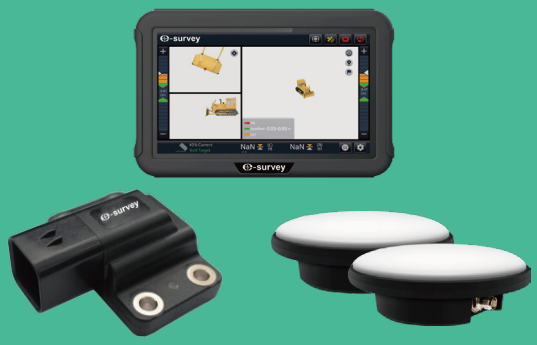
e-survey

eMB10

3D GNSS GUIDANCE SYSTEM FOR BULLDOZERS



The eMB10 integrates multi-constellation precision positioning, sensor fusion, and real-time 3D guidance for bulldozer blade guidance or control. Using 3D data as a reference, the system rapidly meets design specs without traditional surveying.
The system enables round-the-clock operation by any operator, hence ensuring speedy and accurate task completion, reducing rework, and enhancing productivity and project profits.

Machine Control

Flexibility

Support global coordinate library, suitable for global users, and provide multilingual versions.
Support Athena engine RTK and L-Band China accuracy; Even without the base station, the intelligent receiver can reach centimeter-level accuracy.
Support network differential.

Site Safety

Stakeless construction enhances the safety of the construction site.
Electronic fence improves site safety.
Precise and efficient. Reduce the driving requirements. Support rapid construction molding and quality control.
Manual and automatic control modes can be effortlessly switched.

Convenient Operation

Sound prompts, such as operation and danger warning prompts, etc.
Graphical and numerical indication of the relative position of the actual shovel blade and the design surface.
3D visual guidance is intuitive and easy to understand, improving the smoothness of the working surface and ensuring rapid molding.
Work accurately even at night when the field of vision is limited.
Support online version updates and quick registration.
Support the generation of design files on the client side for faster construction.
Support the import and export of coordinate conversion parameters and calibration files to speed up the system calibration process.
Multiple calibration files can be stored and switched.

Real Validity

Self-innovation technology achieves system accuracy of 3cm RMS.
The digital construction management platform enables two-way transmission of design documents, construction tasks, and data to the cloud in real-time.
The data is real and effective for managing remote quality and progress visualizations.

Website & Social media

Product Specification

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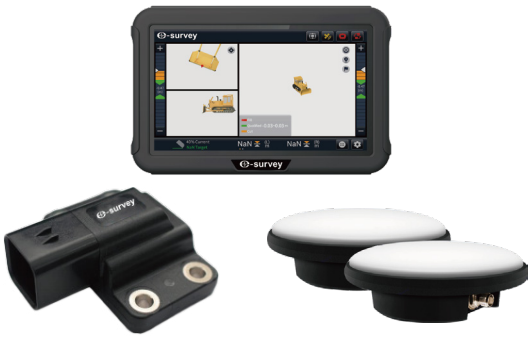

MA-2 Rugged GNSS Antenna	
Signal received	■ GPS: L1/L2/L5 ■ GLONASS: L1/L2/L3 ■ BEIDOU: B1/B2/B3 ■ Glileo: E1/E5a/E5b/E6 ■ QZSS: L1/L2/L3/E6 ■ IRNSS: L5 ■ SBAS: L1/L5 ■ L-band
Nominal impedance	50Ω
Polarization	RHCP
Axial ratio	≤3dB
LNA Gain	40±2dB
Operation Current	≤45 mA
Dimension	Φ150×53mm
Connector	TNC female
Differential Transmission Delay	≤5 ns
Temperature	Working temperature: -45 - +85℃ Storage temperature: -55 - +85℃
Waterproof	IP69K
Weight	≤600 g
Mounting	BSW5/8"-11 screw, depth10-11mm

MI-1 Inertial Sensor	
Number of Axes	6 axes
Angular Velocity Range (°/s)	± 400
Acceleration Rrange (g)	± 8
Pitch Angle Range (°)	± 70
Roll Angle Range (°)	± 180
Roll/tilt Accuracy	0.15 deg
Resolution	0.01°
Output Data Rate	Selectable to 100 Hz
Output Rate	250 k - 1 M
Measurement Direction	X,Y,Z Axis
Signal Output	CAN2.0
Protection Class	IP67
Supply Voltage	5- 32 VDC
Power Consumption	< 100 mA
MTBF	≥ 50000 hours/times
Shock Resistance	500g@11ms, 3-axis and same (half sine wave)
Vibration	10 - 2000 Hz; 13.9gRMS
Operating Temperature	-40 - +85 °C
Storage Temperature	-45 - +85 °C

Wiring	
Definition	Pin
Power	6
GND	3
CAN High	1
CAN Low	2

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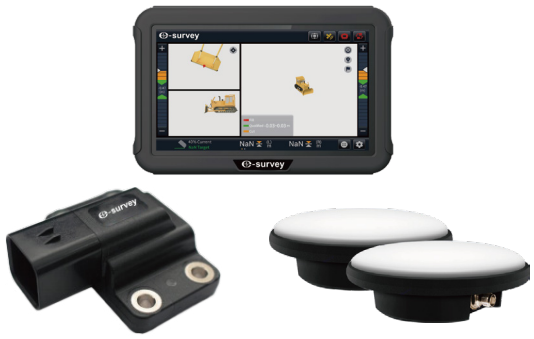

MDP-1 Display	
Product Parameters	
GPU	8 Cores, Supports OpenGLES 3.1
OS	Android 9.0
RAM	2 GB (Optional 4 GB)
ROM	16G ROM (Optional 64 GB), Support TF card (Expandable up to 256G)
Screen size	10.1 inch TFT LCD
Resolution	1024 x 600
Brightness	750 cd/m^2
Touch panel	Capacitive(Supports five-finger touch)
Communications	2.4GHz/5.8GHz WiFi, IEEE 802.11 a/b/g/n/ac
	Supports WiFi hotspot sharing
	Supports Ethernet and 4G simultaneous online
	BT2.1+EDR/3.0/4.1LE/4.2BLE
	4G/LTE (Dual SIM optional)
	GNSS (GPS/BDS/GLONASS)
	Optional centimeter-level positioning board
	Optional inertial module
	Built-in microphone (optional)
	Built-in speaker
I/O Interface	RS-232*2
	RS-485*1
	Support 250K/500K CAN*1/2 (Support J1939,CANopen,ISO15765)
	DI*2, DO*2
	USB 2.0*1
	720p*4/1080p*2AHD camera inputs
	12V DC external power supply*2
	Ethernet*1

Product Parameters	
Power Management	9-36V DC input, support ignition detection
Water/dust Proof	IP65
Vibration Standards (at work)	MIL-STD-810
Shock Standards (at work)	IS016750
Humidity Resistance	95% Non-condensing
Operating Temperature	-20°C ~ +70°C
Storage Temperature	-40°C ~ +85°C
Dimension(W*H*D)	281 mm x 181 mm x 42 mm
Weight	1.5 kg
Function Buttons	Power on/off button*1, Customized function buttons*2
Connector	Standard industrial grade waterproof connector
	SMA female*2(GNSS & 4G)
	TNC female connector*2 (GNSS)

MDP-1 Display				
Performance Indicators				
Channels	1408 channels, based on NebulasIV			
Initialization	<5 seconds (Typical)			
Satellites Tracking	BDS:B1I, B2I, B3I, B1C, B2a, B26b			
	GPS:L1C/A, L1C, L2P (Y), L2C, L5			
	GLONASS:L1, L2			
	Galileo:E1, E5a, E5b, E6			
	QZSS:L1, L2, L5, L6			
Initialization Reliability	> 99.9%			
Differential Format	RTCM3.3/3.2/3.1/3.0			
Data Format	NMEA0183			
	Unicore			
Observation Data Update Rate	20 Hz			
Positioning Data Update Rate	20 Hz			
Orientation Precision (RMS)	0.2°/1m			
Timing Accuracy (RMS)	10 ns			
Velocity Accuracy (RMS)	0.03 m/s			
Positioning Accuracy (RMS)	RTK: H: 8 mm + 1 ppm; V: 15 mm + 1 ppm			
	Single: H: 1.5 m; V: 2.5 m			
Observation Accuracy(RMS)	BDS	GPS	GLONASS	GALILEO
B1I/B1C/L1C/L1 C/A/E1/G1 Code	10cm	10cm	10cm	10cm
B1I/B1C/L1C/L1 C/A/E1/G1 Carrier phase	1mm	1mm	1mm	1mm
B3I/L2P(Y)/L2C/G2 Code	10cm	10cm	10cm	10cm
B2/L2P(Y)/L2C/G2 Carrier Phase	1mm	1mm	1mm	1mm
Time to First Fix (TTFF)	Cold Start < 10s			
	Recapture < 1s			
Radio	Supported frequencies 410-470Mhz			
	Air baud rate 19200/9600			
	Protocol: TRIMTALK, TRIMMK3; TRANSEOT;SOUTH;SATEL			

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