

# PAS 880

Accurate and Affordable  
Oblique & Nadir Aerial System



# PHASE**ONE**

# Bringing a New Dimension to Aerial Mapping

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Phase One introduces its impressive 880MP Large Format Nadir and Oblique Integrated System. It combines the best of both nadir and oblique cameras into one powerful multi-use solution.

With one **280MP nadir** and **four 150MP oblique** cameras, the system provides over **20,000 pixels across flight lines for the nadir** and **14,000 pixels per oblique sensor**.

Phase One's excellent image quality together with precise metric calibration, allows the PAS 880 to achieve the highest quality and accuracy of mapping imagery with an unbeatable performance of **2 frames per second**.

The **light and compact system** is controlled by a new generation of Phase One software enabling the planning and execution of efficient aero photography missions.

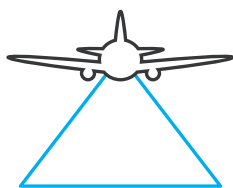
The combination of **90mm/150mm lenses for nadir and oblique** ensures balanced ground resolution products for all cameras. The central leaf shutter provides **speed up to 1/2500 sec.** eliminating motion blur while the 3,76  $\mu\text{m}$  BSI pixels ensures sharp images under any light condition.

Simple to install and operate, the PAS 880 offers dual views for the pilot and navigator, streamlining the management of flight and image collection.

The system is **ready for remote diagnostics and future updates**.

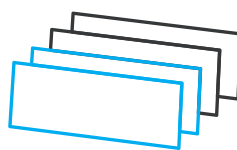


## Coverage (Nadir)



**+20,000**  
pixels accross

## Capture Rate



**2**  
frames per second

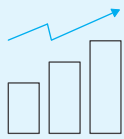
## Shutter Speed



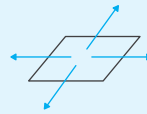
**Up to 1/2500**  
second

# PAS 880's Unique Features

## Performance



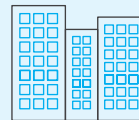
High ROI for 2D and 3D imaging missions



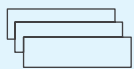
Precise image geometry and superb image quality



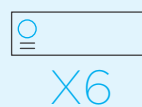
Metrically calibrated system for photogrammetry



Used for large area mapping and 3D city models

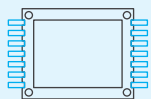


Over 80% forward overlap at high speed

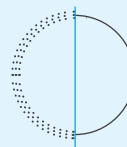


12 TB Storage with separate SSD for each camera

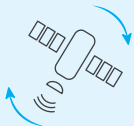
## Technology



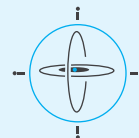
BSI CMOS sensor with 3.76  $\mu\text{m}$  pixel size



Motion Blur Control for FMC

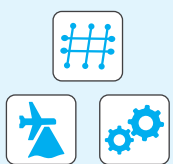


Integrated GNSS/IMU

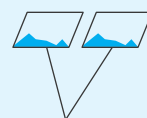


Flexible IMU options

## Software



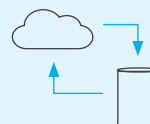
Includes new generation Phase One flight and sensor management software



Standard images fit any photogrammetric software



Realtime image quality control

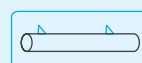


Ready for remote diagnostics and future updates

## Design



Lightweight and compact system



Ergonomic handles for easy installation







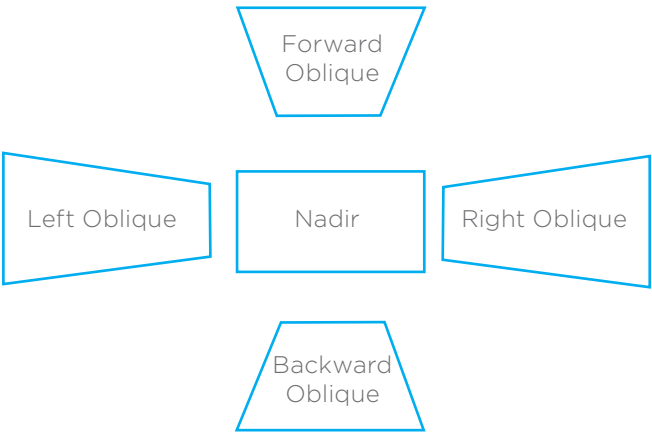
# Technical Specifications

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
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

Oblique Sensor	
Frame geometry	Central Projection
Sensor type	BSI CMOS Bayer Array
Sensor size	150MP 14,204 x 10,652
Pixel size (µm)	3.76
Shutter technology	Electromagnetic
Shutter speed max.	1/2500
Dynamic range (dB)	83
Light sensitivity (ISO)	50-6400
A/D conversion (bits)	14
Aperture	f/5.6
Field of view	Left/Right: 42° 15.2° along track 20.2° across track Forward/backward 45° 15.2° along track 20.2° 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)	45
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)	380
Max. power consumption (W)	450

# PAS 880 Configuration



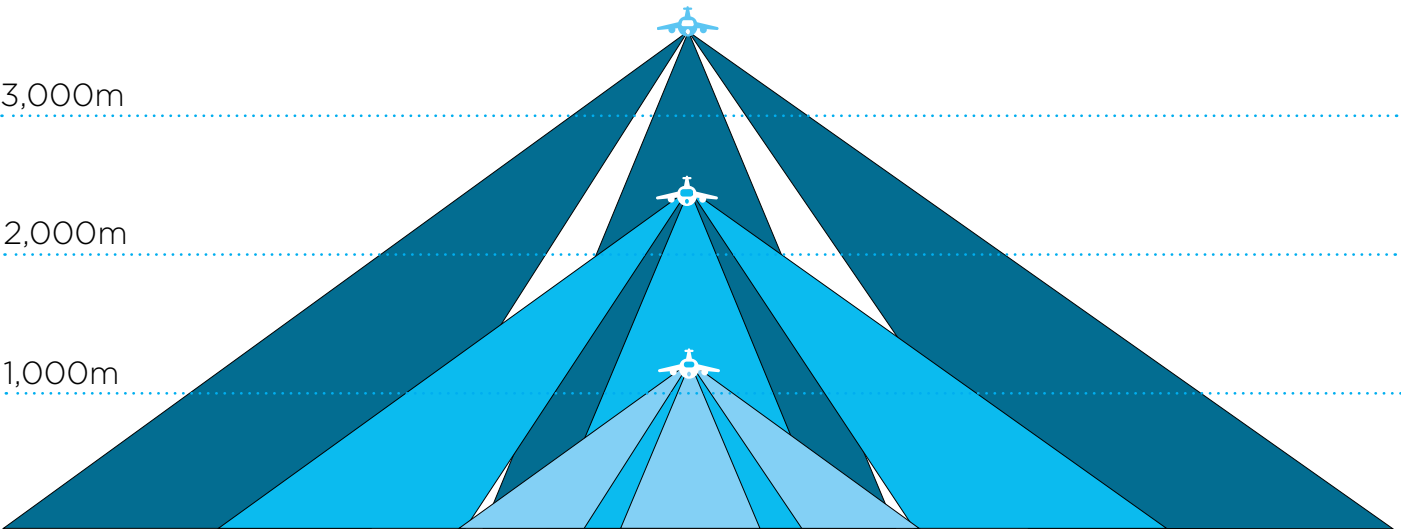
## IMU Options

The system is delivered with the advanced Trimble Applanix GNSS/IMU receiver (GPS, Glonass, BeiDou, Galileo) from Standard Positioning Service to Post Processed data for high accuracy.

Two IMU options are available: 510 level accuracy (IMU-91) or 610 level accuracy (IMU-57), for highest accuracy.

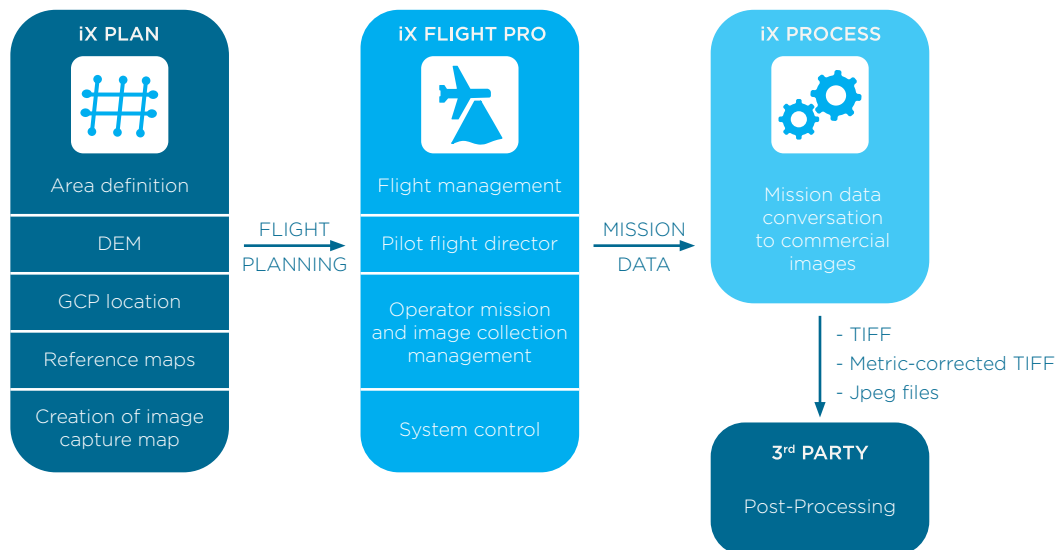
	Standard Position Service		Post Processed	
IMU options	IMU-91	IMU-57	IMU-91	IMU-57
Position (m)	1.5H 3V		0.02H 0.05V	
Velocity (m/s)	0.05	0.03	0.005	0.005
Roll & pitch (deg)	0.010	0.05	0.005	0.0025
True heading (deg)	0.07	0.03	0.010	0.005

## Coverage



GSD nadir (cm)	GSD oblique (cm)	Swath nadir (m)	Swath oblique (m)	Altitude (m)
5	4.2	1,008	880	1,197
10	8.4	2,016	1,760	2,394
15	12.6	3,024	2,640	3,591

# Data Capture Workflow



**The PAS 880 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 converts the mission data into commercial images ready for photogrammetry processing. iX Process can process large quantities of images in batches. An intuitive user interface enables generating and saving processing recipes. The recipes can then be used to process batch jobs on selected files or directories, and iX Process will display the job's progress. iX Process enables easy export of images in TIFF, metric-corrected TIFF, or jpeg files.






Watch Movie



PHASEONE



## 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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