

> PRIVA BLUE ID C4 C-MX34 C4 Controller



The Priva Blue ID C4 C-MX34 Controller is the intelligent heart of the system. The Priva Blue ID C4 C-MX34 Controller also provides analogue outputs, software configurable inputs for analogue and digital use and controls output functions with a relay.

Characteristics

- various inputs and outputs
 - 12 digital inputs
 - 8 universal inputs
 - 6 analogue outputs
 - 8 relay outputs
- powerful processor
- native BACnet
- upgrade via licence codes
- fast communication between controllers
- slot for memory card
- real-time clock
- USB connections (for future applications)
- 24 VAC or 24 VDC system power
- 24 V system power monitoring
- 24 VDC power supply output
- built-in switch with 4 Ethernet ports
- connection for communication with I/O modules
- connection for serial communication
- alarm output
- LEDs for status of controller and I/O
- line-up LED
- clear indication

Intelligent heart

The controller is the intelligent heart of the Priva Blue ID C-Line system. The controller handles the input and output based on control programmes loaded in the controller.

If the controller software fails, the system remains operational as far as possible, so it does not go offline. This means that the network will continue to function and the I/O modules will revert to a user-configured state. The modules with override switches remain in the override state. Manual override remains operational also.

Easy to expand

When the system is expanded, you can easily expand the controller with more I/O via a licence code. There is therefore no need to acquire a new controller.

When the system is expanded, you can connect additional I/O modules to the controller. There are various types of I/O modules that can be added, depending on the need for outputs or inputs. The controller and the modules are connected to each other via an I/O bus.

Internal bus

The system is equipped with an internal bus which is implemented to the outside as an I/O bus. The 24 VDC system power, for instance, is distributed via this bus. The communication between controller and modules also runs via the I/O bus.

Power supply output

The module is equipped with a 24 VDC power supply output. The power supply output can be used to supply external devices, such as a TouchPoint.

Protocols for fieldbus devices

The system supports many protocols for fieldbus devices via RS485.

Ethernet connections

With the Ethernet connections on the controller you can connect the system to a network. The Ethernet connections do not provide Power over Ethernet (PoE).

Short circuit proof and self-restoring

The module's analog outputs are self-restoring after a brief short-circuit or overload.

After a brief short-circuit or overload, the output is switched on automatically after half a second. After a longer short-circuit or overload, you must remove the cause of the problem and restart the output manually by accepting the associated alarm.

Controlled switching

If communication with the controller fails, the outputs are set to a user-configured state.

Easy installation

You simply click the module onto the DIN rail. The wiring connects to the module via spring terminals or screw connectors (optional).

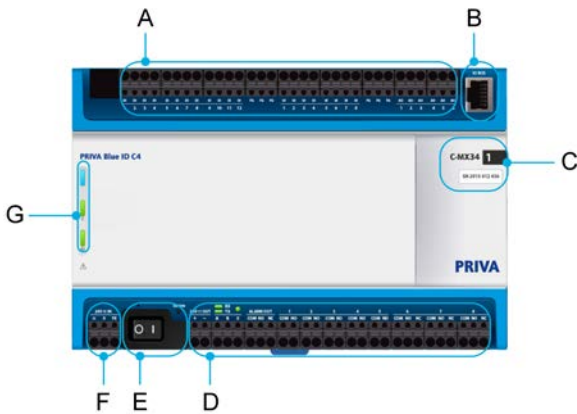
The module can also be installed in a DIN 43870 distribution box.

Alarm output

The alarm output can be used to indicate controller failures. You can define whether and how you wish to use the alarm output via the application with which you set and manage the controller.

Components

The functions and indications are accessible from the front of the controller.

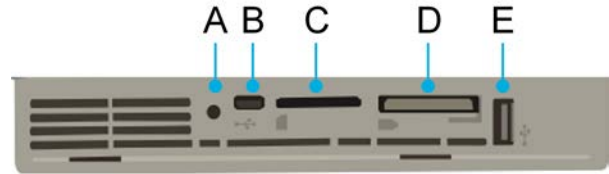


Legend

Front

A	connections for <ul style="list-style-type: none"> digital inputs <ul style="list-style-type: none"> 10 x low current pull-up (inputs 1 .. 10) 2 x high current pull-up (inputs 11 and 12) universal inputs analogue outputs field ground (common)
B	I/O bus
C	module information <ul style="list-style-type: none"> module name number of the module in the line-up The serial number
D	connections for <ul style="list-style-type: none"> 24 VDC output voltage RS485 port with indication LEDs alarm output relay outputs <ul style="list-style-type: none"> 5 x normally open contact (COM+NO) 3 x changeover contact (COM+NO+NC)
E	controls <ul style="list-style-type: none"> on/off button reset button stop button (shutdown)
F	connections for 24 VDC or 24 VAC supply voltage

G	general module LEDs
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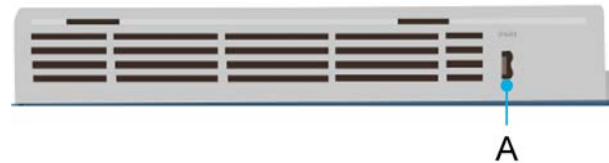
Top

A	energy-saving button
B	micro USB port (USB device, for future use)
C	slot for memory card
D	battery for real-time clock
E	USB port (USB host, for future use)



Right-hand side

A	Ethernet connectors with indication LEDs
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A	shield (shielding for Ethernet ports)
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On/off button

You can use the on/off button to switch the module off. When you switch off the module, you also switch off via the I/O bus the I/O module that is connected to the controller. A C-Line MX34 module or C-Line MX34m module is powered separately and is therefore not switched off.

Reset button

The reset button can be accessed with a paper clip. You can use this button to restart the controller or restore the factory settings.

Stop button

The stop (shutdown) button is used to perform a stop, or to shut down the system.

Energy-saving button

The energy-saving button allows you to switch the line-up LED, LED signals and manual operation of the modules on and off in a single action.

Battery

The battery powers the clock to keep the right time during power outages.

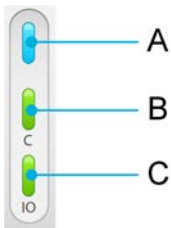
The system detects the presence and polarity of the battery and triggers an alarm if the battery is inserted incorrectly or is missing.

Memory card

The controller has a slot for a memory card. The memory card is used to store project properties from Top Control.

Clear indication

The module has general LEDs that show the status of the module.



Legend

A	line-up LED
B	LED for status of the controller
C	LED for status of the I/O

Line-up LED

The module is equipped with a blue line-up LED. If the blue LED is continuously on, the module is in the correct place according to the set configuration.

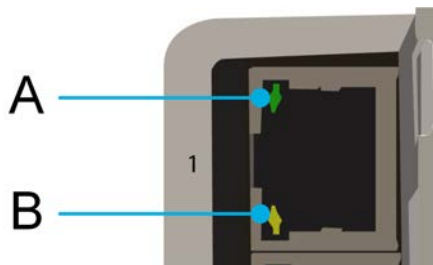
LED for status of the controller

The green/red LED shows the status of the controller. If the controller is working correctly, the LED will be green and on continuously. If the controller is not working correctly or has another (non-operational) status, the LED will flash green or will be red or orange.

LED for I/O status

The green LED shows the status of the I/O on the module. If the I/O on the module is working correctly, the LED will be green and on continuously. If the I/O on the module is not working correctly or has another (non-operational) status, the LED will flash green.

Ethernet indication



Legend

A	LED for status of Ethernet
B	LED for data communication

LED for status of Ethernet

The LED for the status of the Ethernet connection shows whether the corresponding port is connected to another device.

LED for data communication

This LED uses a flashing pattern to show the data communication over the corresponding port.

Connections - supply voltage



24V	24 VAC or 24 VDC for the supply voltage
0	neutral of the supply voltage
FE (Functional Earth)	functional ground

Connections - 24 VDC power supply output



+	+ of the power supply output
-	neutral of the power supply output

Connections - digital input



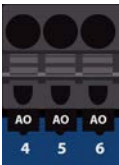
DI	digital input
FG (Field Ground)	common neutral for input

Connections - universal input



UI	universal input
FG (Field ground)	common neutral for input

Connections - analogue output



AO	analogue output
FG (Field ground)	common neutral for output

Connections - relay output



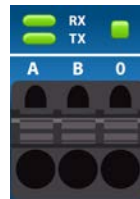
COM	common contact
NO (normally open)	normally open contact, open when output is not powered
NC (normally closed)	normally closed contact, closed when output is not powered

Connections - alarm output



COM	common contact
NO (normally open)	normally open contact, open when output is not powered
NC (normally closed)	normally closed contact, closed when output is not powered

Connections - RS485



A	RS485-A
B	RS485-B
0	RS485-GND

Specifications of Priva Blue ID C4 C-MX34 Controller

General	
Module article description	Priva Blue ID C4 C-MX34 Controller
Module article number	5210001
Number of inputs and outputs	0 ... 84 (depending on licence)
Dimensions (XYZ)	140 x 216 x 82 mm (5.5 x 8.5 x 3.2 inches)
Width according to DIN 43880	12 TE (HP) (1 TE = 18 mm (0.71 inches))
Mounting depth for DIN 43870 distribution box ¹	75 mm (2.95 inches)
Weight	0.6 kg (1.23 lb)
Maximum power consumption (including power for USB port, I/O bus and power supply output)	24 VDC: 23.2 W 24 VAC: 31.2 VA
Maximum power consumption (excluding power for USB port, I/O bus and power supply output)	24 VDC: 8.4 W 24 VAC: 12.2 VA
Typical power dissipation ²	6.6 W
MTBF ³	461,053 hours
Installation	clicks onto DIN rail can be mounted in DIN 43870 distribution box
Housing material	mixture of polycarbonate and ABS
Button material	TPE (synthetic rubber)
Number of Ethernet ports	4
Number of digital inputs	12, consisting of: 10 x low current pull-up (inputs 1 .. 10) 2 x high current pull-up (inputs 11 and 12)
Number of universal inputs	8
Number of analogue outputs	6
Number of relay outputs	8, consisting of: 5 with normally open contact 3 with changeover contact
Number of RS485 ports	1
Number of alarm outputs	1
Accuracy of internal temperature measurements	+/- 2°C (35.6 °F)

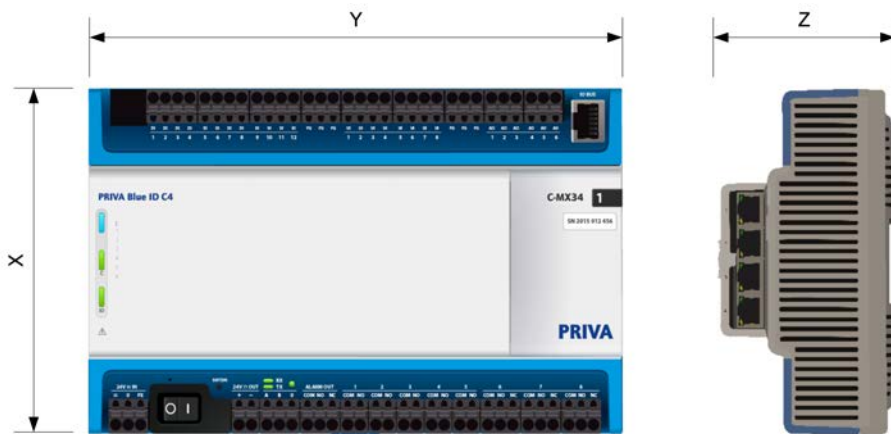
¹ measured between the front of the DIN rail and the rear of the cover plate.

² Dissipation under the following conditions:

- I/O load of 50%
- 50% of the LEDs on

³ The MTBF is calculated according to the *Telcordia SR-332 standard Issue 3* under the following conditions:

- ambient temperature: 35 ... 50°C (95 ... 122 °F)
- supply voltage: 24 VDC
- time in operation per day: 24 hours
- reliability level: 60%



Processor	
Processor	Freescall i.MX6 processor
USB connection file system ¹	FAT32
Clock frequency	800 MHz
Working memory	256 MB DDR3 SDRAM
Storage memory	2 GB SLC NAND flash

¹ for future applications

Memory card	
Maximum ambient temperature	70°C (158 °F)
Supported SD formats	<ul style="list-style-type: none"> SDSC: storage capacity up to 2 GB SDHC: storage capacity up to 32 GB
File system	FAT32

Electrical	
System power input	24 VAC ±25%; 50/60 Hz ± 5 % 24 VDC ±10%
System power output (via I/O bus or power supply output)	24 VDC ±10%
Maximum output power	10 W (combined for I/O bus and power supply output)
Functional isolation of power supply input in relation to system neutral	250 V
Protection of system power	protected against overload and short-circuits by means of a self-resetting fuse
Accuracy of system power measurement	± 2%
Under-voltage warning level	18.5 ... 19.5 VDC
Accuracy of system clock (normal operation)	± 20 ppm 0 ... 50°C (32 ...122 °F)
Accuracy of real-time clock (in the event of power failure)	± 20 ppm at 25°C (77 °F) ± 95 ppm 0 ... 50°C (32 ...122 °F)
Type of battery	BR2032
Battery service life	5 years
Speed of USB ports ¹	480 Mbps
Maximum output current of USB host connection ¹	500 mA
Indication	<ul style="list-style-type: none"> blue line-up LED green/red LED for status of controller green LED for status of I/O
Switching voltage alarm output	max. 30 VAC max. 30 VDC
Switching current alarm output	0.1 mA ... 1 A (cosφ = 1)

¹ USB connection for future applications

Ethernet	
Network standard used	IEEE 802.3 100BASE-TX (100 Mbps) auto negotiation auto MDIX
Baud rate	10 Mbps and 100 Mbps (auto negotiation)
Power over Ethernet	No
Cable type required	UTP or STP, minimum category 5
Maximum cable length	100 m (328 ft)
Connector type	RJ45, screened

RS485 (Priva Blue ID C-Line)	
Standard used	TIA/EIA-485
Bus load	1/2 Unit Load
Bias resistors	47 kΩ
Baud rates	1k2, 2k4, 4k8, 9k6, 19k2, 38k4, 57k6, 76k8 and 115k2 bps
Other parameters	number of data bits: 7, parity: even number of data bits: 8, parity: none, even, odd number of stop bits: 1 or 2
Internal termination and bias circuit	no if required, equip the network with an external termination and bias circuit
Functional isolation of port in relation to system neutral	250 V
Protection of port	protected against ± 30 VDC and 30 VAC
Cable type required	twisted pair
Maximum cable length	500 m (1640 ft)
Indication	<ul style="list-style-type: none"> green/red LED for status of the port green LEDs for indication of sending and receiving

Digital inputs	Alternating current	Direct current
Input voltage measurement range	0 ... 30 VAC	0 ... 30 VDC
Maximum permitted input voltage	0 ... 30 VAC	-30 ... 30 VDC
Type of measurement	pulse and status	pulse and status
Minimum detectable pulse width (Live contact)	500 ms (Mechanical switch)	10 ms (Mechanical switch)
	500 ms (Electronic switch)	350 μs (Electronic switch)
Minimum detectable pulse width (Dry / open collector)	-	10 ms (Mechanical switch)
	-	350 μs (Electronic switch)
Maximum input frequency (Live contact, 50% duty cycle)	-	50 Hz (Mechanical switch)
	-	1,400 Hz (Electronic switch)
Maximum input frequency (Dry / open collector, 50% duty cycle)	-	50 Hz (Mechanical switch)
	-	1,400 Hz (Electronic switch)
Maximum input voltage for low	3 VAC	3 VDC
Minimum input voltage for high	12 VAC	12 VDC
Input resistor with pull-up circuit disabled	24 kΩ nominal for positive voltages 19 kΩ nominal for negative voltages	
Input resistor with pull-up circuit enabled	-1 mA (low current pull-up) -5 mA (high current pull-up)	
Functional isolation of inputs in relation to system neutral	250 V	
Maximum current of FG connections	10 A	
Indication (only for modules with manual override)	<ul style="list-style-type: none"> green/red LEDs for status of inputs (colour is adjustable) 	

Universal inputs - Analogue use	
Type of measurement to be set per input	voltage current resistance
Mains frequency suppression (NMRR @ 50/60 Hz)	-60 dB (applies for a pure sinus)

Universal input - Voltage measurement	
Measurement range	0 ... 10 V
Maximum permissible input voltage	26.4 VAC -24 ... 30 VDC
Number of measurements per second	50 @ 50 Hz mains frequency 60 @ 60 Hz mains frequency
Resolution	14 bits over 12 V (730 μ V)
Accuracy	\pm (5mV + 0.1% of the measurement)
Input resistance	> 1 M Ω
Maximum source resistance	1 k Ω

Universal input - Current measurement	
Input current measurement range	0 ... 22 mA
Maximum permissible input voltage	26.4 VAC 0 ... 30 VDC
Number of measurements per second	50 @ 50 Hz mains frequency 60 @ 60 Hz mains frequency
Resolution	2.3 μ A (approximately 13 bits over 20 mA)
Accuracy	\pm (40 μ A + 0.4% of measurement)
Input resistance	250 Ω , nominal
Protection	resistor for current measurement is switched off automatically in the event of overvoltage (self-restoring after 5 minutes)

Universal input - Measurement of resistance				
Measuring range (automatic selection)	0 ... 2.5 k Ω	0 ... 10 k Ω	0 ... 40 k Ω	0 - 200 k Ω
Accuracy (nominal, at an ambient temperature of 50 $^{\circ}$ C (122 $^{\circ}$ F))	\pm (0.8 Ω + 0.22% of the measurement)	\pm (1.0 Ω + 0.4% of the measurement)	\pm (2.3 Ω + 0.41% of the measurement)	\pm (41 Ω + 1.12% of the measurement)
Maximum permissible input voltage	26.4 VAC -24 ... 30 VDC			
Number of measurements per second	1 @ 50 Hz mains frequency 1.2 @ 60 Hz mains frequency			
Resolution	approximately 14 bits			
Maximum permitted capacity at input	10 nF			

Universal inputs - Digital use	Alternating current	Direct current
Voltage range	0 ... 26.4 VAC	0 ... 30 VDC
Maximum permitted input voltage range	0 ... 26.4 VAC	-24 ... 30 VDC
Type of measurements	status and pulse	status and pulse
Minimum detectable pulse width (Live contact)	500 ms (Mechanical and electronic switch)	35 ms (Mechanical and electronic switch)
Minimum detectable pulse width (Dry / open collector)	-	1000 ms (Mechanical and electronic switch)
Maximum input frequency (Live contact, 50% duty cycle)	-	14 Hz (Mechanical and electronic switch)
Maximum input voltage "0"	3 VAC	3 VDC
Minimum input voltage "1"	12 VAC	12 VDC
Current from input with pull-up circuit enabled	-	-4 mA nominal

Universal input - Other	
Functional isolation of inputs in relation to system neutral	250 V
Maximum current of FG connections	10 A
Indication (for modules with manual override or indication only)	<ul style="list-style-type: none"> green/red LEDs for status of inputs for digital use (colour is adjustable)

Analogue outputs	
Output voltage control range	0 ... 10 V
Maximum load current supplied per output (source)	5 mA
Maximum current load drawn per output (sink)	
Load resistance	> 2 k Ω
Resolution	600 μ V (> 13 bits over 10 V)
Accuracy	\pm (10 mV + 0.5% of the control signal)
Accuracy of feedback	\pm 150 mV
Adjustment time	200 ms (to 70% of the set value)
Input leakage current with high impedance output ¹	maximum 5 μ A
Protection	output is short-circuit proof (self-restoring after a brief short circuit/overload) output is protected against \pm 30 VDC and 30 VAC
Number of switch-on attempts in the event of short circuit or overload ²	5
Functional isolation of outputs in relation to system neutral	250 V
Maximum current of FG connections	10 A
Indication (for modules with manual override only)	<ul style="list-style-type: none"> orange LEDs for indication of output voltage orange LED for status of control (automatic or manual)
Controls (for modules with manual override only)	buttons to set the voltage level of the output manually: <ul style="list-style-type: none"> +: manually increase output voltage A: automatic control of output voltage -: manually decrease output voltage

¹ The output is high impedance ex-factory; the module has not yet been configured then. In addition, unused outputs and the outputs where the overload protection has been activated are high impedance.

² After a short-circuit or overload the output is switched back on after 0.5 s. The output switches back off immediately if the overload is still present. The output performs a maximum of 5 switch-on attempts with a time interval of 0.5 seconds. After 5 attempts, the output is switched off and manual intervention is required.

Digital relay outputs	
Output configuration	normally open contact or changeover contact (depending on output)
Maximum switching voltage	250 VAC (30 VAC when used in Compass) 30 VDC
Maximum switching current	3 A ($\cos\phi = 1$)
Maximum switching voltage in USA/Canada when switching different mains voltage phases on the same module	125 VAC
External fuse	8 A maximum
Expected service life of relay contacts with $\cos\phi = 1$ and maximum of 6 switches per minute	up to 250 VAC and 3 A: 300,000 switches 24 VDC and 3 A: 300,000 switches
Expected service life of relay contacts with $\cos\phi \neq 1$ and maximum of 6 switches per minute	250 VAC and 2 A AC15: 200,000 switches 250 VAC motor 370 W AC3: 300,000 switches 24 VDC and 3 A L/R 7 ms: 100,000 switches 24 VDC and 1 A DC13: 200,000 switches
UL certified service life of relay contacts with $\cos\phi = 1$ and maximum of 6 switches per minute	up to 250 VAC and 3 A: 30,000 switches 24 VDC and 3 A: 30,000 switches
UL certified service life of relay contacts with $\cos\phi \neq 1$ and maximum of 6 switches per minute	240 VAC and 0.5 hp motor: 1,000 switches 120 VAC and 0.25 hp motor: 1,000 switches B300 pilot duty rating: 6,000 switches
Maximum switching frequency	6 times per min.
Fail-safe	if communication with the controller fails, the outputs are set to a user-configured state
Indication (for modules with manual override only)	<ul style="list-style-type: none"> • green/red LEDs for status of outputs (colour is adjustable) • orange LED for status of control (automatic or manual) • red alarm LED
Controls (for modules with manual override only)	buttons for manual operation to control connected equipment: <ul style="list-style-type: none"> • 0: relay off • A: automatic or manual control • 1: relay on




General specifications of Priva Blue ID C-Line controllers and modules

System power supply	Requirements
The system power supply for the controllers and Mix I/O modules must meet the following requirements.	
Output voltage	24 VAC \pm 25%; 50/60 Hz \pm 5 % 24 VDC \pm 10%
Insulation	double insulation between input and output
Type of power supply	for UL916, CSA C22.2 No. 205: UL listed / CSA certified Class 2 extra low output voltage power supply


Housing	
IP code	IP20 (IEC 60529)
Flammability class	V-0 (UL 94)
Recycle code	7
Colour	housing: white (RAL9001) and blue (NCS S 1560-R90B) connections and connectors: black (RAL9011)
Type of device	open type equipment for: <ul style="list-style-type: none"> • indoor use only • pollution degree 2 environment

Installation and connection	
Installation	in control panel: <ul style="list-style-type: none"> • accessible to authorised personnel only • can be clicked onto horizontally or vertically positioned DIN rail. DIN rail installed directly on a mounting plate or floating with respect to the mounting plate in DIN 43870 distribution box
Type of DIN rail	35 x 7.5 (1.38 x 0.30 inches) or 35 x 15 mm (1.38 x 0.59 inches) (height x depth), in accordance with IEC 60715
Connector type for power supply and I/O	pluggable terminal block screw connectors (optional)
Permitted core cross section area	solid: 0.2 ... 2.5 mm ² (25 ... 14 AWG) flexible with ferrule connector: 0.2 ... 2.5 mm ² (25 ... 14 AWG) flexible with double ferrule connector: 0.2 ... 1.5 mm ² (25 ... 16 AWG)
Strip length/connector length (terminal block)	solid: 10 mm (0.39 inches) flexible with ferrule connector: 10 mm (0.39 inches) flexible with double ferrule connector: 12 mm (0.47 inches)
Strip length/connector length (screw connector)	8 mm (0.31 inches)
Identification of connections	labelling with an explanatory abbreviation
Maximum length of I/O bus cable between modules	3 m (9.84 ft)
Maximum length of I/O bus (total, including modules)	20 m (65.62 ft)

Environment	
Permitted temperature inside control panel of a working system (without air flow)	0 ... 50 °C (32 ... 122 °F)
Permitted temperature during transport and storage	-20 ... 70 °C (-4 ... 158 °F)
Maximum height	3000 m (9842 ft)
Permitted ambient relative humidity	10%...95% (non-condensing)
Shock resistance	EN 60068-2-27 (Ea)
Vibration resistance	EN 60068-2-27 (Fc)
Installation category	II
Other installation and environmental requirements	do not expose to direct sunlight

Legislation and standards		
Canada / USA		<ul style="list-style-type: none"> • UL 916 (energy management equipment) • UL 61010-1 (measurement and control equipment) • UL 61010-2-201 (measurement and control equipment) • CSA C22.2 No 61010-1-12 (measurement and control equipment) • CSA C22.2 No 61010-2-201-14 (measurement and control equipment) • CSA C22.2 No 61010-1-04 (measurement and control equipment) • CSA C22.2 No 205-12 (signal equipment)
	EMC	<ul style="list-style-type: none"> • in compliance with 47 CFR Part 15 Subpart B, Class B (FCC Rules) Functioning must meet two conditions: <ol style="list-style-type: none"> 1. The system must not cause harmful interference. 2. The system must acknowledge all interference received, including interference that may cause unwanted operations. • ISM system, in accordance with Canadian standard ICES-001
Europe		<ul style="list-style-type: none"> • Low Voltage Directive 2006/95/EC: <ul style="list-style-type: none"> • EN 61010-1 (measurement and control equipment) • EN 61010-2-201 (measurement and control equipment) • EMC Directive 2004/108/EC: <ul style="list-style-type: none"> • EN 61326-1 (measurement and control equipment) • EN 61000-6-2 (generic immunity standard) • EN 61000-6-3 (generic emission standard) • RoHS directive 2011/65/EU
		in compliance with WEEE directive 2012/19/EU
International	IEC	<ul style="list-style-type: none"> • IEC 61010-1 (measurement and control equipment) • IEC 61010-2-201 (measurement and control equipment)

Legislation and standards

International		<ul style="list-style-type: none">• The Priva Blue ID C4 C-MX34 Controller and Priva Blue ID C4 C-MX34m Controller with manual override are BTL-registered with BACnet International.• The Priva Blue ID C4 C-MX34 Controller and Priva Blue ID C4 C-MX34m Controller with manual override are BACnet-certified in accordance with ISO 16484-5/6.• Priva is a member of the BACnet Interest Group Europe.
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