## **TECHNICAL SPECIFICATIONS**

	D (1)
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
NavIC/ IRNSS	L5
SBAS	EGNOS (L1, L5*)
GNS	S Accuracies <sup>(2)</sup>
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 kinematics (PPK)	Horizontal: 3 mm + 1 ppm RMS Vertical: 5 mm + 1 ppm RMS
PPP	Support PPP-B2b, E6B-HAS H: 10cm   V: 20cm
Post - processing static	Horizontal: 2.5 mm+ 0.5 ppm RMS Vertical: 5 mm+ 0.5 ppm RMS
Code differential	Horizontal : 0.4m RMS Vertical : 0.8 m RMS
Autonomous	Horizontal : 1.5 m RMS Vertical : 2.5 m RMS
Vision stakeout	H : 8 mm + 1 ppm RMS V : 15 mm + 1 ppm RMS
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
	ser Sensor <sup>(5)</sup>
Las	ser Sensor <sup>(5)</sup> 2 cm within range 5 m
Las High-accuracy Laser survey	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m
High-accuracy Laser survey Rapid Laser survey	2 cm within range 5 m 3 cm within range 5 m 3 cm within range 5 m 5 cm within range 10 m
Laser Range	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type	2 cm within range 5 m 3 cm within range 5 m 5 cm within range 10 m 5 cm within range 10 m Up to 50m 2mm
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup>
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup>
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type IMU Type	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type IMU Type IMU update rate	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type IMU Type IMU update rate IMU tilt angle Additional horizontal pole-tilt	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU 200Hz 0-60°
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type IMU Type IMU update rate IMU tilt angle Additional horizontal pole-tilt	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU 200Hz 0-60° Typically less than 2.5 cm within 30°
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type IMU Type IMU update rate IMU tilt angle Additional horizontal pole-tilt	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU 200Hz 0-60° Typically less than 2.5 cm within 30° Hardware
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type  IMU Type IMU update rate IMU tilt angle Additional horizontal pole-tilt  Size (L x W x H)	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU 200Hz 0-60° Typically less than 2.5 cm within 30° Hardware  Ф 133 mm x 90 mm (Ф 5.24 in x 3.54 in)
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type IMU Type IMU update rate IMU tilt angle Additional horizontal pole-tilt  Size (L x W x H) Weight	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU 200Hz 0-60° Typically less than 2.5 cm within 30° Hardware Ф133 mm x 90 mm (Ф 5.24 in × 3.54 in) 800 g (1.76 lb)
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type  IMU Type IMU update rate IMU tilt angle Additional horizontal pole-tilt  Size (L x W x H) Weight Front panel	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU 200Hz 0-60° Typically less than 2.5 cm within 30°  Hardware  Ф 133 mm x 90 mm (Ф 5.24 in × 3.54 in) 800 g (1.76 lb) 4 LED + 2 Button Operating: -40°C to +65°C (-40°F to +149°F)
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type  IMU Type IMU update rate IMU tilt angle Additional horizontal pole-tilt  Size (L x W x H) Weight Front panel Environment	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 10 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU 200Hz 0-60°  Typically less than 2.5 cm within 30°  Hardware  Ф 133 mm x 90 mm (Ф 5.24 in × 3.54 in) 800 g (1.76 lb) 4 LED + 2 Button Operating: -40°C to +65°C (-40°F to +149°F) Storage: -40°C to +85°C (-40°F to +185°F)
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type  IMU Type IMU update rate IMU tilt angle Additional horizontal pole-tilt  Size (L x W x H) Weight Front panel Environment Humidity	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 5 m 5 cm within range 10 m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU 200Hz 0-60° Typically less than 2.5 cm within 30° Hardware Ф 133 mm x 90 mm (Ф 5.24 in × 3.54 in) 800 g (1.76 lb) 4 LED + 2 Button Operating: -40°C to +65°C (-40°F to +149°F) Storage: -40°C to +85°C (-40°F to +185°F) 100% non-condensation IP68 waterproof and dustproof, protected from
High-accuracy Laser survey Rapid Laser survey Laser Range Range Accuracy Laser Type  IMU Type IMU update rate IMU tilt angle Additional horizontal pole-tilt  Size (L x W x H) Weight Front panel Environment Humidity Ingress protection	2 cm within range 5 m 3 cm within range 10 m 3 cm within range 10 m Up to 50m Up to 50m 2mm Class 3R, Green <sup>(6)</sup> MU Sensor 4D AUTO-IMU 200Hz 0-60° Typically less than 2.5 cm within 30°  Hardware  Ф 133 mm x 90 mm (Ф 5.24 in × 3.54 in) 800 g (1.76 lb) 4 LED + 2 Button Operating: -40°C to +65°C (-40°F to +149°F) Storage: -40°C to +85°C (-40°F to +185°F) 100% non-condensation IP68 waterproof and dustproof, protected from temporary immersion to depth of 1 m

Immune to magnetic disturbance

Tilt sensor

Camera	
Sensor pixels	5 & 2 MP
Field of view	75°
Video frame rate	25 fps
	Communication
Wi-Fi	802.11 b/g/n/ac, access point mode
Bluetooth ®	v 4.2
Others	NFC
Ports	1 x USB Type-C port (external power, da download, firmware update) 1 x UHF antenna port (SMA male)
UHF radio <sup>(7)</sup>	Standard Internal Tx/Rx: 410 - 470 MHz Transmit Power: 0.5 W, 1W Protocol: EFIX, Transparent, TT450, Satel (8) Link rate: 9,600 bps to 19,200 bps Range: Typical 3 km, up to 8 km with optin conditions
Data formats	RTCM2.x, RTCM3.x, CMR input / output, Full St RINEX2.11, 3.02 NMEA 0183 output ECN and RINEX static formats NTRIP Client, NTRIP Caster
Data storage	8 GB high-speed memory
	Electrical
Power consumption	Typical 2.0 W (depending on user settings)
Li-ion battery capacity	Rechargeable and built-in Lithium Battery 4900mAh, 7.2 V
Operating time on internal battery <sup>(9)</sup>	RTK Rover, UHF mode wo camera: up to 20 h RTK Rover, Laser Survey: up to 15h RTK Rover, Vision Stakeout: up to 15 h UHF RTK Base: up to 12 h
External power input	5V/2A
Compliance	with Laws and Regulations
International standards	IEC 62133-2:2017, EN IEC 62368-1:2020, UN Manual Section 38.3, IEC60825-1-2007

definition. GLONASS L3, Galileo E6, Galileo E6 High Accuracy Service (HAS), BDS B2b and SBAS 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 atmospheric condition. Performances assume minimum of 5 satellites, 10110W up of 1000111.00 GPS practices.

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

(4) Typical observed values.

(5) Data sourced from EFIX Lab. Actual results may vary depending on testing environment and conditions.

(6) Avoid Direct Eye Contact with Beam

(7) The use of UHF datalink may be subject to local regulations. Users must ensure that the device is not operated without the permission of the local authorities on frequencies or power output other than those specifically reserved and intended for use without required permit.

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

(9) Battery life is subject to operating temperature.



### Shanghai EFIX Geomatics Co.,Ltd.

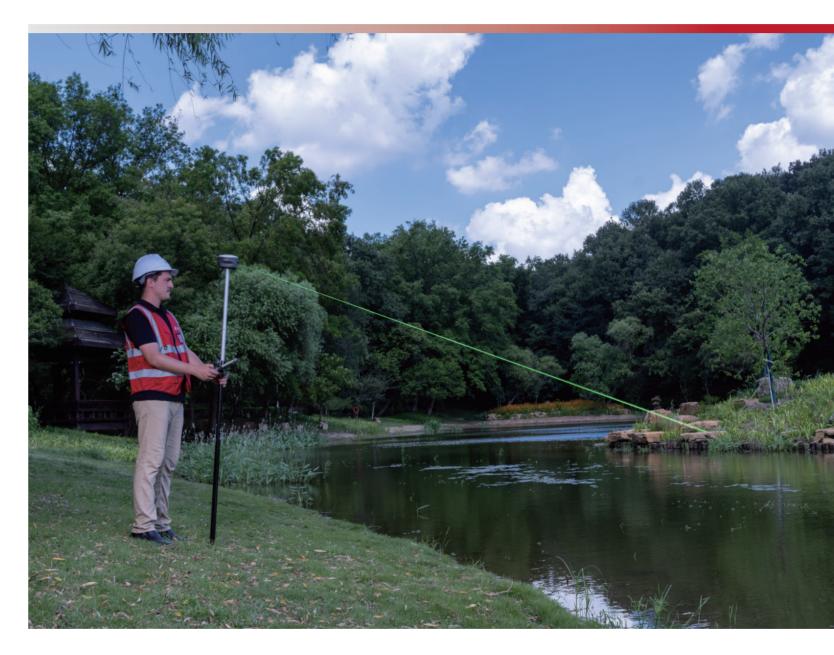
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## FULL-STAR AUTO-IMU

## LASER SURVEY

### **VISION STAKEOUT**



The EFIX F8L seamlessly integrates cutting-edge laser, GNSS, and IMU technologies to meet professional surveyors' demands. It delivers unparalleled accuracy and efficiency for surveying tasks.

With its integrated laser detector, the F8L's advanced laser system enables effortless surveying of challenging terrain—including difficult-to-fix, hard-to-reach, and hazardous points. Real-time AR stakeout feedback provides quick and precise stakeout without complex offset methods, enhancing both efficiency and accuracy.

By leveraging the F8L's capabilities, surveyors streamline workflows, boost productivity, and achieve exceptional project outcomes.

# LASER SURVEY WITH AI: ACCURATELY AND QUICKLY MEASURE COMPLEX SCENES IN REAL-TIME

- ▶ Quickly obtain high-precision 3D coordinates via laser targeting, enabling accurate measurements in challenging environments—such as signal-blocked, hard-to-reach, or hazardous locations.
- ▶ Bright green laser provides a prominent and clear laser dot, while AI-powered edge computing SOC chip ensures seamless and intuitive aiming and collection assistance.

# FULL CONSTELLATION SUPPORT AND ADVANCED RTK ENGINE: RTK SIGNAL BOOSTED BY 60%!

- ▶ 1608 signal channels and advanced Full-Star algorithm to track full constellation and frequencies.
- ▶ High-efficiency SoC provides a 60% increase in processing speed.

#### **EFFORTLESS AR VISION NAVIGATION + VISION STAKEOUT**

- Convenient AR navigation with bold, easy-to-follow arrows and real-time distance readouts ensures clear, intuitive guidance even in complex environments.
- Immersive AR Vision Stakeout within the eField software vividly overlays actual ground stakeout points—boosting field efficiency by around 50%.

#### **FULLY INTEGRATED GNSS AND 4D AUTO-IMU**

- Automatic 4D IMU initialization in motion removes traditional static startup restrictions, enabling the inertial unit to initialize automatically while in movement.
- Continuous IMU readiness during field operations ensures uninterrupted positioning precision throughout surveys.

#### eField: EMPOWER ENGINEERING & CONSTRUCTION PROFESSIONALS

- ▶ Effortless stakeout with dynamic map orientation—the CAD base map auto-rotates to align with the surveyor's viewpoint, streamlining layout tasks.
- ▶ Seamless large-scale CAD handling allows smooth navigation and editing of extensive drawings, improving graphical performance and user experience.
- ▶ Optimize Triangulated Irregular Networks (TIN) for accurate earthwork calculations using advanced filtering techniques.
- ▶ Road stakeout simplified via LandXML cut-fill visualization—imported cut/fill values are graphically overlaid, enabling intuitive interpretation and faster execution.