

# SMC20

Mechanical Control

## Excavator Guidance System





# SMC20 Excavator Guidance System

SMC20 Excavator Guidance System is a sophisticated solution with high precision and high performance, which offers visualized operation. It provides accurate position information of the bucket tip and cut/fill volumes through high-precision positioning technology, sensor data acquisition, and real-time data processing. Compatible with various excavators, it fits many situations like river excavation, seabed dredging, and highway slope trimming. One operator can complete all tasks, reducing labor costs and construction time.

## Dynamic IMU Sensor



It offers high dynamic precision and consistency, with an ultra-wide temperature range. The IMU integrates a high-performance microprocessor and advanced filtering algorithms, ensuring high measurement accuracy and stable data, suitable for the harsh environmental demands of engineering applications.

## High Precision



It achieves a planar accuracy of up to 2 cm and a fill control height accuracy of 3 cm, minimizing rework due to under-digging or over-digging. It meets diverse construction needs, including underwater excavation, river dredging, and seawall building, significantly boosting construction precision.

## Simplicity and Efficiency



The intelligent tablet displays operation information in multiple dimensions, including the front, side, and top views, and shows real-time deviations of the bucket from the reference plane. Operators can solo-fill control operations by following system guidance, skipping surveying and staking. Additionally, the bucket can perform precisely even in low-visibility conditions, significantly enhancing work efficiency.

## Multi-Scenario All-Weather Application



It is versatile, supporting various excavators and suitable for multiple scenarios like river excavation, seabed dredging, and foundation filling. It operates efficiently in all weather conditions including low visibility (night, heavy rain, fog), by combining IMU sensor technology with satellite positioning.



# GNSS

## Characteristic



- It achieves planar accuracy of 2 cm and elevation accuracy of 3 cm, significantly improving construction precision.



- It reduces surveying and staking time with colorful construction map guide operations, improving efficiency, and shortening project duration.



- It avoids duplicate work by marking the completed areas with different colors. It provides automatic area calculation, making it clear and simple.



- With the precise positioning, IP65 protection, and high brightness, it's ideal for tough environments.

## System composition



GNSS Antenna\*2



Dynamic IMU Sensor\*2



On-board Controller



High-Precision Intelligent Display Tablet





ITEM		SPECIFICATION	REMARKS
SATELLITE SYSTEM	GPS	L1, L2, L5	
	GLONASS	L1, L2, L3	
	BDS	B1I, B2I, B3I, B1C, B2a, B2b*	
	GALILEO	E1, E5a, E5b, E6	
	QZSS	L1, L2, L5, L6	
	IRNSS	L5	
	L-Band		
WORKING ENVIRONMENT	Environment	Operating Temperature: -40°C ~ +85°C Storage Temperature: -55°C ~ +85°C	
	Vibration Standards	Complies with national standards GBT-3871, GBT-2423, and GBT-28046 for vehicle vibration standards.	
VEHICLE MOUNTED TABLET	Display Screen	10.1-inch, Support 5-point capacitive touch	
	Brightness	750cd/m2	
	Resolution	1024*600px	
	I/O	RS232*2 RS485*1 CAN*1/2	
	Communication	4G WiFi 2.4G BT 4.2, BLE USB 2.0*1	
	Operating Temperature	-30°C ~ +70°C	
	Storage Temperature	-40°C ~ +85°C	
	Protection Level	IP65	
	Work Humidity	Humidity 95%, non-condensing	
	Vibration standard (Operational)	MIL-STD-810	
	Impact standard (Operational)	ISO16750	
	Power	5-36V DC Input ACC, State detection for ignitio	
SENSOR PERFORMANCE	Angle Measurement Range	Pitch Angle: ±80° Roll Angle: ±180°	
	Angle Repeatability	<0.05	
	Angular Velocity Measurement Range	±450°/s	
	Resolution	0.01°	
	Dynamic Accuracy	0.7°	
	Acceleration Measurement Range	±6g	
	Update Rate	100Hz	
	Voltage Input	9-36 V	
	Power Consumption	0.1-0.24W	
	Interfaces	CAN/RS-485/RS-232/TTL	
	Connector Model	GX12 - 4 Pin (Male)	
	Product Dimensions	37.65524mm	
	Waterproof Rating	IP68	
	Operating Temperature	-40~85°C	
	Storage Temperature	-40~85°C	
ACCESSORIES	Tablet	1 Unit	
	Gnss antenna	2 PCS	
	Dynamic IMU Sensor	2 PCS	
	In-vehicle controller	1 PCS	
	Antenna harness	2 PCS	
	Main Cable	1 PCS	
	Data Cable	2 PCS	
	Power cable	1 PCS	
	Screw Accessories Pack	1 PCS	
	Mount	1 PCS	

► Manufacturers may update parameters at any time, please refer to the latest product information.