

eMG10

INTELLIGENT SYSTEM FOR GRADERS

The eMG10 system adopts multi-star system high-precision real-time dynamic positioning technology, after reading all kinds of sensors installed on scraper and other parts, and solving the main pivot size calibrated, to obtain the real-time, accurate three-dimensional position information of scraper, even in the blind area where the vision is not as good as that of the operator, it can also assist him to work accurately. Through the hydraulic control device, real-time automatic control of scraper lifting is realized. The system supports the rear-mounted hydraulic transformation of motor grader.



Machine Control

Flexibility

Supports global coordinate library, suitable for global users, provides multi-language version.
Support Athena engine RTK and L-Band China accuracy, when not using the base station, the intelligent receiver can still achieve centimeter-level accuracy;
Support network differential.

Site Safety

Stakeless construction enhances the safety of the construction site. Electronic fencing improves site safety.
Precise and efficient, reduce the requirements for the driver, rapid construction molding, quality assurance.
Manual and automatic control modes can be freely switched.

Convenient operation

Sound prompts, including operation prompts 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, intuitive and easy to understand, improve the smoothness of the working surface, to ensure rapid molding.
It can work accurately even at night when the field of vision is limited.
Supports online version update and quick registration.
Supports local creation of design files on the client side for fast construction.
Supports import and export of coordinate conversion parameters and calibration files to quickly complete the system calibration process. Multiple calibration files can be stored and switched.

Real validity

Self-innovation technology, system accuracy reaches 3cm RMS.
Supports digital construction management platform, realize two-way transmission, the platform sends out design documents or construction tasks, construction data and then real-time back to the synchronous cloud, the data is real and effective, to facilitate remote quality, progress visualization management.



Website



Social media

Product Specification

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MA-2 Rugged GNSS Antenna		Encoder Sensor	
Signal received	<ul style="list-style-type: none"> ■ GPS: L1/L2/L5 ■ GLONASS: L1/L2/L3 ■ BEIDOU: B1/B2/B3 ■ Galileo: E1/E5a/E5b/E6 ■ QZSS: L1/L2/L3/E6 ■ IRNSS: L5 ■ L-band 	Technology	Magnetic
Nominal impedance	50Ω	Resolution Singleturn	13 bit
Polarization	RHCP	Resolution Multiturn	12 bit
Axial ratio	<3dB	Multiturn Technology	Self powered magnetic pulse counter (no battery, no gear)
LNA Gain	40±2dB	Accuracy (INL)	±0.0878° (≤12 bit)
Operation Current	≤45 mA	Code	Binary
Dimension	Φ150×53mm	Environmental Specifications	
Connector	TNC female	Protection Class (Shaft)	IP66/IP67
Differential Transmission Delay	≤5 ns	Protection Class (Housing)	IP66/IP67
Temperature	Working temperature: -45 - +85°C Storage temperature: -55 - +85°C	Operating Temperature	-30 °C fixed (-22°F), -5 °C flexible (+23°F) - +80 °C (+176°F)
Waterproof	IP69K	Storage Temperature	-40 °C (-40°F) - +85 °C (+185°F)
Weight	≤600 g	Humidity	98%RH,no condensation
Mounting	BSW5/8"-II screw, depth10-IImm	Mechanical Data	
MI-1 Inertial Sensor		Connection Cap Material	None
Number of Axes	6 axes	Housing Material	Steel
Angular Velocity Range (°/s)	± 400	Housing Coating	Wet coating (RAL 9006 White Aluminium) + Cathodic corrosion protection (>720 h salt spray resistance)
Acceleration Range (g)	± 8	Flange Type	Clamp, Ø 58 mm (L)
Pitch Angle Range (°)	± 70	Flange Material	Aluminum
Roll Angle Range (°)	± 180	Shaft Type	Solid,Single Flat,Length = 20 mm
Roll/tilt Accuracy	0.15 deg	Shaft Diameter	Ø 10 mm (0.39")
Resolution	0.01°	Shaft Material	Stainless Steel V2A (1.4305,303)
Output Data Rate	Selectable to 100 Hz	Minimum Mechanical Lifetime (10^8 revolutions with Fa/Fr)	430 (20N/40 N),150 (40N/60 N), 100 (40 N/80 N),55 (40N7110 N)
Output Rate	250 k - 1 M	Rotor Inertia	≤30 gcm² [≤0.17 oz-in²]
Measurement Direction	X,Y,Z Axis	Friction Torque	≤5 Ncm @20 °C,(7.1 oz-in @68°F)
Signal Output	CAN2.0	Max Permissible Mechanical Speed	≤3000 1/min
Protection Class	IP67	Shock Resistance	≤100 g (half sine 6 ms EN 60068-2-27)
Supply Voltage	5 - 32 VDC	Permanent Shock Resistance	≤10 g (half sine 16 ms EN 60068-2-29)
Power Consumption	< 100 mA	Vibration Resistance	≤10 g (10Hz - 1000 Hz EN 60068-2-6)
MTBF	≥ 50000 hours/ times	Length	52,7 mm (2.07")
Shock Resistance	500g@11ms, 3-axis and same (half sine wave)	Electrical Connection	
Vibration	10 - 2000 Hz; 13.9gRMS	Connection Orientation	Radial
Operating Temperature	-40 - +85 °C	Connection Type	Cable / Connector
Storage Temperature	-45 - +85 °C	Connector	Cable 2 m
Wiring		Cable Length	2 m [79"]
Definition	Pin	Wire Cross Section	0.14 mm² / AWG 26
Power	6	Material / Type	PVC
GND	3	Cable Diameter	6 mm (0.24 in)
CAN High	1	Minimum Bend Radius	46 mm (1.81") fixed 61 mm (2.4") flexing
CAN Low	2	Product Life Cycle	
Product Life Cycle		Product Life Cycle	Established
Approval		Approval	CE + cULus + E1

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Encoder Sensor	
Connection Plan	
SIGNAL	CABLE COLOR
Power Supply	Red
GND	Yellow
CAN Low	Brown
CAN GND	Green

Electrical Data	
Supply Voltage	9-30 VDC
Power Consumption	<1.2 W
Reverse Polarity Protection	Yes
Short Circuit Protection	Yes
EMC:Emitted Interference	DIN EN 61000-6-4
EMC:Noise Immunity	DIN EN 61000-6-2
MTTF	240 years @40 °C

MDP-1 Display	
Performance Indicators	
Channels	1408 channels, based on NebulasIV
Initialization	<5 seconds (Typical)
Satellites Tracking	BDS:B1I, B2I, B3I, B1C, B2a, B2b
	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°/lm
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/L1C/A/E1/G1 Code	10cm 10cm 10cm 10cm
B1I/B1C/L1C/L1C/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

MDP-1 Display	
Product Parameters	
GPU	8 Cores, Supports OpenGL ES 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/m²
Touch panel	Capacitive (Supports five-finger touch) 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
Communications	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
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)

