4 °F) 100 to 150 °C: +/-0.5 °C (212 to 302 °F: +/-0.9 °F)
Linearized 10 kohm	-50 to -30 °C: +/-2.0 °C (-58 to -22 °F: +/-3.6 °F) -30 to 0 °C: +/-0.75 °C (-22 to +32 °F: +/-1.35 °F) 0 to 100 °C: +/-0.2 °C (32 to 212 °F: +/-0.4 °F) 100 to 150 °C: +/-0.5 °C (212 to 302 °F: +/-0.9 °F)
1 kohm	-50 to +150 °C: +/-1.0 °C (-58 to +302° F: +/-1.8 °F)
Voltage outputs	
Range	0 to 10 VDC
Accuracy	+/-60 mV
Resolution	10 mV
Minimum load resistance	5 kohm
Load range	-1 to +2 mA
Relay outputs, DO	
Channels, MP-C-24A-M	4, DO1 to DO4
Channels, MP-C-36A-M	8, DO1 to DO8
Contact rating	250 VAC/30 VDC, 2 A, Pilot Duty (C300)
Switch type	Form A Relay Single Pole Single Throw Normally Open
Isolation contact to system ground	3000 VAC
Cycle life (Resistive load)	At least 100,000 cycles
Minimum pulse width	100 ms

Terminals

Follow proper installation wiring diagrams and instructions, including these instructions:

- All MP-C models have several RET terminals for connection of I/O returns, so a common chassis/signal ground rail is optional and may not be needed.
- Individual 24 V power sources to the field must be current limited to maximum 4 A for UL compliant installations, and maximum 6 A in other areas.
- For more information on wiring, see Hardware Reference Guide.

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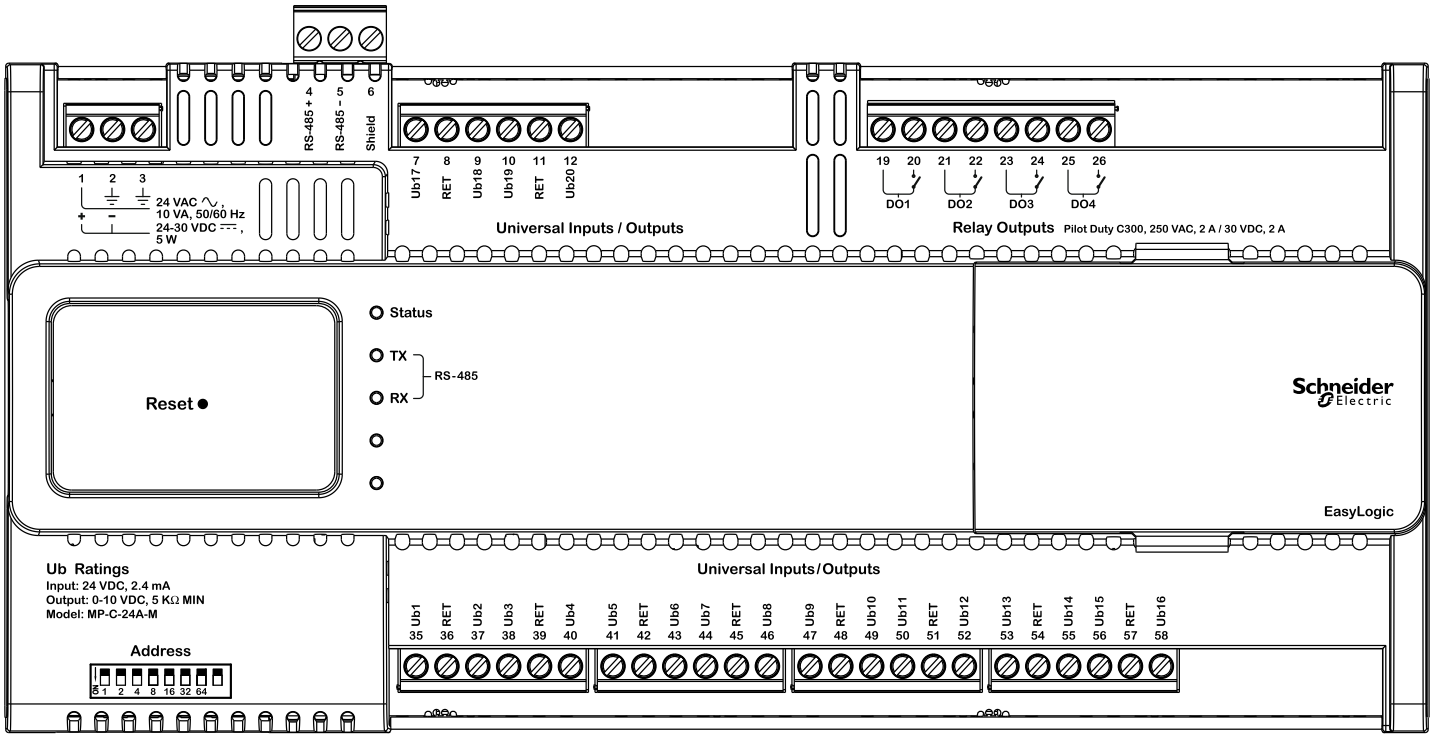
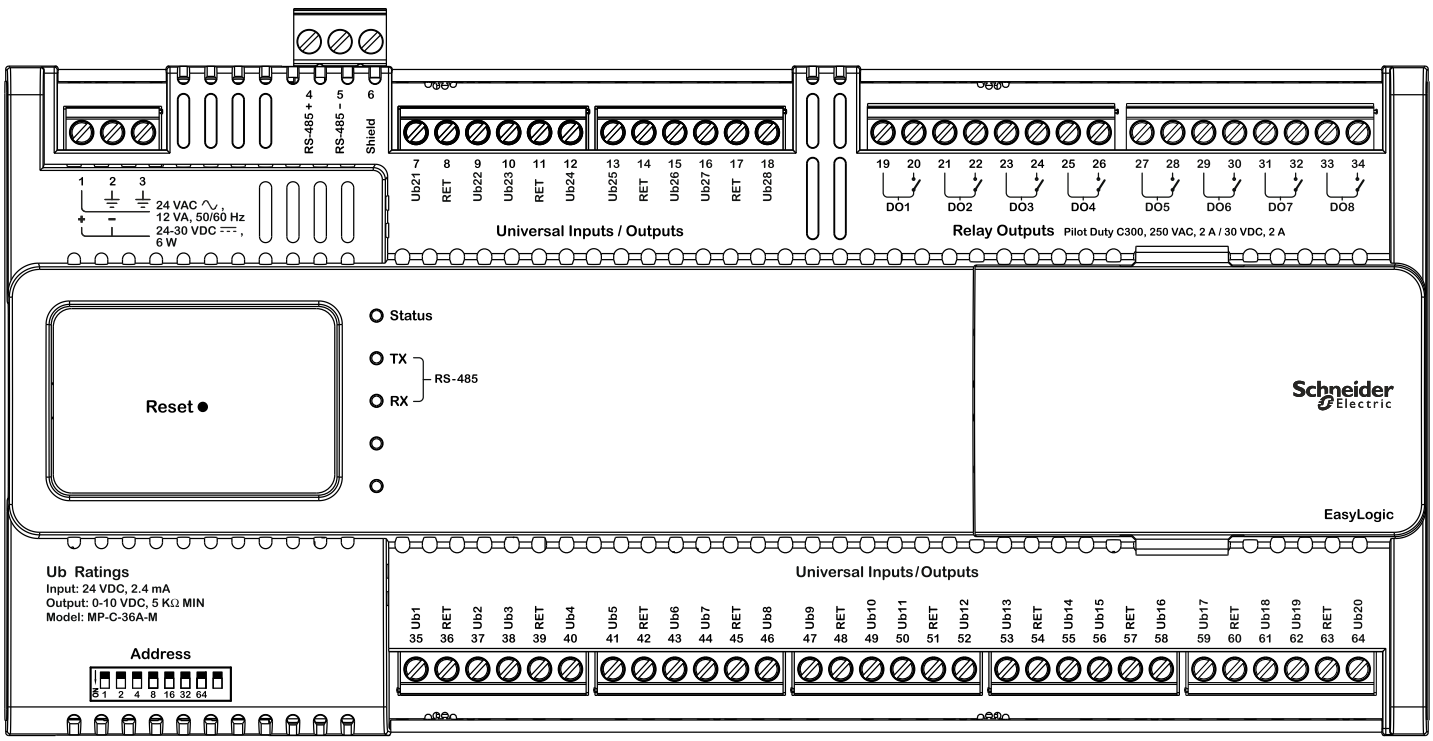


MP-C-24A-M model



MP-C-36A-M model

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Part Numbers for EasyLogic Sensor Devices, Combination Models

Product	Housing	Part number
Complete EasyLogic Sensor[a] model with temperature sensor, buttons for setpoint control, and LCD display cover	Medium matte white	SLEASLXXB
Complete EasyLogic Sensor[a] model with resistive temperature sensor (10 kohm type 3 thermistor) and blank cover	Medium matte white	SLEASXXXB

a) The EasyLogic Sensor is designed to be connected to I/O points/terminals on RP or MP controllers, or I/O modules. The model with buttons for setpoint control and LCD display (SLEASLXXB) requires two analog inputs (voltage inputs). The model with blank cover (SLEASXXXB) requires one analog input (temperature input).

Part Numbers for SpaceLogic Sensor Devices, Combination Models

Product	Housing	Part number
Complete non-communicating[a] SpaceLogic Sensor model with resistive temperature sensor (10 kohm type 3 thermistor) and blank cover	Medium matte white	SLASXXX
Complete non-communicating[a] SpaceLogic Sensor model with resistive temperature sensor (10 kohm type 3 thermistor) and blank cover	Optimum glass white	SLAWXXX
Complete non-communicating[a] SpaceLogic Sensor model with resistive temperature sensor (10 kohm type 3 thermistor) and blank cover	Optimum glass black	SLABXXX

a) The SpaceLogic resistive temperature sensor (SLA...) is designed to be connected to I/O points/terminals on RP or MP controllers, or I/O modules. The sensor requires an analog input (temperature input).

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Regulatory Notices

Federal Communications Commission
FCC Rules and Regulations CFR 47, Part 15, Class B
This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference. (2) This device must accept any interference received, including interference that may cause undesired operation.
Industry Canada
This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Regulatory Compliance Mark (RCM) - Australian Communications and Media Authority (ACMA)
This equipment complies with the requirements of the relevant ACMA standards made under the Radiocommunications Act 1992 and the Telecommunications Act 1997. These standards are referenced in notices made under section 182 of the Radiocommunications Act and 407 of the Telecommunications Act.

CE - Compliance to European Union (EU)
2014/30/EU Electromagnetic Compatibility Directive
2014/35/EU Low Voltage Directive
2011/65/EU Restriction of Hazardous Substances (RoHS) Directive
2015/863/EU amending Annex II to Directive 2011/65/EU
This equipment complies with the rules, of the Official Journal of the European Union, for governing the Self Declaration of the CE Marking for the European Union as specified in the above directive(s).

WEEE - Directive of the European Union (EU)
This equipment and its packaging carry the waste of electrical and electronic equipment (WEEE) label, in compliance with European Union (EU) Directive 2012/19/EU, governing the disposal and recycling of electrical and electronic equipment in the European community.

UK Conformity Assessed
S.I. 2016/1091 - Electromagnetic Compatibility Regulations 2016
S.I. 2016/1101 - Electrical Equipment (Safety) Regulations 2016
S.I. 2012/3032 - Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
S.I. 2013/3113 - Waste Electrical and Electronic Equipment Regulations 2013
This equipment complies with the rules, of the UK regulations, for governing the UKCA Marking for the United Kingdom specified in the above directive(s).

UL 916 Listed products for the United States and Canada, Open Class Energy Management Equipment. UL file E80146.

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