



Patent No. . . ZL 201730609573.9

V2.6

DYNAMIC ANTI-INTERFERENCE 3D ELECTRONIC COMPASS

RION HCM600B/HCM605B

Technical Manual

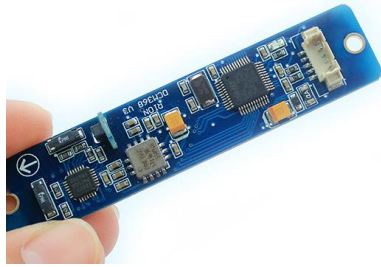
HCM600B/605B DYNAMIC ANTI-INTERFERENCE 3D ELECTRONIC COMPASS



PRODUCTION IMPLEMENTATION STANDARD REFERENCE

- Enterprise quality system standard: ISO9001:2008 standard (certification number: 128101)
- High-tech Enterprise (Certificate Number: GR201844204379)
- CE certification (registration number: AT18250EC000559)
- China National Intellectual Property Appearance Patent (Patent No.: ZL 201730609573.9)
- Revision time: 2021-12-17
- Note: Product functions, parameters, appearance, etc. will be adjusted with the upgrade of the technology. Please contact the pre-sales business of the company for confirmation when purchasing.

HCM600B/605B DYNAMIC ANTI-INTERFERENCE 3D ELECTRONIC COMPASS



HCM SERIES HIGH ACCURACY
3D DIGITAL COMPASS



► PRODUCT INTRODUCTION

HCM600/HCM605 is a dynamic and high-precision 3 axis electronic compass, which integrates three-axis accelerometer, three-axis gyroscope and three-axis magnetic sensor. The roll angle, pitch angle, and heading angle data are dynamically calculated in real time through a 32bit high-speed processor. , it has three working modes: pure compass, 9-axis fusion mode and 9-axis fusion anti-jamming mode (anti-temporary-interference), using a three-axis accelerometer and a three-axis gyroscope to compensate heading angle error caused even by big tilt angle, and adopting hard iron and soft iron calibration algorithms , so that the roll angle can still provide a high-precision heading angle within the range of $\pm 180^\circ$. It is long strip shape with width of only 1.95CM. with high performance, reliability, small size and low power consumption, it is suitable for measuring attitude and heading angles in many fields such as antenna stability, vehicles, and drones. User can order complete product with housing (up to IP67 waterproof level) or compass module.

► FEATURE

- Heading Accuracy: $0.3^\circ \sim 0.5^\circ$
- Tilt Resolution: 0.1°
- Wide Temp. Range: $-40^\circ\text{C} \sim +85^\circ\text{C}$
- With Hard-Soft Magnetic And Tilt Compensation
- Roll Range: $\pm 180^\circ$
- Tilt Accuracy: $<0.2^\circ$ (Full Range)
- Dimension: L110xW19.5xH19.5mm
- RS232/RS485/TTL

► APPLICATION

- Satellite Antenna Search Satellite
- Gps Integrated Navigation
- Gun Emission System
- Laser Range Finder
- Rov Underwater Robot Navigation
- Special Occasion Robot
- Marine Navigation Surveying And Mapping
- Antenna Servo Control
- Infrared Imager
- Map For Plotter
- Oceanography Measurement Instruments
- Unmanned Aircraft



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► SPECIFICATIONS

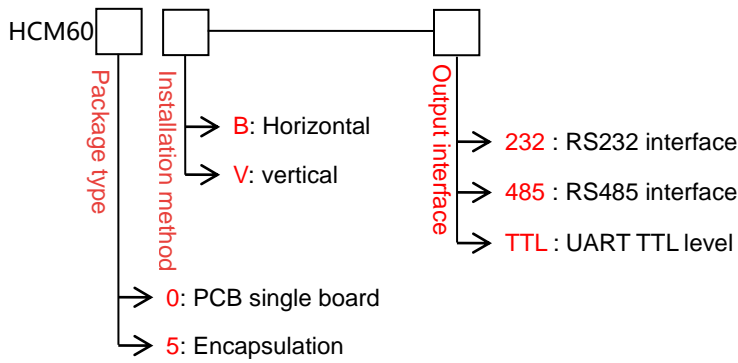
HCM600B/HCM605B		parameters
heading	Heading accuracy	0.5° tilt<10°
		2.0° tilt>60°
	Resolution	0.1°
Tilt parameters	Pitch accuracy	0.1°<15°(measure range)
		0.1°<30°(measure range)
		0.1°<60°(measure range)
		0.2°<85°(measure range)
	Pitch range	±85°
	Roll accuracy	0.1°<15°(measure range)
		0.1°<30°(measure range)
		0.1°<60°(measure range)
0.2°<180°(measure range)		
Roll range	±180°	
Resolution	0.1°	
Calibration	Hard iron calibration	Yes
	Soft iron calibration	Yes
	Magnetic interference calibration	Rotate 360deg horizontally; vertical rotation(option)
Physical feature	Size	L111.5×W19.5×H19.5mm
	Weight	≤85g(exclude cable)
	RS-232/RS485/TTL	5PIN quick plug connector
interface	Start delay	<50ms
	Max output speed	20Hz/s
	Communication speed	2400 to 115200baud (default 9600)
	Output format	Binary High-performance Protocol
Power	Power voltage	(default) DC+5V
	Current(max)	30mA
	Ideal mode	26mA
	Hibernate mode	TBD
Environment	Operating range	-40°C ~ +85°C
	Storage temperature	-40°C ~ +85°C
	Vibration resistance	100g
	Protection	IP67
Electromagnetic compatibility	According to EN61000 and GBT17626	
MTBF	≥40000 hours/time	
Insulation resistance	≥100mego-ohm	
Impact resistant	100g11ms, 3 Axial Direction (Half Sinusoid)	
Anti-Vibration	10grms, 10~1000Hz	

◦Inclinometer ◦Digital Compass ◦Digital Inclinometer ◦Accelerometer ◦Gyro ◦North Finder ◦INS&IMU

RION TECHNOLOGY SINCE2008 · Attitude & Position Solution Provider

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► ORDERING



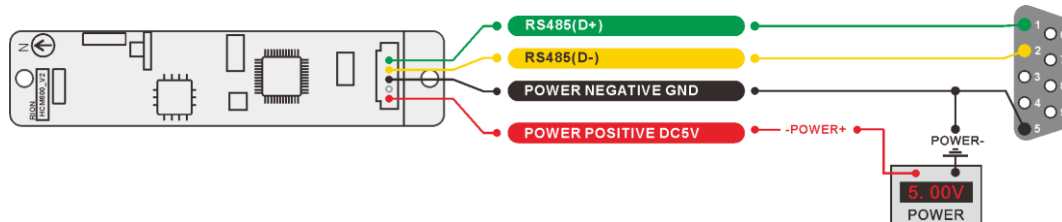
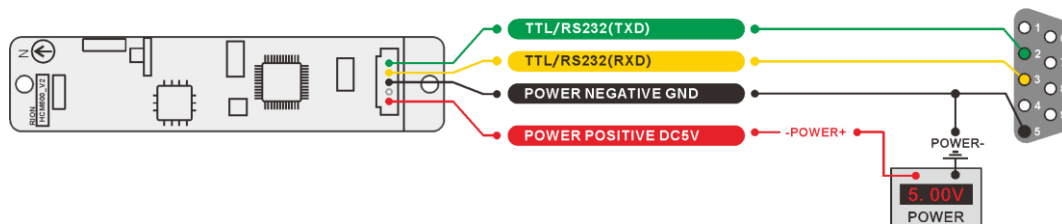
Eg: HCM605B-232: 360deg tilt 3D compass with case, RS232 output.

► ELECTRICAL CONNECTION

HCM600B SINGLE BOARD WIRING DEFINITION

LINE COLOR FUNCTION	BLACK	RED	YELLOW	GREEN
	GND Power negative	DC 5V Power supply positive	TTL/RS232(RXD) Or RS485(D-)	TTL/RS232(TXD) Or RS485(D+)

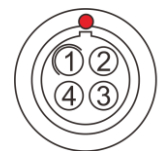
RS232/TTL wiring definition



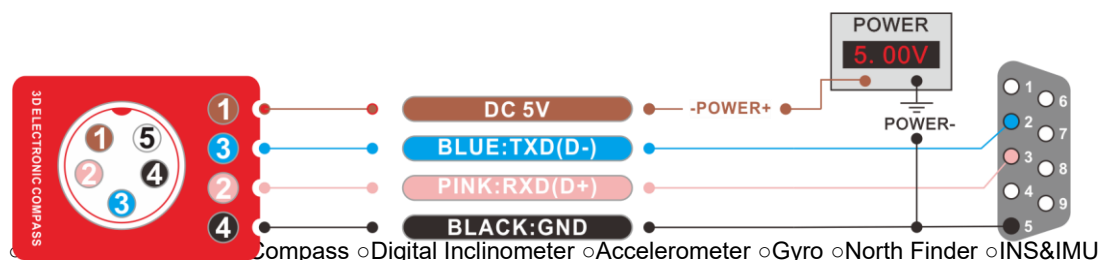
RS485 wiring definition

HCM605B WIRING DEFINITION

LINE COLOR FUNCTION	BLACK	PINK	BLUE	BROWN
	GND	RS232(RXD) Or RS485(D+)	RS232(TXD) Or RS485(D-)	DC 5V Power supply positive



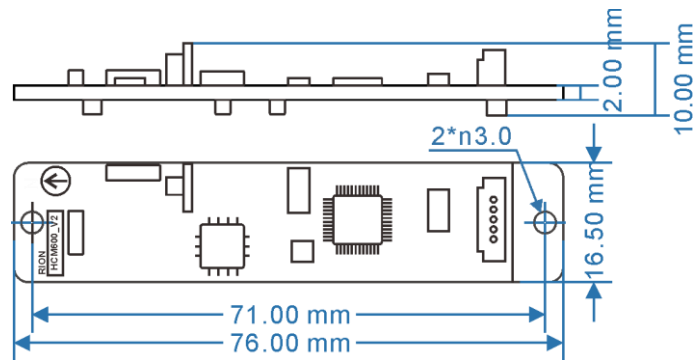
- 1:DC 5V
- 2:RXD
- 3:TXD
- 4:GND



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► **SIZE**

SINGLE BOARD SIZE

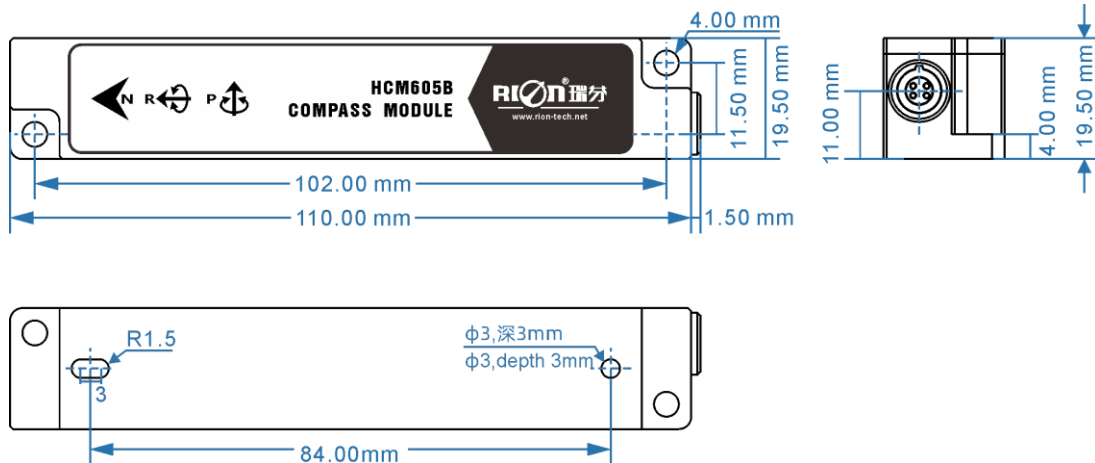


PCBA board size: L76×W16.5×H10mm

Installation size: L71×H2mm

Mounting screws: 2 M3 screws

SHELL SIZE



Shell size: L111.5×W19.5×H19.5mm

Installation size: L102×W11.5×H4mm

Mounting screws: 2 M4 screws

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