ioPAC 6500 (65M) Switch and Communication Backplane Modules Quick Installation Guide

Version 2.0, September 2026

Technical Support Contact Information
www.moxa.com/support

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P/N: 1802065000132

Package Checklist

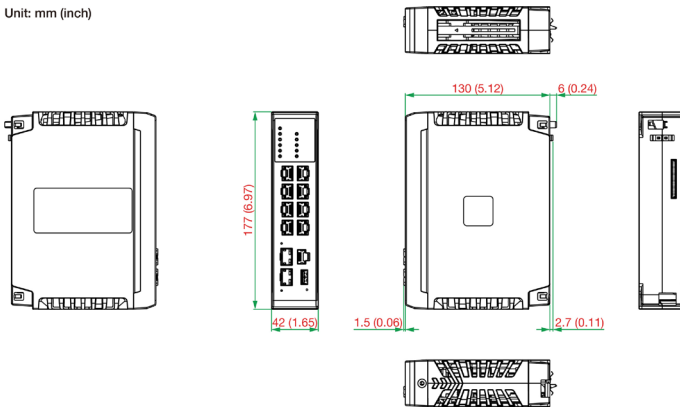
- 1 x 65M module
- 1 x Quick installation guide (printed)
- 1 x Warranty card

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

Dimensions

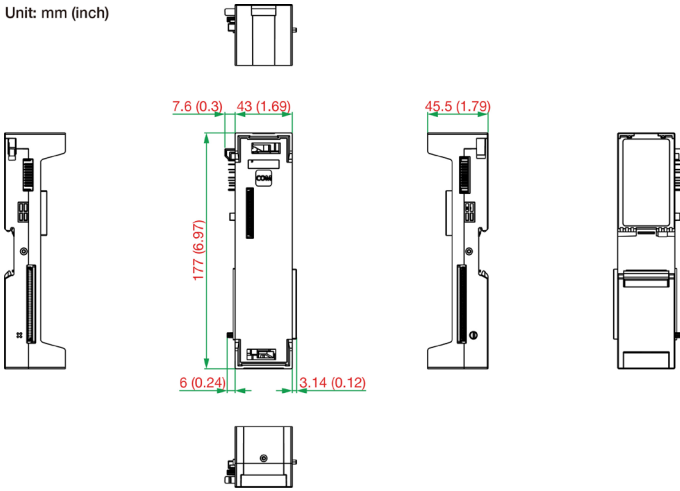
65M-5011M-CT-T

Unit: mm (inch)



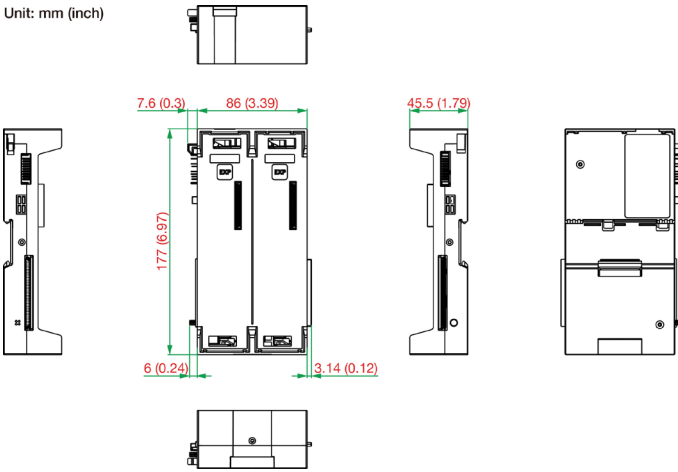
65M-BMCM01-CT-T

Unit: mm (inch)



65M-BMCM02-CT-T

Unit: mm (inch)



LED Descriptions

LED	Color	Status	Description
STATUS (module status)	Green	Solid	Module passed POST and running normally
		Blinking (1 Hz)	Module initializing
		Blinking (2 Hz)	External storage connected to module
	Red	Solid	• Boot-up failure • Module info read failure • EEPROM info error
FAULT	Red	Solid	• Network loop detected (loop protection enabled). • External storage load or save failure • Port disabled (Ingress rate limit for shutdown mode exceeded) • Invalid connection to Ring port
		Off	• Module running normally • A user-configured event not triggered
MSTR/ HEAD (master or head status)	Green	Solid	Switch is master/head of Turbo Ring/Turbo Chain
		Blinking (4 Hz)	• Switch has become the master of Turbo Ring after Turbo Ring went down • Switch set as head of Turbo Chain and the Chain went down • Switch set as a Turbo Ring member and the corresponding Ring port is down

LED	Color	Status	Description
			• Switch set as a Turbo Chain member/tail and the corresponding head-end Chain port is down
		Off	Switch is not the master/head of this Turbo Ring/Turbo Chain
CPRL/ TAIL (coupling or tail status)	Green	Solid	• Ring coupling or dual homing function is enabled • Switch set as the tail of a Turbo Chain
		Blinking (4 Hz)	• Turbo Chain is down • Switch set as a Turbo Chain member/head and the corresponding tail-end Chain port is down
		Off	Switch has disabled the coupling or tail role of Turbo Chain
SYNC	N/A	N/A	Reserved
3 to 10 (10M/100M/ 1000M RJ45 Ethernet port status)	Green (top LED)	Solid	Port active and linking at 1 Gbps
		Blinking	Port transmitting data at 1 Gbps
		Off	Port inactive or link down
	Amber (bottom LED)	On	Port active and linking at 10/100 Mbps
		Blinking	Port transmitting data at 10/100 Mbps
		Off	Port inactive or link down
1 to 2 (100M/1000M SFP port status)	Green	Solid	Port active and linking at 1 Gbps
		Blinking	Port transmitting data at 1 Gbps
		Off	Port inactive or link down
	Amber	Solid	Port active and linking at 100 Mbps
		Blinking	Port transmitting data at 100 Mbps
		Off	Port inactive or link down

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.

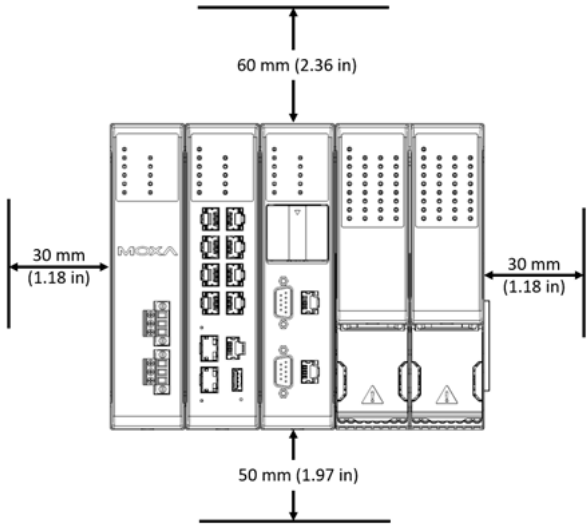


CAUTION

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.

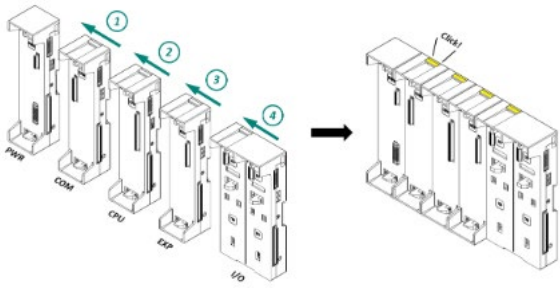


CAUTION

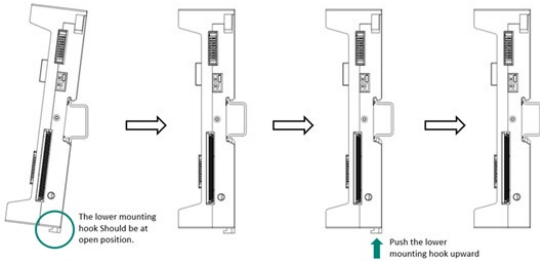
Install in a suitable tool-accessible enclosure. Devices are open-type. Open-type equipment is for indoor use. IP rating is not safety-certified.

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. 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 flush with the top of the module. Some modules have special installation instructions. See the *ioPAC 6500 Series Manual* and the corresponding QIG for details.

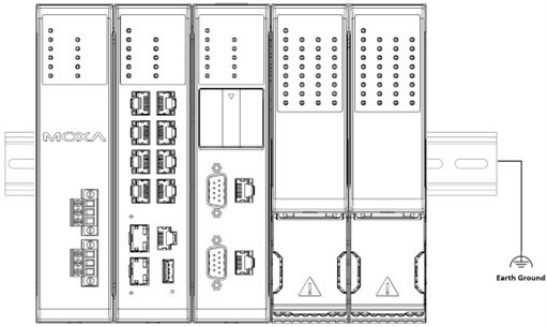
Module Power

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:

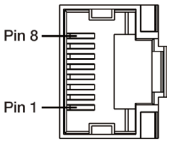
- Each backplane module has a grounding spring that directly connects to the grounded DIN rail. DIN rails must be connected to earth ground.



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

Wiring the Ethernet Port

The maximum cable length is 100 m (350 feet), but the actual limit for your application could be longer or shorter depending on the amount of electrical noise in the environment. To minimize the amount of noise, Ethernet cables should not run parallel to power cables or other types of cables that generate electrical noise. The following diagram and table show the pin assignments for the RJ45 Ethernet ports:



Pin	Media Direct Interface Signal
1	TRD(0)+
2	TRD(0)-
3	TRD(1)+
4	TRD(2)+
5	TRD(1)-
6	TRD(2)-
7	TRD(3)+
8	TRD(3)-

Wiring the Fiber Port

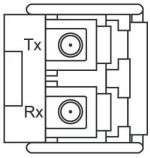
1000BaseSFP (mini-GBIC) Fiber Port

The Gigabit Ethernet fiber ports on the switch are 1000BaseSFP fiber ports, which must use 1G mini-GBIC fiber transceivers to work properly.

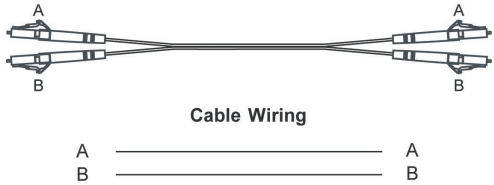
The concept behind the LC port and cable is straightforward. Suppose you are connecting devices I and II; contrary to electrical signals, optical signals do not require a circuit to transmit data. Consequently, one of the optical lines is used to transmit data from device I to device II, and the other optical line is used to transmit data from device II to device I, for full-duplex transmission.

Remember to connect the Tx (transmit) port of device I to the Rx (receive) port of device II, and the Rx (receive) port of device I to the Tx (transmit) port of device II. If you make your own cable, we suggest labeling the two sides of the same line with the same letter (A-to-A and B-to-B, as shown below, or A1-to-A2 and B1-to-B2).

LC-Port Pinouts



LC-Port to LC-Port Cable Wiring



Specifications

Ethernet Interface	
10/100/1000BaseT(X) Ports (RJ45 connector)	8 Auto MDI/MDI-X connection Auto negotiation speed Full/Half-duplex mode
100/1000BaseSFP Ports	2*
Serial Interface	
Console Port	RS-232, RJ45 connector on front
Other Interface	
Backup and Storage Interface	USB Type A; only supports the ABC-02-USB from Moxa
Button	RESET button
Power Parameters	
Input Current	0.9 A @ 12 VDC
Physical Characteristics	
Weight	65M-5011M: 660 g (1.46 lb) 65M-BMCM01: 169 g (0.37 lb) 65M-BMCM02: 330 g (0.73 lb)
Mounting Options	DIN-rail mounting (default) Rack mounting (with optional kit)

Environmental Limits	
Operating Temperature	Without SFP module installed: -40 to 75°C (-40 to 167°F) With SFP module installed: -40 to 65°C (-40 to 149°F)
Storage Temperature	-40 to 85°C (-40 to 185°F) including the package
Relative Humidity	5 to 95% (non-condensing)
IP Protection	IP20
Operating Altitude	Up to 2000 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
Shock	IEC 60068-2-27 half-sine wave Acceleration: 15 g; time: 11 ms
Vibration	IEC 60068-2-6 DIN-rail mounted: 7 mm peak-peak (p-p) (2 to 8.42 Hz), 1 g (8.42 to 150 Hz) Rack mounted (with optional kit): 7 mm peak-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

*The SFP modules supported are listed in the following table:

Model	**Description**
SFP-1GLHLC-T	SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, -40 to 85°C operating temperature
SFP-1GLXLC-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, -40 to 85°C operating temperature

Model	Description
SFP-1GZXLC-T	SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, -40 to 85°C operating temperature
SFP-1G10ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G10BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1G20ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G20BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1G40ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G40BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1FELLC-T	SFP module with 1 100Base single-mode with LC connector for 80 km transmission, -40 to 85°C operating temperature
SFP-1FEMLC-T	SFP module with 1 100Base multi-mode with LC connector for 2/4 km transmission, -40 to 85°C operating temperature
SFP-1FESLC-T	SFP module with 1 100Base single-mode with LC connector for 40 km transmission, -40 to 85°C operating temperature



CAUTION

This is a Class 1 Laser/LED product. To avoid causing serious damage to your eyes, do not stare directly into the laser beam.



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

Trade Mark	MOXA®	
Model/ Rating	Model	Rating
	65M-5011M-CT-T	System power: 12 VDC, 0.9 A
ATEX information	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	
IECEx Cert. No.	IECEx UL 26.0030X	

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.

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.