PHASEONE
INDUSTRIAL

iXA SYSTEM

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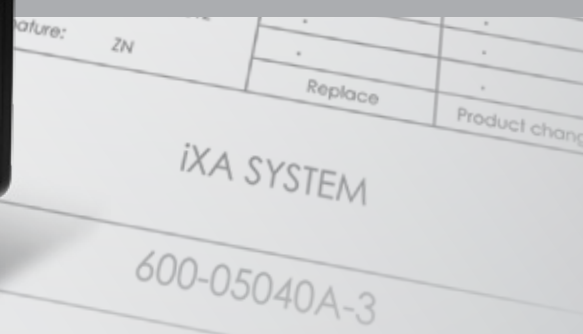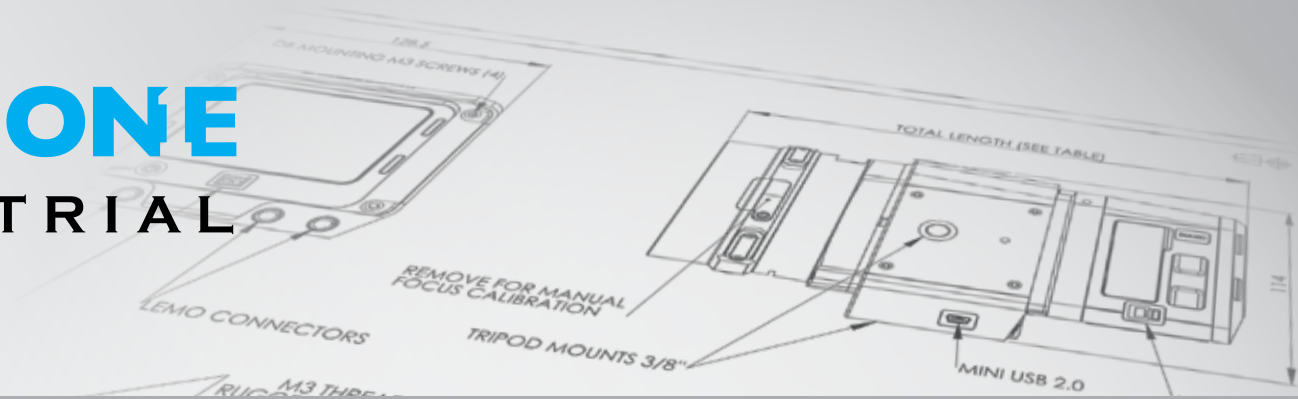
Phase One iXA-R Camera
Fully Integrated Aerial Photography Solutions

Phase One iXA-R Camera System

The Phase One iXA-R aerial camera system is an integrated medium format camera system that was designed from the ground up exclusively for aerial photography.

Developed with leading experts and engineers in the field, the iXA-R is built to meet the exacting needs of aerial photography and streamline the entire capture and processing workflow.

With a choice of 80 megapixel, 60 megapixel or Achromatic models, the iXA-R is designed to easily incorporate into existing or new systems, making it the perfect solution for integrators or end users looking for a rugged, high-quality industrial-grade aerial camera system. The medium format solution offers exceptional image quality and features that rival large-format cameras at a fraction of the price.

The Phase One iXA-R camera, built as an integrated system offers high dynamic range and detailed image quality that only high resolution, medium format systems can produce. Images are captured as fast as one per 1.25 seconds and are processed using one of several Phase One software solutions that can also enhance the images and perform file correction on the raw images to further enhance their quality.

Extended Optic Range

Phase One has extended the lens range by adding the iXA-R camera with three new focal lengths — 40 mm, 50 mm and 70 mm. The enhanced lenses are built by German lens manufacturer, Rodenstock. Each lens/shutter combination is adapted for aerial photography and offers low distortion, high MTF, excellent contrast and the ultimate in transmission. When finished, each lens is individually inspected, calibrated for infinity focus and tested to ensure edge to edge sharpness across the sensor.

The lenses, which are easily changed in the field, are outfitted with internal electronically controlled leaf shutters, guaranteeing the image quality expected from a dedicated aerial photography camera.

There are three lenses to choose from:

o Rodenstock 40 mm f/4.0

o Rodenstock 50 mm f/4.0

o Rodenstock 70 mm f/5.6

The range of lenses covers most uses and are suitable for creating DTMs and DSMs for mapping as well as Orthophotos. The 50 mm lens, with its opening angle of 56.4 ° is especially suited for capturing images alongside a LiDAR.
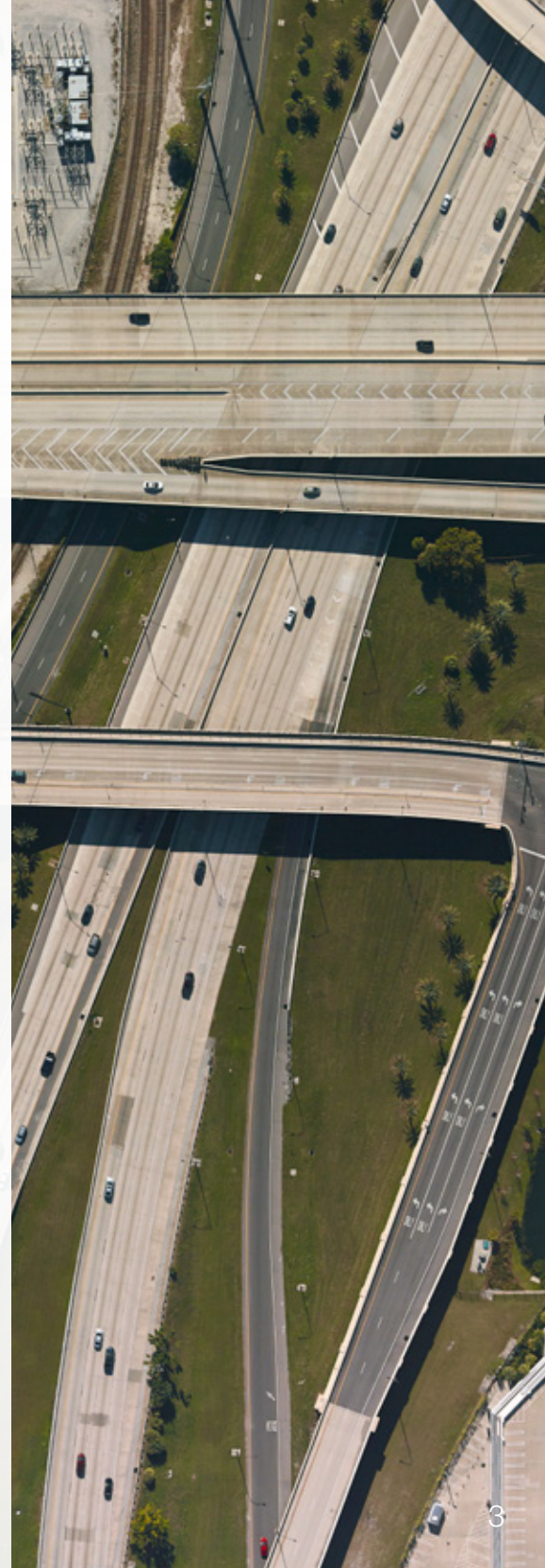
Forward Motion Compensation

The Phase One FMC solution employs Time Delayed Integration (TDI) to compensate for image blurring occurring as a result of slower shutter speeds, faster flight speeds or higher GSDs. This enables more flexibility when determining flight schedules and enhanced image quality under low light conditions.
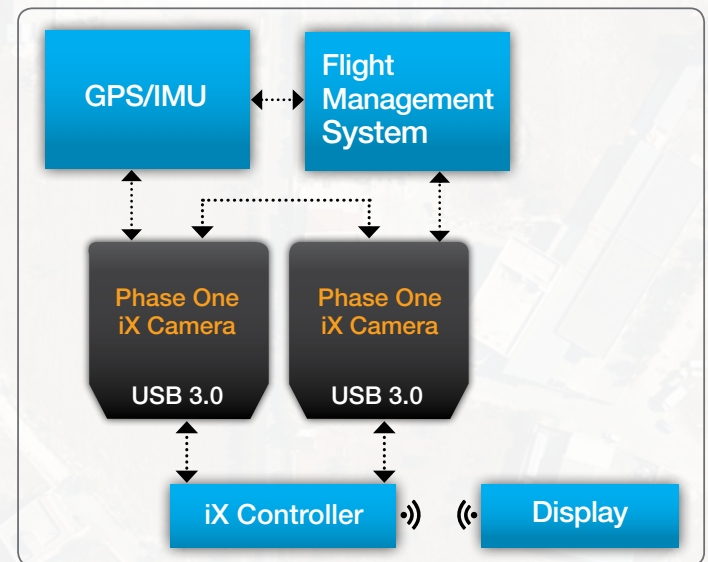
The FMC option enables increased profitability through the ability to fly more days and under less optimal light conditions, compensating for issues with blurring and smearing.

The Phase One iXA-R FMC option is sold either as an option on a new system or as an upgrade to an existing camera and is available for use with the 80 and 60 MP camera systems as well as the 60 MP Achromatic cameras.

Multiple Camera Configuration

The iXA-R camera system is a truly scalable system, allowing you to adapt to different needs and scale the system to match diverse requirements. Whether the need is a single camera for small area mapping, or a two-, four-, five- or more camera configuration for large area mapping, the iXA-R is the perfect camera to use to build your solution.

Use the iXA-R by itself or in a multiple camera configuration to capture synchronized images and eliminate post production sync issues. The cameras are daisy-chained together to reduce unnecessary cabling and simplify connectivity with the FMS, GPS and iX Controller.

GPS/IMU

Flight Management System

Phase One iX Camera
USB 3.0

Phase One iX Camera
USB 3.0

iX Controller

Display

Hardware and Software Solutions

Phase One offers a choice of hardware and software solutions to enable the integration of the camera with your existing workflow.

Phase One iX Controller

Phase One introduced the iX Controller as the perfect companion for the iX Capture application or SDK-based application and the Phase One iXA-R camera.

Designed to provide the ultimate in speed, and with the ability to control multiple Phase One aerial cameras, the iX Controller is a rugged, fanless PC, based on the 4th Generation Intel® Core™ i7 Processor.

With a small footprint and easily integrated into any aircraft, the Phase One iX Controller acts as a central hub of your aerial camera system controlling multiple cameras.
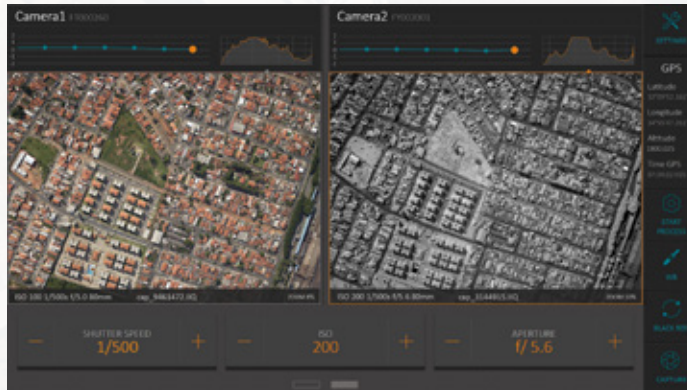

Image capture

The iX Capture application enables complete control over the iXA-R. It contains all the essential tools, in a single package, to control the camera's settings, capture images, monitor and evaluate image captures throughout the flight and store all images.

The iX SDK provides the tools for you to build your own custom application. Using the SDK, you can control the camera as with iX Capture. With the iX SDK you have a high degree of control of which parameters to apply while capturing or processing images.

Image processing

Phase One also offers a choice of software solutions for image processing:

Capture One software is the raw converter for ultimate image quality. It contains all the essential tools, in a single package, to enable you to organize, edit, process and convert images to industry standard formats, such as TIF and JPG.

Capture One Processing Engine (COPE) provides components for you to automate image processing with your settings. Batch process files with specific parameters including lens correction and save images in industry standard formats. Using COPE, post-processing can happen in parallel to the capture process, saving valuable time on the ground.

Lens Range

Phase One has integrated three lenses with the iXA-R cameras. The lenses are interchangeable between Phase One iXA-R cameras and are factory calibrated to infinity focus.

Lenses	Rodenstock 40 mm f/4.0	Rodenstock 50 mm f/4.0	Rodenstock 70 mm f/5.6
Opening angle in FD	53.5 °	43.9°	32.1°
Opening angle cross FD	67.7 °	56.4 °	41.9 °
Recommended working aperture	5.6 - 8	5.6 - 8	5.6 - 8
Filter thread size	M 67 x 0.75	M 67 x 0.75	M 58 x 0.75

Technical Specifications

Camera type	Medium format camera for aerial photography
Lenses	Rodenstock lenses 40 mm, 50 mm, 70 mm
Lens mount	Phase One dedicated mount
Shutter speed	- Focal plane: up to 1/4000 second - Leaf shutter: up to 1/1600 second
Shutter control	1/3 f-stop increments
Interfaces	- USB 3.0 - FireWire 800 - Secured power input (LEMO) - Camera trigger - Mid-exposure pulse - Camera status - iX Link
GPS/IMU support	Applanix, NovAtel, NMEA Devices
Forward Motion Compensation	TDI controlled
Data storage	- 1 TB SSD storage (optional iX Controller) - CompactFlash card Type I/II including UDMA 6 and 7

	iXA-R 180	iXA-R 160	iXA-R 160 Achromatic
Resolution	10328 x 7760 (80 MP)	8984 x 6732 (60.5 MP)	8964 x 6716 (60 MP)
Dynamic range	>72 db		
Image quality	16 bit		
Aspect ratio	4:3		
Pixel size	5.2 micron	6.0 micron	6.0 micron
CCD size effective	53.7 x 40.4 mm	53.9 x 40.4 mm	53.8 x 40.3 mm
Lens factor	1.0		
Light sensitivity (ISO)	35-800	50-800	200-3200
Capture rate			
Full resolution	0.7 frame/second	0.8 frame/second	0.8 frame/second
RAW File compression	IIQ large: 80 MB IIQ small: 54 MB	IIQ large: 60 MB IIQ small: 40 MB	IIQ large: 60 MB IIQ small: 40 MB

Lens + technology optimizes	- Color cast - Light falloff - Chromatic aberration - Fringing - Sharpness falloff - Lens distortion
Output format	Phase One Raw, TIF & JPG
Post processing	- iX Capture - Capture One Pro - Capture One Processing Engine
IR cut-off filter	Camera system available either with or without IR filter
Connection to pod	Four M4 bolts
Tripod sockets	Two 3/8 inch
Power input	12 – 30 V DC
Maximum power consumption	20 W
Dimensions (excluding lens)*	128.5 x 114 x 137 mm / 5.06 x 4.48 x 5.39 in (W x H x D)
Dimensions (including lens 40)*	128.5 x114 x 190.5 mm / 5.06 x 4.48 x 7.5 in (W x H x D)
Dimensions (including lens 50)*	128.5 x 114 x 199 mm / 5.06 x 4.48 x 7.83 in (W x H x D)
Dimensions (including lens 70)*	128.5 x 114 x 191 mm / 5.06 x 4.48 x 7.51 in (W x H x D)
Weight (camera and lens)	iXA-R 40 2.6 kg / 5.6 lb iXA-R 50 2.6 kg / 5.6 lb iXA-R 70 2.4 kg / 5.2 lb
Approvals	FCC (Class A), CE, RoHS
Operating Conditions	
Temperature	-10° to 40°C (14° to 104°F)
Humidity	15 to 80% (non-condensing)

* 2 D and 3D drawings for integration of cameras are available from http://industrial.phaseone.com/downloads

About Phase One

Phase One A/S is based in Copenhagen with offices in New York, London, Cologne, Tokyo and Hong Kong. Phase One Industrial is a division of Phase 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 products, please visit http://industrial.phaseone.com and set up an appointment with one of our aerial photography experts for a demonstration.

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