ioPAC 6500 (65M) IO, IO Backplane Modules Quick Installation Guide

Version 2.0, September 2026

Technical Support Contact Information
www.moxa.com/support

© 2026 Moxa Inc. All rights reserved.

P/N: 1802065000124

Package Checklist

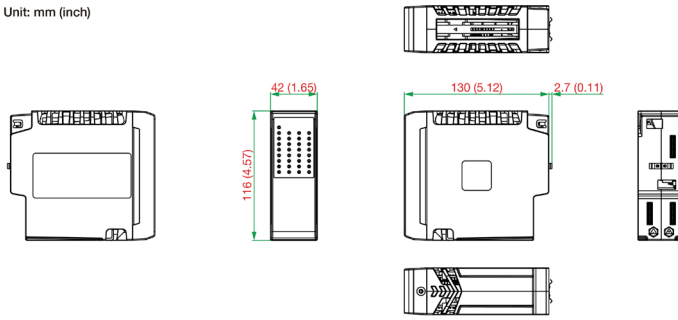
- 1 65M module
- 1 Quick installation guide (printed)
- 1 Warranty card

NOTE Notify your sales representative if any of the above items are missing or damaged.

Dimensions

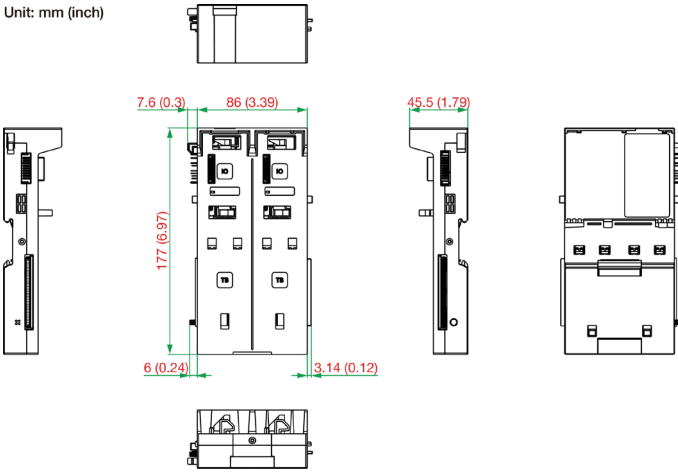
65M-1XXX/2XXX/3XXX/4XXX/5801 Models

Unit: mm (inch)

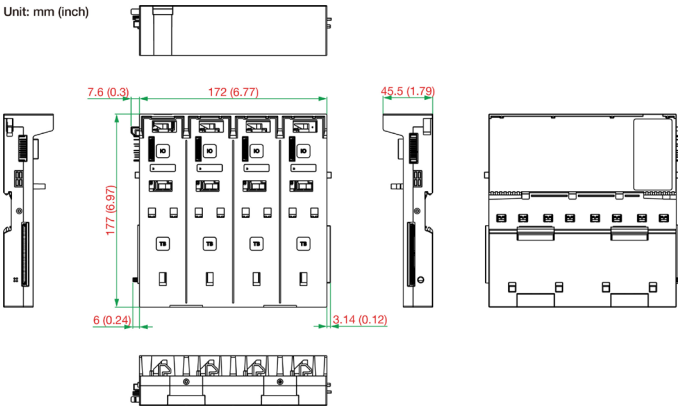


65M-BMIO02 Models

Unit: mm (inch)



65M-BMIO04 Models



LED Descriptions

DI Module (65M-1900-CT-T)

LED	Color	Status	Description
STATUS (module status)	Green	Solid	Module running normally
		Blinking (5 Hz)	Firmware upgrade in progress
		Blinking (0.5 Hz)	Module booting up
		Double blink (1.11 Hz)	Module located
	Red	Solid	Module failed
		Blinking (5 Hz)	Connection to CPU lost
		Blinking (0.5 Hz)	Diagnostic error
		Double blink (1.11 Hz)	Field power error
1 to 32 (DI channel status)	Green	Solid	DI channel is on
	Red	Solid	Diagnostic error
	Off	Solid	DI channel is off or inactive

Relay Module (65M-2804-CT-T)

LED	Color	Status	Description
STATUS (module status)	Green	Solid	Module running normally
		Blinking (5 Hz)	Firmware upgrade in progress
		Blinking (0.5 Hz)	Module booting up
		Double blink (1.11 Hz)	Module located
	Red	Solid	Module failed or firmware upgrade failed
		Blinking (5 Hz)	Module in fail-safe mode
1 to 8 (Relay channel status)	Green	Solid	Relay channel is on or booting up
	Off		Relay channel is off or inactive

DO Module (65M-2901-CT-T)

LED	Color	Status	Description
STATUS (module status)	Green	Solid	Module running normally
		Blinking (5 Hz)	Firmware upgrade in progress
		Blinking (0.5 Hz)	Module booting up
		Double blink (1.11 Hz)	Module located
	Red	Solid	Module failed
		Blinking (5 Hz)	Module in fail-safe mode
		Blinking (0.5 Hz)	Diagnostic error
		Double blink (1.11 Hz)	Field power error
1 to 32 (DO channel status)	Green	Solid	DO channel is on
	Red	Solid	Diagnostic error
	Off		DO channel is off or inactive

AI Module (65M-3600/3610/3800H Models)

LED	Color	Status	Description
STATUS (module status)	Green	Solid	Module running normally
		Blinking (5 Hz)	Firmware upgrade in progress
		Blinking (0.5 Hz)	Module booting up
		Double blink (1.11 Hz)	Module located
	Red	Solid	Module failed
		Blinking (5 Hz)	Connection to CPU lost
		Blinking (0.5 Hz)	Diagnostic error
		Double blink (1.11 Hz)	Field power error
1-16, 1-8 (3800H) AI channel status	Green	Solid	AI channel is on
	Red	Solid	Diagnostic error
	Off		AI channel is inactive

AO Module (65M-4820/4450 Models)

LED	Color	Status	Description
STATUS (module status)	Green	Solid	Module running normally
		Blinking (5 Hz)	Firmware upgrade in progress
		Blinking (0.5 Hz)	Module booting up
		Double blink (1.11 Hz)	Module located
	Red	Solid	Module failed
		Blinking (5 Hz)	Module in fail-safe mode
		Blinking (0.5 Hz)	Diagnostic error
		Double blink (1.11 Hz)	Field power error
1-8 1-4 (4450) AO channel status	Green	Solid	AO channel is on
	Red	Solid	Diagnostic error
	Off		AO channel is inactive

Serial Module (65M-5801-CT-T)

LED	Color	Status	Description
STATUS (module status)	Green	Solid	Module running normally
		Blinking (5 Hz)	Firmware upgrade in progress
		Blinking (0.5 Hz)	Module booting up
		Double blink (1.11 Hz)	Module located
	Red	Solid	Module failed
		Blinking (5 Hz)	Module in fail-safe mode
		Blinking (0.5 Hz)	Diagnostic error
		Double blink (1.11 Hz)	Field power error
1-8 (serial channel status)	Green	Blinking (0.5 Hz)	Tx: Serial channel transmitting data
	Red		Rx: Serial channel receiving data
	Off		Channel inactive

Mounting Requirements

Mounting requires an earth-grounded DIN rail and sufficient clearance for heat dissipation.



CAUTION

Risk of device malfunction. Install units with release latch facing up. Fanless heat dissipation requires exhaust vents on the top of each module to face up.

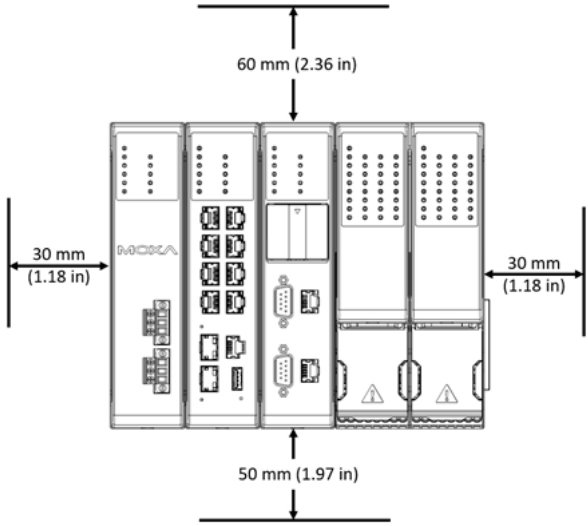


CAUTION

Risk of electrical hazard if ungrounded. DIN rails must be connected to earth ground.

The minimum clearance for heat dissipation is:

Direction	Clearance
Top	60 mm (2.36 in)
Sides	30 mm (1.18 in)
Bottom	50 mm (1.97 in)



Unit Installation Requirements and Limitations

Modules must be arranged in the following order from left to right:

1. Power Module(s)
2. Communication Module(s) (optional)
3. CPU Module(s) (Control units only)
4. Expansion Module (optional)
5. IO Module(s) (optional)

Determine the correct backplane and module sequence before mounting to avoid unmounting. Modules are hot-swappable. However, once mounted, module backplanes are difficult to rearrange without unmounting.

Unit/Module Limitations

Each unit may have the following:

Module Type	Maximum Backplanes	Multislot
Power	1	1-slot or 2-slot
Communication	1	1-slot or 2-slot
CPU	1	1-slot or 2-slot
Expansion	1	1-slot or 2-slot
IO	2	2-slot or 4-slot

CAUTION

Risk of device malfunction. Ensure total unit power draw does not exceed 75 W.

Assembling and Mounting Backplane Modules

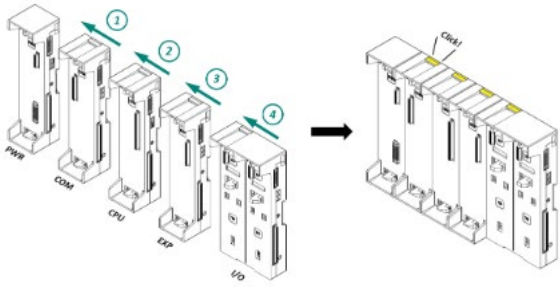
Backplanes link modules together and anchor them on the DIN rail. The backplane modules for each unit must follow a specific order. Refer to the *ioPAC 6500 Series Manual* for more information on the exact order and module compatibility.

CAUTION

Install in a suitable tool-accessible enclosure. Devices are open-type. Open-type equipment is for indoor use. IP rating is not safety-certified.

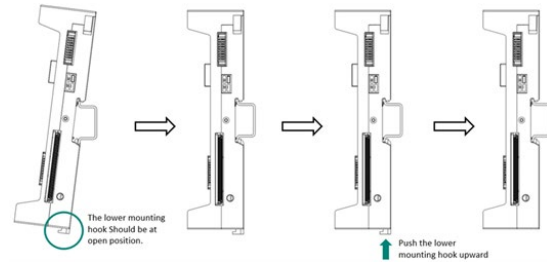
NOTE Assembled units may be heavy. Mounting backplanes first is recommended before installing modules into slots.

1. To attach one backplane to another, align the two backplanes and gently push.



   The top clip should snap downward when connected. If the clip does not snap, gently push it down. Do not force. If it still doesn't lock, make sure the backplanes are in the correct order and flush, then try again.
2. Repeat until all necessary backplanes are connected and all top clips are flush.
3. On the back of the assembled backplanes, make sure that the lower mounting hooks of all backplane modules are extended.
4. Hang the upper mounting hook of the assembled backplanes on the upper lip of the DIN rail.
5. Allow the bottom mounting hook of the assembled backplanes to rest flush against the DIN rail.

6. Secure the backplanes by pushing the lower mounting hook clasps up.
   The backplane modules are now secure.

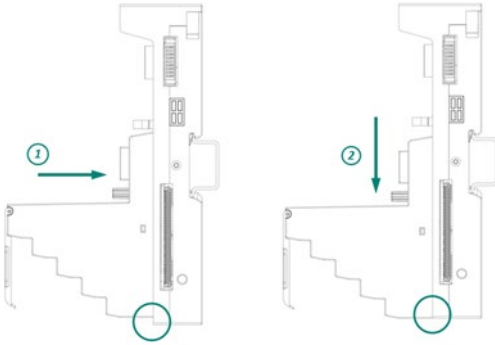


Installing Modules Into Slots

CAUTION

Do not force. Valid module combinations should snap easily into place. Consult the *ioPAC 6500 Series Manual* for valid combinations.

1. Place the terminal block module on the I/O backplane module, then pull it down to lock into place.



2. Hold the module with both hands and insert it horizontally into the corresponding slot on the backplane assembly.



   Repeat until all modules are installed.

NOTE The tab on the top of the module should be flushed with the top of the module. Some modules have special installation instructions. See the *ioPAC 6500 Series Manual* and the corresponding QIG for details.

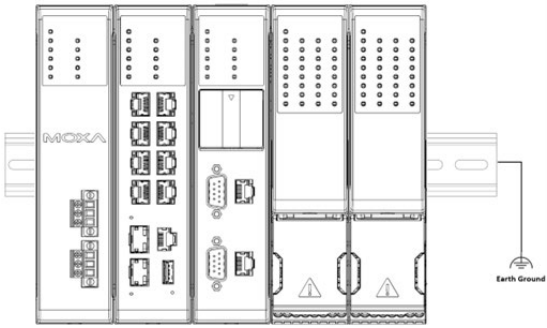
Module Power

Backplane modules distribute power to each module in the unit. Modules are powered automatically once power is supplied to the unit. After the power supply is turned on, boot-up takes approximately 90 seconds. Consult the *ioPAC 6500 Series Manual* and *ioPAC 6500 (65M) Power and Power Backplane Modules Quick Installation Guide* for more information.

Module Grounding

Modules must be grounded through the following mechanisms:

- Each backplane module has a grounding spring that directly connects to the grounded DIN rail. DIN rails must be connected to earth ground.



- Each backplane module connects to the other backplane modules, with their own grounds.

Specifications

General

Mounting Options	
DIN-rail Mounting	Default
Rack Mounting	Supported (with optional kit)
Environmental Limits	
Operating Temperature	-40 to 75°C (-40 to 167°F)
Storage Temperature (including package)	-40 to 85°C (-40 to 185°F)
Relative Humidity	5 to 95% (non-condensing)
IP Protection	IP20
Operating Altitude	Up to 2,000 meters
Standards and Certifications	
EMC	EN 55032/35 EN 61000-6-2/6-4
EMI	CISPR 32 FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: DC Power: 1 kV; Signal: 1 kV IEC 61000-4-5 Surge: DC Power: 0.5 kV L-N, 1 kV L/N-PE; Signal: 1 kV; IO: 0.5 kV IEC 61000-4-6 CS: DC Power: 10 Vrms; Signal: 10 Vrms IEC 61000-4-8 PFMF: 30 A/m
Safety	UL 61010-1, UL 61010-2-201
Vibration	IEC 60068-2-6 • DIN-rail mounted: 7 mm peak-to-peak (p-p) (2 to 8.42 Hz), 1 g (8.42 to 150 Hz) • Rack-mounted (with optional kit): 7 mm peak-to-peak (p-p) (2 to 8.42 Hz), 0.5 g (8.42 to 150 Hz)
Package Vibration / Drop Test	ISTA-1A
Warranty	
Warranty period	5 years
Details	See www.moxa.com/tw/warranty

65M-1900-CT-T

Digital Input	
Number of Channels	32
Input Type	Current sink (internal or external field-circuit supply for dry contact)
Input ON Voltage	11 to 30 VDC
Input OFF Voltage	0 to 5 VDC
Internal Field Circuit Supply	Voltage: 24 VDC, 22.8 to 25.2 VDC Current: 125 mA (max.) (only for dry contact)
Isolation	3k VDC for 1 min. (signal to system)
Counter	
Number of Counter Channels	8 (Channel 1 to 8, group configurable by software)
Counting Frequency	Square wave 0 to 10 kHz
Power Consumption	
System Power	0.068 A @ 12 VDC
Field Power	0.019 A @ 24 VDC (without using an internal field-circuit supply) 0.115 A @ 24 VDC (32 channel dry contact using the internal field circuit supply)
Physical Characteristics	
Weight	253 g (0.56 lb)

65M-2804-CT-T

Relay Output	
Number of Channels	8 (4 Channels/COM)
Relay Type	Form A
Rated Applied Voltage	24 VDC
Maximum Load Current (Resistive Load)	24 VDC, 2 A
Switching Frequency	2 Hz
Isolation	3k VDC for 1 min. (signal to system)
Mechanical Durability	5000000 cycles
Electrical Durability	24 VDC, 2A: 20000 cycles
Power Consumption	
System Power	0.11 A @ 12 VDC
Physical Characteristics	
Weight	258 g (0.57 lb)

65M-2901-CT-T

Digital Output	
Number of Channels	32
Output Type	Current Source
Field Power Input Voltage	24 VDC, 19.2 to 28.8 VDC
Field Power Input Current	6.4 A (max.)
Load Current	200 mA/1 channel (typ.) 500 mA/1 channel (max.)
Isolation	3k VDC for 1 min. (signal to system)
Pulse	
Number of Pulse Channels	8 (Channel 1 to 8, group configurable by software)
Pulse Duration	500 µs (min.)
Power Consumption	
System Power	0.068 A @ 12 VDC
Field Power	0.01 A @ 24 VDC
Physical Characteristics	
Weight	254 g (0.56 lb)

65M-3600-CT-T

Analog Input	
Number of Channels	16 (8 channels per group)
Input Mode	0 to 20 mA 4 to 20 mA
Permitted Overload on Inputs	± 30 mA
IO type	Differential
Internal Loop Power Supply	Voltage: 24 VDC, 22.8 to 25.2 VDC Current: 200 mA/group (max.) (only for 2-wire connection)
ADC Resolution	16 bits
Measurement Resolution	2 µA (0 to 20 mA) 1.6 µA (4 to 20 mA)
Conversion Time	100 ms
Accuracy	± 0.1% full-scale range @ 25°C; ± 0.3% full-scale range @ -40 to 75°C
Isolation	3k VDC for 1 min. (signal to system)
Power Consumption	
System Power	0.073 A @ 12 VDC
Field Power	0.053 A @ 24 VDC (without using internal loop power) 0.466 A @ 24 VDC (16 channels, 4 to 20 mA input using internal loop power all 20 mA)
Physical Characteristics	
Weight	267 g (0.59 lb)

65M-3610-CT-T

Analog Input	
Number of Channels	16 (8 channels per group)
Input Mode	0 to 10 V 1 to 5 V
Permitted Overload	± 12 V
IO type	Differential
ADC Resolution	16 bits
Measurement Resolution	1 mV (0 to 10 V) 0.4 mV (1 to 5 V)
Conversion Time	100 ms
Accuracy	± 0.1% full-scale range @ 25°C ± 0.3% full-scale range @ -40 to 75°C
Isolation	3k VDC for 1 min. (signal to system)
Power Consumption	
System Power	0.069 A @ 12 VDC
Field Power	0.038 A @ 24 VDC
Physical Characteristics	
Weight	250 g (0.55 lb)

65M-3800H-CT-T

Analog Input	
Number of Channels	8 channels with HART function
Channel Enabled/Disabled	Yes
Input Mode	4 to 20 mA
Permitted Overload on Inputs	± 30 mA
IO type	Differential
Internal Loop Power Supply	Voltage: 24 VDC, 22.8 to 25.2 VDC Current: 500 mA (max.) (only for 2-wire connection)
ADC Resolution	16 bits
Measurement Resolution	1.6 µA (4 to 20 mA)
Conversion Time	100 ms
Accuracy	± 0.1% full-scale range @ 25°C; ± 0.3% full-scale range @ -40 to 75°C
Isolation	3k VDC for 1 min. (signal to system)
HART Function	
Number of HART Modem	1
Data Update Time	1 sec/field device
Operation Type	Primary master
Topology	Point-to-point
Power Consumption	
System Power	0.072 A @ 12 VDC (max.)
Field Power	0.05 A @ 24 VDC (max.) (without using internal loop power) 0.25 A @ 24 VDC (max.) (8 channels, 4 to 20 mA input using internal loop power, all in 20 mA) 0.66 A @ 24 VDC (max.) (internal loop power supply at 500 mA)

Physical Characteristics	
Weight	262 g (0.58 lb)

65M-4450-CT-T

Ch-Ch Isolated Analog Output	
Number of Channels	4
Output Mode	0 to 10 V 1 to 5 V 0 to 20 mA 4 to 20 mA
Resolution	16 bits
Output Resolution	1 mV (0 to 10 V) 0.4 mV (1 to 5 V) 2 µA (0 to 20 mA) 1.6 µA (4 to 20 mA)
Output Refresh Time	8 ms
Accuracy	± 0.1% full-scale range @ 25°C ± 0.3% full-scale range @ -40 to 75°C
Isolation	3k VDC for 1 min. (signal to system) 1k VDC for 1 min. (channel to channel)
Power Consumption	
System Power	0.35 A @ 12 VDC (max.)
Physical Characteristics	
Weight	272 g (0.6 lb)

65M-4820-CT-T

Analog Output	
Number of Channels	8 (4 channels per group)
Output Mode	0 to 10 V 1 to 5 V 0 to 20 mA 4 to 20 mA
IO type	Differential
Resolution	16 bits
Output Resolution	1 mV (0 to 10 V) 0.4 mV (1 to 5 V) 2 µA (0 to 20 mA) 1.6 µA (4 to 20 mA)
Output Refresh Time	16 ms
Accuracy	± 0.1% full-scale range @ 25°C ± 0.3% full-scale range @ -40 to 75°C
Isolation	3k VDC for 1 min. (signal to system) 1k VDC for 1 min (group to group)
Power Consumption	
System Power	0.069 A @ 12 VDC
Field Power	0.022 A @ 24 VDC (without external load) 0.266 A @ 24 VDC (8 channels with 20 mA current output)
Physical Characteristics	
Weight	257 g (0.57 lb)

65M-5801-CT-T

Serial	
Number of Channels	8 (4 channels per group)
Standards	RS-232 RS-422 RS-485-2w
Baud rate	300, 1200, 1800, 2400, 4800, 9600, 19200, 28800, 38400, 57600, 115200 bps
Data Bits	7, 8
Stop Bits	1, 2
Parity	None, Even, Odd
Isolation	3k VDC for 1 min. (signal to system)
Power Consumption	
System Power	0.143 A @ 12 VDC
Field Power	0.110 A @ 24 VDC
Physical Characteristics	
Weight	259 g (0.57 lb)

65M-BMIO02-CT-T

Power Consumption	
System Power	0.093 A @ 12 VDC
Physical Characteristics	
Dimensions	86 x 177 x 45.5 mm (3.39 x 6.97 x 1.79 in)
Weight	205 g (0.45 lb)

65M-BMIO04-CT-T

Power Consumption	
System Power	0.117 A @ 12 VDC
Physical Characteristics	
Dimensions	172 x 177 x 45.5 mm (6.77 x 6.97 x 1.79 in)
Weight	395 g (0.87 lb)



CAUTION

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any received, including interference that may cause undesired operation.

Hazardous Location Specifications

<table>
<tr><td>Trade Mark</td><td colspan="2">MOXA®</td></tr>
<tr><td rowspan="11">Model/ Rating</td><td>Model</td><td>Rating</td></tr>
<tr><td>65M-1900-CT-T</td><td>System power: 12 VDC, 0.068 A
Field power: 24 VDC, 0.115 A</td></tr>
<tr><td>65M-2901-CT-T</td><td>System power: 12 VDC, 0.068 A
Field power: 24 VDC, 0.01 A</td></tr>
<tr><td>65M-3600-CT-T</td><td>System power: 12 VDC, 0.073 A
Field power: 24 VDC, 0.466 A</td></tr>
<tr><td>65M-3610-CT-T</td><td>System power: 12 VDC, 0.069 A
Field power: 24 VDC, 0.038 A</td></tr>
<tr><td>65M-4820-CT-T</td><td>System power: 12 VDC, 0.069 A
Field power: 24 VDC, 0.266 A</td></tr>
<tr><td>65M-3800H-CT-T</td><td>System power: 12 VDC, 0.072 A
Field power: 24 VDC, 0.66 A</td></tr>
<tr><td>65M-5801-CT-T</td><td>System power: 12 VDC, 0.143 A
Field power: 24 VDC, 0.11 A</td></tr>
<tr><td>65M-BMIO02-CT-T</td><td>System power: 12 VDC, 0.093 A</td></tr>
<tr><td>65M-BMIO04-CT-T</td><td>System power: 12 VDC, 0.117 A</td></tr>
<tr><td>ATEX information</td><td colspan="2">CE
Ex II 3G
Ex ec IIC T4 Gc
UL 26 ATEX 3542X
Ambient Range for “-T” models:
-40 °C ≤ Tamb ≤ +75 °C
Ambient Range for non “-T” models:
-10 °C ≤ Tamb ≤ +60 °C</td></tr>
<tr><td>IECEx Cert. No.</td><td colspan="2">IECEx UL 26.0030X</td></tr>
</table>



CAUTION

These devices are suitable for use in Class I, Division 2, Groups A, B, C, and D, or for use in non-hazardous locations only.

NOTE 65M-2804-CT-T and 65M-4450-CT-T are NOT yet CID2, IECEx, and ATEX certified.

Specific Conditions of Use

- The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP 54 in accordance with EN IEC/IEC 60079-0.
- The equipment shall only be used in an area of at least pollution degree 2, as defined in EN IEC/IEC 60664-1.