PAS 280i

The most cost-effective
aerial mapping solution

280MP Aerial System
The standard in large format aerial imaging

With over 20,000 pixels across, light weight, the 280MP Aerial System provides higher return on investment compared to any other large format system available on the market.

The 280MP Aerial System offers the highest image capture rate and dynamic range, increasing the overall quality and accuracy of the final photogrammetric products.

The iXM-RS 280F provides a large format option that easily integrates with the GSM4000 gyrostabilized mount, creating a lightweight system for use in a wider range of aircraft.

The iXM-RS 280F is a dual-lens metric camera, with 90mm lenses for capturing RGB information, and providing superior image quality. The 280MP camera generates a central projection image from two 150MP nadir images with equal ground resolution.

The aerial system is comprised of our dedicated controller with GNSS-inertial; an IMU unit; a Somag gyro-stabilized mount (DSM4000) and the Phase One new generation iX Suite software (iX Plan, iX Flight Pro and iX Process), providing the user best quality images and navigation data within the shortest time.

- Backside illuminated (BSI) CMOS sensor
- Wide dynamic range
- Improved light sensitivity
- More flying hours per day and more flights achievable per year
- Maintains object resolution in lowlight conditions
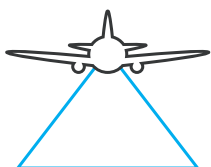
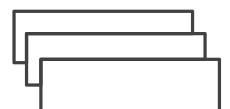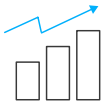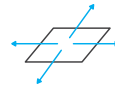| Coverage (Nadir)	Capture Rate	GSD	Overlap
+ 20,000 pixels across	2 frames per second	390kts maximal ground speed at 10cm GSD with motion blur under 1 pixel	97% forward overlap on 10cm GSD at 150kts

PAS 280i Unique Features

Performance

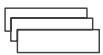High ROI for 2D
imaging missions

Precise image geometry
and superb image quality

Metrically calibrated system for
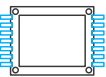photogrammetric applications

Used for large area
mapping

Over 80% forward
overlap at high speed

12 TB Storage with separate
SSD for each camera

Technology

BSI CMOS sensor with
3.76 μm pixel size
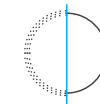
Blur Control
Technology for FMC

Integrated GNSS/IMU
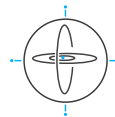
Flexible IMU options
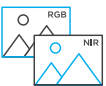
NIR option

Software

New generation software iX Suite,
from planning to data delivery
with real-time QA in all steps
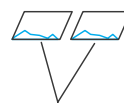
Standard image formats
compatible to any
photogrammetric software
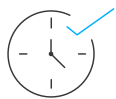
Realtime image
quality control
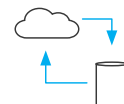
Ready for remote diagnostics
and future updates

Design

Light weight
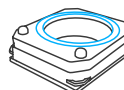
Stabilization mount
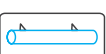
Ergonomic handles
for easy installation

iXM-RS 280F:
Pure Sharpness with Blur Control FMC

Our CMOS sensor eliminates motion blur thanks to short exposure time, enabled by our high speed shutter and a higher sensitivity pixel design. Combined with RS shutter technology, the camera provides extremely sharp images overcoming cameras with other FMC capabilities.


Flying Height and Swath Width

GSD (cm)	Altitude (m)	Altitude (ft)	Swath (m)
2,5	598	1,963	504
5	1,197	3,926	1,008
10	2,394	7,853	2,015
15	3,590	11,779	3,023
20	4,787	15,706	4,030
25	5,984	19,632	5,038
30	7,181	23,559	6,045
33	7,899	25,915	6,650
35	8,378	27,485	7,053
40	9,574	31,412	8,060
45	10,771	35,338	9,068

4-Band Configuration
280MP Aerial System

Phase One expands the camera's performance by offering an additional configuration to simultaneously capture RGB and NIR images. The 280MP 4-Band solution comprises dual 90mm lenses for capturing RGB information and a 50mm lens for capturing NIR information, which supports additional applications in agriculture, forestry, environmental monitoring, land management, and many more.

RGB image taken with Phase One Aerial Solution PAS 280i

Processed CIR image

Image courtesy of GGS

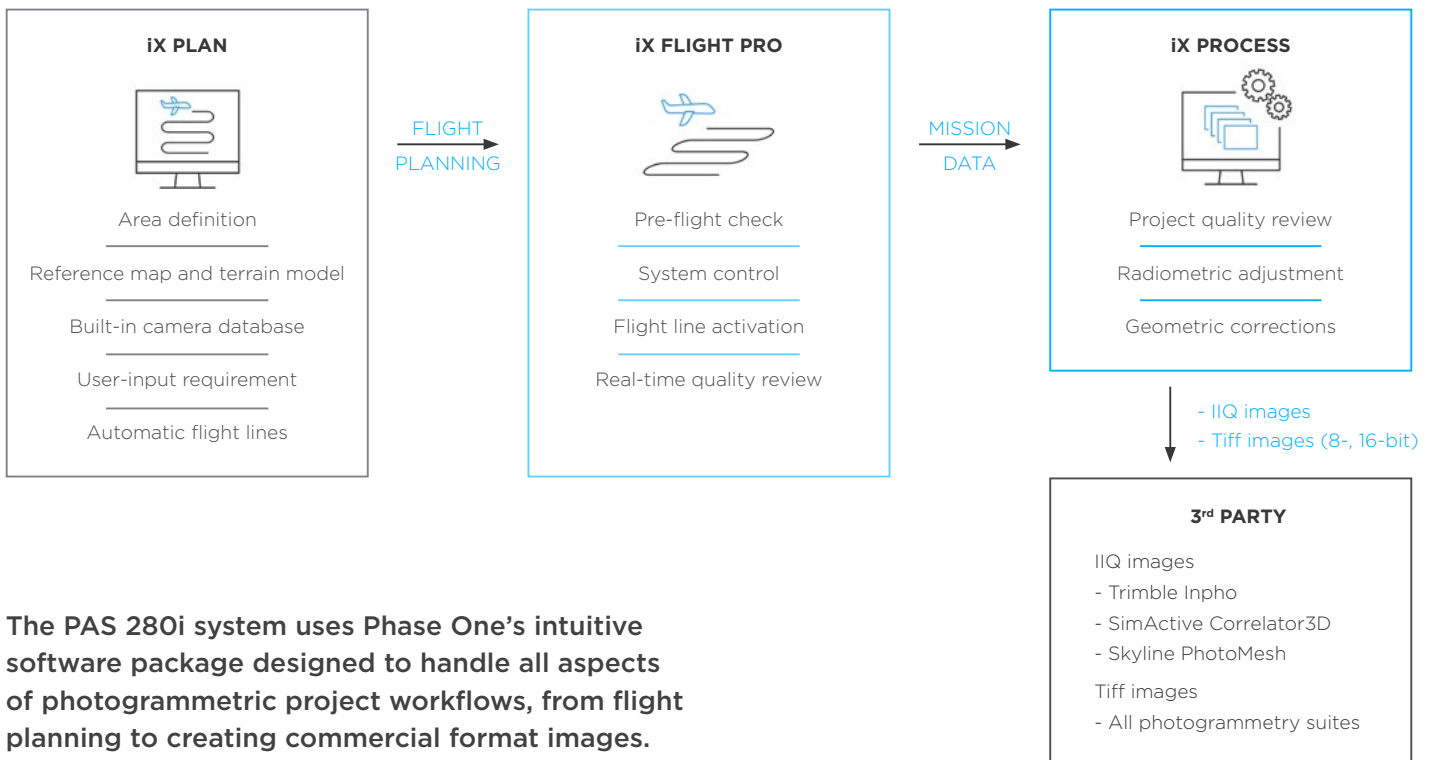| Nadir Sensor		
	Frame geometry	Central Projection
	Sensor type	BSI CMOS Bayer Array
	Sensor size	280MP | 20,150 x 14,118
	Pixel size (µm)	3.76
	Nominal focal length (mm)	90
	Shutter technology	Electromagnetic
	Shutter speed max.	1/2000
	Dynamic range (dB)	83
	Light sensitivity (ISO)	50-6400
	A/D conversion (bits)	14
	Aperture	f/5.6
	Field of view	32.9° along track
		45.7° across track

NIR Sensor		
	Frame geometry	Central Projection
	Sensor type	BSI CMOS Bayer Array
	Sensor size	150MP | 14,204 x 10,652
	Pixel size (µm)	3.76
	Nominal focal length (mm)	50
	Shutter technology	Electromagnetic
	Shutter speed max.	1/2000
	Dynamic range (dB)	83
	Light sensitivity (ISO)	50-6400
	A/D conversion (bits)	14
	Aperture	f/5.6
	Field of view	42.2° along track
		56.2° across track

System		
	Capture (fps)	2
	Internal storage	Integrated, 6 x 2TB
	GNSS receiver/IMU	Integrated, Trimble Applanix AP+ , Applanix IMU91/IMU57
	Data interface	USB3
	Dimensions [Ø] (mm)	408 x 716
	Weight (kg)	38
	Operating temperature (°C)	-10 to 40
	Humidity (%)	15 to 80 (non-condensing)
	Storage temperature (°C)	-20 to 65
	Sensor control software	iX Flight Pro
	Peripherals	7" Pilot display, 20" Operator display, Input devices
	Stabilized mount	GSM4000
	Average power consumption (W)	330
	Max. power consumption (W)	400

Data Capture Workflow

iX PLAN		iX FLIGHT PRO		iX PROCESS
Area definition	FLIGHT PLANNING →	Pre-flight check	MISSION DATA →	Project quality review
Reference map and terrain model		System control		Radiometric adjustment
Built-in camera database		Flight line activation		Geometric corrections
User-input requirement		Real-time quality review		
Automatic flight lines				

- IIQ images
- Tiff images (8-, 16-bit)

3rd PARTY

IIQ images
- Trimble Inpho
- SimActive Correlator3D
- Skyline PhotoMesh

Tiff images
- All photogrammetry suites

The PAS 280i system uses Phase One's intuitive software package designed to handle all aspects of photogrammetric project workflows, from flight planning to creating commercial format images.

The Phase One software is an open system enabling photogrammetric image processing and visual products to be produced with tools of choice. System users are not tied to specific products and may continue using existing packages, thereby avoiding large expenditure on software and training.

Planning a flight with iX Plan

iX Plan is a user-friendly tool that provides extensive planning capabilities by importing area definition, DEM, GCP locations and reference maps. The preferred line direction is drawn and the selected polygon is then automatically filled with photography lines at the correct GSD, overlap and side lap.

With iX Plan:

- Flight lines can be edited.
- Quality control GSD and coverage ensure that the planning covers all requirements.
- Flight plans can be exported to Microsoft Excel for quick estimation of project cost.
- The flight plan can be exported from iX Plan to iX Flight Pro for flight management.

Flying the plan with iX Flight Pro

iX Flight Pro serves as a flight management center, interfacing with all hardware such as cameras, Applanix GNSS/IMU, Somag stabilizer and pilot/operator monitors.

The flight director module provides position altitude and speed commands to the pilot based on mission design and planned tolerances.

This easy-to-follow-and-maintain flight director graphical display enables execution of long missions with low pilot fatigue, resulting in higher mission safety and quality.

The operator monitor enables mission and image collection management. A graphical collection summary provides the crew with a clear status of mission execution, ensuring that all images are collected at the correct locations, with the required quality and within the required speed and height tolerances.

Continuously displayed images and exposure value graphs allow the operator to manage camera parameters for best image acquisitions.

At the end of the mission, post flight reports in thin file format can be easily sent to the back office where engineers can assess project status and decide, prior to getting the large image files, whether the mission has been successfully completed or if a refly is required.

Processing Images with iX Process

iX Process is a mission review and image processing application. It ensures the acquired images are of high quality, consistent GSD, sufficient overlap and side-lap, and without duplicates. iX Process allows users to adjust image color if needed, and exports distortion-free images in IIQ or Tiff formats
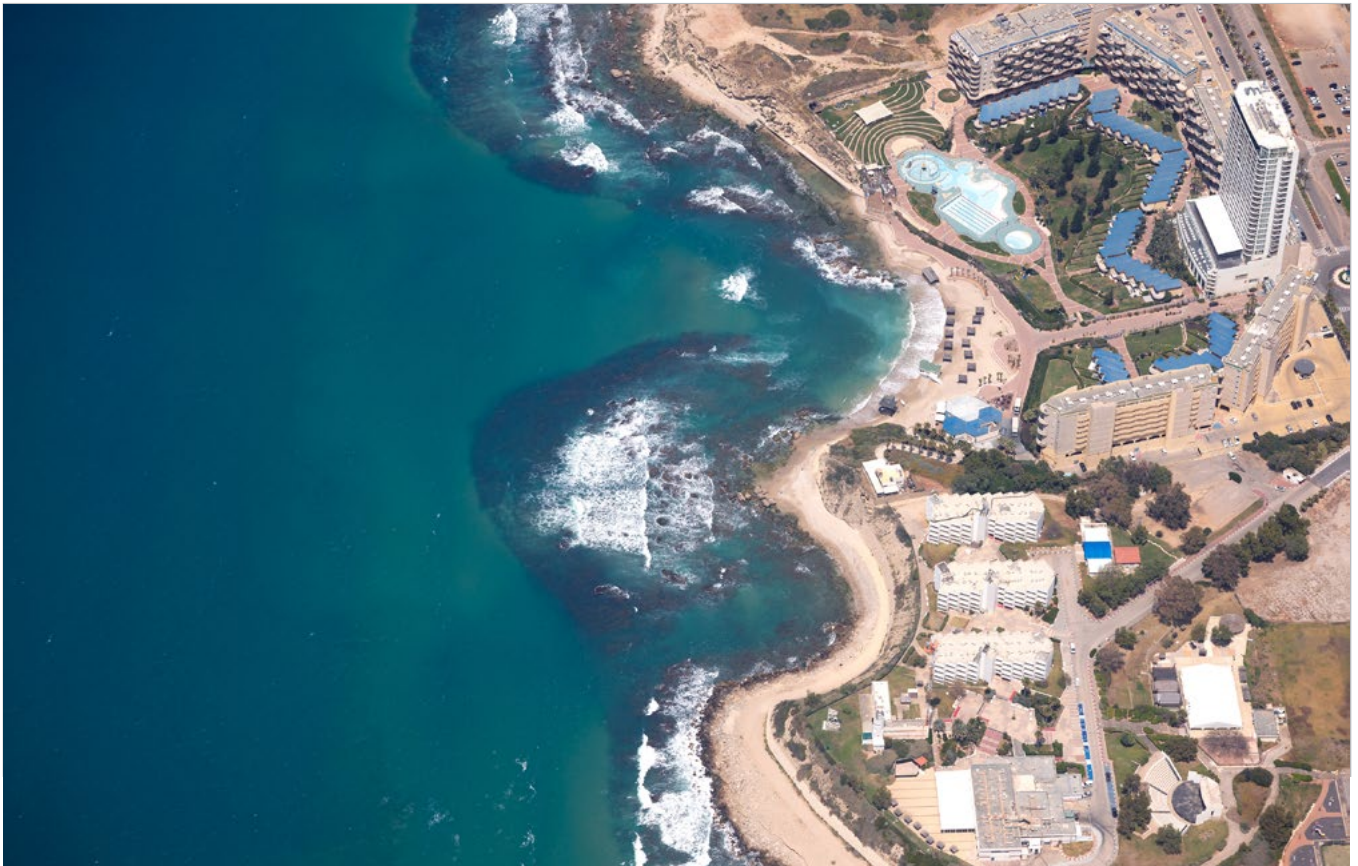
About Phase One

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.

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