

# PHASE**ONE** INDUSTRIAL

## Phase One iXM-RS/iXM Series Aerial Camera Systems Installation Guide



This guide describes installation of your Phase One iXM-RS/iXM camera system. As new features are introduced via firmware updates, the downloadable version of this document changes accordingly. Downloads are available [HERE](#)

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# 1 What's in the Box?

The following items are included (Standard) with the camera or can be purchased as optional (Optional Accessories).

## Standard components

- Phase One iXM-RS or iXM camera
- 24 V DC power supply with international outlet adapters
- iX Camera Power Right-Angle Cable (2m)
- iX Camera Control Right-Angle Cable (2m)
- USB3.1 (Gen. 1) cable shielded for iXM, 2m
- 2mm hex screwdriver
- Microfiber cloth
- Sensor cleaning kit
- USB drive with documentation
- Warranty certificate
- Suitcase for iXM-RS/iXM camera

## Optional Accessories

- Phase One RSM-35mm Lens (73181000)
- Phase One RSM-80mm Lens (73182000)
- Phase One RSM-80mm AF Lens (73180000)
- Phase One RSM-150mm AF Lens (73183000)
- Phase One USB 3.1 (Gen.1) Shielded Cable for iXM (1m) (73233000)
- Phase One USB 3.1 (Gen.1) Shielded Cable for iXM (3m) (73235000)
- Rodenstock RS-28mm Lens (73218000)
- Rodenstock RS-32mm Lens (73137000)
- Rodenstock RS-40mm Lens (73118000)
- Rodenstock RS-50mm Lens (73110000)
- Rodenstock RS-70mm Lens (73119000)
- Rodenstock RS-90mm Lens (73121000)
- Schneider Kreuznach RS-110mm Lens (73135000)
- Schneider Kreuznach RS-150mm MK II Lens (73209000)
- Schneider Kreuznach RS-180mm Lens (73238000)
- Phase One RSM 300mm AF Lens (73230000)
- Multi Sync Cable (1m) (70362000)

Camera Systems Overview

1.1 iXM/iXM-RS Systems



- 1. Pod mounting threaded holes (four)
- 2. Lens secure screws (four)



- 3. XQD card cover
- 4. XQD card cover screw
- 5. Storage LED
- 6. Operation LED
- 7. USB 3.1 port cover screw
- 8. USB 3.1 port cover
- 9. Data terminal A
- 10. Data terminal B
- 11. Power terminal
- 12. Power LED
- 13. Ethernet port cover screw
- 14. Ethernet port cover
- 15. HDMI port cover
- 16. HDMI port cover screw

## 2 Pre-flight Planning

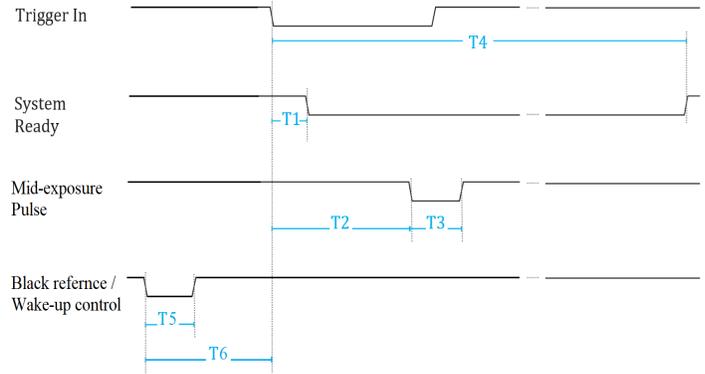
### 2.1 Exposure Sequence

These 4 signals control the iXM-RS/iXM exposure sequence:

- **Trigger in:** The Flight Management System (FMS) signals the iXM-RS/iXM to take an image.
- **System ready:** Camera ready/busy signal.
- **Mid-exposure pulse:** Indicates the midpoint of the exposure time.
- **Black reference / Wake-up control:** dual-purpose signal.

Black reference indicating coming capture will include with black reference (see page 9 for more details)

Wake-up control indicating the camera to exit low power mode and prepare for a capture (indicated by trigger signal)



**Table 1- Exposure Sequence**

Typical Values	iXM 100MP	iXM 50MP	iXM-RS 100F	iXM-RS 150F
<b>T1</b> Trigger IN - SysRdy (Low)	2 mSec			
<b>T2</b> Trigger IN - Mid Exposure	~30 mSec + ½ of Exp. Time	~20 mSec + ½ of Exp. Time	~30 mSec + ½ of Exp. Time	~20 mSec + ½ of Exp. Time
<b>T3</b> Mid Exposure Width	1.1 mSec + ½ of Exp. Time			
<b>T4</b> Trigger IN - SysRdy (High) - in	330 mSec	500 mSec	625 mSec	500 mSec
<b>T5</b> Wake-up pulse (minimum)	1 mSec			
<b>T6</b> Wake-up pulse - Trigger IN (minimum)	350 mSec			

Note: Enabling low power mode (see section 9 for more information settings) can cause in some cases slowness in capture rate when the image capture rate is slower than the low power mode timing. If, for example, the capture rate is scheduled at 15 seconds and the low power mode is set at 10 seconds, each capture will be delayed by up to 350mS. As a result, the capture rate will be 15.35 S/F instead of 15 S/F in order to allow the camera to exit low power mode. If the capture rate is crucial, disable low power mode or use hardware wakeup signal.

## 2.2 Wiring a Control Cable for the iXM-RS/iXM Series Cameras

External devices are connected to the camera with an iX Camera control cable (supplied with the camera kit). This cable has a LEMO-secured connector on one side for the camera and an open side with nine (28 AWG) wires for connection to your system.

Table 2 below, describes the functionality of the wires in the iX Camera control cable and the figures below show the wires numbering order.

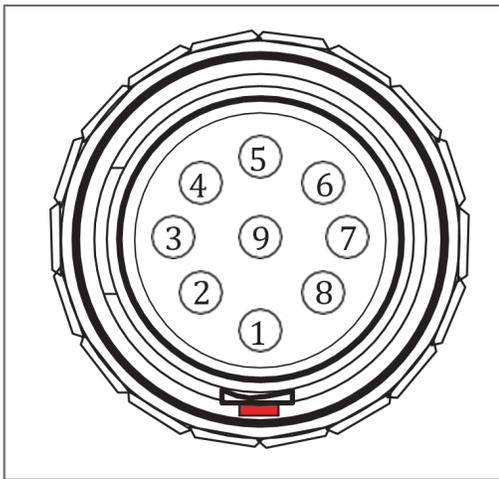


Figure 1: Control Cable Plug Pinout

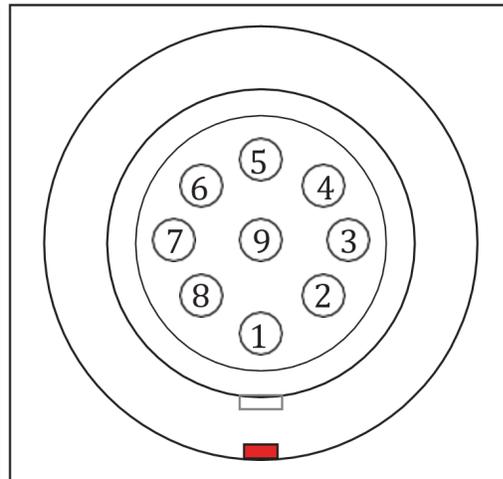


Figure 2: Socket Pinout

Table 2- Camera Control Cable Description

Pin	Color	Name	Description	Direction	Level	Notes
1	Orange	Reserved	Reserved	Reserved	Reserved	Reserved
2	Green	System Ready	iXM-RS/iXM system ready for next capture.	Out	VOH, min = 4.0V (I <sub>o</sub> = -10uA) VOL, max = 0.8V (I <sub>o</sub> = 4mA)	5 Volt Level Pull up resistor 47.5K Ohms to +5 V
3	Red	Black Reference / Wake-up Control	Indicates a black reference sequence is required.  Signal the camera to wake-up from low power mode	In	VIH, min = 2.4V VIL, max = 0.8V tiF, tiR < 1uSec	Isolated. Active low. For black reference see “Understanding Black Reference” on page 9  For low power mode control see “Exposure Sequence” on page 6
4	Purple	Trigger In	Trigger the iXM-RS/iXM for new capture cycle	In	VIH, min = 2.4V VIL, max = 0.8V tiF, tiR < 1uSec	Active low. (For manual triggering, activate by short to common signal, otherwise leave floating)
5	Blue	RS-232 RX	External system can send specific information to the iXM-RS/iXM system.	In	RS-232 input level +/- 15V (VIT+ max=2.4V) (VIT- min=0.8V)	RS232 Voltage Level Isolated For baud rate and additional information, see the Phase One GPS User Guide.
6	Yellow	RS-232 TX	iXM-RS/iXM system can send specific information to external system.	Out	VOH at RL=3 kΩ to GND + 5.4V VOL at RL=3 kΩ to GND - 5.4V	
7	White	Mid-exposure Pulse	Midpoint of the exposure time.	Out	VOH min = 4.0V (I <sub>o</sub> = -4mA) VOL max = 0.8V (I <sub>o</sub> = 4mA)	5 Volt Level
8	Gray	Reserved	Reserved	In		Short to pin 9*
9	Black	Common		Common		

\*For iXM-RS/iXM cameras, this connection is mandatory.

VIL	Maximum voltage level that is interpreted as a '0' by an input.
VIH	Minimum voltage level that is interpreted as a '1' by an input.
VOL	Guaranteed maximum voltage level that appears on output set to '0'.
VOH	Guaranteed minimum voltage level that appears on output set to '1'.
VIT+	Input threshold voltage when the input voltage is rising;
VIT -	Input threshold voltage when the input voltage is falling.

## 2.3 Understanding Black Reference

A black reference is the process of reading the sensor output during an exposure without the sensor being exposed to light. This data is written to the camera and used to subtract from the regular capture.

Updating the black reference data whenever it is possible enhances the image quality, in particular when shooting in conditions where the temperature of the camera changes. If the exposure time varies a lot, the black calibration reference data should be updated.

It is advisable to make a black reference capture before starting your first flight line and if the exposure settings or ISO have been changed. This ensures the accuracy of exposures.

The best time to do this is before starting a new flight line, when images are not being captured.

**Note:** Black reference is done, automatically, with the first shot after switching the camera on.

## 2.4 Hardware Activation of Black Reference

If you are building your own hardware control box, you can update the black reference data in the camera. The black reference control signal should be kept low while an image capture cycle is initiated. The signal must remain low for the full capture cycle.

This makes it possible to create a black reference whenever it is convenient (i.e. when turning an aircraft around or between flight lines). When the force black signal is kept high, the camera uses the last updated black reference data. See Figure 3 for schematic illustration.

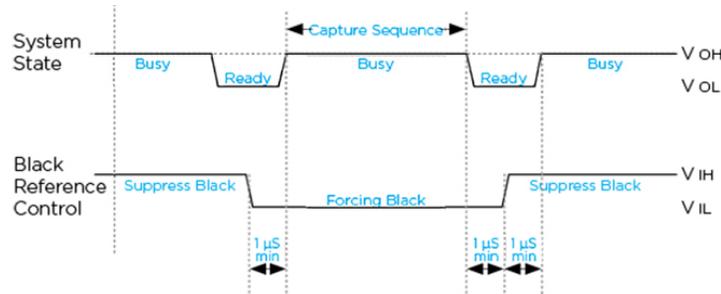


Figure 3: Black Reference Timing

## 2.5 Software Activation of Black Reference

The Phase One iXM-RS/iXM cameras can perform a black reference sequence by using the iX Capture application, the Phase One SDK, the Flight Management System or through an iX Link API.

When using iX Capture, click **Black Ref** on the iX dashboard to update black reference.

Use the following table to determine the Black Reference mode to use for your capture flow:

<b>Prerecorded</b>	This mode uses a <i>prerecorded</i> Black Reference created during manufacture of the iXM-RS/iXM camera. As a result, there is no delay in capture flow and the black reference is used for each capture.
<b>Once</b>	This mode takes a black reference one time only. The Black Reference is taken by using the manual Black Reference feature on the iX Capture dashboard. This mode is usually selected for normal captures in where there are no large changes to Exposure time, ISO or temperature.  Phase One recommends that you initiate a new Black Reference sequence whenever possible (for example, during flight while turning the aircraft).
<b>Always</b>	This mode takes a new Black Reference for every capture.  <b>Note:</b> This slows the capture cycle (approximately twice as slow) but does provide an accurate, custom Black Reference for each capture.
<b>On Change</b>	The iXM-RS/iXM camera uses an internal algorithm to decide when a new Black Reference is required based on specific values of Exposure, ISO or large changes in temperature.

## 2.6 Wiring the Power Cable

The camera is connected to the aircraft's power bus with a power cable.

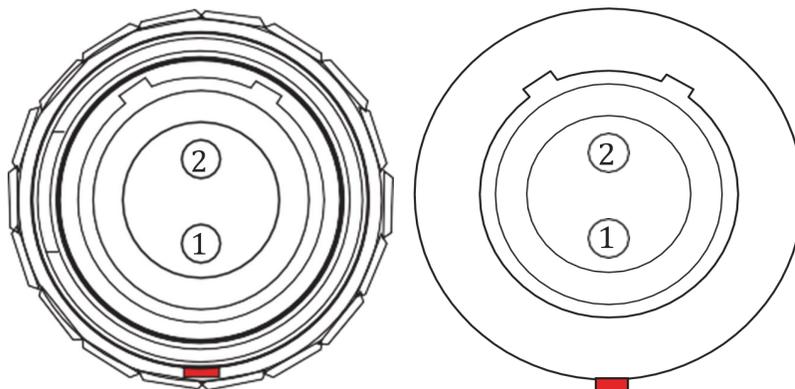


Figure 4: Power Cable Plug (right) & Power Socket (left) Pinouts

**Note:** The iXM-RS/iXM cameras must be powered by a limited fused power source only, up to 8A single fault condition.

**Attention:** La caméra iXM-RS/iXM doit être alimentée par une source d'alimentation protégée par un fusible, d'une capacité maximale de 8 Ampères.

Wire the power cable using the information in the table below.

Table 3-Power Cable Description

Connector Pin	Color	Name	Description	Direction	Level	Notes
1	White or yellow	DC In +	Provides positive power	Input	12 - 30 V DC	Provides up to 20 W
2	Black	DC In -	(Common)	Input		

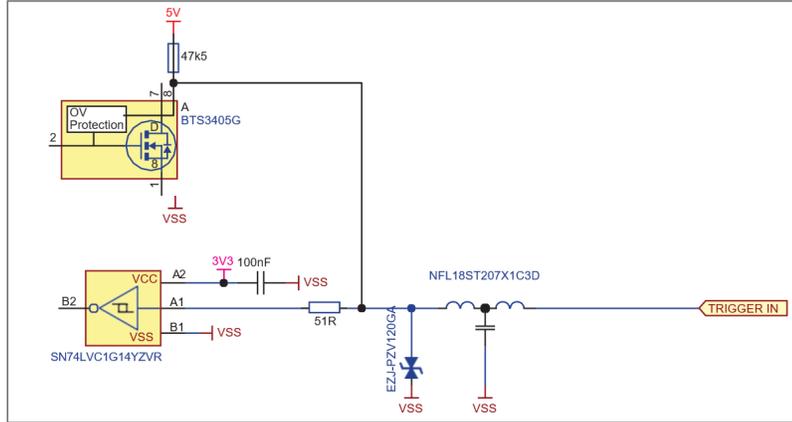
## 2.7 Electrical Interfaces

The schematic drawings below contain component part numbers for reference.

These four signals control the iXM-RS/iXM camera:

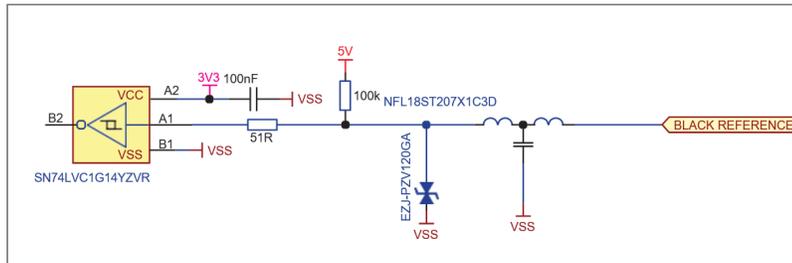
### Trigger in

Triggers the iXM-RS/iXM camera for new capture cycle.



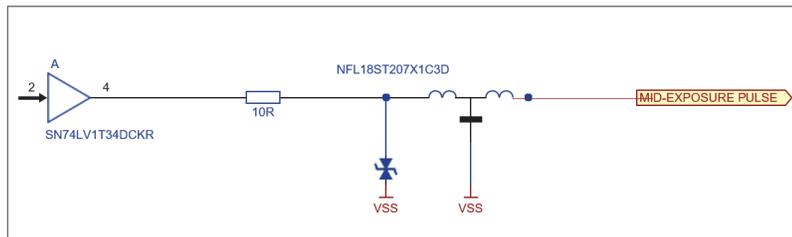
### Black reference

Triggers the iXM-RS/iXM camera for a black



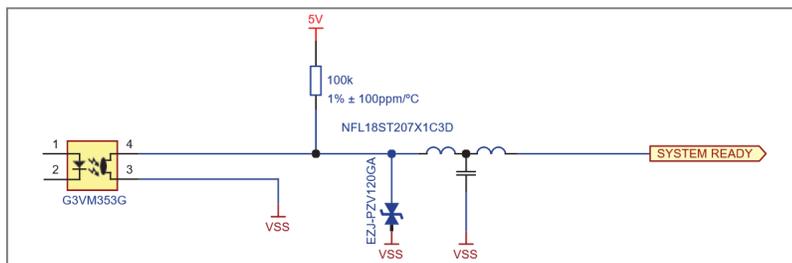
### Mid-exposure pulse

Indicates midpoint of the exposure time.



### System ready

Camera ready/busy signal



## 3 Preparing the Camera

### Notes:

- Before mounting or dismounting a lens, verify that the power cable is not attached to the camera.
- Mount/dismount lenses in a clean environment, only. Place a soft cloth down on the table to avoid scratching the camera and a lens cap on the lens.

### 3.1 Mounting an RSM Lens

#### To mount a lens on an iXM:

1. Place the iXM camera interface with the sensor **facing up** and the contacts (solid red) closest to you.
2. Hold the RSM lens so that the contacts pins strip (solid green) is aligned with the contacts on the iXM camera interface (solid red - see photo).

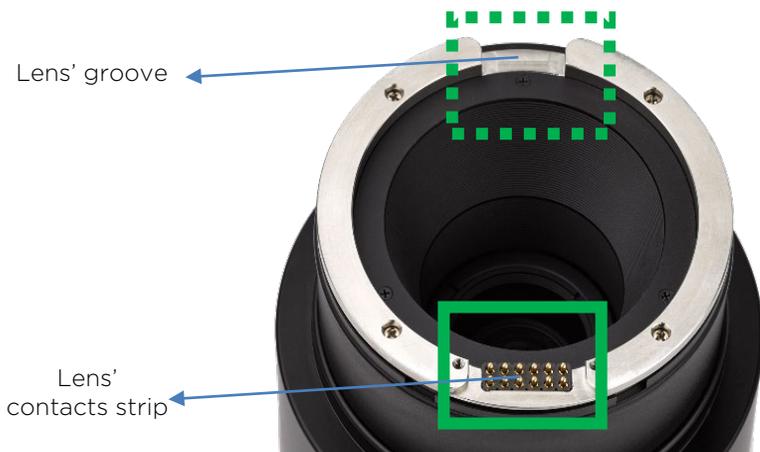


Figure 5: RSM Lens

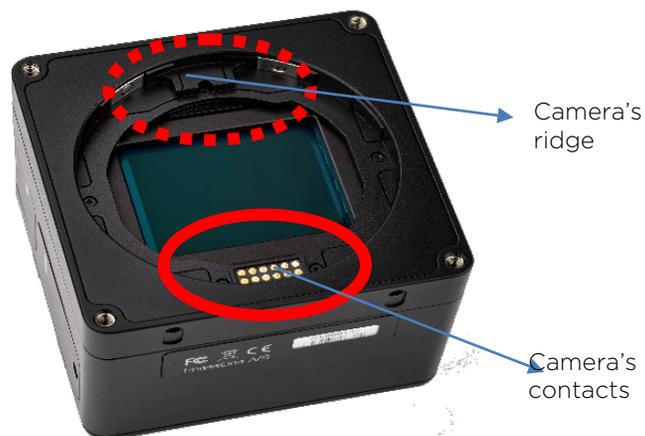


Figure 6: iXM's Camera Interface

3. Place the groove of the lens onto the ridge of the iXM camera interface (opening-to-opening).
4. With the openings touching, lower the lens' contacts pins strip to the contacts on the iXM camera interface.



5. Hold the lens with both hands and press it firmly down onto the iXM camera interface, so that the O-Ring seal is pressed inside.



4. Use a 2mm hex key to tighten the 4 screws on the iXM camera interface; use torque of 50cNm.

### 3.2 Dismounting a RSM Lens

**To dismount a lens from an iXM:**

1. Use a 2 mm hex key to unscrew the four screws on the iXM camera interface.
2. Hold the lens and gently pull up at an angle.



### 3.3 Mounting a RS Lens

**To mount a lens on an iXM-RS:**

1. Remove the rear lens cap (if attached) before mounting the lens.
2. Hold the RS lens so that the lens contacts strip is above the contacts of the camera interface.
3. Slowly lower the lens' *opening* onto the iXM-RS's *opening* (opening -to-opening).
4. Use a **2 mm** hex key to secure the lens assembly onto the iXM-RS gently tightening each of the three locking screws.
5. Tighten the 3 locking screws a second time using a **torque of 50 cNm**.



### 3.4 Dismounting a RS Lens

**To dismount the lens from an iXM-RS:**

1. Use a 2 mm hex key to unscrew the three lens screws.
2. **Note:** The screws remain attached to the camera.
3. Pull the lens assembly away from the camera.
4. Place a rear cap on the lens.



## 4 Connecting a camera

**Note:** This section applies to both iXM and iXM-RS cameras

### 4.1 Attaching the Camera (iXM-RS/iXM) to a Pod

1. Attach the iXM-RS/iXM camera to a pod using four M4 screws.

**Note:** Do not insert screws deeper than **6mm** into the threaded holes on the front of the camera.

### 4.2 Connecting a Control Cable

1. Insert the **iX Camera** control cable into a data terminal on the camera body and connect the other end of the iX Camera control cable to an external device.

**Note:** The two data terminals are **not** interchangeable.

2. Connect the devices to **Data Terminal A or B** depending on the specific device.

See details in "Connecting Control Cables to Devices" on page 18 and "Modifying, Activating & Deactivating iX Link" on page 22.

### 4.3 Connecting the Power Cable

**To connect the camera to the aircraft's power bus:**

1. Insert the **iX Camera** power cable to the power input of the **iXM-RS/iXM** camera.
2. Connect the other end of the **iX Camera** power cable to the aircraft's power bus.



## 4.4 Connecting a USB Cable

**To connect a USB 3.1 cable to an onboard computer:**

1. Unscrew the bolt on the cover of the USB 3.1 port (use a 2mm hex key).
2. Remove the cover and store it.
3. Insert the end of the USB 3.1 cable into the camera's USB 3.1 port.
4. Tighten the 2 locking screws using a torque of 25 cNm.



## 4.5 Connecting Control Cables to Devices

Depending on how you choose to configure your iXM-RS/iXM, the camera can be connected to the following:

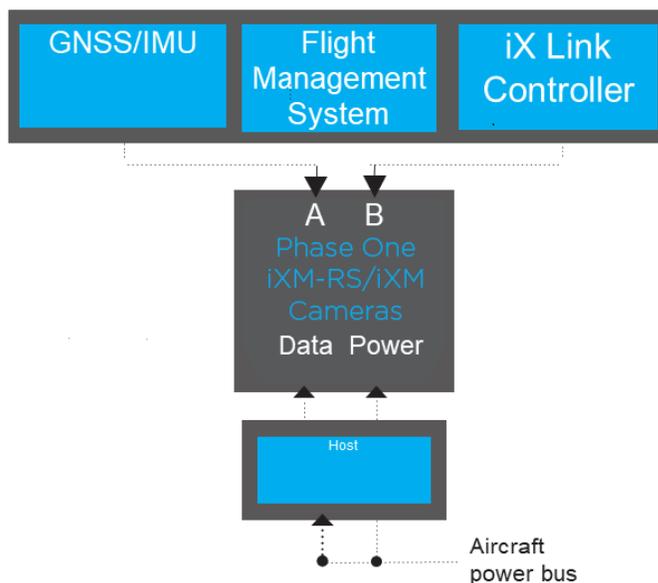
- Flight Management System
- GPS/IMU or GNSS
- Controller using iX Link



**To connect the iXM-RS/iXM to external devices:**

1. Insert the iX **control cable** into **data terminal A** (the **left** data terminal) on the iXM-RS/iXM camera body.
2. Connect the other end of the iX Camera control cable into the GNSS/IMU.
3. Insert an iX Camera control cable into data **terminal B** (right data terminal).
4. Connect the other end of the iX Camera control cable into your Flight Management System and / or a controller using **iX Link**.
5. Connect the power cable as described on page 17.

**Note:** Ensure that the camera and all connected devices are connected to a power source.

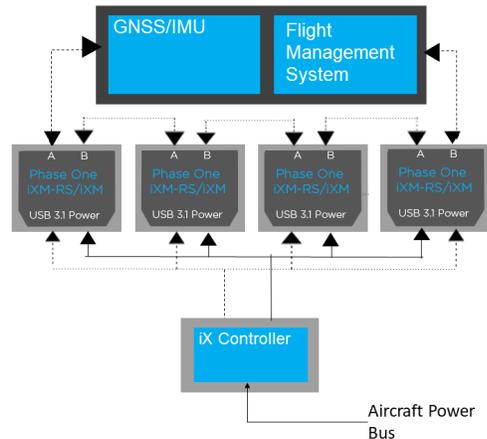


## 4.6 Connecting Cables for Multiple Camera Configuration

Multiple iXM-RS/iXM cameras can be synchronized to shoot simultaneously. The first camera in the daisy-chain is triggered with an iX Camera control cable.

Before connecting, ensure that all cameras in the array do not have iX Link activated. See "Activating / Deactivating iX Link" on page 22.

1. Insert an iX Camera control cable into **data terminal A** (left terminal) on an iXM RS/iXM camera and connect the other end of the iX Camera control cable to the GPS/IMU.
2. Insert an Multi Sync cable into the camera's **data terminal B** (right terminal).
3. Connect the other end of the Multi Sync cable to data **terminal A** of the second camera.
4. Repeat for any additional cameras.
5. Connect an iX Camera control cable from data **terminal B** of the **last camera** in the daisy-chain.
6. Connect the other end of the iXM-RS/iXM camera control cable to the flight management system or other device.



### Notes:

- For a multiple camera setup, do not use trigger or black reference from iX Capture.  
**Use hardware signals only.**
- When creating a daisy-chain between iXM-RS/iXM and iXU-RS/iXU cameras, you can configure each camera in any position required, however, you must disable low power mode for the iXM-RS/iXM cameras.

## 4.7 Connecting an HDMI Cable to an iXM-RS/iXM Camera

### To connect an HDMI cable to an iXM-RS/iXM camera:

1. Remove the HDMI cover of the HDMI port (use a 2mm Hex screwdriver).
2. Insert an HDMI cable into the iXM camera's HDMI port and connect the other end of the HDMI 3.1 cable to an HDMI capable display.



## 4.8 Connecting to a Host Controller with iX Link

iXM-RS/iXM cameras can be connected to a host computer using a serial interface. This enables you to control the camera and to capture images directly to a XQD card.

Use the Phase One proprietary **iX Link** protocol to work with the host controller. The protocol is a Phase One protocol for sending commands and receiving status to or from an iXM-RS/iXM camera when using an external controller with RS-232.

**Note:** iX Link is used with a single camera only, in an unsynchronized setup.

**To use iX Link with your iXM-RS/iXM camera you must:**

1. Activate iX Link in the camera.
2. Program the controller device you are using to transmit and receive the iX Link commands (9600, 8 bits, 1 stop bit, no parity).
3. Connect the iX Camera control cable between the iXM/iXM-RS Cameras and your controller device (for more information refer to section 5.2 on page 17 and table 2 on page 8)

Refer to the iX Link Programming Guide; the guide contains the application programming interface (API) required to program your controller. It is available [HERE](#).

### 4.8.1 Modifying, Activating & Deactivating iX Link

Activating iX Link changes the iXM-RS/iXM camera's data terminal allocation so that data terminal B (the right terminal) is dedicated to iX Link usage.

**To activate/deactivate iX Link:**

1. In iX Capture, go to Settings.
2. Click the appropriate camera tab.
3. Click the Link tab.
4. Choose the required iX Link mode and value from the scroll-down list.

## 5 Using Auto-exposure

The camera's exposure parameters can be controlled manually or with Auto-exposure by adjusting the settings on the **iX Capture** Setup tab.

Auto-exposure controls the camera's three exposure parameters:

- ISO
- Aperture
- Shutter speed

When Auto-exposure is activated, the camera reads the histogram of each image after it is captured and adjusts the exposure parameters for the next image. The adjustments are in third stop increments.

### 5.1 Using Auto-exposure Mode:

1. Go to Settings
2. Click the appropriate camera tab
3. Click the Image tab
4. In the Auto-exposure area:
  - a) Set the Auto-exposure Range.
  - b) Set the Auto-exposure Priorities (the order in which the parameters are changed).
  - c) Activate Auto-exposure Mode (on the Capture screen).
  - d) Adjust Auto-exposure Bias as if needed (on the Capture screen).

The camera uses the following parameters for the first exposure:

ISO —Selected in Auto-exposure Minimum.

Aperture — The **average** aperture between Auto-exposure

Minimum and Maximum.

Shutter speed —Set in **Auto-exposure Maximum**.

**Note:** Capture a few images **before** your first flight line so that Auto-exposure can determine the optimum exposure.

**Note:** When Auto-exposure is activated, the exposure parameters (ISO, aperture and shutter speed) in the Capture screen are **disabled**.

## 6 Storing Images

You can save images to an onboard computer running iX Capture, to the Phase One SDK or to Capture One using a USB 3.1 cable. An alternative method is to work in **portable mode** and to use a XQD card as your storage device.

### 6.1 Using XQD Cards

It is important to follow a few simple guidelines to help avoid loss of data when working with XQD cards, card readers and digital cameras. Phase One recommends that you test-drive all new XQD cards. By performing an initial test to verify that the capture files are stored properly on the card and can be accessed on a computer, you will avoid surprises when you return from a flight. XQD cards are manufactured by external suppliers; Phase One is not responsible for defective cards.

#### 6.1.1 Inserting and Ejecting a XQD Card

The XQD card is inserted in the slot located under the cover on the left hand side of the iXM-RS/iXM camera.

**To insert an XQD card:**

1. Use a 2mm hex key, unscrew the screw on the XQD cover and remove it.
2. Insert a XQD card with the brand label facing the backside of the camera as shown in the image below.
3. Replace the XQD cover and tighten the XQD card screw – apply 15cNm torque.

**To eject the XQD card:**

1. Always make sure the camera is in “Low power mode” before ejecting the XQD card to prevent data corruption. “Low power mode” setting value can be found under camera settings (default is 10 seconds)
2. Push the XQD card further inside and release. The XQD card ejects.



#### 6.1.2 Formatting an XQD card

**Use iX Capture to format the XQD card**

1. Go to Settings.
2. Click the appropriate camera tab.
3. Click the Service tab.
4. Choose to format the card and acknowledge the operation.  
A confirmation message displays.

**Note:** Before shooting for the 1st time, verify that local storage is enabled. If local storage is not enabled, you will not be able to store to the XQD card.

## 7 Video Display

**Note:** When in Live View or HDMI modes, re-powering the camera will not disable the mode. The Camera will start with the last working mode (indicated with an operation LED showing blue color).

### 7.1 Using Live View Mode (From iX Capture)

**Live View enables you to view a live view video from the iXM-RS/iXM camera and to capture images while viewing a subject of interest.**

**To use Live View:**

1. In the Capture screen, click **Live View**. The screen displays a video image.
2. Click the Capture button to capture an image.
3. While an image is being captured, Live View is unavailable.
4. Click the Live View button again to turn it off.

**Notes:**

- Video is not recorded during Live View.
- When exiting Live View, the last image captured displays on the screen.

### 7.2 Setting HDMI Display

HDMI mode enables you to view full HD video with or without overlay.

**To set HDMI Display:**

1. Go to Settings.
2. Click the appropriate camera tab.
3. Click the HDMI tab.
4. Choose the required HDMI values and settings.

## 8 Miscellaneous Camera Settings

All the below refer to the IX Capture User Guide.

### 8.1 Adjusting ISO, Exposure Time and Aperture

**To set ISO, Exposure time and Aperture values:**

1. Go to Settings.
2. Click the appropriate camera tab.
3. Click the Image tab.
4. Select the required value from the scroll down menu.

### 8.2 Adjusting Date & Time of Camera

**To set Data & Time:**

1. Go to Settings.
2. Click the appropriate camera tab.
3. Click the Service tab.
4. Modify the Date & Time.

### 8.3 Setting Image Orientation

**To set image orientation:**

1. Go to Settings
2. Click the appropriate camera tab
3. Click the Image tab.
4. Select the Image orientation from the scroll down list.

### 8.4 Setting GPS Mode & Value

**To set GPS Mode & Value:**

1. Go to Settings
2. Click the appropriate camera tab
3. Click the GPS tab
4. Choose the required GPS mode & value from the scroll down list

### 8.5 Setting Low Power mode

**To set Low Power Mode:**

1. Go to Settings
2. Click the appropriate camera tab
3. Click the Service tab
4. Choose the time laps for the camera to go to low power consumption (when no operation is performed)

## 8.6 Restoring Default Camera Values

**To restore default camera values:**

1. Go to Settings
2. Click the appropriate camera tab
3. Click the Service tab
4. Click the button.  
A confirmation appears.

**Note:** By default, the Network and custom White Balance parameters are *not* restored by the Restore Camera Defaults operation. However, they can *be added* to the restore operation in the iX Capture application, manually.

# 9 Firmware

## 9.1 Installing the Firmware Updater Application

### To install the Phase One Firmware Updater Application,

1. Download it [HERE](#).
2. Open the zip file, extract and store the FWUpdater.msi file.
3. Double-click FWUpdater.msi to start the Firmware Updater Setup Wizard.
4. When installation completes, click **Start > Phase One > Firmware Updater**.

## 9.2 Updating the Firmware

Before starting, ensure that your computer has the Firmware Updater application installed and the computer is connected to the Internet.

### To update the iXM-RS/iXM camera firmware:

1. Connect the camera to the computer with a USB 3.1 cable.
2. Connect the camera to a power source and turn the power on.
3. Start the Firmware Updater application
4. The Firmware Updater automatically checks online for a new version of firmware and displays a download button if your camera requires an update
5. If displayed, click the link to download the firmware. The firmware is saved locally
6. From the Select Firmware dropdown menu, select the firmware that you want to update.
7. After downloading the new firmware, the Release Notes button is no longer grayed out.
8. Click the Release Notes button to download the release notes for the newest firmware.
9. To update the camera to the latest firmware, click Update. The firmware is written to the camera and a gear icon  is displayed next to the MAIN component and a progress bar displays the progress of the update.
10. Upon a successful completion of the update, the MAIN component is marked with a green check mark icon.
11. If the update fails, disconnect the USB 3.1 cable, reconnect it, and repeat the procedure described above.

## 9.3 Checking Firmware Version

**To determine if you have the latest firmware installed:**

1. Go to Settings.
2. Click the appropriate camera tab.
3. Click the Service tab.
4. Check to see if the firmware version installed on the camera is the same as the latest version available [HERE](#)

## 9.4 Restoring Firmware to Factory Version

**If you need to restore the camera's firmware to the factory version (camera settings are not affected):**

1. Open the XQD card cover (see Using XQD Cards).
2. Insert a pin into the hole shown in the picture and hold it down.
3. Connect the camera to power.
4. Wait 3 - 4 seconds.
5. Put the camera aside for several minutes while the firmware is restored to the factory version. Do not power off the camera until all Leds resumes normal colors (see interpreting the camera Leds section)



# 10 Interpreting the Camera LEDs

The camera has three LEDs on its back to show camera status, as follows:



Color:→	Off	Orange	Green	Red	Blue
LED #:↓					
<b>1. Storage</b>	No storage	Storing	Storage available	X	X
<b>2. Operation</b>	X	Capturing	Ready	Not ready	Live view / HDMI modes
<b>3. Power</b>	No power	Starting-up	Power on	X	X

## Temperature Warning

When the internal temperature of the iXM-RS/iXM camera exceeds its upper limit (usually while working continuously for an extended amount of time: e.g. in HDMI mode or rapid capturing), the camera signals a warning by toggling the Operation LED. The warnings are activated as per the Temperature Warnings table:

<b>Temperature High</b>	Flashes slowly in <i>Green</i> (regular mode) or <i>Blue</i> (Live View or HDMI modes).
<b>Temperature too high</b>	Flashes quickly in <i>Green</i> (regular mode) or <i>Blue</i> (Live View or HDMI modes).
<b>Thermal Shutdown</b>	Flashes quickly in <i>Red</i> .

**Note:** Thermal shutdown stops all active capturing:

- All images not saved will be lost.
- If the temperature falls below the warning level, capturing restarts and works normally.



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