Phase One iXA Camera System

Fully Integrated Aerial Photography Solutions

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The Phase One iXA 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 is built to meet the exacting needs of aerial photography and streamline the entire capture and processing workflow. The camera is a major addition to the current aerial implementations that Phase One already provides to partners in the industry.

With a choice of 80 megapixel or 60 megapixel models, the iXA 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.

High Resolution Images

The Phase One iXA camera, built as an integrated system offers high dynamic range and detailed image quality that only high resolution, medium format systems can produce. The iXA, combined with either Schneider-Kreuznach fast sync lenses with internal electronically controlled leaf shutters or Phase One digital lenses, guarantees the image quality expected from a dedicated aerial photography camera. Lenses, which are easily changed in the field, have special secure lens holders attached to them to secure them to the camera, ensuring edge to edge sharpness across the sensor.

- **Ultimate image sharpness** – Phase One's extensive array of lenses, including Schneider-Kreuznach fast sync and digital lenses.
- **Dynamic range** – Phase One digital technology makes 72 db (12.5 f-stops) dynamic range possible and enables the capture of details that might normally have been lost in extreme shadows or highlights.
- **Excellent color and detail** – Advanced algorithms provided by Phase One's software combined with DALSA CCD sensors guarantee faithful recording of even the smallest details.

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.

Photo courtesy Hawker Beechcraft Corp.

Tailor-Made for Aerial Photography

The Phase One iXA aerial camera system is easily integrated into existing systems, both onboard the aircraft and in post production. Simply plug it into the aircraft's power bus or any other 12-30 V DC source for a reliable source of power.

The camera facilitates bi-directional communication with the flight management system (FMS) and an onboard computer, sending and receiving signals to trigger the camera and indicate the status of the capture sequence. Running the Phase One SDK on the host computer enables setting up the camera as well as status indication of the remote capture and storage of the images.

Built as a modular system, the iXA provides the flexibility to perform under a variety of conditions making it a natural choice for integration into large or small configurations. These choices include:

- 80 megapixel or 60 megapixel versions
- Camera systems are available with RGB or NIR sensor modules
- A wide selection of lenses (28 mm to 240 mm) allows for a greater choice of flight altitudes and fields of view to satisfy any assignment
- Focal plane shutter speeds up to 1/4000 second or leaf shutter speeds up to 1/1600 second*
- Multiple software solutions

Multiple Camera Configuration

The iXA 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 is the perfect camera to use to build your solution.

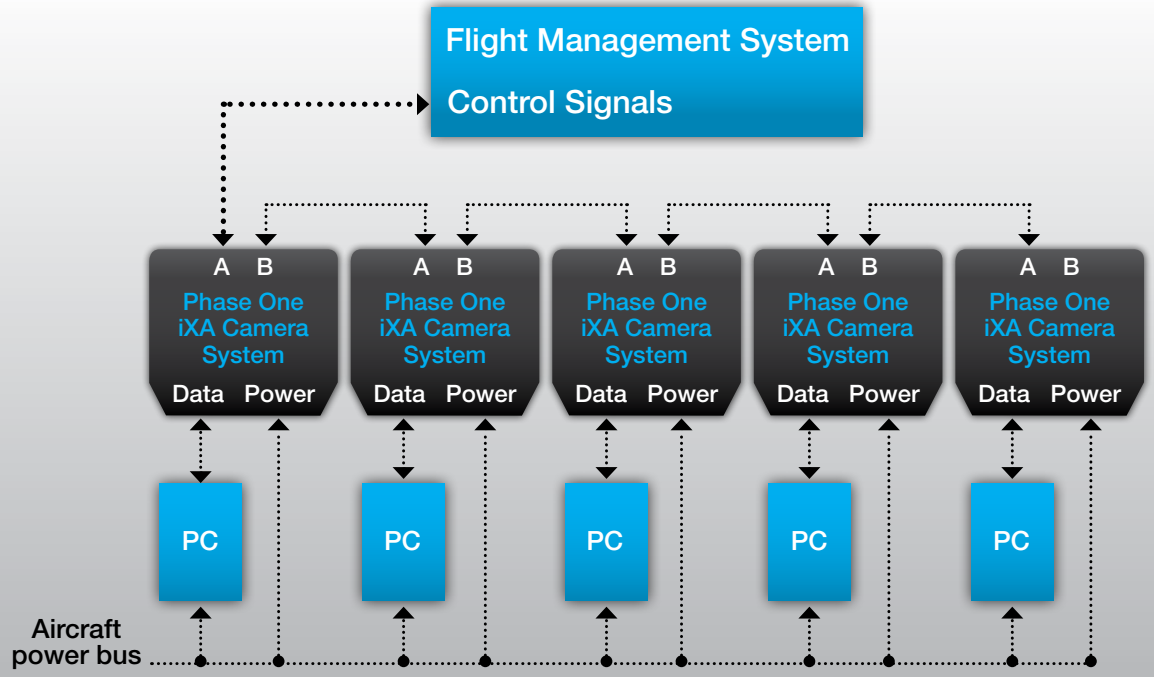
Use the iXA by itself or in a multiple camera configuration, capturing synchronized images within 100 microseconds of each other and eliminating post production sync issues. The cameras are daisy-chained together to reduce unnecessary cabling and simplify connectivity with the FMS and host computers.

To ensure a rapid synchronization speed in multiple camera configurations, Phase One has introduced a line of Schneider-Kreuznach fast sync lenses that are calibrated in the factory for aerial photography. The lenses have electronically controlled leaf shutters to provide precise exposure and are available in various focal lengths.

Image storage

The camera offers two image storage options:

- **Onboard computer**, connected via FireWire 800 or USB 3, can store all the images taken on a flight. The storage capabilities of a PC enable large amounts of images to be taken, enabling longer flight durations.
- **Stand-alone mode** also uses the Phase One Capture SDK to control the camera, but storage is directly to the camera using a CompactFlash card. This solution makes the iXA perfectly suited for unmanned aerial vehicle (UAV) use.



Rugged and Built to Last

The Phase One iXA is a rugged, dedicated aerial camera system, not assembled from off-the-shelf parts and is especially built to withstand the tough demands and abuse of airborne systems.

The compact camera body is constructed of 6061 aluminum alloy, known for its balance of toughness, lightness and strength. Constructed as a real workhorse with long life, the camera is built with fewer moving parts to reduce unnecessary wear that can cause a camera to fail. Removable parts are securely connected to prevent movement or vibration.

Weighing in at just 1.6 kg / 3.5 lb (without lens), the compact iXA has a very small footprint, contributing to the aircraft's fuel economy, making it highly suited for integration with small-payload needs, such as UAV applications. Running in stand-alone mode, the iXA captures images and saves them directly to an internal CompactFlash card.

What makes the iXA stand out from other aerial cameras is the ruggedness and attention to detail. The camera system includes features such as:

- LEMO connectors — self-locking connectors make sure that cables stay securely connected to where they are supposed to be.
- Mirror-free system — no mirror means fewer moving parts to ensure minimal vibrations, longevity and reduced need for frequent maintenance.
- Solid bolting of camera — the iXA is bolted to the pod with four M4 screws to prevent any movement from vibrations.
- Secure lens holder — eliminates any play in lens bayonet mount and secures lens at infinity focus.
- Constant aperture — lens remains at stopped-down aperture settings between shots, reducing vibration and unnecessary wear on the lens.
- Compact, small footprint — can be mounted for vertical or oblique photography, in a variety of positions or integrated into different sized pods.
- Easily interchangeable lenses — easily changed in the field, enabling flexibility in flight altitude and field of view.
- Shutters for all applications — with two shutters, the iXA shoots up to 1/4000 second with its focal plane shutter or up to 1/1600 second with a leaf shutter in the Schneider-Kreuznach fast sync lenses.*

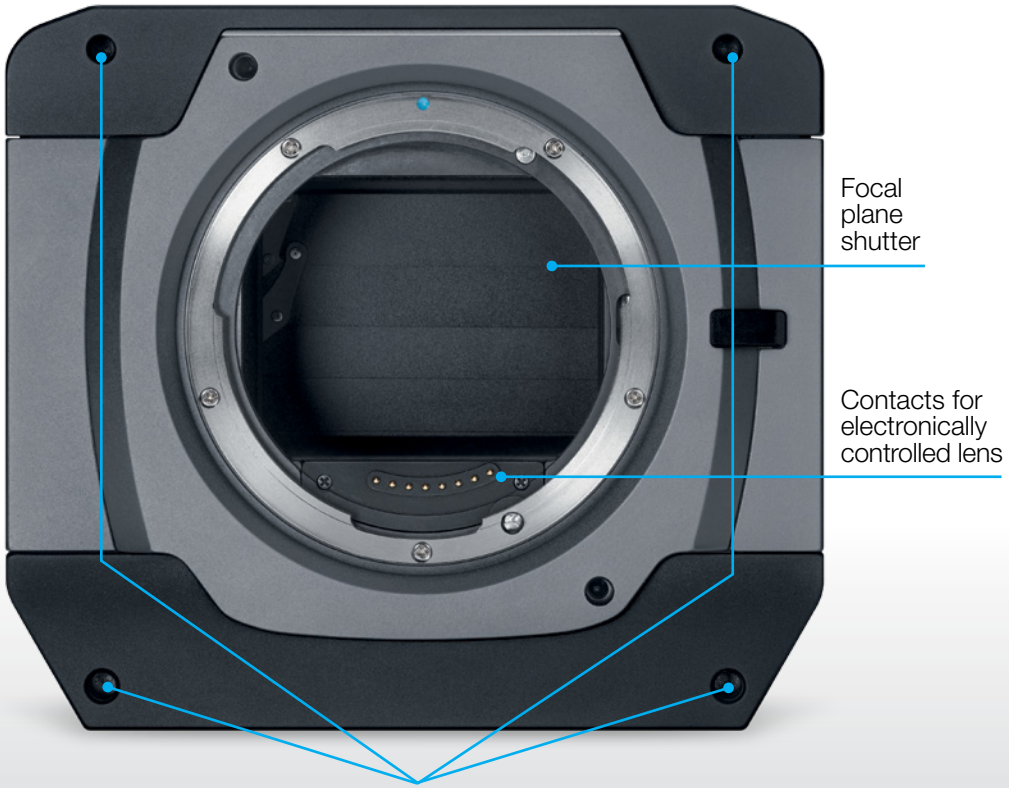


Photo courtesy DTEK Systems UK

Software Solutions for Every Scenario

Flexibility features also extend to the software that is used to drive the camera and control the processing of images. Phase One offers a choice of software solutions that enable the integration of the iXA camera with your existing workflow and utilize the power of a system built to extend the capabilities of medium format aerial cameras.

Image capture

The Phase One SDK gives you the tools to manage all of the camera's exposure parameters such as ISO, shutter speed, aperture and capture during the flight. Equipped with bi-directional communication ports, the camera is able to send and receive control signals to the FMS for total control. Use the Phase One SDK to build custom applications for image capturing and processing with the iXA camera system. With the Phase One SDK you have a high degree of control of what parameters to apply while capturing or processing images. The Phase One SDK includes interface components for your custom applications to work with the iXA camera system in a production set up.

In addition, the Phase One SDK includes reference documentation and sample applications for guidance and inspiration. The Phase One SDK is available for Windows and Mac OS X platforms.

Included with the Phase One SDK is also free access to SDK updates and online support.

Image processing

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

The Phase One SDK includes components for you to automate image processing with your settings through Capture One's processing engine, without a need for loading or navigating the standard user interface of Capture One. Batch process files with specific parameters (e.g. exposure + 1, white balance at 5500 Kelvin), simultaneously making use of Phase One's Lens+ technology to analyze the image and the lens characteristics and calculate an appropriate correction. With Lens+, not only will the aberration be handled, but also the pixels corrected and refitted in a way that optimizes the image into a perfect photo where all pixels are placed correctly upon each other. Using the Phase One SDK, post-processing can happen in parallel to the capture process, saving valuable time on the ground.

Capture One software is the raw converter for ultimate image quality. Capture One DB 6 is a professional RAW converter and image editing software. It contains all the essential tools, in a single package, to enable you to capture, organize, edit, share and print images in a fast, flexible and efficient workflow. Capture One DB 6's powerful and intuitive toolset is used to achieve world-class image quality with excellent color and detail and an option for processing images individually or in a batch, without the need for an SDK.

Accessories and Lenses

What's in the box?
iXA 180 camera system or iXA 160 camera system
Secure lens holder (provides infinity focus)
Camera control cable
Power Cable
Power supply adapter
FireWire 800 cable
Mini-USB cable
USB 3.0 cable
Cleaning kit
Capture One DB software

Optional accessories
Multi sync cable
External release cable
Secure lens holder (additional)

Schneider-Kreuznach fast sync lenses for multiple camera configuration
Schneider-Kreuznach fast sync 55 mm f/2.8
Schneider-Kreuznach fast sync 80 mm f/2.8
Schneider-Kreuznach fast sync 110 mm f/2.8
Schneider-Kreuznach fast sync 150 mm f/3.5
Schneider-Kreuznach fast sync 240 mm f/4.5

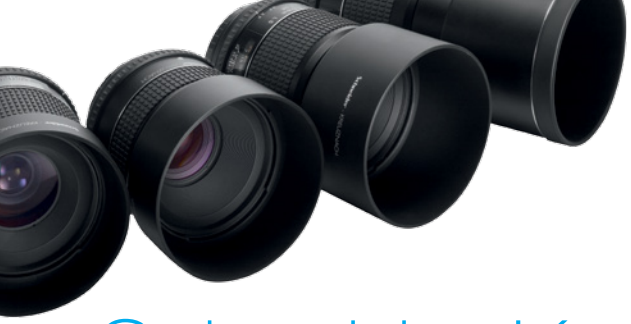
Phase One digital lenses
Phase One Digital AF 28 mm f/4.5
Phase One Digital AF 35 mm f/3.5
Phase One Digital AF 45 mm f/2.8
Phase One Digital AF 80 mm f/2.8
Phase One Digital MF 120 mm f/4.0
Phase One Digital AF 150 mm f/2.8

Technical Specifications

Camera type	Medium format camera for aerial photography
Lenses	- Schneider-Kreuznach fast sync lenses for multiple camera configuration - Phase One digital focal plane lenses
Lens mount	Phase One 645
Shutter speed	- Focal plane: up to 1/4000 second - Leaf shutter: up to 1/1600 second*
Shutter control	1/3 f-stop increments
Sensor module interfaces	- FireWire 800 - USB 3
Camera body interfaces	- Two secured I/O communication connectors (LEMO) - Secured power input (LEMO) - Mini USB connector for updating camera firmware
Data storage	- Onboard computer - CompactFlash card Type I/II including UDMA 6 and 7
Synchronization speed in multiple camera configuration	100 microseconds with factory calibrated lenses

	iXA 180	iXA 160
Resolution	10320 x 7752 (80 MP)	8984 x 6732 (60.5 MP)
Dynamic range	>72 db	
Aspect ratio	4:3	
Pixel size	5.2 micron	6.0 micron
CCD size effective	53.7 x 40.4 mm	53.9 x 40.4 mm
Lens factor	1.0	
Light sensitivity (ISO)	35-800	50-800
Capture rate		
Full resolution	0.7 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

Lens + technology optimizes	- Color cast - Light falloff - Chromatic aberration - Fringing - Sharpness falloff - Lens distortion
Output format	Phase One Raw
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 — on bottom and on left side (25 mm to locking pin hole)
Power input	12 – 30 V DC
Maximum power consumption	20 W
Dimensions (excluding lens)	132 x 114 x 128.5 mm / 5.2 x 4.4 x 5 in (W x H x D)
Weight (excluding lens)	1.7 kg / 3.7 lb
Approvals	FCC (Class A), CE, RoHS
Operating Conditions	
Temperature	-10° to 40°C (14° to 104°F)
Humidity	15 to 80% (non-condensing)
Operating systems / software for Phase One SDK	Windows 7® Mac OS X 10.6 or later



Schneider-Kreuznach Fast Sync Lenses for Multiple Camera Configuration

Phase One's entire range of both Schneider-Kreuznach leaf shutter lenses and focal plane lenses are fully integrated and compatible with the iXA camera system.

Lenses	Schneider-Kreuznach fast sync 55 mm f/2.8	Schneider-Kreuznach fast sync 80 mm f/2.8	Schneider-Kreuznach fast sync 110 mm f/2.8	Schneider-Kreuznach fast sync 150 mm f/3.5	Schneider-Kreuznach fast sync 240 mm f/4.5
Angle of view	64°	47°	29°	26°	16.5°
35 mm focal length equivalent	35 mm	51 mm	71 mm	96 mm	149 mm
Dimensions	77.6 x 86.5 mm / 3 x 3.4 in	64.4 x 86.5 mm / 2.5 x 3.4 in	83.3 x 86.5 mm / 3.2 x 3.4 in	87.1 x 86.5 mm / 3.4 x 3.4 in	169 x 104.5 mm / 6.7 x 4.1 in
Filter thread size	72 mm	72 mm	72 mm	86 mm	86 mm
Weight	600 g / 1.3 lb	500 g / 1.1 lb	700 g / 1.5 lb	652 g / 1.43 lb	1600 g / 3.50 lb

*240 mm leaf shutter speed is 1/1000s.

Phase One Digital Lenses

Lenses	Phase One Digital AF 28 mm f/4.5	Phase One Digital AF 35 mm f/3.5	Phase One Digital AF 45 mm f/2.8	Phase One Digital AF 80 mm f/2.8	Phase One Digital MF 120 mm f/4.0	Phase One Digital AF 150 mm f/2.8
Angle of view	102°	90°	74°	47°	33°	26°
35 mm focal length equivalent (iXA 180 and iXA 160)	18 mm	22 mm	29 mm	51 mm	77 mm	96 mm
Dimensions	136 x 90 mm / 5.35 x 3.54 in	62 x 84 mm / 2.4 x 3.3 in	49.5 x 77 mm / 1.9 x 3 in	51.5 x 80.5 mm / 2 x 3.2 in	111 x 83 mm / 4.4 x 3.25 in	120 x 85 mm / 4.7 x 3.3 in
Filter thread size	Gelatin filter frame	77 mm	67 mm	67 mm	67 mm	72 mm
Weight	886 g / 1.9 lb	480 g / 1.0 lb	492 g / 1.1 lb	330 g / 0.7 lb	835 g / 1.8 lb	780 g / 1.7 lb

DTEK Systems UK

About Phase One

Phase One is the world's leader in open-platform based medium format camera systems. Phase One cameras, digital backs and lenses are used by photographers around the world for fashion, architecture, food, product, fine art, museum and archive photography. For years, Phase One has partnered with leading companies in the aerial photography industry, providing critical components for systems that have successfully logged millions of exposures.

Phase One takes pride in delivering superior service and support to ensure unparalleled reliability that lets you stay focused on photography. Phase One offers 365 days round the clock support delivered online and backed up by our dedicated partners and a global support team.

Phase One representatives will be happy to advise you on the best solution for your needs. To find out more about the Phase One iXA, please visit http://industrial.phaseone.com and set up an appointment with one of our aerial photography experts.

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