iX Controller MK6 OEM

Installation & Operation Guide

PHASEONE

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iX Controller MK6 OEM Installation & Operation Guide 06/05/2025

This manual applies for iX Controller MK6 OEM units with the following serial numbers: ZC001033 and higher.

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1. Introduction

1.1. Scope

This manual describes how to install the iX Controller MK6 OEM as follows:

- Section 2 - iX Controller MK6 OEM Hardware Overview
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- Section 4 - Connecting System Cables to the iX Controller MK6 OEM
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1.2. Applicable Documents

Item	Manual
Phase One iX Controller MK6 OEM	Connecting to the iX Controller Using Remote Desktop Connection

2. iX Controller MK6 OEM Hardware Overview

2.1. General

The iX Controller MK6 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:

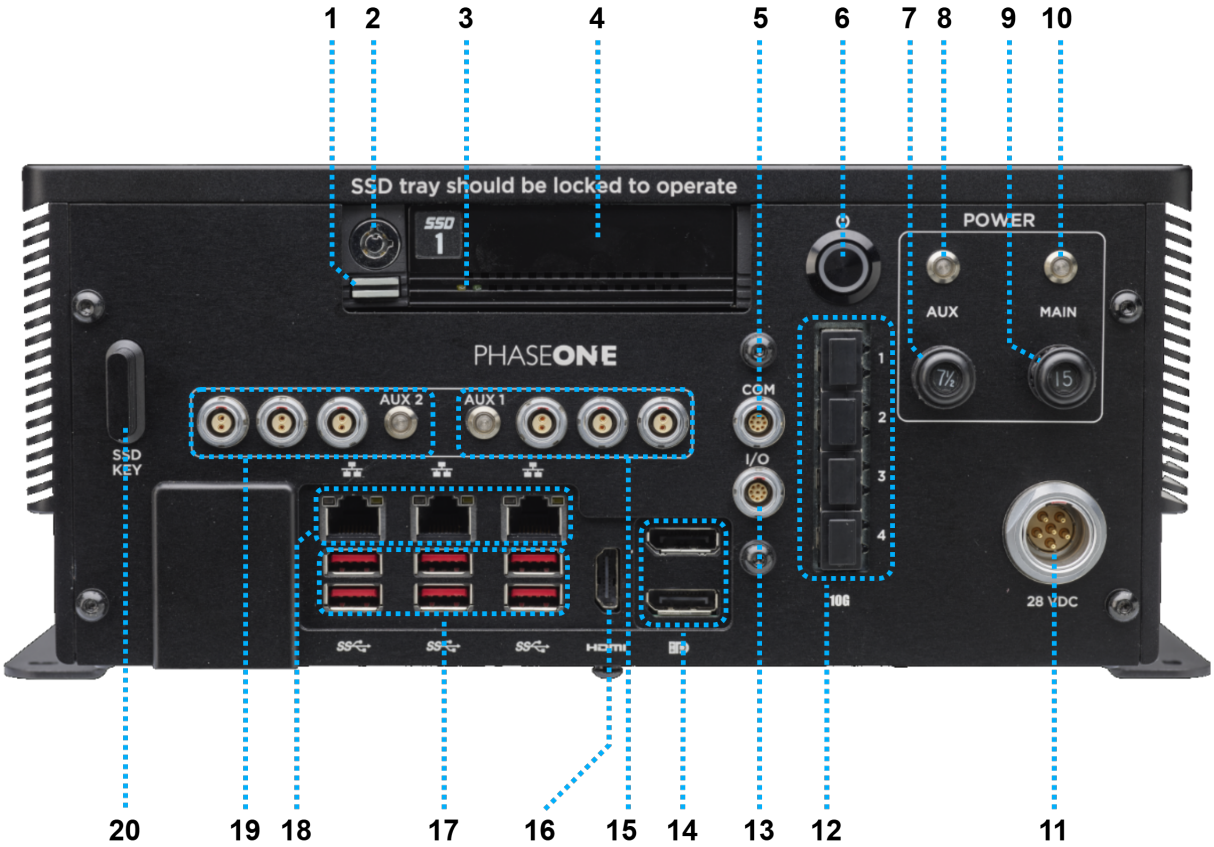
- ports for transferring data between the iX Controller MK6 OEM, cameras and an external IMU.
- standard aircraft power in port.
- 2 DP and 1 HDMI ports for connecting monitors.
- three Ethernet ports

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 MK6 OEM front panel items:

iX Controller MK6 OEM - Front Panel



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. AUX circuit breaker (power out ports)
8. AUX power LED
9. MAIN circuit breaker
10. MAIN power LED
11. 28 VDC port (power in)
12. 10GbE SFP+ ports (x4)
13. I/O port
14. DP ports (x2)
15. AUX 1 Power out ports (x3)
16. HDMI port
17. USB 3 ports (x6)
18. Ethernet ports (x3)
19. AUX 2 Power out ports (x3)
20. SSD carrier key

2.3. iX Controller MK6 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.

2.4. iX Controller MK6 OEM LEDs Overview

The iX Controller MK6 OEM front panel LEDs are described in the following table (refer to Section 2.2 - Front Panel Description):

LED Name	Description
On/Off pushbutton	• White solid - iX Controller MK6 OEM is on.
AUX power	• Green solid - power is supplied to iX Controller MK6 OEM AUX power ports.
MAIN power	• Green solid - power is enabled to iX Controller MK6 OEM.
AUX1 power	• Green solid - power to AUX1 power out ports is enabled. • Red solid - overcurrent detected - power to AUX1 power out ports is disabled. • Off - power is disabled in software. **Note** For details on toggling the AUX1 power through iX Flight Pro, see Section 7 - Operating the iX Controller MK6 OEM.
AUX2 power	• Green solid - power to AUX2 power out ports is enabled. • Red solid - overcurrent detected - power to AUX2 power out ports is disabled. • Off - power is disabled in software. **Note** For details on toggling the AUX2 power through iX Flight Pro, see Section 7 - Operating the iX Controller MK6 OEM.

3. Unboxing the iX Controller MK6 OEM

Verify that all parts were supplied according to the specific packing list for your iX Controller MK6 OEM.

3.1. Product Identification

To enable support for your iX Controller MK6 OEM, you must identify and record the serial number located on the left panel.

4. Connecting System Cables to the iX Controller MK6 OEM

This section describes how to connect the power and various system components to the iX Controller MK6 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 MK6 OEM.

4.1. iX Controller MK6 OEM Power Cable (P/N 73286000)

Warning

- The iX Controller MK6 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 MK6 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 MK6 OEM power cable to the iX Controller MK6 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

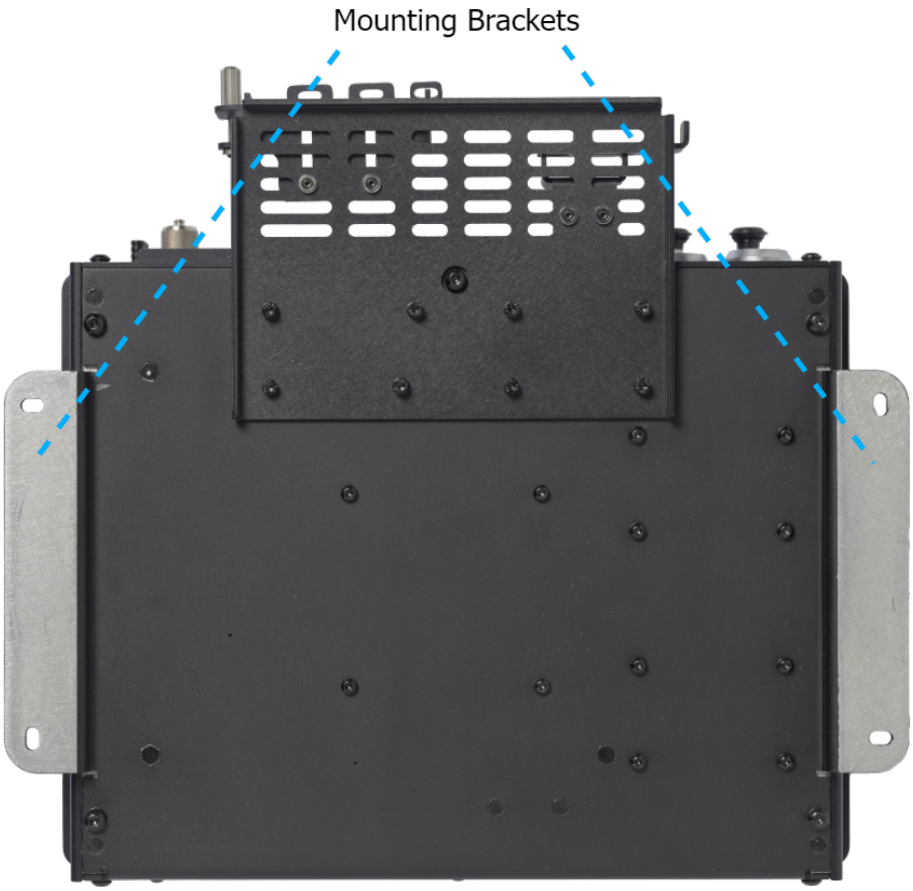
Wire	Polarity
Red	+
Black	GND

1. Connect the power cable with the LEMO connector to the iX Controller MK6 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. Removing the Cable Strain Relief Bracket Front Plates

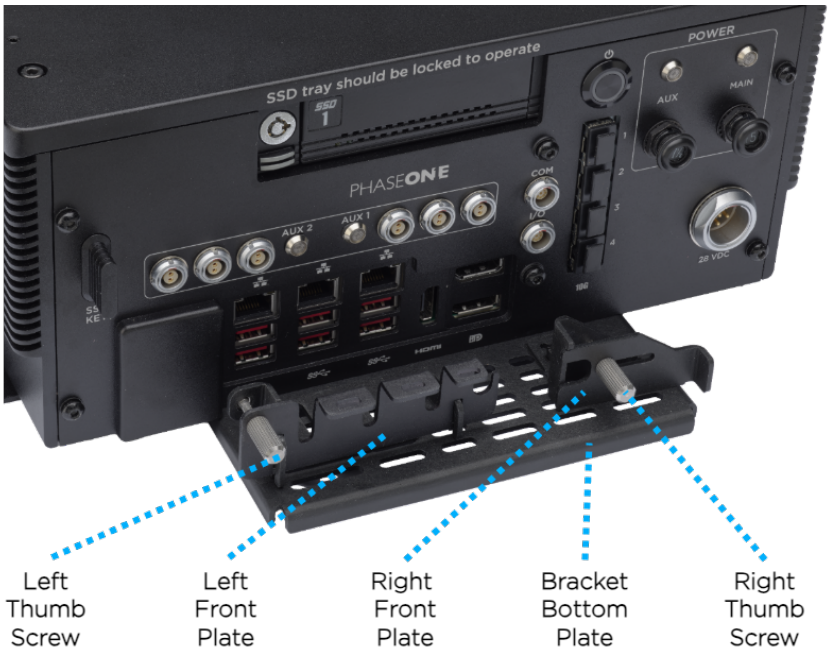
The Cable Strain Relief Bracket secures the cable hoods to the iX Controller MK6 OEM.

Before connecting or removing any cables, you must loosen the Cable Strain Relief Bracket front plates.

> **Note**
> It is recommended to connect all required cables (cameras, pilot monitor, operator monitor, keyboard/mouse) to the iX Controller MK6 OEM before returning the Cable Strain Relief Bracket front plates to their position.

To loosen the Cable Strain Relief Bracket front plates:

1. Locate the thumb screws on the left and right front plates of the strain relief bracket.
2. Rotate the thumb screw counterclockwise until the front plates become loose but do not detach completely.
3. Left front plate - once loosened, rotate the left front plate outwards to allow free access to the cables.
4. Right front plate - once loosened slightly, slide the right front plate to the right to allow free access to the cable.



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4.4. Connecting iX Controller MK6 OEM - iX Camera Cables

4.4.1 iX Controller MK6 OEM - Camera Power Cable (P/N 70364000)

The iX Controller MK6 OEM - Camera power cable provides power to the iX camera.

To connect iX Controller MK6 OEM - Camera power cables:

1. Connect one end of the iX Controller MK6 OEM - Camera power cable to an iX Controller MK6 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 MK6 OEM - Camera I/O Cables (P/N 75010000)

The iX Controller MK6 OEM - Camera I/O cable transfers trigger, camera ready, black reference and MEP signals between the iX Controller MK6 OEM and the iX camera. In addition, it provides metadata to the camera.

To connect the iX Controller MK6 OEM - Camera I/O cables:

1. Connect one end of the iX Controller MK6 OEM - Camera I/O cable to the iX Controller MK6 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 MK6 OEM - Camera Images/Data Cables

You can transfer the images and associated data between iX Controller MK6 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 MK6 OEM - Phase One Camera SFP+ cables:

1. Connect one end of the iX Controller MK6 OEM - Phase One Camera SFP+ cable to the iX Controller MK6 OEM SFP+ port.

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

> **Note**
> For details on IP configuration of the SFP+ and camera ports, see Appendix B - Configuring SFP+ Ports

4.4.3.2 Connecting USB Cables (P/N 73234000)

The iX Controller MK6 OEM - Camera USB cable (supplied with each camera) transfers control data from the iX Controller MK6 OEM and the camera, and images from the camera for storage in the iX Controller MK6 OEM.

To connect iX Controller MK6 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 MK6 OEM:

- iX Controller MK6 OEM - Pilot Monitor cable
- iX Controller MK6 OEM - Operator Monitor cable

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

4.5.1 iX Controller MK6 OEM - Pilot Monitor Cable (P/N 75098490)

To connect the iX Controller MK6 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 MK6 OEM power port, HDMI port and one of the USB 3 ports.

4.5.2 iX Controller MK6 OEM - Operator Monitor Cable (P/N 75098530)

1. Connect the cable end with 3 connectors to an iX Controller MK6 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 MK6 OEM.

To connect the keyboard to the iX Controller MK6 OEM:

1. On the iX Controller MK6 OEM, connect the keyboard's Bluetooth dongle to a USB port.

4.7. Closing the Cable Strain Relief Bracket Front Plates

To close the Cable Strain Relief Bracket front plates:

1. Return the front plates to their position and secure the front plates using the thumb screws. The front plates should secure the cable hoods.

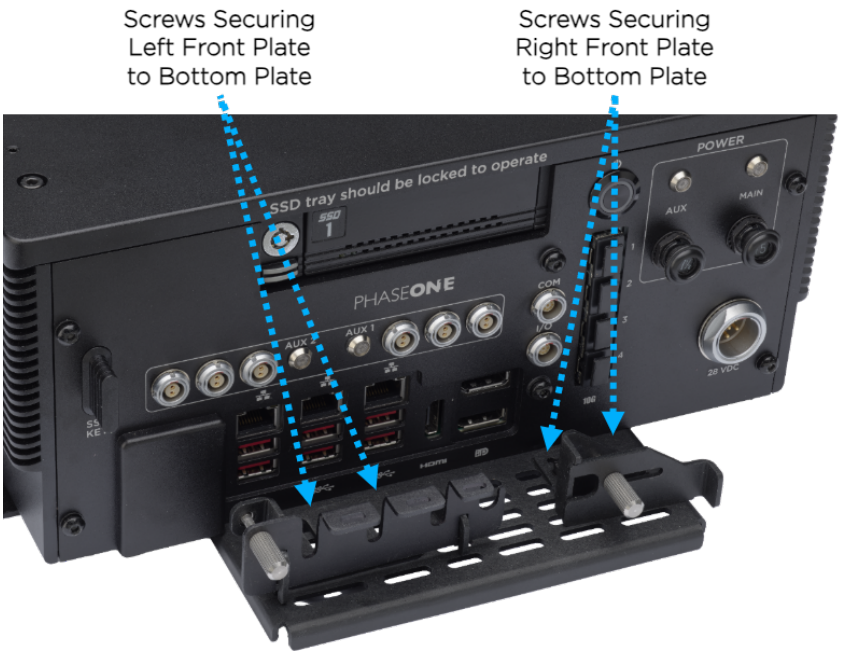
Note

For the cable hoods to be secure, you may need to adjust the distance between each front plate and the iX Controller MK6 OEM as follows:

a. For the front plate that requires adjustment and open the screws securing it to the bottom plate.

b. Adjust the distance as required.

c. Close and tighten the screws securing the front plate to the bottom plate.



4.8. iX Controller MK6 OEM - Mount COM Cable (P/N 73260000 / 73285000 / 73293000)

The iX Controller MK6 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 MK6 OEM.

To connect the iX Controller MK6 OEM - Mount COM cable:

1. Connect one end of the iX Controller MK6 OEM – Mount COM cable to the iX Controller MK6 OEM COM port.

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

5. Powering up the iX Controller MK6 OEM

To power up the iX Controller MK6 OEM:

1. Push the MAIN circuit breaker. The MAIN power LED turns on.
2. Press the On/Off pushbutton. The iX Controller MK6 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 MK6 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 MK6 OEM Storage

6.1. Disk Management

The iX Controller MK6 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 MK6 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 MK6 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 MK6 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 MK6 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 MK6 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 MK6 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 MK6 OEM:

1. Shutdown the iX Controller MK6 OEM as described in Section 8 - Shutting Down the iX Controller MK6 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 MK6 OEM.

6.4. Inserting the SSD Drive Carrier

To insert the SSD drive carrier into the iX Controller MK6 OEM:

1. Shutdown the iX Controller MK6 OEM as described in Section 8 - Shutting Down the iX Controller MK6 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 MK6 OEM.
4. Insert the SSD carrier key into the SSD carrier keylock and turn it 90° clockwise.
5. Power up the iX Controller MK6 OEM as described in Section 5 - Powering up the iX Controller MK6 OEM
6. Verify that the green SSD drive LED turns on.

7. Operating the iX Controller MK6 OEM

7.1. Powering Equipment

To activate equipment connected to the iX Controller MK6 OEM:

1. Push the AUX circuit breaker. The AUX power LED turns on.

To deactivate equipment connected to the iX Controller MK6 OEM:

1. Pull out the AUX circuit breaker. The AUX power LED turns off.

8. Shutting Down the iX Controller MK6 OEM

Warning
To avoid any damage to the iX Controller MK6 OEM when shutting it down, make sure you follow the following procedure.

To shut down the iX Controller MK6 OEM:

1. Perform one of the following:
   - On iX Controller MK6 OEM, press the On/Off pushbutton.

   OR
   - On the operator monitor, shut down Windows.

   Warning
   Make sure you shut down Windows properly before powering down the iX Controller.

2. After the On/Off pushbutton white LED turns off: on the iX Controller MK6 OEM, pull the MAIN circuit breaker out. The MAIN power LED turns off.

9. Troubleshooting

9.1. General Faults

The following table details how to troubleshoot common iX Controller MK6 OEM faults.

Faults	Solution
iX Controller MK6 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 MK6 OEM POST Beep Codes

The following table lists the iX Controller MK6 OEM POST (Power On Self-Test) beep codes issued by the motherboard.

POST BeepCode	Description
1	Normal POST, iX Controller MK6 OEM is OK.
3	Memory not installed
5	No console output devices found

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 MK6 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. Configuring SFP+ Ports

You must configure each iX Controller MK6 OEM SFP+ port and its corresponding camera SFP+ port on separate subnets with unique IP addresses within their respective subnets. This prevents IP conflicts and ensures smooth network communication.

Use the following example as a reference:

iX Controller SFP+ Port Number	iX ControllerSFP+ Port IP	Camera IP
1	10.10.10.10	10.10.10.11
2	10.10.20.10	10.10.20.11
3	10.10.30.10	10.10.30.11
4	10.10.40.10	10.10.40.11

9.3. Configuring SFP+ Ports on iX Controller

To configure the iX Controller SFP+ ports:

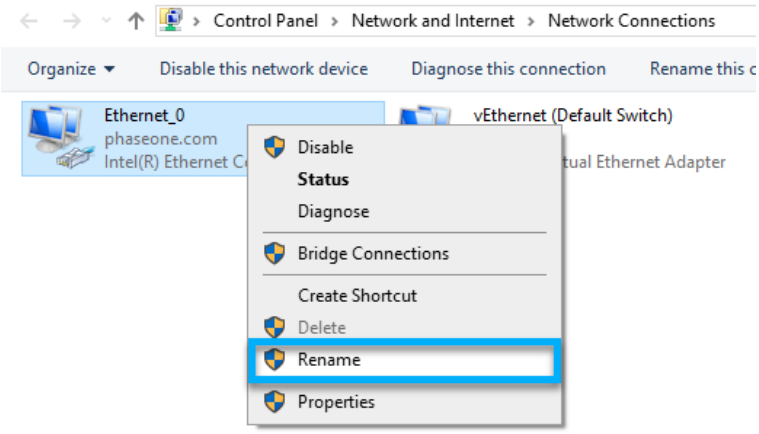
1. On the iX Controller, in Windows, open the **Control Panel**.
2. Click **Network and Internet**.
3. Click **Network Connections**.
4. Click **Change Adapter settings**.
5. Validate that the network connections representing the ports are named as marked on the iX Controller front panel as shown at right.

If necessary:

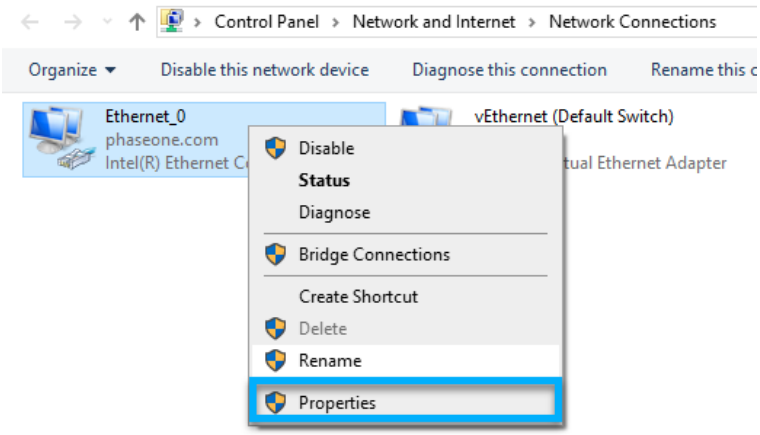
a. Right-click a connection.

b. Click **Rename**.

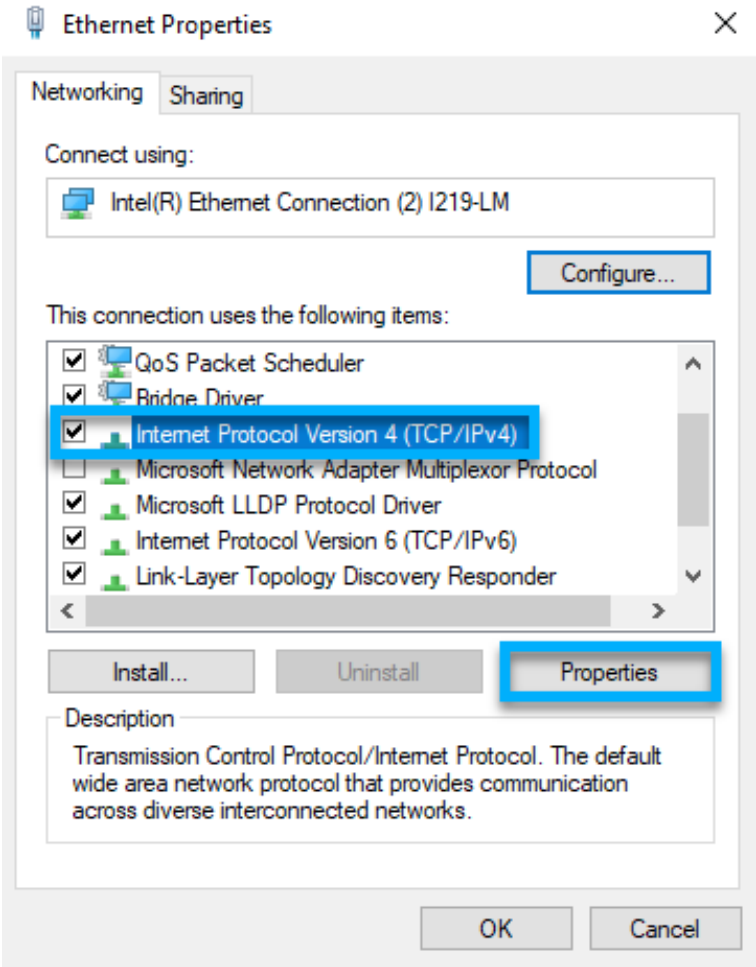
c. Enter the required name.



6. For each port perform the following:
   a. Right-click the connection.
   b. Click **Properties**.



   c. Click **Internet Protocol Version 4 (TCP/IPv4)** and click **Properties**.

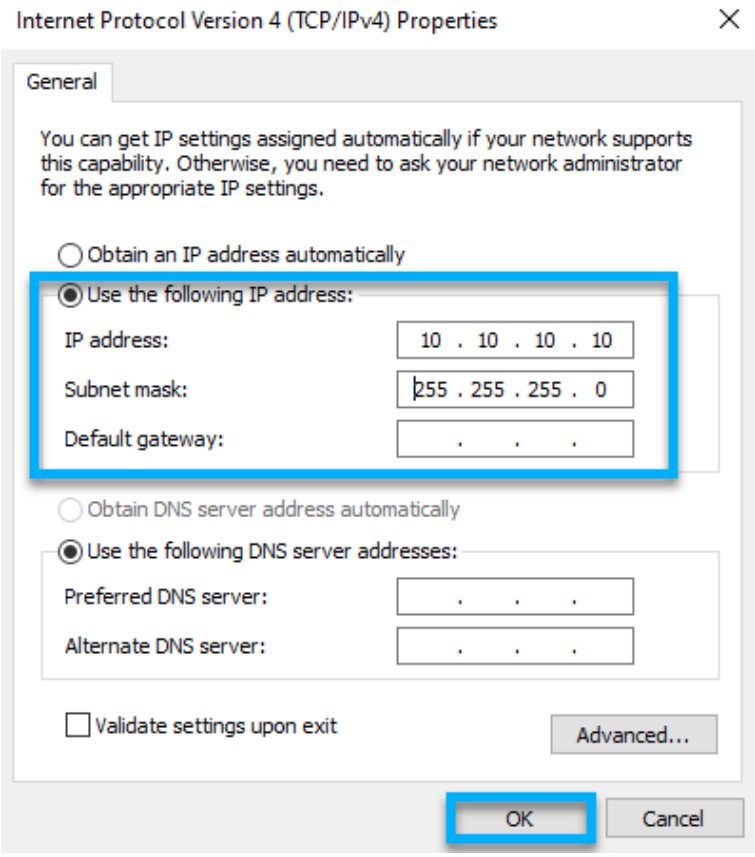


d. In **IP address:** enter the following addresses:
   - For port 1: 10.10.10.10
   - For port 2: 10.10.20.10
   - For port 3: 10.10.30.10
   - For port 4: 10.10.40.10

e. In **Subnet mask:** enter the following address for all connections: 255.255.255.0

f. Click **OK**.

g. Click **Close**.



7. Close the Windows Control Panel.
8. Press `Windows + R`, type `cmd`, and hit `Enter` to open the Command Prompt.
9. In the Command Prompt, type `ipconfig /all` and press `Enter`.
10. For each port you configured, confirm that the following details are correct:
    - IPv4 Address matches the settings listed above.
    - Subnet Mask matches the settings listed above.

9.4. Configuring SFP+ Ports on Cameras

> **Note**
> This section assumes you are familiar with iX Flight Pro. For details, see the latest iX Flight Pro Operation Guide.

9.4.1 Configuring a Camera Currently Configured for 10G Connection

To configure a camera already configured for a SFP+ (Ethernet) connection:

1. Using a suitable SFP+ module and cable, connect the Phase One camera to a iX Controller SFP+ port.
2. Run iX Flight Pro.
3. In **Camera Settings**, click **Add Camera**.

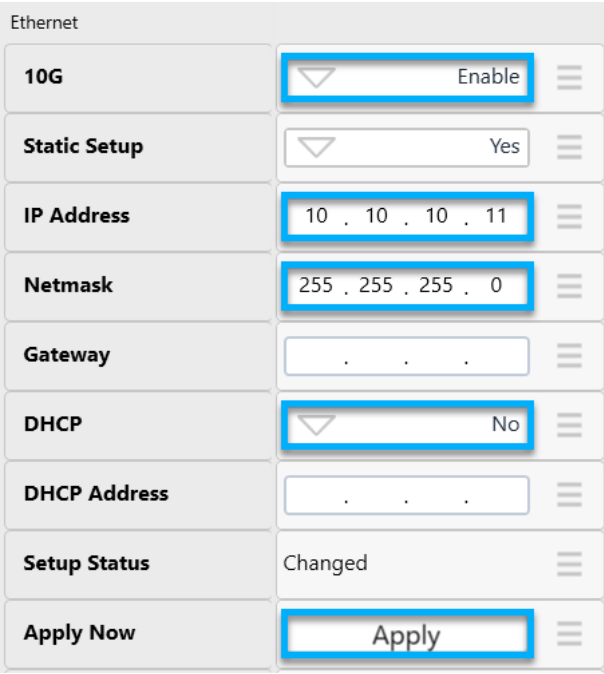
4. In the IP Address window that appears, enter the IP address as follows:
   - For a camera connected to iX Controller SFP port 1: 10.10.10.11
   - For a camera connected to iX Controller SFP port 2: 10.10.20.11
   - For a camera connected to iX Controller SFP port 3: 10.10.30.11
   - For a camera connected to iX Controller SFP port 4: 10.10.40.11

5. Click **OK**.
6. On the iX Controller:
   a. In Windows, open **Control Panel**.
   b. Click **Network and Internet**.
   c. Click **Network Connections**.
   d. Click **Change Adapter settings**.
   e. Make sure that the connection for that iX Controller SFP+ port is working, as indicated by the computer icon with a cable (not or a warning sign).

9.4.2 Configuring a Camera Currently Configured for USB Connection

To configure a camera currently configured for a USB connection to use an SFP+ (Ethernet) connection:

1. Using a USB cable supplied with your Phase One system, connect the Phase One camera to an iX Controller USB port.
2. Run iX Flight Pro.
3. In **Camera Settings**, under **Ethernet**, configure the following:
   - **10G** - **Enable**
   - **IP address** - enter the following addresses:
     - For a camera connected to iX Controller SFP port 1: 10.10.10.11
     - For a camera connected to iX Controller SFP port 2: 10.10.20.11
     - For a camera connected to iX Controller SFP port 3: 10.10.30.11
     - For a camera connected to iX Controller SFP port 4: 10.10.40.11
   - **Netmask** - enter the following address for all connections: 255.255.255.0
   - **DHCP** - No



4. In **Apply Now**, click **Apply**.

5. Disconnect the USB cable from the iX Controller and from the camera.
6. Using a suitable SFP+ module and cable, connect the Phase One camera to the correct iX Controller SFP+ port (as per the camera IP address as described above).
7. On the iX Controller:
   a. In Windows, open **Control Panel**.
   b. Click **Network and Internet**.
   c. Click **Network Connections**.
   d. Click **Change Adapter settings**.
   e. Make sure that the connection for that iX Controller SFP+ port is working, as indicated by the computer icon with a cable  (not  or a warning sign).

Appendix C. Data Storage Management

C.1 Replacing SSD Drives

The iX Controller MK6 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 MK6 OEM as described in Section 8 - Shutting Down the iX Controller MK6 OEM.
2. Remove the carrier from the iX Controller MK6 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 MK6 OEM as described in Section 6.4 - Inserting the SSD Drive Carrier.

Appendix D. Declaration of Conformity

PHASEONE

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

Morten Bruun-Larsen

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