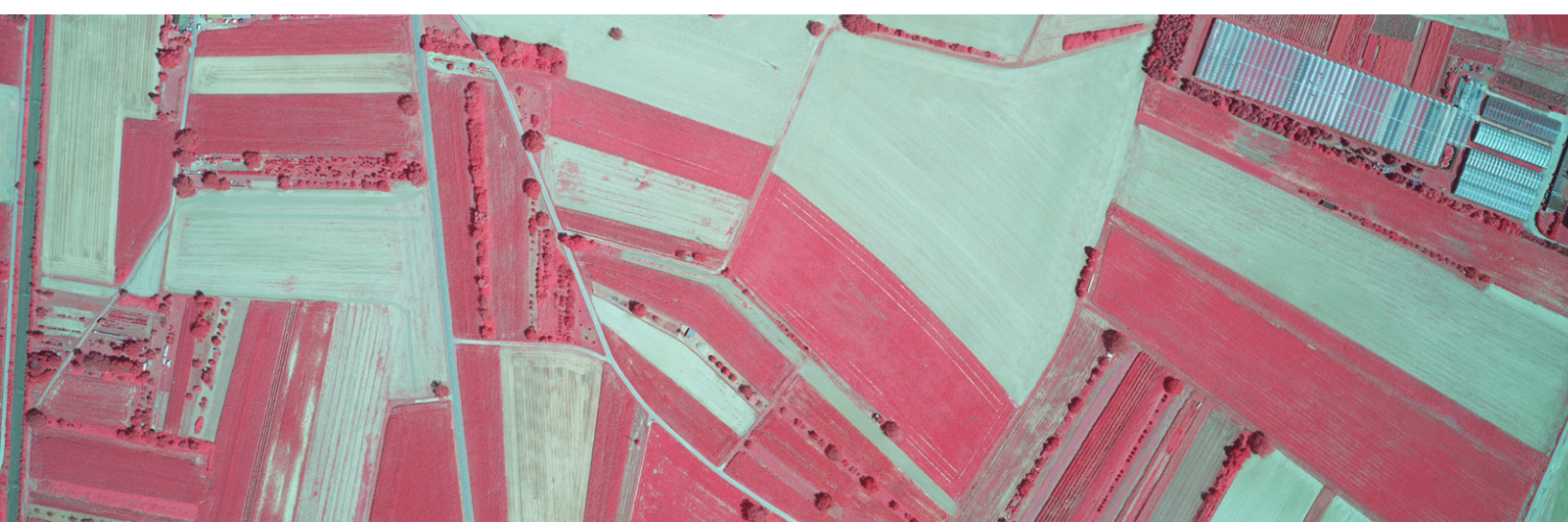# Phase One

4-Band Solution

PHASE**ONE**

Capture 150MP 4-Band imagery

With the increasing demand for combined NIR and RGB aerial imagery for applications such as crop analysis for growth optimization, vegetation health and environmental contamination, as well as projects including city observation for green site monitoring, Phase One has developed a fully automatic solution for capturing and processing 4-Band multispectral imagery*. The 4-Band solution is specifically designed for the photogrammetric airborne market, using two high-resolution, Phase One aerial cameras.

Simplifying your workflow

The 4-Band solution includes two synchronized Phase One metric calibrated cameras (RGB and Achromatic) mounted side by side on a specially designed base plate, an iX Controller computer and the iX Capture software.

The software automatically generates distortion-free images and performs fine co-registration of pixels from the NIR to the RGB images, including processing different image sizes.

Aside from the horizontal mount, shown above, you also have the option of performing a vertical mount.

The cameras are calibrated separately. This means you can use any one of the cameras for other projects and later return it to the blue mounting plate.

The users can generate the following products:

- 4-Band combined NIR and RGB (RGBN) TIFF (4-Band CIR)

- 3-Band combined NIR and RGB (NRG) TIFF (3-Band CIR)

- NDVI (Normalized Difference Vegetation Index) TIFF

- Distortion-free / corrected RGB TIFF

- Distortion-free / corrected NIR TIFF

- RGB TIFF

- NIR TIFF

One solution for multiple applications

- The perfect choice for any 4-Band precise requirements.

- Cost effective solution

- Flexible: two cameras that can be used in different combinations (together or stand-alone) for varied simultaneous projects

- Lightweight and compact: easy to install in small aerial platforms

- Simple workflow, reducing hours spent post-processing

- Reliable output: accurate high resolution images

*Configuration options: 150MP / 100MP

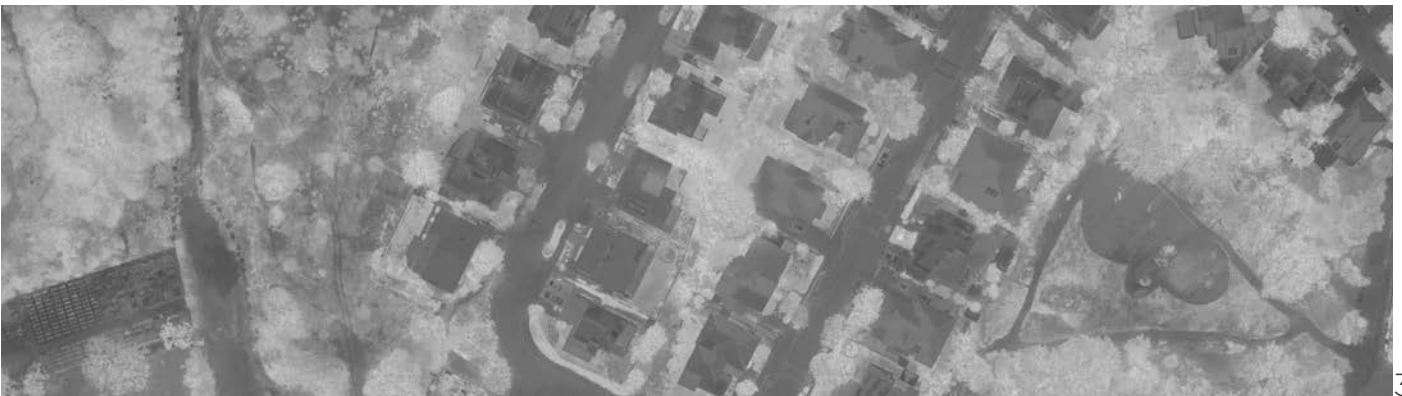Upgrade options available for existing camera customers

RGB Image

NIR Image

CIR Image

NDVI Image

Technical Specifications

	150MP	100MP
Frame geometry	Central projection	
Resolution	150MP 14204 X 10652	100MP 11608X8708
Sensor Type	CMOS	
Image formats	PhaseOne RAW IIQ-L, IIQ-S	
Output formats	Distortion Free RGB, NIR, CIR, RGBN, NVDI in TIFF 8 and 16 Bit or JPEG	
Pansharpen ratio	1:1	
Frame width for 10 cm GSD (m)	1420	1161
Frame height for 10 cm GSD (m)	1065	871
Frame area for 10 cm GSD (sq.km)	1.51	1.01
Typical image size (MB) for TIFF (8 Bit)	3 Band: 450 / 4 Band: 600	

Lenses type	Rodenstock / Schneider-Kreuznach							
Focal length (mm)	32	40	50	70	90	110	150 MK II	180
FOV - across flight (°)	77.8	65	54.6	41.8	33	27.6	20.2	16.9
FOV - along flight (°)	62.3	51	42.3	31.9	25.1	20.9	15.2	12.7
Aperture Range	f/5.6 - 22						f/6.3 - 22	
Exposure principle	Leaf shutter							
Shutter speed (sec)	Up to 1/2500			1/2000	Up to 1/2500		1/2000	
Capture rate (fps)	2.0				1.6			
Light Sensitivity (ISO)	50-6400							
Dynamic Range (dB)	83				84			

	150MP	100MP
NIR Range (nm)	720 - 1000	
Events synchronization speed (µsec)	50	

Flight Specifications		
Maximal ground speed for 5cm GSD at 1/2500 shutter speed with motion blur under 1 pixel (knot)	243	
Maximal forward overlap for 5cm GSD at 150 knot (%)	93	91
Maximal orthophoto angle for 20% side overlap (°)	27 for 90mm focal lens	
Flight altitude for 5cm GSD (Feet)	3925 for 90mm focal length	3200 for 90mm focal length

Operating Conditions	
Power input (V DC)	12-30
Maximal Power consumption (W) – camera only	32
Humidity - non-condensing (%)	15 to 80
Temperature (°C)	-10 to 40
Approvals	FCC (Class A), CE, RoHS

iX Controller MK4	
Interfaces	USB3, Power and Control Ports for Camera, GNSS and Mount
Storage capacity (TB)	1.0
Storage type	SSD
Storage exchangeability	Yes

Optional System Specifications	
System weight (kg/Lb)	31 / 68.5
System size (mm/In)	460 x 430 x 165 / 18.1 x 16.9 x 6.5
Pilot monitor for navigation (In)	7
Operator monitor for camera management (In)	15
Gyro-stabilizer SOMAG	DSM400
GNSS/IMU Applanix	POS AV 210 / POS AV 510
Power consumption	6 Amp at 28V

iX Capture

iX Capture is a professional Capture and processing application that was created exclusively for shooting with Phase One aerial camera systems.

Used together with Phase One aerial cameras, this professional capture and processing software enables full control over one or multiple cameras, enabling an operator to easily monitor and control every aspect of aerial digital data acquisition.

Designed for use with a touchscreen or mouse, iX Capture makes inflight camera changes as easy as tapping a button. It contains all of the essential tools for high-end performance in one package to enable you to capture, monitor and process images in a fast, flexible and efficient workflow.

iX Capture exports raw images to TIFF and JPG files, distortion corrected TIFF images and batch processes.

iX Controller

Designed to enable rapid transfer, the iX Controller MK4 has the abilitiy to control up to six Phase One aerial cameras independently. Built as a workhorse, the system boasts a small footprint and easily integrates into any aircraft.

• 8th Generation intel® Core™ i7 Processor

• Fanless system cooling

• Rugged construction

• 8 GB of RAM

• Single power input and mutiple power outputs for cameras

• Pre-installed with iX Capture, Capture One, iX Flight*

• Two removable SSD with optional RAID system for data mirroring

• Supports triple monitors for parallel monitoring and observation of different views of the setup

RGB image taken with Phase One Aerial Solution

CIR image taken with Phase One Aerial Solution

About Phase One

Phase One A/S is a leading researcher, developer and manufacturer of medium format and large format digital cameras and imaging solutions.

Founded in 1993, Phase One is a pioneer of digital photography. Phase One has developed core imaging technologies and a range of digital cameras and imaging modules, providing the world's highest image quality in terms of resolution, dynamic range, color fidelity and geometric accuracy. As such, Phase One has grown to become the leading provider of high-end imaging technology across many demanding business segments, such as aerial mapping, industrial inspection and cultural heritage digitization, as well as serving the world's most demanding photographers.

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