

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

eMG10

INTELLIGENT SYSTEM FOR GRADERS



MA-2 Rugged GNSS Antenna

| | |
|---------------------------------|--|
| 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 |
| 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°C Storage temperature: -55 - +85°C |
| 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 Range (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 |

Encoder Sensor

| | |
|-----------------------|---|
| Technology | Magnetic |
| Resolution Singleturn | 13 bit |
| Resolution Multiturn | 12 bit |
| Multiturn Technology | Self powered magnetic pulse counter (no battery, no gear) |
| Accuracy (INL) | ±0.0878° (≤12 bit) |
| Code | Binary |

Environmental Specifications

| | |
|----------------------------|---|
| Protection Class (Shaft) | P66/IP67 |
| Protection Class (Housing) | IP66/IP67 |
| Operating Temperature | -30 °C fixed (-22°F), -5 °C flexible(+23°F) - +80 °C(+176°F) |
| Storage Temperature | -40 °C(-40°F) - +85 °C(+185°F) |
| Humidity | 98%RH,no condensation |

Mechanical Data

| | |
|--|---|
| Connection Cap Material | None |
| Housing Material | Steel |
| Housing Coating | Wet coating (RAL 9006 White Aluminium) + Cathodic corrosion protection (>720 h salt spray resistance) |
| Flange Type | Clamp, Ø 58 mm (L) |
| Flange Material | Aluminum |
| Shaft Type | Solid, Single Flat, Length = 20 mm |
| Shaft Diameter | Ø 10 mm (0.39") |
| Shaft Material | Stainless Steel V2A (1.4305, 303) |
| Minimum Mechanical Lifetime (10^8 revolutions with Fa/Fr) | 430 (20N/40 N), 150 (40N/60 N), 100 (40 N/80 N), 55 (40N/110 N) |
| Rotor Inertia | ≤30 gcm² [≤0.17 oz-in²] |
| Friction Torque | ≤5 Ncm @20 °C, (7.1 oz-in @68°F) |
| Max.Permissible Mechanical Speed | ≤3000 1/min |
| Shock Resistance | ≤100 g (half sine 6 ms, EN 60068-2-27) |
| Permanent Shock Resistance | ≤10 g (half sine 16 ms, EN 60068-2-29) |
| Vibration Resistance | ≤10 g (10Hz - 1000 Hz, EN 60068-2-6) |
| Length | 52,7 mm (2.07") |

Electrical Connection

| | |
|------------------------|---|
| Connection Orientation | Radial |
| Connection Type | Cable / Connector |
| Connector | Cable 2 m |
| Cable Length | 2 m [79"] |
| Wire Cross Section | 0.14 mm² / AWG 26 |
| Material / Type | PVC |
| Cable Diameter | 6 mm (0.24 in) |
| Minimum Bend Radius | 46 mm (1.81") fixed, 61 mm (2.4") flexing |

Product Life Cycle

| | |
|--------------------|-----------------|
| Product Life Cycle | Established |
| Approval | CE + cULus + EI |

Product Specification

eMG10

INTELLIGENT SYSTEM FOR GRADERS



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, B26b | | | |
| | GPS:L1C/A, L1C, L2P (Y), L2C, L5 | | | |
| | GLONASS:L1, L2 | | | |
| | Galileo:E1, E5a, E5b, E6 | | | |
| 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/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/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 |
| I/O Interface | Built-in microphone (optional) |
| | Built-in speaker |
| | 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) | ISO16750 |
| 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) |

