

PHASE**ONE**
INDUSTRIAL

iXU-RS1900
Aerial Solutions



Seeing the Large Picture Medium Format Evolves

iXU-RS1900 Aerial Camera

Phase One 190MP Aerial Camera series is the latest Phase One innovation to offer large format metric camera functionality.

The iXU-RS1900 dual lens aerial camera is an advanced large format metric camera, with technology designed specifically for the toughest demands of aerial imaging projects.

Developed with leading experts and engineers in the field, the iXU-RS1900 offers exceptional imaging/ aerial coverage, high accuracy and image quality, presenting an excellent alternative to traditional large format cameras in diverse aerial mapping applications such as: remote sensing, precision agriculture, disaster management and monitoring.

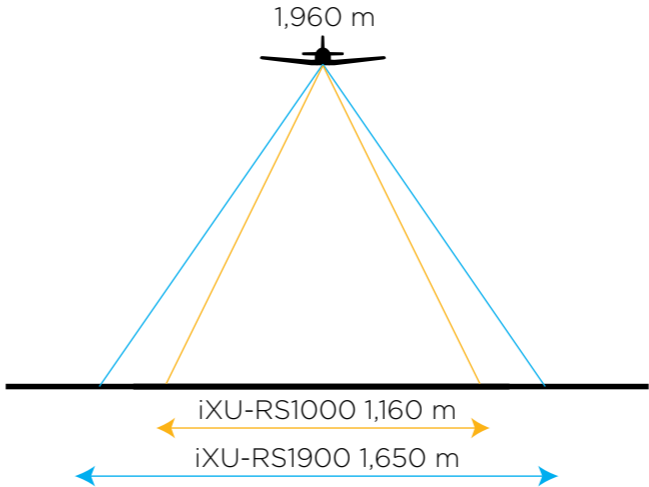
The new camera is characterized by small pixel size (4.6 μ), large image area (190 MP), high image capture rate of 0.6 sec and exposure time of up to 1/2000, a focal length of 90 mm, and optional NIR channel.

The iXU-RS1900 relatively small size, light weight and low power consumption makes it compatible with all types of light aviation vehicles. These factors significantly reduce the operational costs of mapping projects, and make it an ideal camera for use as a standalone camera for photogrammetric work, as a component for LIDAR systems and a NADIR camera for Oblique systems, or as part of an array of multiple cameras.

Extended Coverage, Enhanced Productivity

The Phase One iXU-RS1900 is built with dual 90mm lenses for capturing RGB information. This advanced optical integration and software development enable the generation of a 190MP single central projection image from two 100MP nadir images with equal ground resolution.

Each sensor provides an image with 8,708 pixels across flight and 11,608 pixels along flight, and the two stitched images form a large frame with 16,470 pixels across the flight line and 11,540 pixels along the flight line, providing a 190MP image.



Phase One RS Shutter Setting New Records

The iXU-RS1900 is equipped with an RS Lens central Shutter which is built on an innovative direct drive concept with electronic charging. The RS shutter enhanced exposure speed guarantees half a million (500,000) exposures - a record breaking capture rate and life span longer than ever seen before.

The blades in the RS shutter are produced of specially made carbon fiber material, as used in the aerospace industry, driven by a linear motor and controlled in real time for absolute precision of exposure time.

The reliable performances of the RS Shutter enable faster flying, and allow customers to execute and manage the most demanding aerial photography missions with higher operational efficiency, reliability, and in a more cost effective manner.



Phase One 190MP Aerial System

Phase One Industrial designed a powerful and fully integrated 190MP aerial system that enables customers to execute mapping projects – faster and in a more efficient manner. The system integrates state-of-the-art hardware and software components, including:

iX Controller MK III

The iX Controller is a rugged, fanless PC that acts as a central hub of the Phase One 190MP Aerial System. It controls the camera, the gyro-stabilizing mount, the GNSS/IMU system and runs the capture application and the flight management system. It utilizes the new I/O port, which enables accurate activation of multiple cameras by a flight management system installed on the controller.

The iX Controller has a single power input connected to the power source on the aircraft, and multiple power output for the different cameras. It also contains two 0.5TB SSD, capable of storing thousands of images.

The iX Controller supports dual monitors so both the pilot and the operator are able to monitor and observe different views of the setup in parallel.



iX Capture

The iX Capture is an aerial capture, control and image processing software with an intuitive interface that displays key information such as exposure settings, histogram, GNSS/IMU data and frame count. It provides the operator with real-time feedback and the confidence that each image has been captured correctly.



Gyro Stabilized Mount

SOMAG DSM400 - was specifically designed for the Phase One 190MP Aerial System. With low weight of 14 kg and high payload of 35 kg, the mount supports the reduction of the angular rate, provides optimal stabilization of the system and allows efficient and precise image capturing at any flight conditions.

GNSS/IMU system

The Phase One 190MP Aerial System is equipped with an Applanix' POS AV system that enables direct georeferencing of aerial images. By integrating precision GNSS with inertial technology, POS AV enables precise determination of position and attitude, as well as the completion of geospatial projects in a more efficient and cost effective manner.

*The Phase One 190MP Aerial System is also compatible with additional GNSS/IMU systems.

Flight Management System

Controlled and operated with ease, TopoFlight flight management system integrated into the Phase One 190MP Aerial Camera System enables the planning, positioning and sensors' management / triggering - reducing aerial survey operational costs and increasing productivity.

**The Phase One 190MP Aerial System is also compatible with additional Flight Management systems.

The 4-Band Configuration

Phase One is expanding the camera's performance, offering additional configuration for simultaneous capturing RGB and NIR images. The iXU-RS1900 4-Band comprises dual 90 mm lenses for capturing RGB information, and a 50 mm lens for capturing NIR information and thus providing 4-Band (R,G,B,NIR) or CIR imagery.

The integrated iX Capture software automatically generates distortion-free 4-Band images by performing an accurate matching of NIR image to an RGB image, creating precise and reliable output data.

iX Capture outputs the following products in both TIFF and JPG formats:

- 4-Band RGB+NIR (RGBN)
- 3-Band CIR (Color Infra Red)
- NDVI (Normalized Difference Vegetation Index)
- Distortion-free / corrected RGB
- Distortion-free / corrected NIR

iXU-RS 190 MP Aerial System's Unique Capabilities

- Large image coverage
- Aerial survey productivity increased by 43% (versus 100MP platforms)
- High stereoscopic accuracy due to large FOV along flight
- Flight at higher speed due to highly sensitive CMOS sensors and very short exposure time
- Large forward overlap for 3D City modeling and denseDSM due to high image capture rate
- Small size and light weight enable the use of light aircraft for mapping



Technical Specifications

	iXU-RS1900	iXU-RS1900 4-Band
Frame geometry	Central projection	
Image size (pixel)	16,470 x 11,540	
Image volume (MP)	190	
Color	RGB	RGB, NIR, CIR, 4-band
Pansharpen ratio	N/A	1:1.8
Frame width for 10 cm GSD (m)	1,647	
Frame height for 10 cm GSD (m)	1,154	
Frame area for 10 cm GSD (sq.km)	1.92	
Typical image size (MB) For TIFF	570	760
Image format	PhaseOne RAW, Undistorted TIFF, JPG	

Lenses type	Rodenstock	
Number of lenses	2	3
Focal length (mm)	90	90 & 50
FOV (across flight, deg)	45.7	
FOV (along flight, deg)	33.0	
Aperture	f/5.6	
Exposure principle	Leaf shutter	
Exposure (sec)	1/2000 to 1/125	
Image capture rate (sec)	0.6	
Light Sensitivity (ISO)	50-6400	
Dynamic Range (db)	>84	
NIR Options	N/A	Option 1 – from 720 nm Option 2 – from 830 nm
Events synchronization speed (µsec)	100	

Sensor Specifications

Sensor type	CMOS	CMOS
Sensor number	2	3
Pixel size (µm)	4.6	
Array (pixel)	11,608 x 8,708	
Analog-to-digital-conversion (bit)	14	

Flight Specifications

Maximal ground speed for 10 cm GSD with motion blur under 1 pixel (knot)	385
Maximal forward overlap for 10 cm GSD at 150 knot (%)	96
Maximal orthophoto angle for 20% side overlap (deg)	37
Flight altitude for 10cm GSD (feet)	6400

iXU-RS1900

Operating Conditions

Power input (V)	12-30 V DC
Maximal Power consumption (W) – camera only	20W
Humidity (non-condensing, %)	15 to 80
Temperature (°C)	-10 to 40

Mechanical Specifications

iXU-RS1900	
Total weight (kg/Lb)	4.7 / 10.3
Size (WxHxL, cm)	22.5 x 9.7 x 21.8
Connection to Pod	Six M4 bolts
Approvals	FCC (Class A), CE, RoHS
iX Controller MKIII	
On-board storage capacity (TB)	1.0
On-board storage type	SSD
On-board storage exchangeability	Yes

Optional Interfaces

Pilot monitor for navigation	Yes
Operator monitor for camera management	Yes
Gyro-stabilizer	SOMAG DSM400
INS/GNSS	Applanix, NovAtel, and more
iX Controller MKIII	Up to 6 separate USB3 ports Power and Control Outputs - Camera, GNSS, Mount

*Mechanical Central Shutter with up to 500,000 cycles

**RGB – Red/Green/Blue; NIR – Near Infra-Red; CIR – Color Infra-Red; 4-band – RGB&NIR

***SSD – Solid State Drive

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About Phase One

Phase One A/S is based in Copenhagen with offices in Colorado, New York, London, Cologne, Tokyo, Tel Aviv and Hong Kong. Phase One Industrial is a division of Phase One and is dedicated to research, development and manufacturing of advanced hardware and imaging software solutions that meet the unique requirements of aerial photography users.

To find out more about Phase One Industrial products, please visit industrial.phaseone.com and set up an appointment with one of our aerial photography experts for a demonstration.

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