MR413
Multi rotor drone

Omnipotent multi rotor
Surveying/Inspection/Reco
nnaissance

Product Features

MR413 is a multi rotor unmanned aerial vehicle independently developed by AheadX for various fields such as surveying, inspection, and reconnaissance. It is equipped with an advanced redundant navigation and flight control system. MR413 can achieve fully autonomous takeoff, landing, and operation, and supports various emergency protection functions. It has functions such as intelligent batteries, power monitoring, structural monitoring, backup data link, 3D ground station, cloud system, etc. Carrying loads such as cameras/LiDAR/pods for operation.

Performance
Maximum flying speed of 29 meters/second
Level 6 wind resistance, 55 minute range

5kg mount
Mountable Searle camera/RIEGL LiDAR/Optoelectronic pod/Custom payload

Foldable design for quick installation
No disassembly tools required,
Single person can install within 3 minutes.

Motor monitoring
Real time monitoring of motor status
Identify safety hazards that cannot be perceived by human eyesight

Redundancy system
4 redundancy IMU, 3 redundancy heading measurement
Dual redundancy satellite measurement

Forward/downward obstacle avoidance
Optional configuration for forward and downward obstacle avoidance, making flight safer

RTK/PKK simultaneous operation

Real time differential/post differential simultaneous operation

Provide data and image solving services

Load function integration

The ground station software integrates Sail camera/RIEGL load control and status monitoring functions

Pod location lock

Quickly lock known geographic locations by clicking on the map, greatly improving search efficiency
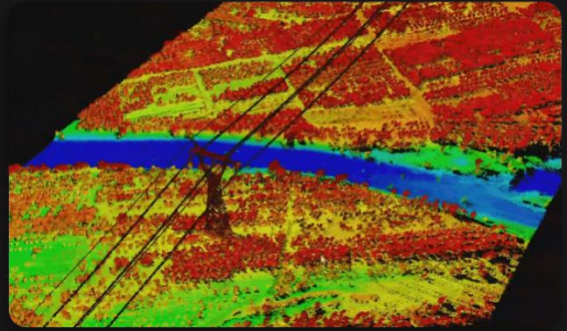

3D ground station software

3D map interface, WYSIWYG

Provide customized services

Intelligent inspection

Lidar one click settings, automatically start when entering the measurement area, and automatically shutdown when leaving the measurement area

Target recognition/locking/following flight

Equipped with an optoelectronic pod, it can automatically recognize multiple targets, lock and track flight with one click
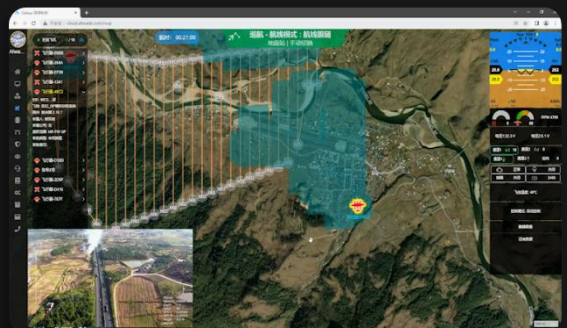

Multiple emergency protection

Low battery/data link loss/automatic return when overtaking
Multiple protections such as attitude overrun and emergency alternate landing
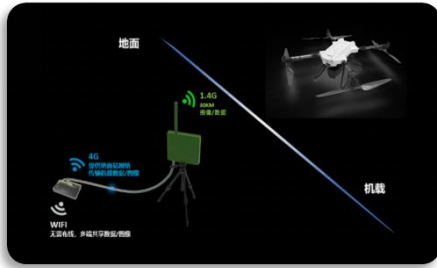

Galaxy Cloud System

Unmanned aerial vehicle online management, 3D real-time data monitoring
Remote control to improve efficiency of large-scale operations

Radio+4G dual data link

20KM data transmission and 4G data link are mutually backed up, ensuring stable communication in complex scenarios

Portable transport box

Adopting a trolley box design, it is easy to transport and move, achieving individual operations

Intelligent battery management

Real time monitoring of battery health status,Automatic alarm in case of abnormality

Working in complex weather conditions

-Working in an environment of 20 ℃~50 ℃, capable of short-term flight in light rain and snow weather

Industry applications

MR413 can be widely used in various scenarios such as surveying, inspection, reconnaissance, and special fields. Support the mounting of Sail cameras/RIEGL LiDAR/optoelectronic pod level for operations, while also supporting task payload customization. Support mobile platform takeoff and landing, remote takeoff and landing, and meet the needs of different usage scenarios.

Image-free surveying and mapping

1: 150 image-free orthophoto/tilt mapping,

Without deploying image control points, the accuracy can

reach 2CM

High-precision ground simulation flight

Support high-precision terrain elevation simulation flight

Fearless mountain operations

UAV parameters

Empty weight	7kg
Empty weight (including battery)	14kg
Maximum takeoff weight	19kg
Carrying capacity	5kg
Drone size	Expand 98×98×50cm（Length x width x height） Fold60×54×50cm（Length x width x heigh）
Dimensions	84*72*46cm

Wheelbase	1.3m
Max Flight Time	55min
Maximum horizontal flight speed	29m/s
Maximum rising speed	5m/s
Maximum descent speed	3m/s
Wind resistance	≤6level （10.8~13.8m/s)
Takeoff and landing mode	Fully automatic takeoff and landing
4G data communication	Support
Operation temperature	-20℃~50℃
RTK positioning accuracy	Hor.1cm+1ppm; Ver.2cm+1ppm

Load parameters

Searle camera	6100	102S
Effective pixels	61 million	24.3 million, with a total of 120 million pixels
Sensor Size	Full frame (35.7 * 23.8mm)	APS-C(23.5*15.6 mm)
Resolution	9504*6336	6000*4000
Tilt angle	--	45°
Focal length	40 mm	Looking down at 25 mm; Side view 35 mm

RIEGL LiDAR	RIEGL VUX-120	RIEGL miniVUX-1UAV
Laser emission frequency	1800KHz	100KHz
Precision/Repetitive Precision	10 mm / 5 mm	15 mm / 10 mm
Maximum measurement range	1430 m	330 m
Minimum distance	5 m	3 m
Laser class	Class 1	Class 1
Viewing angle	± 50° = 100°	360°
Scanning speed	50-400 lines/second	10-100 rpm

Load Parameter

AheadX pod	PG323	PG333T	PG343TL
Camera	Visible light, wide Angle	Visible light and infrared Wide Angle	Visible light and infrared Wide Angle, Lidar

Visible light lens parameters

resolution	1920×1080
Focal length of lens	6.5mm-162mm
Horizontal field Angle	58.1°-2.3°
Optical zoom	30X

infrared Camera

Detector type	Uncooled focal plane
Detector resolution	640×512
Focal length of lens	35mm（4X digital zoom）
Field Angle	12.5°（Hor.）×10°（Ver.）
False color	Black heat, white heat

Wide-angle lens parameters

Resolution	1920×1080
Focal length of lens	3.14mm
Horizontal field Angle	86°
Vertical field Angle	54.4°

Laser ranging parameter

Ranging range	5~2000m
Ranging accuracy	±1m
Ranging frequency	1~4Hz
Laser wavelength	905nm