

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

Version 1.0, November 2024

Technical Support Contact Information
www.moxa.com/support



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P/N: 1802065000101



Package Checklist

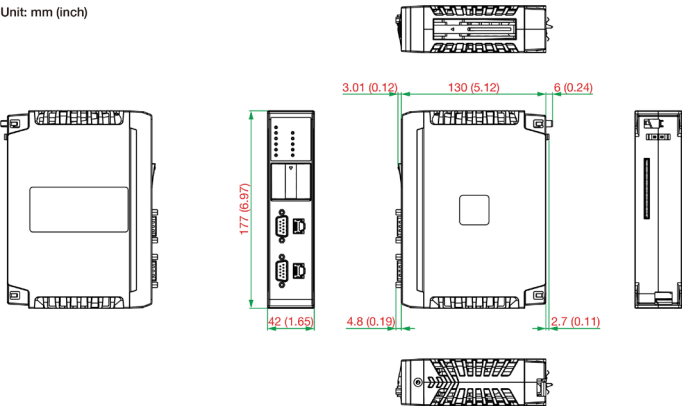
- 1 x 65M module
- 1 x Quick installation guide (printed)
- 1 x Warranty card

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

Dimensions

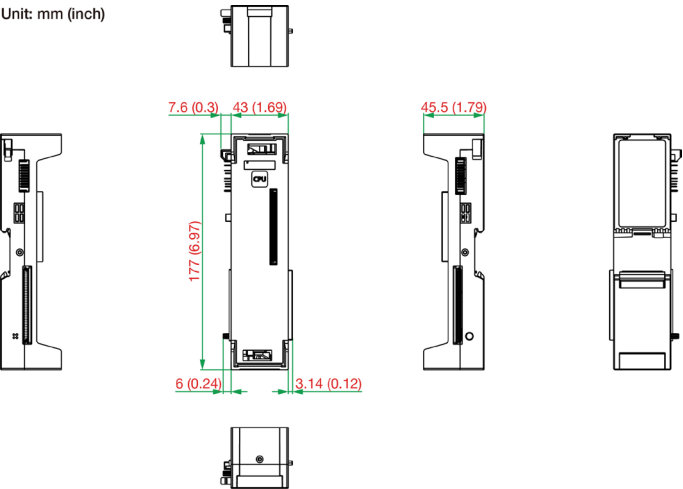
65M-CPU14-IEC-CT-T

Unit: mm (inch)



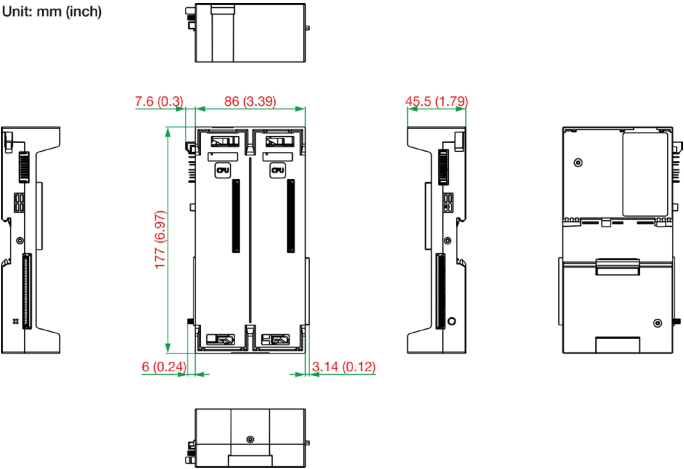
65M-BMCPU01-CT-T

Unit: mm (inch)



65M-BMCPU02-CT-T

Unit: mm (inch)



LED Description

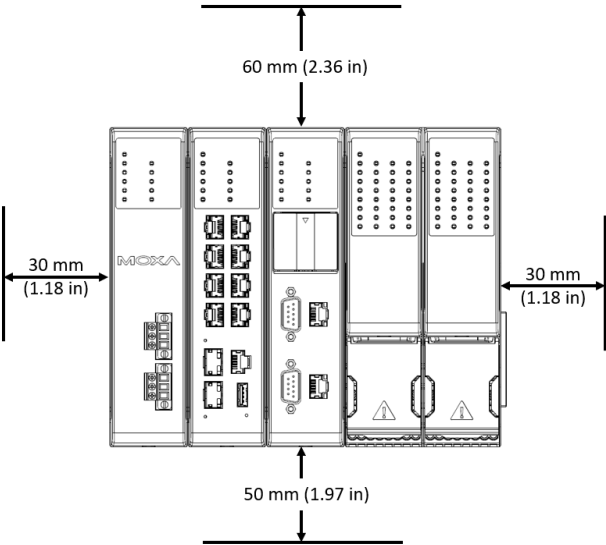
CPU Module (65M-CPU14-IEC-CT-T)

Labeling	Indication	Qty	Color	Behavior	Description
STATUS	System status	1	Green	On	Normal
				Blinking at 5 Hz	Firmware upgrade in Progress
				Blinking at 0.5 Hz	Booting up
				Double Blinking	Module located
			Red	On	System failure
				Blinking at 0.5 Hz	Service failure
				Double Blinking	Press reset button for 15 seconds, the STATUS will start to RED double blinking, release the reset button to start the reset to default.
ACT	Active	1	N/A	N/A	Reserved
PROG	Program	1	Green	On	Program is running
			Red	On	Runtime failure
			Off		Program has stopped
SD	SD card	1	Green	Blinking at 0.5 Hz	SD card is reading
P1/P2	Serial	1 for each	Green	Blinking at 0.5 Hz	Tx
			Amber	Blinking at 0.5 Hz	Rx
	Ethernet		Green	On	Connected on 1000M

Labeling	Indication	Qty	Color	Behavior	Description
LAN1/ LAN2		1 for each		Blinking	Data is transmitting
			Amber	On	Connected on 10/100M
				Blinking	Data is transmitting
			Off		Disconnected

Horizontal Installation

Before mounting the device onto a DIN rail, ensure that there is enough space around the device so that heat generated can effectively dissipate. The minimum space allowance recommendation around the device is shown in the following diagram:



CAUTION

DO NOT install the device upright because the fanless heat dissipation design will not perform as intended in this position.

Installing the System on a DIN Rail

The ioPAC 6500 Series needs to be installed from left to right in the following order:

Power Module > Communication (switch) Module (optional) > CPU Module > IO Module (optional)

NOTE **LIMITATIONS**

The system combinations have the following limitations:

- Maximum unit: 1 (control unit)
- Maximum power backplane in the control unit:
1 (1 slot or 2 slots)
- Maximum CPU backplane in control unit:
1 (1 slot or 2 slots)
- Maximum communication backplane in control unit:
1 (1 slot or 2 slots)
- Maximum IO backplane in the control unit:
2 (2 slots or 4 slots)

To mount the modules on to a DIN rail, do the following:

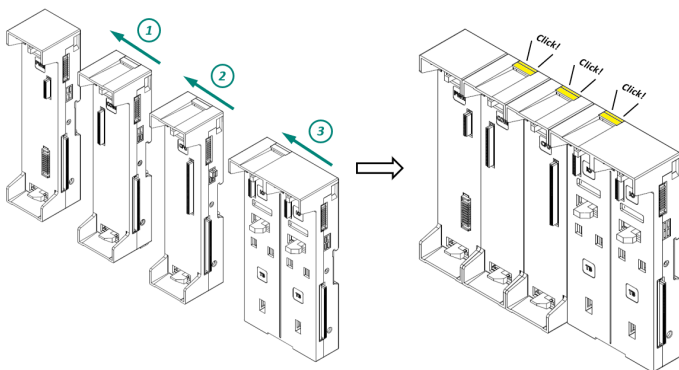
The system configuration shown in this document includes 1 power module, 1 communication module (switch), 1 CPU module, and 2 IO modules.

Step 1: Assemble all the backplane modules you need before mounting them onto the DIN rail.

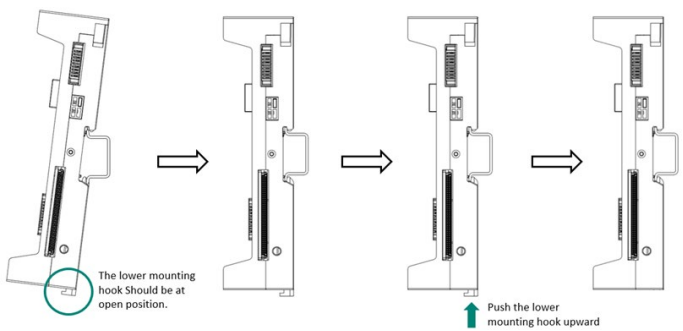
You must assemble them in the following order:

Power Module > Communication Module (Switch) > CPU Module > IO Module.

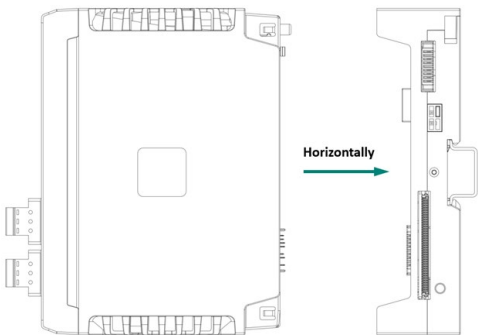
A click sound from the top clip indicates that the backplane modules are connected properly.



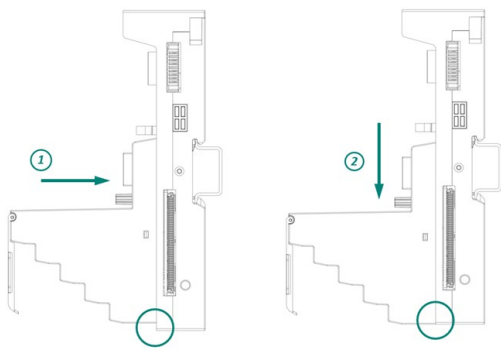
Step 2: Attach the upper mounting hook of all assembled backplanes to the upper lip of the DIN rail, while making sure the lower mounting hooks of all of them are open as shown in the following illustrations (side view), and push the assembled backplane towards the DIN rail, and finally push the lower mounting hooks upwards until the backplane modules are securely latched to the DIN rail.



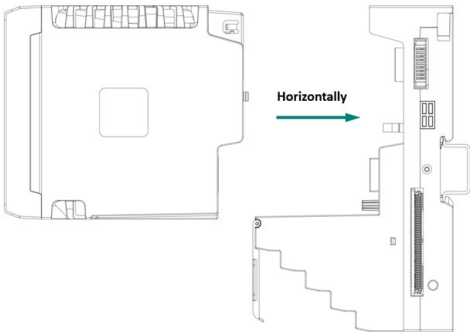
Step 3: Hold the power module with both hands and install it horizontally onto the power backplane module. Do the same with the CPU module and switch module (if applicable).



Step 4: Place the terminal-block module onto the IO backplane module and then pull down the terminal-block module to secure it in its position.



Step 5: Hold the IO module with both hands and install it horizontally onto the IO backplane module. Use the poka-yoke (error-proof) design as a guide to ensure the IO module is installed in the correct slot.

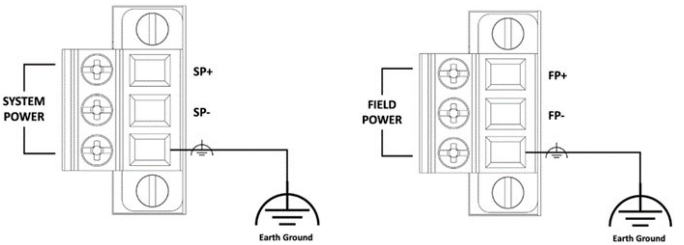


ATTENTION

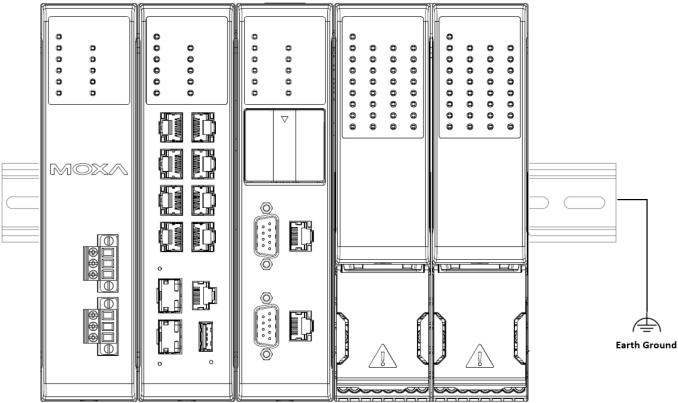
These devices are OPEN-TYPE and are required to be installed in a suitable enclosure so that the devices can only be accessed with the use of a tool.

Grounding the System

You must ensure that the system is properly grounded. The three points that should be connected to the earth ground as shown in the following illustrations

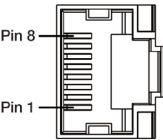


NOTE The grounding spring on the rear side of the backplane modules will directly connect to the DIN rail when they are successfully mounted.



Wiring the Ethernet Port

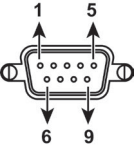
The maximum cable length is 100 m (350 feet), but the actual limit for your application could be longer or shorter depending on the amount of electrical noise in the environment. To minimize the amount of noise, Ethernet cables should not run parallel to power cables or other types of cables that generate 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 Serial Port

The ioPAC 6500 is equipped with two 3-in-1 serial ports that support RS-232/422/485, making it more convenient to connect field serial devices.

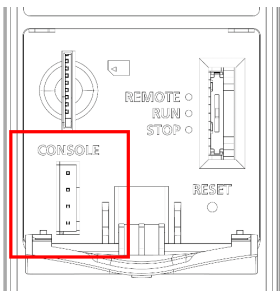


Pin	RS-232	RS-422	RS-485 2-wire
1	DCD	TxD-(A)	-
2	RXD	TxD+(B)	-
3	TXD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	-	-
7	RTS	-	-
8	CTS	-	-
9	RI	-	-

Powering the Units

When all the installation and wiring are complete, you can turn on the power to boot up the system. After turning on the system power supply, it will take 90 seconds for the operating system to boot up. The green Ready LED will illuminate continuously until the operating system is ready.

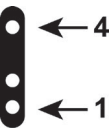
Wiring the Console Port



The ioPAC 6500 CPU module offers a serial console port, allowing users to reboot and reset to default. Open the cover on the CPU module and find the console port inside.

The following diagram shows the 4-pin serial connector pin assignment and the console settings.

Pin Assignment for the Serial Console Port

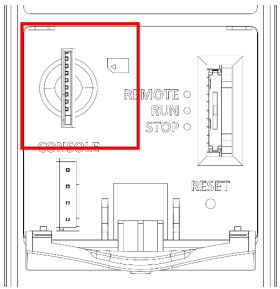


Pin	Definition
1	TxD
2	RxD
3	NC
4	GND

Serial Console Default Settings

Parameter	Value
Baudrate	115200 bps
Parity	None
Data bits	8
Stop bits	1
Flow Control	None
Terminal	VT100

microSD Slot

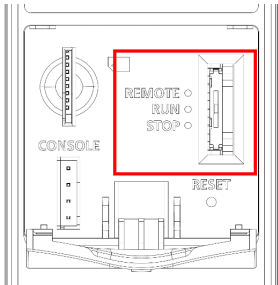


The ioPAC 6500 CPU module offers a microSD slot. This function is currently reserved. Open the cover on the CPU module to find the microSD slot inside.

Mode Switch

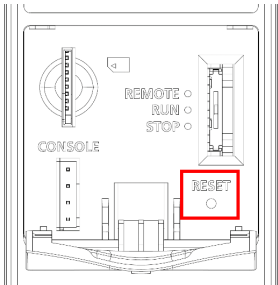
The ioPAC 6500 CPU module offers a mode switch for users to change the system status.

- **Remote:** The device may download the program and modify the device setting remotely. An authorized user with secure access is required.
- **Run:** The device actively runs the program. It rejects any attempt to download the program or change the device settings. The device information is set to read only.
- **Stop:** The device will not execute the program on any condition. The authorized user may download the program and change the device setting.



Open the cover on the CPU module to find the mode switch inside.

Reset Button



The ioPAC 6500 CPU module offers a reset button for you to reset the entire system to factory default. Keep pressing the reset button for 15 seconds. The STATUS LED will become red, blinking double. Releasing the reset button when the red STATUS LED blinks double, will reset the ioPAC 6500 system back to factory default. Open the cover on the CPU module to find the reset button inside.

Specifications

Controller	
CPU	Arm Cortex-A53 quad-core 1.6 GHz
DDR SDRAM	4 GB
Storage (eMMC)	8 GB (4 GB reserved for users)
NVRAM	512 kB MRAM for data logger
OS	Moxa Industrial Linux
Automation Language	IEC 61131-3
Interfaces	
Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2
Serial Ports	RS-232/422/485 ports x 2, software selectable (DB9)
Console Port	3-pin console connector
microSD Slot	Reserved
Mode Switch States	Remote, Run, Stop
Button	Reset

Power Parameters	
Input Current	0.8 A @ 12VDC
Physical Characteristics	
Weight	65M-CPU14-IEC-CT-T: 625 g (1.38 lb) 65M-BMCPU01-CT-T: 170 g (0.37 lb) 65M-BMCPU02-CT-T: 325 g (0.72 lb)
DIN-rail Mounting	Default
Wall Mounting	Supported (with optional kit)
Environmental Limits	
Operating Temperature	-40 to 75°C (-40 to 167°F)
Storage Temperature	Package included: -40 to 85°C (-40 to 185°F)
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 Duration 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