EXPC-F2000W Series
Quick Installation Guide

Flat-panel fanless industrial computers with Zone-2 certifications

Version 1.1, June 2024

Technical Support Contact Information
www.moxa.com/support

P/N: 1802020004011

Overview

The EXPC-F2000W family consists of 12.1-inch and 15.6-inch panel computers with 11th Gen Intel Core™ i processor to deliver a reliable, durable, and versatile platform for use in industrial, non-hazardous, and mission-critical environments. The EXPC-F2000W panel computers come with a rich set of IO interfaces to satisfy most industrial application scenarios. The computers are also provided with DisplayPort and VGA video outputs, enabling extensions of the display.

The EXPC-F2000W panel computers come in a fanless design for operations in the -40 to 70°C temperature range and a streamlined enclosure for efficient heat dissipation, making them the most reliable industrial platforms available for harsh, hot, outdoor environments such as oil and gas fields, drilling platforms, and power stations, as well as smart heater solutions. The panel computers are also designed with sunlight-readable features, such as a 1200-nit LCD panel, projected-capacitive, glove-friendly, multi-touch, anti-glare screen, and optical bonding, to provide an excellent user experience for outdoor applications.

Package Checklist

Before installing the EXPC-F2000W panel computer, verify that the package contains the following items:

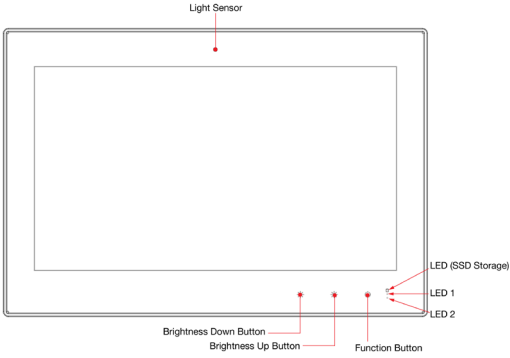
- 1 EXPC-F2150W or 1 EXPC-F2120W panel computer
- 1 2-pin terminal block for remote power switch
- 1 2-pin terminal block for DC power connector (DC model)
- 1 C14-male-to-C15-female AC short power cord adapter
- Panel mounting kit
  (EXPC-F2120W: 10 pieces, EXPC-F2150W: 13 pieces)
- Quick installation guide (printed)
- Warranty card

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

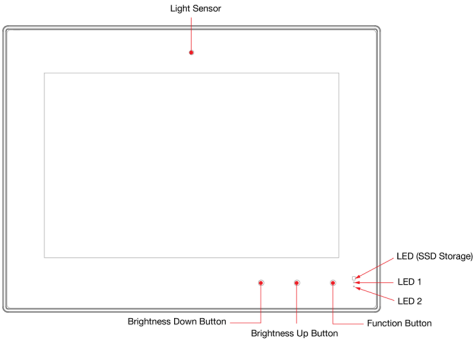
Panel Views

Front Panel

EXPC-F2150W Series

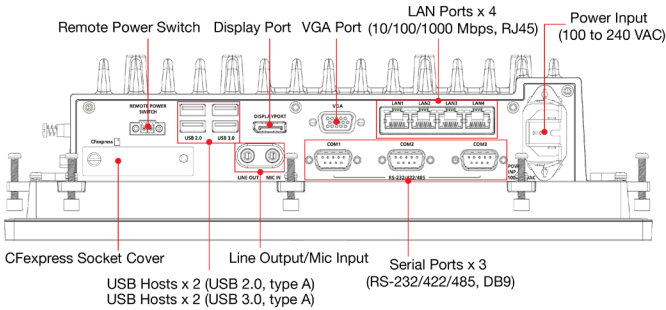


EXPC-F2120W Series

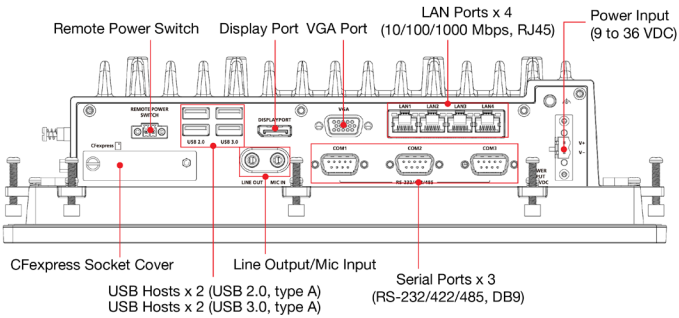


Bottom Panel

AC Models



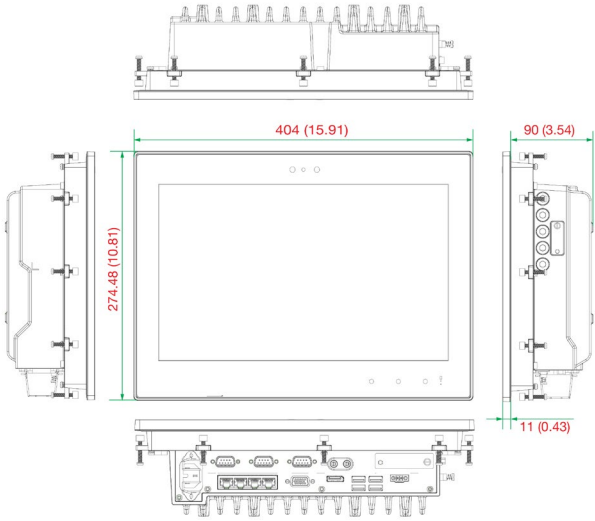
DC Models



Dimensions

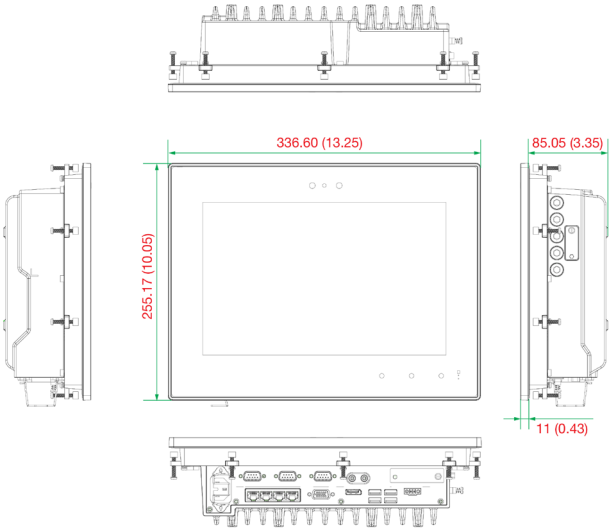
EXPC-F2150W Series

Unit: mm (inch)



EXPC-F2120W Series

Unit: mm (inch)



Touch-panel Buttons and LEDs

The panel computers should be powered ON and functioning properly before the touch-panel buttons can be activated. To protect the touch-panel buttons against accidental activation, the buttons only get activated when they are pressed twice. Pressing a button for the first time activates the touch-panel area (the LED lights on the three buttons light up) and pressing it for the second time activates the function associated with the button. Refer to the following table for instructions on using the display control touch-panel buttons.

Button/LED	LED Status	Function Description
Function Button  *Combines power on/off and touch enable/disable functions*	LED (white): When the system is powered off (S5 state), the Function button is clear white (not lit with any color). LED (Green): When the system is powered on (S0 state) and on tapping the touch keypad, the function button will turn green for 5 sec.	The function button can be used to activate three functions configured using settings in the BIOS or a Moxa utility. The default function is that of the Power button. When in S5 state, the button is forced to function as a Power button to ensure the system can be powered on through the keypad. **Function 1: Power Button:** • When the system is in S0 state, press the button for 3 seconds to power off the system (normal shutdown process), or display on/off, depending on the power management settings in the OS • When the system is in S0 state, press the button for 6 seconds to force a hard shutdown of the system • When the system is in S5 state, press the button for 1 second to power on the system **Function 2: Enable/disable the Touch Function** The touch function is enabled by default. After the function button is assigned to the touch function, press the button to enable or disable the function. **Function 3: Customized function based on files stored in specified folders** Use the built-in configuration utility to assign a specific folder for the quick start and running configuration files.

Button/LED	LED Status	Function Description
Increase Brightness  **Decrease Brightness** 	S0: LED (White): When the system is powered on (S0 state), touching the keypad button will light up both the Increase Brightness and Decrease Brightness button LEDs White 5 secs.	**Auto Mode 1:** Light sensor is enabled and will automatically detect the ambient light sources to adjust the LCD brightness. **Auto Mode 2:** Light sensor is enabled as normal, but the brightness adjustment is still available. The light sensor will turn to "manual mode" when you press the +/- button, which is only available for 30 seconds after which it goes back to auto light sensor setting. **Manual Mode:** Auto light sensor is disabled. The brightness can be configured using the brightness button +/-. The brightness level setting can be adjusted from 0 to 10.
Storage LED	Green	Indicates the access to storage (SSD only)
LED1 **LED2**	LED1 and LED2 can be configured as LAN ports or serial ports using settings in the BIOS or a Moxa utility. LED1 is set to UART1 Rx by default LED2 is set to LAN1 by default When an LED is configured for a LAN port, its color indicates the following: Green: 100M speed Yellow: 1GB speed When an LED is configured for a serial port, its color indicates the following: Green: TX Yellow: RX	Programmable LEDs to monitor serial or Ethernet communications. Ethernet Ports: 1 to 4 (100M/1G) Serial Ports: 1 to 3 (TX, RX)

Installing the Panel Computer

NOTE To ensure a secure and safe installation, we highly recommend that the mounting of the computer is done by a skilled person experienced in installing such devices.

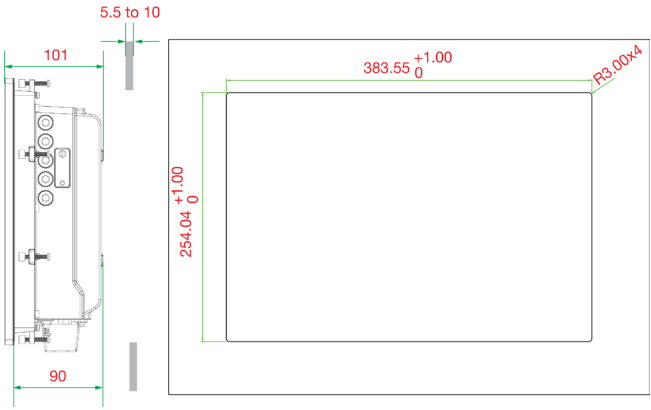
Panel Mounting

A panel-mounting kit is included in the package of the EXPC-F2000W panel computers, which comes with 10 mounting clamps for EXPC-F2120W and 13 mounting clamps for EXPC-F2150W.

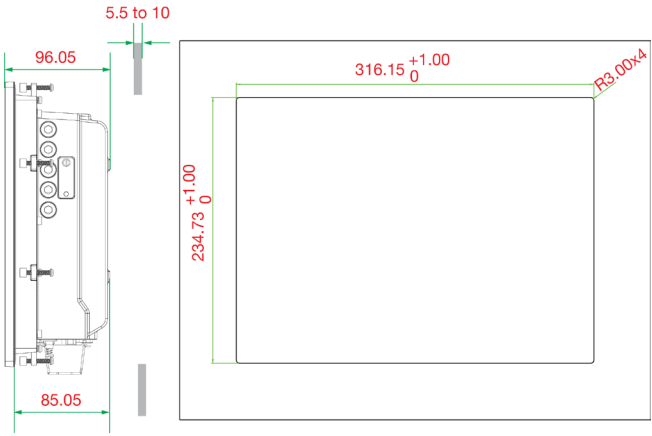
The panel-mounting kit enables installation onto a wall (where space has been cut out to accommodate the rest of the hardware) or on to computing stations where a flush mount is required.

The surface to which the computer is clamped should have a thickness of 5.5 to 10 mm. For secure mounting, all 10 or 13 clamps must be used. The clamp arms should be fastened onto slots on all four sides of the EXPC-F2000W.

EXPC-F2150W Panel Mounting Dimensions

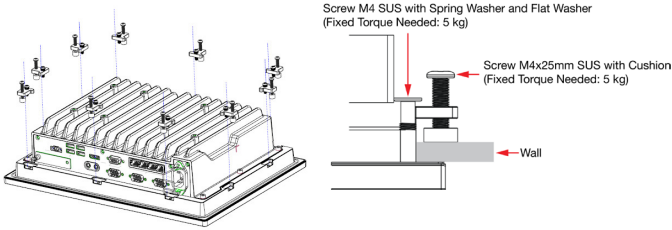


EXPC-F2120W Panel Mounting Dimensions



To install the mounting clamps:

1. Use short M4 SUS stainless-steel screws (included in the panel-mounting kit) to fasten the clamp arms to the EXPC-F2000W mounting slots, as shown in the diagram below.
2. Use clamps to fasten the computer to its mounting point. Ensure that the torque value does not exceed 5 kgf.



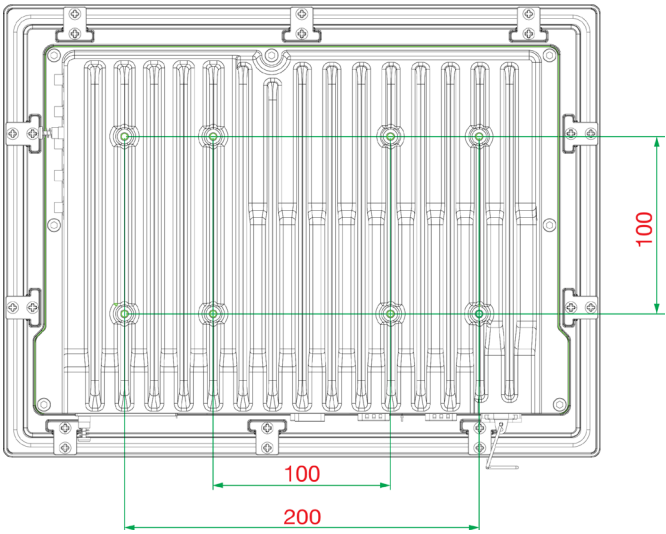
NOTE When installing the product onto the end-equipment casing:

- Ensure that the installation surface is clean, smooth, flat, and plain.
- Ensure that the gasket between the product and the equipment casing does not loosen or shift, and the gasketed joint between the product and end equipment casing does not open.

NOTE When using the product in any field, ensure that the ambient temperature around the product does not exceed 70°C or the limit in the product usage specifications. Otherwise, unpredictable dangerous accidents may occur.
Avoid installing heat-generating parts and equipment close to the product.

VESA Mounting (optional)

You can use an optional VESA-mounting kit to install the EXPC-F2000W. Refer to the following figures for the VESA mounting dimensions for the EXPC-F2000W panel computers and attach the bracket on the rear of the computer.



Use a torque value of not more than 5.5 kgf-cm for the screws (M4x10 mm SUS).

NOTE Eight additional screws are required to secure the VESA-mounting bracket to the mounting area. These screws must be purchased separately.

ATTENTION

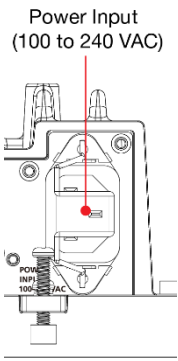
When using the VESA mounting, ensure that computer is installed in a safe and explosion-free environment.

Connector Descriptions

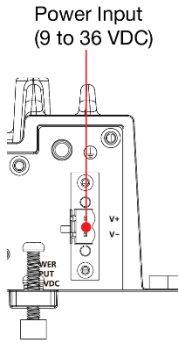
AC/DC Power Input

The EXPC-F2000W family consists of both AC and DC models. Power input sockets are located on the bottom panel of the computers.

AC Models

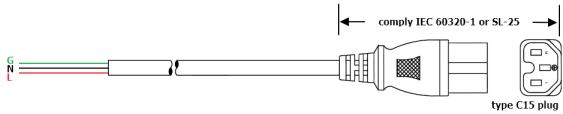


DC Models

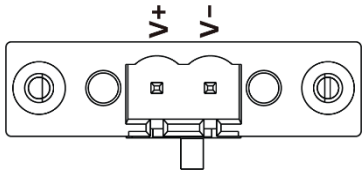


When using AC power, first ensure that you connect the AC power cord to a socket-outlet with earthing connection and use a standard C16 AC inlet along with a C15 plug (refer to the figure in the *Powering On/Off the EXPC-F2000W* section). Alternatively, use a standard C15 plug (compliant with SL-25 or IEC 60320-1) with AC adapter cable and secure wire retainer clip on the AC power inlet.

NOTE In hazardous locations, the power cord cannot use plugs. Securely lock the power wire cable (L/N/G) to the AC power source terminal and make sure it is stable and will not come loose. Power wire cable must use type NISP-2, NISPE-2, NISPT-2, SP-2, SPE-2, SPT-2, SP-3, SPE-3, SV, SVE, SVO, SVOO, SVT, SVTO or SVTOO; 18 AWG minimum. Run a connection from the power wire cable (G) to a grounding surface. Use a M4 screw to connect the power wire G to the ground.



When using DC power, use at least a 100 W power adapter connected through the 2-pin terminal block in the accessories package. The pin assignments for the DC models are shown in the following diagram:



A terminal block is available in the accessories package. The required wire size is 12 to 14 AWG (Wire Type: Cu, Field Wiring: 2) and a torque value 0.5 N-m (4.5 lb-in) should be applied. The input terminal block should be wired and installed by a skilled person.

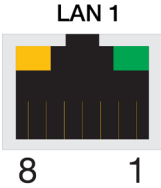
The wire size of the power input and the earthing conductor should be 12 AWG (3.33mm²). The recommended stripping length is 6 to 8 mm. Terminal blocks do not accommodate more than one individual conductor in a clamping point.

ATTENTION

This equipment is intended to be supplied by an external power source, which is evaluated according to UL/EN/IEC 62368-1 or UL/IEC 60950-1. It shall comply with ES1/SELV requirements such as output rating 9 to 36 VDC, 11 A (min.), an ambient temperature of 70 degrees C minimum for DC power construction of the EXPC-F2000W panel computers. If you are using a Class I adapter, the power cord should be connected to an outlet with an earthing connection.

Ethernet Ports

The pin assignments for the four Fast Ethernet 100/1000 Mbps RJ45 ports are shown in the following table:



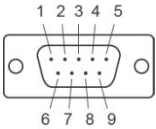
Pin	100 Mbps	1000 Mbps
1	ETx+	TRD(0)+
2	ETx-	TRD(0)-
3	ERx+	TRD(1)+
4	–	TRD(2)+
5	–	TRD(2)-
6	ERx-	TRD(1)-
7	–	TRD(3)+
8	–	TRD(3)-

Refer to the following table for a description of the LAN status indicators:

LAN status indicators (Located on the ports)	Green	100 Mbps Ethernet mode
	Yellow	1000 Mbps (Gigabit) Ethernet mode
	Off	No activity / 10 Mbps Ethernet mode

Serial Ports

The EXPC-F2000W panel computers come with three software-selectable RS-232/422/485 serial ports over a DB9 connector. The pin assignments for the ports are shown in the table below:



Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	–
2	RxD	TxDB(+)	TxDB(+)	–
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	–	–	–
7	RTS	–	–	–
8	CTS	–	–	–

For instructions on configuring the serial ports, see the *EXPC-F2000W Hardware User Manual*.

The serial ports are referred to by different names as indicated in the following table:

Device Label	BIOS	Utilities	Windows	Linux
COM1	UART1	UART1	COM3	/dev/USB1
COM2	UART2	UART2	COM4	/dev/USB2
COM3	UART3	UART3	COM5	/dev/USB3

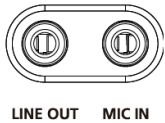
USB Ports

Two USB 2.0 ports and two USB 3.0 ports are available on the bottom panel. Use these ports to connect mass-storage drives and other peripherals.

NOTE To comply with the IP42, all connectors and interfaces must be fully plugged in and secured.

Audio Interface

The EXPC-F2000W panel computers come with line-out and mic-in audio jacks, allowing users to connect a speaker system, earphone, or microphone.



Extending the Display

The EXPC-F2000W Series comes with both standard VGA (DB15) and DisplayPort interfaces (located on the bottom of the shell) for simultaneously extension of the display to two monitors.

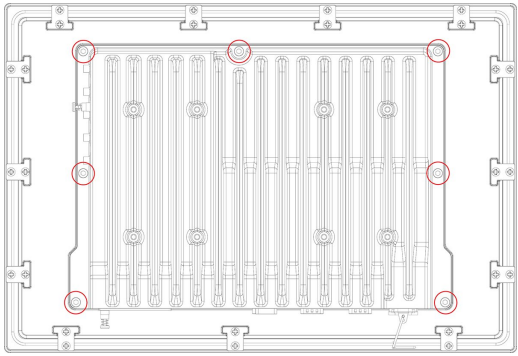
Installing Additional Storage

The EXPC-F2000W panel computers come with two storage slots: A CFexpress slot located on the bottom panel for easy installation and maintenance and a **M.2 B Key** interface (**SATA 3.0**) located inside the computer, allowing users to install the second storage with an SSD to fit the applications. The applicable SSD type is **M.2 2242 B-M**.

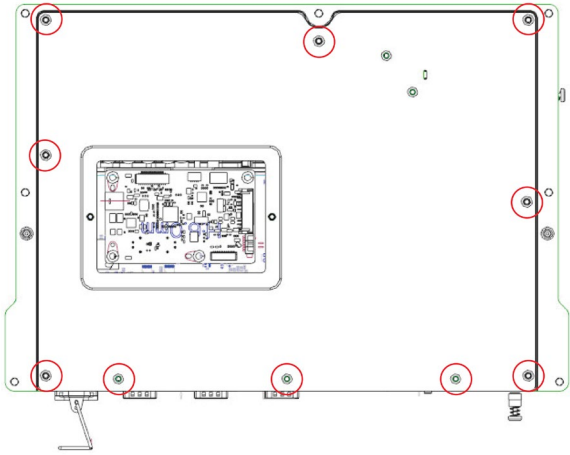
Installing an SSD Card

If you want to install or replace the SSD, follow these steps:

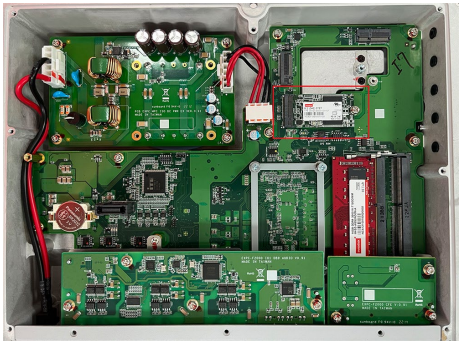
1. Unfasten the seven screws on the back panel of the computer.



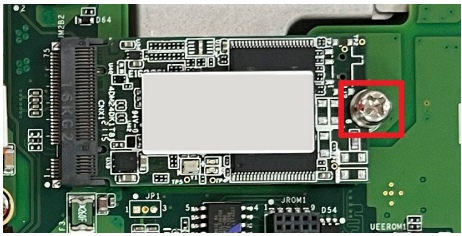
2. Remove the back-panel board and then remove the ten screws that are exposed.



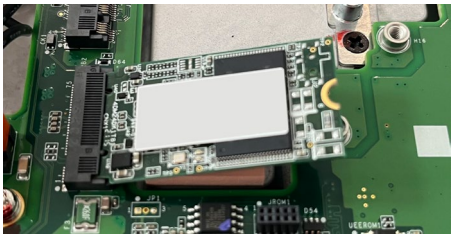
3. Remove the cover and locate the SSD socket.



4. If an SSD is already installed, unfasten the screw on the end and remove the SSD.



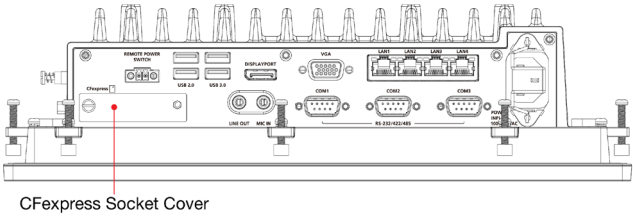
5. Insert an SSD card into the socket or replace the existing one.



6. Push the SSD card in place and secure it by fastening the screw on the socket.

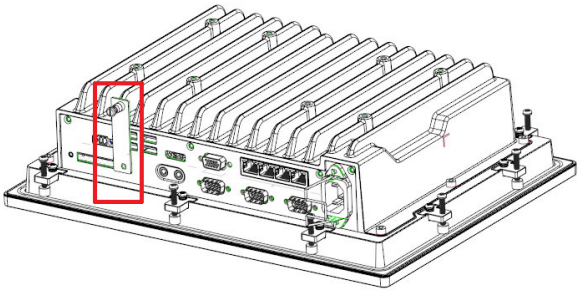
Installing a CFexpress Card

The EXPC-F2000W has one CFexpress slot with a PCIe 3.0 interface for installing a standard CFexpress card using the push-push mechanism. For a list of compatible CFexpress cards contact the Moxa technical support team.

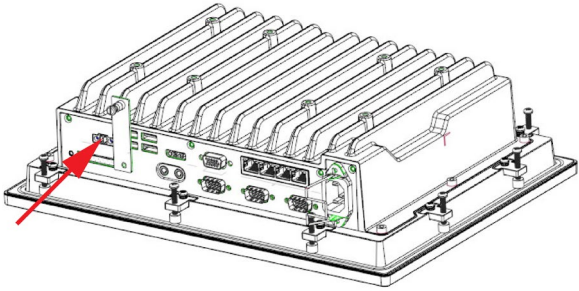


To install a CFexpress card, do the following:

1. Loosen the screws on the CFexpress slot cover.



2. Slide the cover to access the slot and insert the CFexpress card into the slot and push it all the way into the slot.



To remove the card, you need to push the card in to release the card.

3. Put back the CFexpress slot cover and tighten the screws to secure it.

Real-time Clock

The real-time clock (RTC) in the computer is powered by a lithium battery. We strongly recommend that you do not replace the lithium battery without help from a qualified Moxa support engineer. If you need to change the battery, contact the Moxa RMA service team at http://www.moxa.com/rma/about_rma.aspx.

ATTENTION

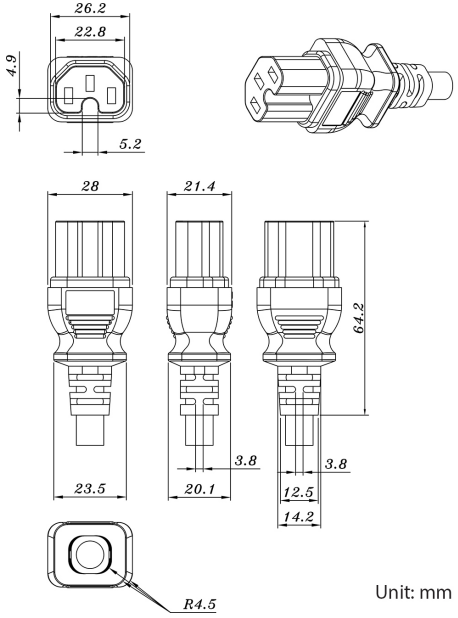
There is a risk of explosion if the clock's lithium battery is replaced with an incompatible battery. Dispose of used batteries according to instructions.

Powering the EXPC-F2000W

To power on the panel computer, you can either supply the power by connecting the **Terminal Block to Power Jack Converter** to the terminal block and then connecting a power adapter or connect the computer to an AC power source using the power cord. After the power source is connected, the EXPC-F2000W will boot automatically. It takes about 10 to 30 seconds for the system to boot up.

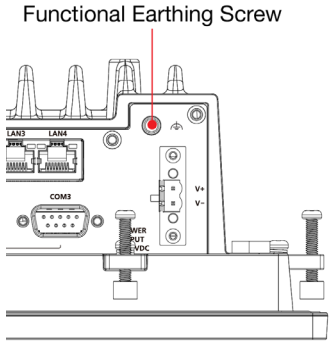
To power off the EXPC-F2000W, touch the function button once and push for 3 seconds. Depending on the OS's power management settings the panel computer may enter **Display On/Off** or **Power On/Off** mode. If you encounter technical problems, touch the function button once, and push for 6 seconds to force a hard shutdown of the system.

For a safe installation, we recommend using a C15 plug with the following dimensions:



Grounding the Device

Proper grounding and wire routing help to limit the effects of noise from electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting the power source.
For DC models, run a connection from the functional earthing screw (M6) to the grounding surface. The grounding wire should have a minimum diameter of 3.31 mm^2.



WARNING

POTENTIAL ELECTROSTATIC CHARGING HAZARD

- Before touching the surface of the product casing, wipe the surface of the product casing with a damp cloth to eliminate static electricity accumulation and prevent static electricity hazards.
- Another way to eliminate this is to install an electrostatic ring to prevent the accumulation of static electricity on the surface and the possibility of static electricity hazards.
- Ensure that the ground wire of the product is properly connected to the ground of the power system to reduce the accumulation of static electricity on the surface of the product casing.

Hazardous Location Specifications

<table>
<tr><td>Trademark</td><td colspan="2">MOXA®</td></tr>
<tr><td rowspan="3">Model/Ratings</td><td>Model</td><td>Input Rating</td></tr>
<tr><td>EXPC-F2150W-TL7-AC,
EXPC-F2150W-TL5-AC,
EXPC-F2150W-TL3-AC,
EXPC-F2150W-TL1-AC,
EXPC-F2150W (CTO),
EXPC-F2120W-TL7-AC,
EXPC-F2120W-TL5-AC,
EXPC-F2120W-TL3-AC,
EXPC-F2120W-TL1-AC,
EXPC-F2120W (CTO)</td><td>100-240 VAC, 50-60 Hz or 50/60 Hz, 1.0 A (max.)</td></tr>
<tr><td>EXPC-F2150W-TL7-DC,
EXPC-F2150W-TL5-DC,
EXPC-F2150W-TL3-DC,
EXPC-F2150W-TL1-DC,
EXPC-F2150W (CTO),
EXPC-F2120W-TL7-DC,
EXPC-F2120W-TL5-DC,
EXPC-F2120W-TL3-DC,
EXPC-F2120W-TL1-DC,
EXPC-F2120W (CTO)</td><td>9-36 VDC, 11A (max.)</td></tr>
<tr><td>ATEX Information</td><td colspan="2">CE
II 3 G Ex ec nC IIC T4 Gc
II 3 D Ex tc IIIC T 86°C Dc
UL 23 ATEX 2966X
Ambient Range : -40 °C ≤ Tamb ≤ +70 °C
WARNING – DO NOT SEPARATE WHEN ENERGIZED</td></tr>
<tr><td>IECEx Certificate No.</td><td colspan="2">IECEx UL 24.0001X</td></tr>
<tr><td>Address of Manufacturer</td><td colspan="2">No. 1111, Heping Rd., Bade Dist., Taoyuan City 334004, Taiwan</td></tr>
</table>

Specific Conditions of Use

- All front surfaces have been evaluated to the enclosure requirements for Ingress Protection at IP64 in accordance with IEC/EN 60079-0.
- The equipment shall only be used in an area with a pollution degree of 2 or lower, as defined in IEC/EN 60664-1.
- For AC models, transient protection shall be provided and set at a level not exceeding 140 % of the peak rated voltage at the supply terminals to the equipment.
- The equipment must be installed in an IEC/EN 60079-0 EPL Dc enclosure that can withstand min temperature of 86°C. The temperature classification and ambient temperature for the EXPC being -40°C ≤ Tamb ≤ +70°C.
- The equipment must be mounted in an enclosure that provides a degree of protection of not less than IP54 in accordance with IEC/EN 60079-0 for category 3G Zone 2 or IP64 in accordance with IEC/EN 60079-31 for category 3D Zone 22.
- To minimize the risk of electrostatic charging, install an electrostatic ring or clean the surface with a damp cloth.
- For DC input models, an input terminal block must be used with conductors of 12 to 14 AWG (3.22 to 2.09 mm²).
- The EXPC-F2000W device must be installed in a location with a low risk of mechanical danger.

ATTENTION

This equipment is suitable for use in Class I, Division 2, Groups A, B, C, and D; Class II, Division 2, Groups F, and G or non-hazardous locations only.

WARNING

EXPLOSION HAZARD

Do not disconnect equipment while the circuit is live or unless the area is free of ignitable concentrations.

AVERTISSEMENT

RISQUE D'EXPLOSION

Ne pas déconnecter l'équipement lorsque le circuit est sous tension ou à moins que la zone ne soit exempte de concentrations inflammables.

ATTENTION

EXPLOSION HAZARD

Do not remove or replace the CF express card while the circuit is live unless the area is free of ignitable concentrations.

AVERTISSEMENT

RISQUE D'EXPLOSION

CFexpress carte: Ne pas la retirer ou la remplacer lorsque le produit est sous tension ou à moins que la zone ne soit exempte de concentrations inflammables.

ATTENTION

EXPLOSION HAZARD

Remote Power Switch, Phone Jacks for LINE OUT and MIC IN, NOT FOR USE IN HAZARDOUS LOCATIONS.

AVERTISSEMENT

RISQUE D'EXPLOSION

Bloc d’alimentation distant, commutateur, prises jack pour la sortie audio et l'entrée micro, NE PAS UTILISER DANS DES ENDROITS DANGEREUX.