PT. ASABA
SURVEYING DIVISION

Xirius
Powered by CHCNAV

Premium Surveying. Trusted Solutions

Xirius

POCKET VISUAL IMU-RTK RECEIVER

Xirius X-1i Powered by CHCNAV

The Xirius X-1i Pocket Visual GNSS Receiver is the latest cutting-edge GNSS surveying receiver designed in Singapore, featuring advanced GNSS, IMU, and dual-camera technology. The X-1i boasts an impressive 1608-channel GNSS SoC module, ensuring precise positioning even in challenging environments. Equipped with state-of-the-art dual-camera technology, the X-1i harnesses the power of high-quality dual cameras and video photogrammetry while maintaining its compact and portable design.

The X-1i GNSS provides surveying professionals and construction operators with powerful capabilities, including visual stakeout, visual surveying, and 3D modeling, enabling efficient, real-time data collection and stakeout. Designed as a pocket-sized visual GNSS RTK, the X-1i is compact, rugged, and durable. Crafted with meticulous manufacturing in Singapore, the X-1i is backed by GeoMate's commitment to quality and precision, making it a reliable partner for executing any surveying task and an ideal tool for surveyors striving for excellence in their projects.

TECHNICAL SPECIFICATIONS

GNSS Performance(1)

Channels	1608 channels
GPS	L1C/A, L2C, L2P(Y), L5
GLONASS	L1, L2, L3*
Galileo	E1, E5a, E5b, E6*
BeiDou	B1I, B2I, B3I, B1C, B2a, B2b
QZSS	L1C/A, L1C, L2C, L5, L6*
NavIC/ IRNSS	L5*
PPP	B2b-PPP
SBAS	EGNOS(L1, L5)

GNSS Accuracies(2)

Real time kinematic (RTK)	Horizontal: 8 mm + 1 ppm RMS Vertical: 15 mm + 1 ppm RMS Initialization time: < 10 s Initialization reliability: > 99.9%
Post-processing kinematic (PPK)	Horizontal: 3 mm + 1 ppm RMS Vertical: 5 mm + 1 ppm RMS
Post-processing static	Horizontal: 2.5 mm + 0.5 ppm RMS Vertical: 5 mm + 0.5 ppm RMS
Code differential	Horizontal: 0.4 m RMS Vertical: 0.8 m RMS
Autonomous	Horizontal: 1.5 m RMS Vertical: 2.5 m RMS
Visual stakeout	H: 8 mm + 1 ppm RMS V: 15 mm + 1 ppm RMS
Visual survey	Typical 2-4 cm, Range 2-15 m
Positioning rate(3)	1 Hz, 5 Hz and 10 Hz
Time to first fix(4)	Cold start: < 45 s Hot start: < 10 s Signal re-acquisition: < 1 s
IMU update rate	200 Hz
Till angle	0-60°
RTK tilt-compensated	Additional horizontal pole-tilt uncertainty typically less than 8 mm + 0.7 mm/° tilt

Environments(2)

Temperature	Operating: -40°C to +65°C (-40°F to+149°F) Storage: -40°C to +85°C (-40°F to +185°F)
Humidity	100% non-condensation
Ingress protection	IP68<5> (according to IEC 60529)
Drop	Survive a 2-meter pole-drop
Waterproof and breathable membrane	Prevent water vapor from entering under harsh environments.

Electrical

Power consumption	UHF / 4G RTK Rover w/o camera: Typical 2.4 W UHF RTK Base w/o camera: Typical 4.3 W Visual Stakeout/Visual Survey: Typical 4.2 W
Li-ion battery capacity	Built-in non-removable battery
Operating time on internal battery(6)	UHF / 4G RTK Rover w/o camera: up to 16.5h Visual Stakeout / Visual Survey: up to 9.5h UHF RTK Base: upto 10 h Static: up to 22 h
External power input	5V/2A

Hardware

Size (LxWxH)	<t> 134 mm x 80 mm (<t>5.28 in x 3.15 in)
Weight	750 g (1.65 lb)
Front panel	4 LED, 2 physical buttons
Tilt sensor	Calibration-free IMU for pole-tilt compensation. Immune to magnetic disturbances. E-Bubble leveling.

Cameras

Sensor pixels	Global shutter with 2 MP & 5 MP
Field of view	75°
Video frame rate	25 fps
Image group capture	Method: video photogrammetry. Rate: typically 2 Hz, up to 25 Hz. Max. capture time: 60s with an image group size of appr. 60 MB.
Illumination	Starlight-grade camera. OmniPixel®-GS technology. Maintain full color at illumination levels as low as 0.01 lux.
Features	MateSurvey™ software, support Visual Navigation, Visual Stakeout, Visual Survey, 3D Modeling*7'.

Communication

Wireless connection	NFC for device touch pairing
Wi-Fi	Wi-Fi IEEE 802.11 b/g/n/ac, access point mode
Bluetooth®	V 4.2, backward compatible
Ports	1 x USB Type-C port (external power, data download, firmware update); 1 x UHF antenna port (TNC female)
UHF radio	Standard Internal Tx/Rx: 410 - 470 MHz Transmit Power: 0.5 W, 1 W Protocol: Transparent, TT450, Satel*8' Link rate: 9600 bps to 19200 bps Range: Typical 3 km, up to 8 km with optimal conditions
Data formats	RTCM 2.x, RTCM 3.x, CMR input / output RINEX 2.11,3.02 NMEA 0183 output NTRIP Client, NTRIP Caster
Data storage	8 GB high-speed memory

Compliance with Laws and Regulations

International standards NGS Antenna Calibration

*All specifications are subject to change without notice.

(1) Compliant, but subject to availability of BDS ICD, GLONASS, Galileo, QZSS and IRNSS commercial service definition. GLONASS L3, Galileo E6, QZSS L6 and IRNSS L5 will be provided through future firmware upgrade.

(2) Accuracy and reliability are determined under open sky, free of multipaths, optimal GNSS geometry and atmospheric condition. Performances assume minimum of 5 satellites, follow up of recommended general GPS practices.

(3) Compliant and 10 Hz to be provided through future firmware upgrade.

(4) Typical observed values.

(5) Splash, water, and dust resistant and were tested under controlled laboratory conditions with a rating of IP68 under I EC standard 60529.

(6) 4900 mAh, 7.2 V internal battery. Battery life is subject to operating temperature.

(7) 3D Modeling feature can be activated through function code.

(8) Compliant and Satel protocol to be provided through future firmware upgrade.

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PT. Aneka Sakti Bakti

Jl. Ir. H. Juanda No.7, Kebon Kelapa, Kec. Gambir. Jakarta Pusat. DKI Jakarta. 10120

(021) 806-644-99

www.asaba.id