# 4-Band Solution





# PHASEONE

## 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<sup>\*</sup>. 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 distortionfree 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 standalone) 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: 100 MP, or 80 MP/60 MP Upgrade options available for existing camera customers

### RGB Image



NIR Image



CIR Image



NDVI Image



RGB image taken with Phase One Aerial Solution

31.

-

E

The loss of the second

0

0

11/11

1

CIR image taken with Phase One Aerial Solution



100

-15

1

...

10

-



## Technical Specifications

	iXM-RS150F iXM-RS150F 4-Band				-Band		
Frame geometry		Central projection					
Image size (pixel)	14204 X 10652						
Image volume (MP)		150					
Image formats		PhaseOne RAW, Undistorted TIFF, JPG					
Output formats	Distortion Free RGB in TIFF 8 and 16 Bit or JPEG			Distortion Free RGB, NIR, CIR, RGBN, NVDI in TIFF 8 and 16 Bit or JPEG			
Pansharpen ratio	N/A 1:1.8						
Frame width for 10 cm GSD (m)		1420					
Frame height for 10 cm GSD (m)	1065						
Frame area for 10 cm GSD (sq.km)				1.51			
Typical image size (MB) for TIFF (8 Bit)	450 600						
Lenses type	Rodenstock / Schneider-Kreuznach						
Number of lenses	1			2			
Focal length (mm)	32	40	50	70	90	110	150
FOV - across flight (°)	77.8	65	54.6	41.8	33	27.6	20.8
FOV - along flight (°)	62.3	51	42.3	31.9	25.1	20.9	15.6
Aperture Range	f/5.6 - 11						
Exposure principle	Leaf shutter						
Shutter speed (sec)	Up to 1/2500						
Capture rate (sec)	2.0						
Light Sensitivity (ISO)	50-6400						
Dynamic Range (db)	83						
NIR Range (nm)	N/A			720 - 1000			
Events synchronization speed (µsec)	100						
Ser	nsor Spec	ifications	5				
Sensor type	CMOS						
Sensor number	1			2			
Pixel size (µm)	3.76						
Array (pixel)	14204 × 10652						
Analog-to-digital-conversion (bit)	14						



1 1 13

	iXM-RS150F	iXM-RS150F 4-Band				
Flig	ght Specifications					
Maximal ground speed for 10 cm GSD with motion blur under 1 pixel (knot)	300					
Maximal forward overlap for 10 cm GSD at 150 knot (%)	96					
Maximal orthophoto angle for 20% side overlap (°)	27 for 90mm focal lens					
Flight altitude for 10cm GSD (Feet)	7850 for 90mm focal length					
Operating Conditions						
Power input (V)	12-30 V D	С				
Maximal Power consumption (W) - camera only	16	32				
Humidity - non-condensing (%)	15 to 80					
Temperature (°C)	-10 to 40					
Approvals	FCC (Class A), CE, RoHS					
System Specifications						
System weight (kg/Lb)	8.5 / 19	31 / 68.5				
System size (mm/ln)	290 x 275 x 260 / 11.4 x 10.8 x 10.3					
Pilot monitor for navigation (In)	7					
Operator monitor for camera management (In)	15					
Gyro-stabilizer SOMAG	CSM40	DSM400				
Power consumption	6 Amp at 28V					
iX Controller MK5						
Interfaces	USB3, power and control ports for camera, GNSS and mount					
Storage capacity (TB)	2.0					
Storage type	SSD					
Storage exchangeability	Yes					
Weight (kg/lb)	5.6 /12.3					
Size (mm/in)	290 x 109 x 225 / 11.4 x 4.3 x 8.9					
	AP180 (IMU - 69)					
GNSS/IMU configurations	AP310 (IMU - 82)					
	AP510 (IMU - 91)					
	AP610 (IMU - 57)					



## Technical Specifications

	iXM-RS100F iXM-RS100F 4-Ban				l-Band		
Frame geometry		Central projection					
Image size (pixel)		11608 X 8708					
Image volume (MP)	100						
Image formats		PhaseOne RAW, Undistorted TIFF, JPG					
Output formats	Distortion Free RGB in TIFF 8 and 16 Bit or JPEG			Distortion Free RGB, NIR, CIR, RGBN, NVDI in TIFF 8 and 16 Bit or JPEG			
Pansharpen ratio	N/A			1:1			
Frame width for 10 cm GSD (m)	1161						
Frame height for 10 cm GSD (m)	871						
Frame area for 10 cm GSD (sq.km)	1.01						
Typical image size (MB) for TIFF (8 Bit)	300			400			
Lenses type	Rodenstock / Schneider-Kreuznach						
Number of lenses	1			2			
Focal length (mm)	32	40	50	70	90	110	150
FOV - across flight (°)	77.8	65	54.6	41.8	33	27.6	20.8
FOV - along flight (°)	62.3	51	42.3	31.9	25.1	20.9	15.6
Aperture Range	f/5.6 - 11						
Exposure principle	Leaf shutter						
Shutter speed (sec)	Up to 1/2500						
Capture rate (sec)	1.6						
Light Sensitivity (ISO)	50-6400						
Dynamic Range (db)	84						
NIR Range (nm)	N/A			720 - 1000			
Events synchronization speed (µsec)	100						
Ser	nsor Spec	cification	S				
Sensor type	CMOS						
Sensor number	1 2						
Pixel size (µm)	4.60						
Array (pixel)	11608 × 8708						
Analog-to-digital-conversion (bit)	14						



1 1 13

	iXM-RS100F	iXM-RS100F 4-Band				
Flight Specifications						
Maximal ground speed for 10 cm GSD with motion blur under 1 pixel (knot)	300	300				
Maximal forward overlap for 10 cm GSD at 150 knot (%)	95	95				
Maximal orthophoto angle for 20% side overlap (°)	27 for 90mm fo	27 for 90mm focal lens				
Flight altitude for 10cm GSD (Feet)	6400 for 90mm focal length					
Operating Conditions						
Power input (V)	12-30 V D	С				
Maximal Power consumption (W) - camera only	16	32				
Humidity - non-condensing (%)	15 to 80					
Temperature (°C)	-10 to 40	-10 to 40				
Approvals	FCC (Class A), C	FCC (Class A), CE, RoHS				
System Specifications						
System weight (kg/Lb)	8.5 / 19	31/68.5				
System size (mm/ln)	290 x 275 x 260 / 11.4	4 × 10.8 × 10.3				
Pilot monitor for navigation (In)	7					
Operator monitor for camera management (In)	15	15				
Gyro-stabilizer SOMAG	CSM40	DSM400				
Power consumption	6 Amp at 28V					
iX Controller MK5						
Interfaces	USB3, power and cor camera, GNSS ar	USB3, power and control ports for camera, GNSS and mount				
Storage capacity (TB)	2.0	2.0				
Storage type	SSD	SSD				
Storage exchangeability	Yes	Yes				
Weight (kg/lb)	5.6 /12.3	5.6 /12.3				
Size (mm/in)	290 × 109 × 225 / 11.4 × 4.3 × 8.9					
GNSS/IMU configurations	AP180 (IMU - 69)					
	AP310 (IMU - 82)					
	AP510 (IMU - 91)					
	AP610 (IMU - 57)					



### 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 MK5

The iX Controller MK5 is specifically designed to address the challenges of imaging data acquisition, helping you improve productivity and save you time and money.

The controller comes with custom cables and ample ports to quickly connect up to six cameras, three monitors, a gyro-stabilizer, the Applanix IMU unit, and standard aircraft power supply. The high-capacity data storage SSD trays can be easily accessed or removed for rapid download of image and telemetry data.



- Controls up to 6 cameras and gyro-stabilizing mount
- Rapid data transfer
- High-capacity storage with robust removable dual protective SSD trays
- Simplified aerial system setup with integrated GNSS-Inertial unit
- Direct connectivity with Applanix IMU multiple upgrade options for higher accuracy
- Easy integration with any aircraft
- · Compact, low-power, lightweight, and rugged construction
- Meets airborne environmental operational requirements
- Pre-installed with Phase One capture and flight management software
- Backward compatibility with previous iX Controller setups





### **About Phase One**

is subject to change without notice, 85085000 18.04.2021. Aerial photos in this brochure are for illustrative purposes.

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

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

Roskildevej 39 DK-2000 Frederiksberg Denmark Tel.: +45 36 46 0111 Fax: +45 36 46 0222

#### Phase One USA

Rocky Mountain Metropolitan Airport 11755 Airport Way, Suite 216 Broomfield, CO 80021 USA Tel.: +1 (303) 469-6657

### Phase One Germany

Lichtstr. 43h 50825 Köln Germany Tel.: +49 (0)221/5402260 Fax: +49 (0)221/54022622

#### Phase One Japan Co., Ltd.

#401 ARK HOUSE 17-6 Wakamatsucho Shinjuku-ku, Tokyo 162-0056, Japan Tel: +81-3-6380-2506 Fax: +81-3-6380-2507

#### Phase One Asia Pacific

Unit 503, 5/F., Times Tower No. 928-930 Cheung Sha Wan Road, Lai Chi Kok, Kowloon, Hong Kong Tel.: + 852 28967088 Fax: + 852 28981628





geospatial.phaseone.com

