iX Controller MK 6 OEM

Installation and Operation Guide

PHASEONE

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1 Introduction

1.1 Scope

This manual describes how to install the iX Controller MK 6 OEM as follows:

- Section 2 - What's in the Box
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1.2 Applicable Documents

Item	Manual
Phase One iX Controller MK 6 OEM	Connecting to the iX Controller Using Remote Desktop Connection

2 iX Controller MK 6 OEM Hardware Overview

2.1 General

The iX Controller MK 6 OEM is a new generation of aerial controller. This robust command center onboard the aircraft is designed for smooth performance of geospatial project missions.

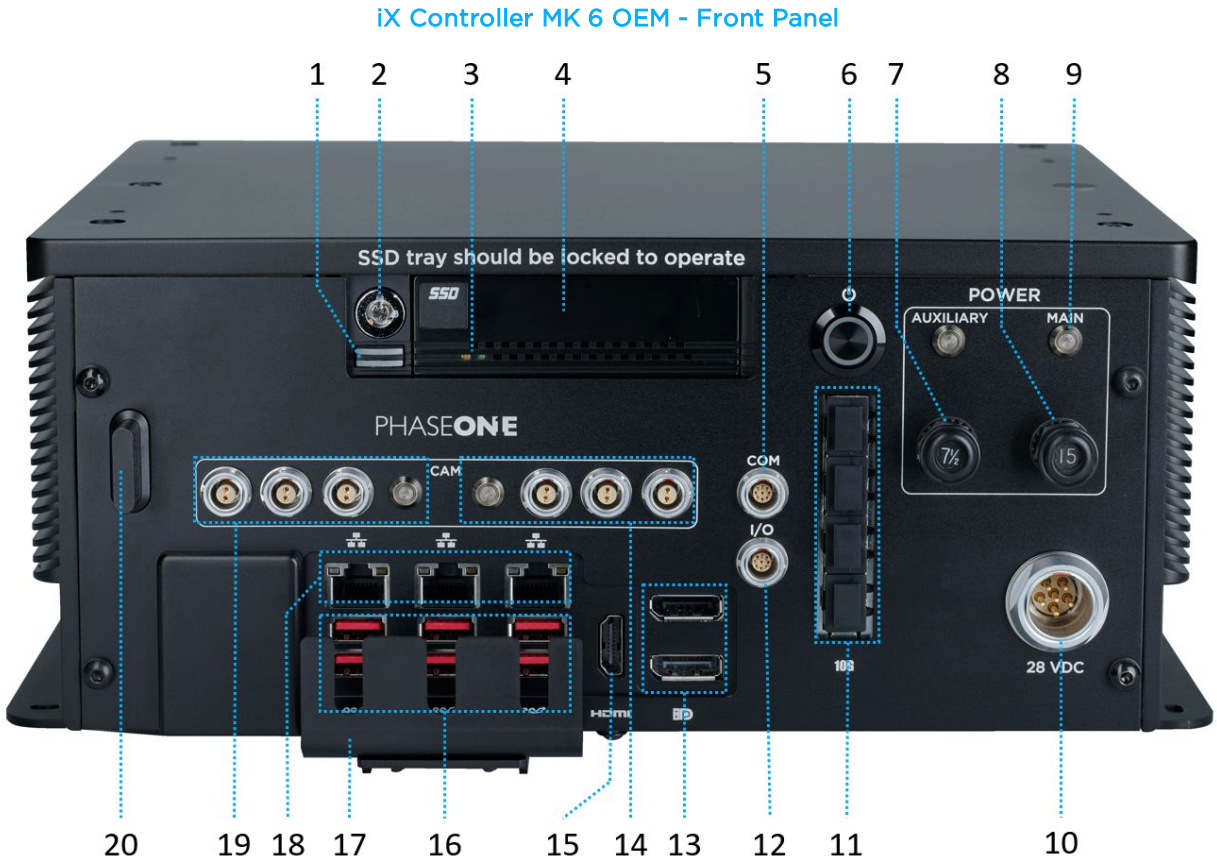
The controller has the following main ports:

- ports for transferring data between the iX Controller MK 6 OEM and cameras and an external IMU.
- standard aircraft power in port.
- 2 DP and 1 HDMI ports for connecting monitors.
- three Ethernet ports

A high-capacity data storage SSD tray (factory provided with two 2 TB or 4 TB SSD drives) can be easily accessed or removed for rapid transfer of images and telemetry data.

2.2 Front Panel Description

The following figure and table show the iX Controller MK 6 OEM front panel items:



1. SSD carrier eject button
2. SSD carrier keylock
3. SSD drive activity LEDs
4. SSD drive carrier
5. COM port
6. On/Off pushbutton
7. Auxiliary circuit breaker (power out ports)
8. Main circuit breaker
9. Main power LED
10. 28 VDC port (power in)
11. 10GbE SFP+ ports (x4)
12. I/O port
13. DP ports (x2)
14. Power out ports (x3)
15. HDMI port
16. USB 3 ports (x6)
17. USB cable bracket
18. Ethernet ports (x3)
19. Power out ports (x3)
20. SSD carrier key

2.3 iX Controller MK 6 OEM Power Outputs Overview

> **Note**
>
> Only Phase One approved equipment should be connected to the six power out ports.

The Auxiliary power circuit breaker controls power to the six power ports. Each set of power ports can be software-controlled using iX Capture and iX Flight Pro.

3 Unboxing the iX Controller MK 6 OEM

Verify that all parts were supplied according to the specific packing list for your iX Controller MK 6 OEM.

3.1 Product Identification

To enable support for your iX Controller MK 6 OEM, you must identify and record the serial number located on the left panel.

4 Connecting System Cables to the iX Controller MK 6 OEM

This section describes how to connect the power and various system components to the iX Controller MK 6 OEM.

Warning

The power ports support only equipment approved Phase One, such as cameras, external GNSS and monitors. Other equipment must not be connected to the iX Controller MK 6 OEM.

4.1 iX Controller MK 6 OEM Power Cable (P/N 73286000)

Warning

- The iX Controller MK 6 OEM has been tested and certified for connection to a 28 VDC power supply. Installation on aircraft with other power supplies is not recommended unless special measures are taken to provide the iX Controller MK 6 OEM with a 28 VDC supply.
- On the aircraft side, a 15 A circuit breaker must be installed on the 28 VDC power supply.

To connect the iX Controller MK 6 OEM power cable to the iX Controller MK 6 OEM:

1. Connect the open end of the power cable to the aircraft power supply as follows:

Caution

Before connecting the power cable to the aircraft power supply, verify voltage polarity.

PAS Power Cable Polarity

Wire	Polarity
Red	+
Black	GND

2. Connect the power cable with the LEMO connector to the iX Controller MK 6 OEM 28 VDC port.

4.2 Grounding Cable

Connect a grounding cable (not supplied by Phase One) as follows:

1. Connect one end of the grounding cable to the uncoated underside of one of the attachment panels.

2. Connect the other end to the aircraft frame.

4.3 Disassembling the USB Cable Bracket

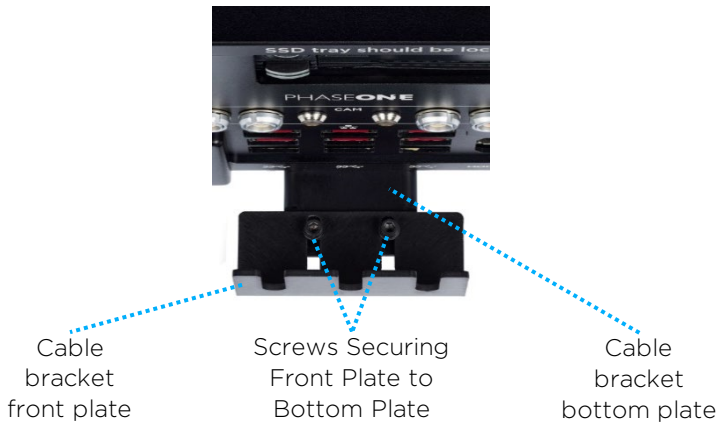
The USB cable bracket secures the USB cable hoods to the iX Controller MK 6 OEM.

Before connecting or removing any USB cables, you must disassemble the cable bracket front plate, and in some cases reposition the cable bracket bottom plate, as described in this section.

> **Note**
>
> It is recommended to connect all required USB cables (camera, pilot monitor, operator monitor, keyboard/mouse) to the iX Controller MK 6 OEM before reassembling the USB cable bracket.

To disassemble the USB Cable Bracket:

1. Using a 2.5 mm hex key, remove both screws securing the USB cable bracket front plate to the cable bracket bottom plate.



2. Remove the cable bracket front plate, the screws and washers and set them aside in a safe place.

4.4 Connecting iX Controller MK 6 OEM - iX Camera Cables

4.4.1 iX Controller MK 6 OEM - Camera Power Cable (P/N 70364000)

The iX Controller MK 6 OEM - Camera power cable provides power to the iX camera.

To connect iX Controller MK 6 OEM - Camera power cables:

1. Connect one end of the iX Controller MK 6 OEM - Camera power cable to an iX Controller MK 6 OEM power port.

2. Connect the other end of the cable to the iX camera power port.
3. Repeat for additional cameras.

4.4.2 iX Controller MK 6 OEM - Camera I/O Cables (P/N 75010000)

The iX Controller MK 6 OEM - Camera I/O cable transfers trigger, camera ready, black reference and MEP signals between the iX Controller MK 6 OEM and the iX camera. In addition, it provides metadata to the camera.

To connect the iX Controller MK 6 OEM - Camera I/O cables:

1. Connect one end of the iX Controller MK 6 OEM - Camera I/O cable to the iX Controller MK 6 OEM I/O port.

2. Connect the other end to the camera left I/O port.

> **Note**
>
> For I/O connections on additional cameras, use a Phase One camera to camera multisync cable (PN 75007000) ordered separately.

4.4.3 iX Controller MK 6 OEM - Camera Images/Data Cables

You can transfer the images and associated data between iX Controller MK 6 OEM and the iX cameras for storage on the SSD using either of the following methods:

- SFP+ cables (not supplied by Phase One) - up to 4 cameras can be connected.
- USB cables

> **Note**
>
> Only use one method for transferring images – either SFP+ or USB. Do not use both methods simultaneously.

4.4.3.1 Connecting SFP+ Cables

To connect the iX Controller MK 6 OEM - Camera SFP+ cables:

1. Connect one end of the iX Controller MK 6 OEM - Camera SFP+ cable to the iX Controller MK 6 OEM SFP+ port.

2. Connect the other end to the camera SFP+ port.

4.4.3.2 Connecting USB Cables (P/N 73234000)

The iX Controller MK 6 OEM - Camera USB cable (supplied with each camera) transfers control data from the iX Controller MK 6 OEM and the camera, and images from the camera for storage in the iX Controller MK 6 OEM.

To connect iX Controller MK 6 OEM - Camera USB 3 cables:

1. Connect up to four USB 3 camera cables as required to the USB 3 ports.

2. Connect the other end of each USB 3 cable to a Phase One aerial camera.

4.5 Connecting Monitor Cables

Phase One recommends ordering and using the pilot and operator monitors available from Phase One. The monitors are supplied with the following cables for connection to the iX Controller MK 6 OEM:

- iX Controller MK 6 OEM - Pilot Monitor cable
- iX Controller MK 6 OEM - Operator Monitor cable

The following sections show power and communication connections for the pilot and operator monitors.

4.5.1 iX Controller MK 6 OEM - Pilot Monitor Cable (P/N 75098490)

To connect the iX Controller MK 6 OEM – Pilot Monitor cable:

1. Connect the cable end with 2 connectors to the pilot monitor power and video ports (video cable includes USB signal).
2. Connect the cable end with 3 connectors to an iX Controller MK 6 OEM power port, the HDMI port and a USB 3 port.

4.5.2 iX Controller MK 6 OEM – Operator Monitor Cable (P/N 75098530)

1. Connect the cable end with 3 connectors to an iX Controller MK 6 OEM power port, DP port and one of the USB 3 ports.

4.6 Keyboard and Mouse

A Bluetooth keyboard with touchpad is provided with the iX Controller MK 6 OEM.

To connect the keyboard to the iX Controller MK 6 OEM:

1. On the iX Controller MK 6 OEM, connect the keyboard's Bluetooth dongle to a USB port.

4.7 Reassembling the USB Cable Bracket

To reassemble the USB Cable Bracket:

1. Use a 2.5 mm hex key to reattach the cable bracket front plate to the cable bracket bottom plate using the screws and washers you set aside in Step 2. The front plate should secure the cable hoods.

Note

If the length of the cable hoods prevents you from securing the cable bracket front plate to the cable bracket bottom plate, you can increase the distance between the front plate and the iX Controller MK 6 OEM as follows:

1. Gently place the iX Controller MK 6 OEM on its upper plate.
2. Remove both screws securing the cable bracket bottom plate to the iX Controller MK 6 OEM.
3. Mount the cable bracket bottom plate to the iX Controller MK 6 OEM using the holes near the bottom plate edge.

For USB cables with **short** hoods

For USB cables with **long** hoods

4.8 iX Controller MK 6 OEM - Mount COM Cable (P/N 73260000 / 73285000 / 73293000)

The iX Controller MK 6 OEM – Mount COM I/O cable transfers SOMAG V2 protocol commands and data between the mount and iX Flight Pro running on the iX Controller MK 6 OEM.

To connect the iX Controller MK 6 OEM - Mount COM cable:

1. Connect one end of the iX Controller MK 6 OEM – Mount COM cable to the iX Controller MK 6 OEM COM port.

2. Connect the other end to the mount INTERFACE port.

5 Powering up the iX Controller MK 6 OEM

To power up the iX Controller MK 6 OEM:

1. Push the **MAIN** circuit breaker. The **MAIN** power LED turns on.
2. Press the On/Off pushbutton. The iX Controller MK 6 OEM powers up.
3. When the Windows login window appears, log in using the following credentials:
   - **User name**: user
   - **No password required.**

> **Note**
>
> To remotely login to the iX Controller MK 6 OEM, see **Connecting to the iX Controller Using Remote Desktop Connection** available for download at https://www.phaseone.com/download-categories/geo-guides-documentation/

6 iX Controller MK 6 OEM Storage

6.1 Disk Management

The iX Controller MK 6 OEM storage consists of a built-in frame with a removable carrier containing two SSD drives. The drives store the images captured by cameras connected to the iX Controller MK 6 OEM.

The carrier front panel contains the following LEDs:

LED	Color	State	Description
Drive power	Green	Solid	The drive is powered on.
Drive activity	Amber	Blinking	The drive is being accessed by the iX Controller MK 6 OEM.

The drives are assigned the following drive letters:

- D - top drive
- E - bottom drive

> **Note**
>
> For information on transferring data from the SSDs to the processing computer, see the iX Process Operations Guide.

6.2 Locking the Carrier

> **Note**
>
> The carrier must be locked with the SSD carrier key for the iX Controller MK 6 OEM to recognize the drives.

To lock the carrier in the SSD drive bay frame:

> **Note**
>
> The SSD carrier key is stored on the left side of the iX Controller MK 6 OEM front panel.

1. Insert the SSD carrier key into the SSD carrier keylock and turn it 90° clockwise. The yellow and green SSD drive LEDs turn on momentarily and the green LED remains on.

An additional frame is provided with the iX Controller MK 6 OEM. This frame should be installed in the computer used for post-flight processing. You can then transfer the carrier with its SSD drives between the iX Controller MK 6 OEM and the processing computer.

> **Note**
>
> Additional carriers (with or without SSD drives) with SATA or USB 3 based frames can be ordered through your Phase One sales representative.

6.3 Removing the SSD Drive Carrier

To remove the SSD drive carrier from the iX Controller MK 6 OEM:

1. Shutdown the iX Controller MK 6 OEM as described in Section 8 - Shutting Down the iX Controller MK 6 OEM.
2. Insert the SSD carrier key into the SSD carrier keylock and turn it 90° counterclockwise.
3. Push the SSD carrier eject button once to release the button, and again to eject the carrier from the frame.
4. Gently remove the SSD carrier from the iX Controller MK 6 OEM.

6.4 Inserting the SSD Drive Carrier

To insert the SSD drive carrier into the iX Controller MK 6 OEM:

1. Shutdown the iX Controller MK 6 OEM as described in Section 8 - Shutting Down the iX Controller MK 6 OEM.
2. If the SSD carrier eject button is protruding, push it all the way in.
3. Gently insert the SSD carrier into the iX Controller MK 6 OEM.
4. Insert the SSD carrier key into the SSD carrier keylock and turn it 90° clockwise.
5. Power up the iX Controller MK 6 OEM as described in Section 5 - Powering up the iX Controller MK 6 OEM.
6. Verify that the green SSD drive LED turns on.

7 Operating the iX Controller MK 6 OEM

7.1 Powering Equipment

To activate equipment connected to the iX Controller MK 6 OEM:

1. Push the **AUXILIARY** circuit breaker.

To deactivate equipment connected to the iX Controller MK 6 OEM:

1. Pull out the **AUXILIARY** circuit breaker.

8 Shutting Down the iX Controller MK 6 OEM

To shut down the iX Controller MK 6 OEM:

> **Warning**
>
> To avoid any damage to the iX Controller MK 6 OEM when shutting it down, make sure you follow the following procedure.

1. Perform **one** of the following:
   - On iX Controller MK 6 OEM, press the On/Off pushbutton.

   OR
   - On the operator monitor, shut down Windows.
2. After the On/Off pushbutton white LED turns off: on the iX Controller MK 6 OEM, pull the **MAIN** circuit breaker out.

9 Troubleshooting

9.1 General Issues

The following table lists possible solutions for general issues.

Issue	Solution
iX Controller MK 6 OEM MAIN Power LED is on, but Windows 10 does not appear.	Press the On/Off pushbutton and verify that pushbutton white LED is on.
SSD drive is not recognized.	Make sure that SSD is properly inserted and locked (see Section 6.4 - Inserting the SSD Drive Carrier).

9.2 iX Controller MK 6 OEM POST Beep Codes

The following table lists the iX Controller MK 6 OEM POST (Power On Self-Test) beep codes issued by the motherboard.

POST Beep Code	Description
1	Normal POST, iX Controller MK 6 OEM is OK.
3	Memory not installed
5	No console output devices found

10 Maintenance

10.1 Replacing SSD Drives

The iX Controller MK 6 OEM is factory provided with 2 x 2TB or 2 x 4TB SSD drives installed in a removable carrier.

You can replace the SSDs as required. To achieve optimal performance, both SSDs should have a high writing speed (>500 MB/S). Drive capacities can be different.

To replace the SSD drives:

1. Shutdown the iX Controller MK 6 OEM as described in section 8 - Shutting Down the iX Controller MK 6 OEM.
2. Remove the carrier from the iX Controller MK 6 OEM as described in section 6.3 - Removing the SSD Drive Carrier.
3. Remove both cover screws at the rear of the carrier.

4. Slide the carrier out from the carrier cover.

5. Remove all screws securing the SSD drives to the carrier.

6. Replace the SSD(s) in the carrier.
7. Secure the SSD(s) to the carrier.
8. Slide the cover back on to the carrier and secure it with the cover screws.
9. Insert the carrier into the iX Controller MK 6 OEM as described in section 6.4 - Inserting the SSD Drive Carrier.

Appendix A Technical Data

A.1 Physical Dimensions

- Width: 310 mm / 12.2 in
- Height: 130 mm / 5.1 in
- Depth: 230 mm / 9.1 in

A.2 iX Controller MK 6 OEM Weight

- Weight: 5.3 kg / 11.7 lb

A.3 Power Input Specifications

A.3.1 Power Requirements

- Voltage: 24 - 30 VDC
- Maximum current: 20 A

A.3.2 Power Consumption

- Controller, four cameras: 250 W (max)

Appendix B Declaration of Conformity

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EU Declaration of Conformity

Phase One A/S issues this Declaration of Conformity under our sole responsibility, covering the following product(s):

Product:	Phase One iX Controller
Manufacturer:	Phase One A/S
Models:	Phase One iX Controller mk 6
	Phase One iX Controller mk 6 OEM

The product is in conformity with the following standards and/or other normative documents:

EMC: EN 61000-6-3:2020, EN 61000-6-1:2019
EN 55035:2017 + A1:2015, EN 55032:2015

FCC CFR 47 Part 15:2017 subpart B, class A
ANSI C63.4:2014
ICES-003:2020 issue 7
CISPR 32, AS/NZS CISPR 32:2012
VCCI Technical Requirements, V-3/2016.11

Environmental:
RTCA/DO-160G Environmental Conditions and Test Procedures for Airborne Equipment

RoHS: Article 4 (1)

Technical Documentation relevant to the product is available from:

Phase One, Roskildevej 39, DK-2000 Frederiksberg, Denmark

Frederiksberg, Denmark, March 14, 2024

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