

eMP10

INTELLIGENT PILING GUIDANCE SYSTEM

The eMP10 system adopts multi-satellite system high-precision real-time positioning and orientation, as well as multi-sensor fusion technology, to obtain accurate three-dimensional position information of the pile head; Collect real-time data from sensors installed on the pile foundation, such as current sensors and grout volume sensors; Able to capture digital and image files to assist the machine operators in precise construction.



Machine Control

Supported Platforms

Connect with a digital construction management platform for two-way data transmission;
Remote quality and progress management.

Data Monitoring

Real-time depth monitoring for drilling and piles.

In-construction Inspection

Real-time monitoring of drilling speed.

Data Intuition

Load the pile point design file and visualize the plan.

Error Monitoring

Track the pile frame's tilting conditions from the beginning to the present, and display the overall verticality deviation in real time.

Adaptable

Strong R&D capabilities; Support a variety of piling machinery: static pile, CFG long auger drilling rig, cement mixing pile, photovoltaic piling rig, rotary drilling rig, down the hole drilling rig, drainage sheet pile, and rotary spraying pile.

Quick Guiding

Pile point guiding to the pile is precise and quick with the pile head orientation data.

Power Supply Monitoring

Monitor the real-time value of drilling current in the drilling rig while drilling, and record any abrupt change in the holding layer.



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 ■ 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

Depth Sensor

Performance

Measuring Range	Strokes 1800 mm - 2300 mm - 3300 mm - 4300 mm - 4800 mm - 5300 mm - 6300 mm - 7300 mm - 8000 mm - 8300 mm
Linearity Factory Verification@25 °C	< ± 0.5 %FS
Long Term Repeatability	< ± 3 %FS (for 1.80m,2.30m,3.30m) < ± 2 %FS (for 4.30m,4.80m,5.30 m, 6.30m,7.30 m,8.00m,8.30m)
Resolution	0.1 mm CAN open output; 12 bit analog output
Speed	Max.2 m/sec,typ.1 m/sec
Typical Acceleration	1 g
Durability	■ 500000 speed max.1 m/sec acc.max.0.5 g; ■ 150000 speed max.2 m/sec acc.max.1 g

Electrical specifications

Electrical Connections	M12(4,5 or 8 pin)connector or Cable
Output Signal	0.5 - 4.5V DC, 0-10V DC, 4 - 20 mA, CANopen
Supply Voltage	10 - 36 V DC
Current Consumption	<10 mA/per channel (no load)
MTTFd [Years]	CANopen:220 Analogue:173 (Single channel)

Environmental conditions

Operating Temperature Range	40-65 °C
EMC	Fmission, EN 55011 Immunity, EN 61236-3-2
Vibration Stability Sinusoidal	20g, 10 Hz-2,000 kHz, EC 60068-2-6
Shock Resistance mpulsive on 3 axes	50g, 11 ms EC 60068-2-27
IP Rating	P67 with female connector mounted

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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
	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)	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)

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/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

