米朗 MIRAN®

中国工信部高精度传感器一条龙应用计划示范项目

国家级专精特新“小巨人”企业，国家级高新技术企业

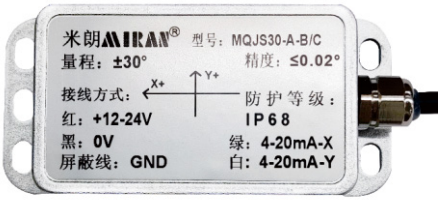
中国工业强基重点产品，中国工信部传感器一条龙应用计划示范企业

倾角传感器

Tilt Angle Sensor



A型静态倾角
type A static inclination



B型静态倾角
type B static inclination



C型静态倾角
type C static inclination



D型静态倾角
type D static inclination



E型静态倾角(不锈钢材质)
type E static inclination (stainless steel)



C型动态倾角
type C dynamic inclination

静态/动态倾角传感器

STATIC/DYNAMIC INCLINATION SENSOR

- Demonstration project of one-stop application plan for high-precision sensors of Ministry of Industry and Information Technology of China
- National level specialized and special new "little giant" enterprise, national level high-tech enterprise
- Key products of strong industrial base in China, demonstration enterprise of sensor one-stop application plan of Ministry of Industry and Information Technology of China

MQJ高精度静态倾角传感器
MQJ High Precision Static Inclination Sensor

产品实物图Product Picture

倾角传感器单轴Inclination Sensor Single Axis



MQJD30-V1-A



MQJD30-V1-B



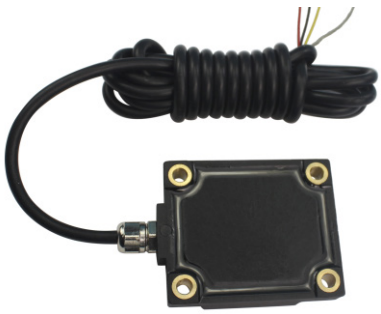
MQJD30-485-C



MQJD30-V1-D



MQJD30-V1-D

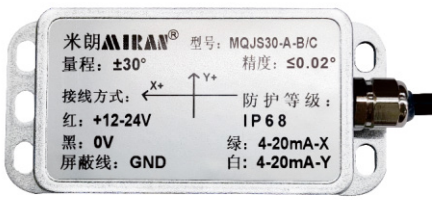


MQJD30-V1-D

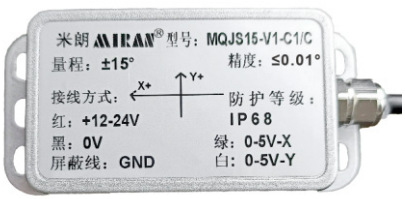
倾角传感器双轴Inclination Sensor Dual Axis



MQJS30-485-A



MQJS30-A-B



MQJS15-V1-C1

倾角传感器单轴/双轴（不锈钢材质）
Inclination Sensor Single / Dual Axis (Stainless Steel)



MQJS60-485-E/C



MQJS60-485-E/C



MQJS60-485-E/C

产品型号选型Product Model Selection

MQJ □ □□ - □□□ - □ / □

MQJ：米朗科技倾角传感器
miran technology inclination sensor

□：
D:单轴
D:single axis
S:双轴
S:dual axis

□□：
15:±15°
30:±30°
60:±60°
90:±90°

□□□：
V1:0-5V输出
V1:0-5V output
V2:0-10输出
V2:0-10 output
A:4-20mA输出
A:4-20mA output
485: RS485输出
485: RS485 output

□：
A1:圆形电子仓水平安装（尺寸L55*W56*H18.8mm）
A1: round electronic bin horizontal mounting(dimensions L55*W56*H18.8mm)
A2:圆形电子仓垂直安装（尺寸L55*W56*H18.8mm）
A2: vertical mounting of round electronic bin(dimensions L55*W56*H18.8mm)
A3:圆形电子仓水平倒置安装（尺寸L55*W56*H18.8mm）
A3: round electronic bin horizontal inverted installation(dimensions L55*W56*H18.8mm)
B:长方形电子仓水平安装（尺寸L85*W37*H26mm）
B: rectangular electronic bin horizontal installation(dimensions L85*W37*H26mm)
C1:长方形电子仓水平安装（尺寸L88*W41*H20mm）
C1: rectangular electronic bin horizontal installation(dimensions L88*W41*H20mm)
C2:长方形电子仓垂直安装（尺寸L88*W41*H20mm）
C2: vertical mounting of rectangular electronic bin(dimensions L88*W41*H20mm)
C3:长方形电子仓水平倒置安装（尺寸L88*W41*H20mm）
C3:rectangular electronic compartment installed horizontally inverted(dimensions L88*W41*H20mm)
D:方形电子仓水平安装（尺寸L60*W50*H20.3mm）
D:square electronic bin horizontal mounting(dimensions L60*W50*H20.3mm)
E1:圆形不锈钢电子仓水平安装(尺寸L66*W58*H30mm)
E1: round stainless steel electronic bin horizontal installation (size L66*W58*H30mm)
E2:圆形不锈钢电子仓垂直安装(尺寸L66*W58*H30mm)
E2: vertical installation of round stainless steel electronic bin (size L66*W58*H30mm)
E3:圆形不锈钢电子仓水平倒置安装(尺寸L66*W58*H30mm)
E3:round stainless steel electronic bin horizontal inverted installation (size L66*W58*H30mm)

例如Example:

MQJD30-485-A1/C: 米朗科技倾角传感器单轴倾角检测，测量范围为±30°，输出方式为RS485输出，圆形电子仓水平安装方式（外观尺寸L55*W56*H18.8mm），防水接头。如有特殊需求订购时备注。

MQJD30-485-A1/C: miran technology inclination sensor single-axis inclination detection, measuring range ±30°, output mode is RS485 output, round electronic compartment horizontal mounting mode (appearance ruler L55*W56*H18.8mm), waterproof connector. If you have special needs, please make a note when ordering.

产品概述Product Overview

MQJ系列是米朗科技公司推出的高精度倾角传感器，最高分辨率可达0.01°，全量程线性精度高达0.01°，传感器内部采用高分辨率差分数模转换器，产品使用高精度的3D-MEMS测量芯片，内置自动温度补偿和滤波算法，最大程度减小了因环境变化引起的误差。为使产品在高低温环境中有优良的性能，特对产品在-35°C～+60°C范围内进行温度补偿，有效抑制由温度变化引起的角度数据偏移，确保测量数据的准确性，稳定性。

产品外壳采用锌合金压铸成型，机械强度高，温度膨胀系数小，密封性能高，安装方便、使用简单、体积小、抗外界电磁干扰、承受振动冲击能力强，是测量测绘，高层建筑，公路桥梁，工业自动化，工程机械等行业倾角测量的推荐选择。

MQJ series is a high-precision inclination sensor with the highest resolution up to 0.01° and linear accuracy up to 0.01° in full scale. The sensor adopts high-resolution differential digital-to-analog converter, and the product uses high-precision 3D-MEMS measuring chip with built-in automatic temperature compensation and filtering algorithm to minimize the error caused by environmental changes. In order to make the product in the high and low temperature environment has excellent performance, special products in the -35 °C ~ +60 °C range of temperature compensation, effective suppression of temperature changes caused by the angular data offset, to ensure the accuracy and stability of the measurement data.

The product shell adopts zinc alloy die-casting molding, high mechanical strength, temperature expansion coefficient is small, high sealing performance, easy to install, simple to use, small size, anti-external electromagnetic interference, bear vibration impact ability, is the measurement of surveying and mapping, high-rise buildings, highways and bridges, industrial automation, engineering machinery and other industries inclination measurement of the recommended choice.

性能参数Performance Parameters

电气指标Electrical indicators

测量范围 Measurement Range	±15°、±30°、±60°、±90°	
测量轴 Measuring Axis	单轴 single axis	双轴 dual axis
工作电流 Operating Current	18~45mA(24V)	
分辨率 Resolution	0.01°(最高分辨率理论可达0.001°) 0.01° (Theoretically, the highest resolution can reach 0.001°)	
供电电压 Supply Voltage	12-24V DC	
输出信号 Output Signal	RS485 / 0-5V / 0-10V / 4-20mA	
线性精度 Linear Accuracy	0-15°线性精度≤0.01°;15°-30°线性精度≤0.02°;30°-85°线性精度≤0.03° 0-15° linearity accuracy ≤ 0.01°; 15°-30° linearity accuracy ≤ 0.02°; 30°-85° linearity accuracy ≤ 0.03°	

性能指标Performance indicators

工作温度 Operating Temperature	-40~+85°C	储存温度 Storage Temperature	-55~+100°C
输出频率 Output Frequency	10~20Hz		
安装 Mounting	四颗M4螺丝 four M4 screws		
抗震动 Anti-vibration	10grms、10～1000Hz		
上电启动时间 Power-on Start-up Time	＜1s		
外壳材质 Shell Material	锌合金 zinc alloy		
绝缘电阻 Insulation resistance	≥100兆欧 ≥100 megohms		
零点温漂 Zero-point Temperature Drift	单轴:±0.0007°/°C 双轴:±0.005°/°C single axis:±0.0007°/°C dual axis:±0.005°/°C		
抗冲击 Impact Resistance	2000g,0.5ms,3 次/轴 2000g,0.5ms,3 times/axis		
防护等级 Protection Class	IP67(经客户定制，防水接头出线型可做到IP68) IP67 (waterproof connector can be customized to IP68)		

电气连接Electrical Connection

单轴模拟量接线定义 single-axis analog wiring definition	红色 RED	黑色 BLACK		黄色 YELLOW		屏蔽线SHIELDED WIRE		
	电源正极 power positive +12~24VDC	电源负极 power negative 0V		信号输出 signal output OUT		接地 grounding		

双轴模拟量接线定义 dual-axis analog wiring definition	红色 RED	黑色 BLACK		绿色 GREEN		白色 WHITE		屏蔽线SHIELDED WIRE
	电源正极 power positive +12~24VDC	电源负极 power negative 0V		模拟量输出-X analog output-X		模拟量输出-Y analog output-Y		接地 grounding

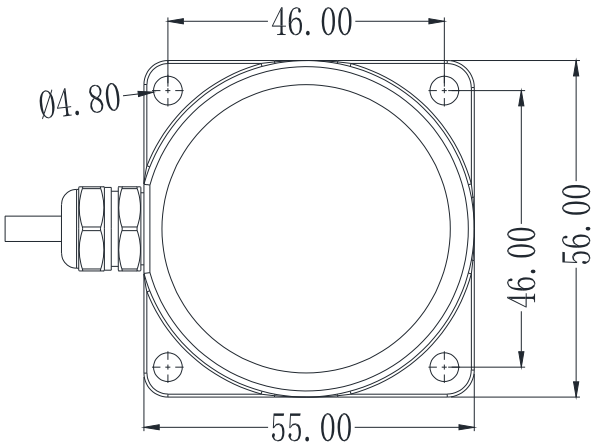
单/双轴数字量接线定义 single/dual axis digital wiring definitions	红色 RED	黑色 BLACK		绿色 GREEN		白色 WHITE		屏蔽线SHIELDED WIRE
	电源正极 power positive +12~24VDC	电源负极 power negative 0V		RS485 A		RS485 B		接地 grounding

注：以上仅为参考，具体接线定义以产品实物标签上的标注为准。

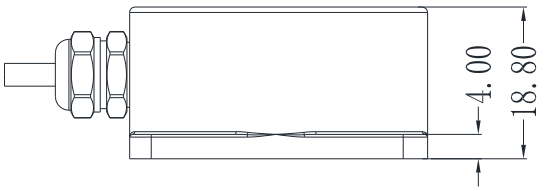
Note: The above is for reference only, the specific wiring definition is subject to the labeling on the physical product label.

产品尺寸图Product Dimension Drawing

A1/A2/A3型尺寸size：L55*W56*H18.8(mm)

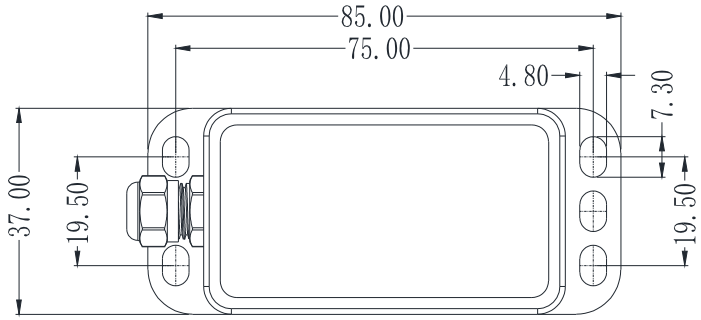


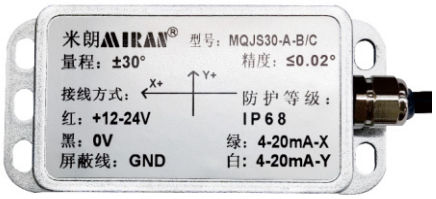


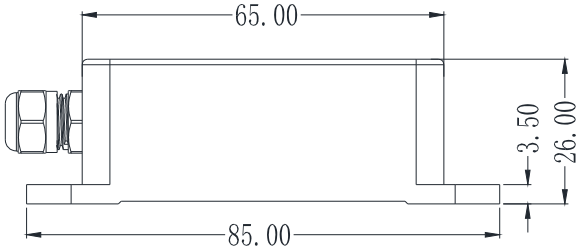




B型尺寸size：L85*W37*H26(mm)

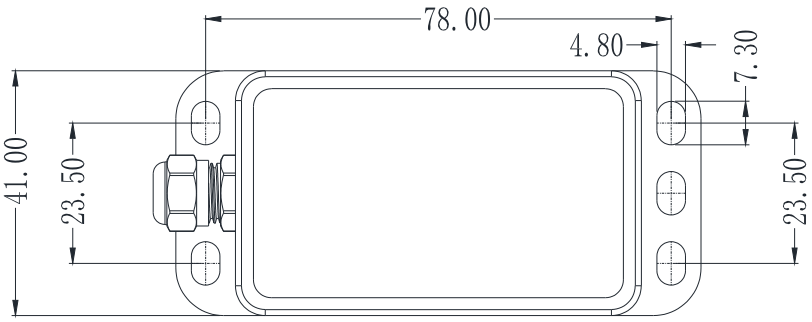




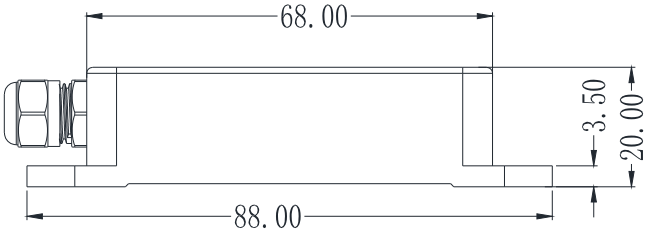




C1/C2/C3型尺寸size：L88*W41*H20(mm)

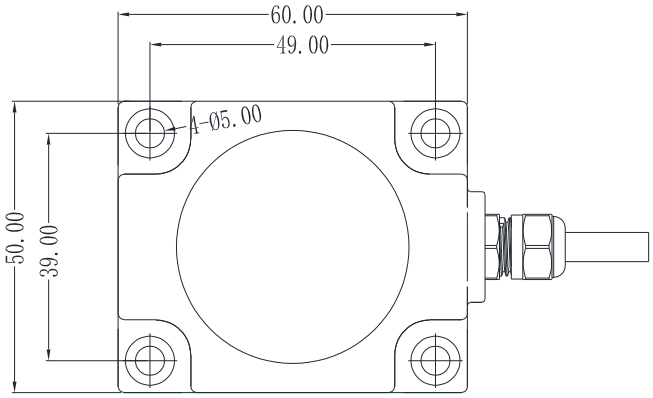




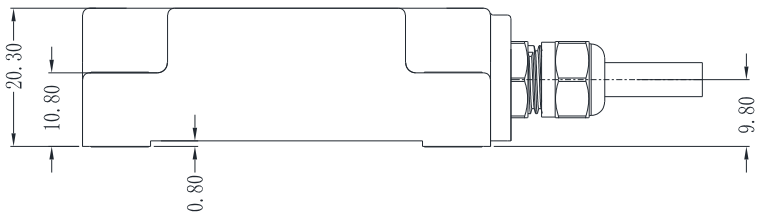




D型尺寸size：L60*W50*H20.3(mm)

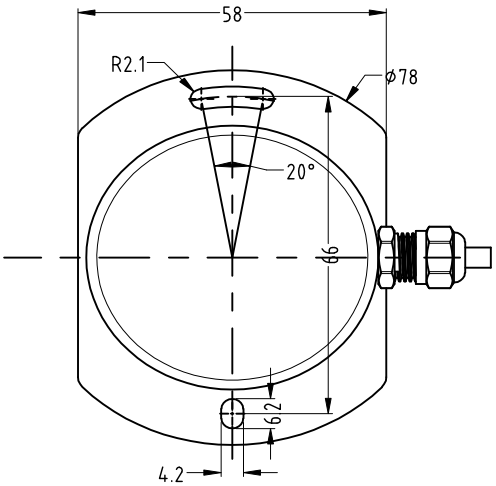




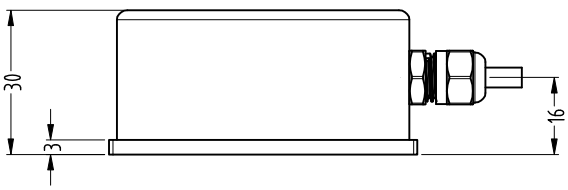




E1/E2/E3型尺寸size:L66*W58*H30(mm)









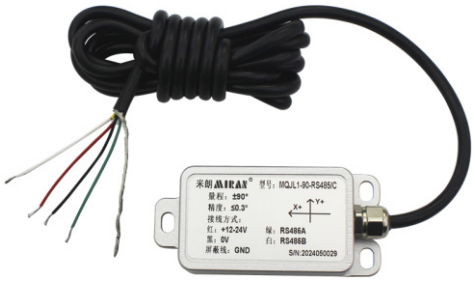
MQJL经济型静态倾角传感器
MQJL Economic Static Inclination Sensor

产品实物图Product Picture

MQJL-C型（单/双轴）
MQJL-C type (single/dual axis)







产品型号选型Product Model Selection

MQJL □-□□-□□□-□/□

- MQJL：倾角传感器经济型系列 Inclination sensor economy series
- □（1）：1:单轴 1:single axis；2:双轴 2:dual axis
- □□：15:±15°；30:±30°；45:±45°；60:±60°；90:±90°；180:±180°(限X轴X-axis only)
- □□□：A:4-20mA输出 A:4-20mA output；V1:0-5V输出 V1:0-5V output；V2:0-10V输出 V2:0-10V output；485: RS485输出 485: RS485 output
- □：C1:长方形电子仓水平安装（尺寸L80*W36*H20mm） C1: Rectangular electronic bin horizontal installation(dimensions L80*W36*H20mm)；C2:长方形电子仓垂直安装（尺寸L80*W36*H20mm） C2: Vertical mounting of rectangular electronic bin(dimensions L80*W36*H20mm)；C3:长方形电子仓水平倒置安装（尺寸L80*W36*H20mm） C3:Rectangular electronic compartment installed horizontally inverted(dimensions L80*W36*H20mm)
- □：C:防水接头 C: waterproof connector

例如Example:

MQJL1-30-V1-C1/C: 米朗科技倾角传感器经济型系列，单轴，测量范围为±30°，0-5V输出，长方形电子仓水平安装（尺寸L80*W36*H20mm），防水接头。如有特殊需求订购时备注。

MQJL1-30-V1-C1/C: miran technology inclination sensor economy series, single axis, measuring range ±30°, 0-5V output, Rectangular electronic bin horizontal installation(dimensions L80*W36*H20mm), waterproof connector. If you have special needs when ordering note.

产品概述Product Overview

MQJL经济型倾角传感器系列采用抗干扰平台设计，集成新型微机械传感单元，宽温工作性能，长期工作稳定可靠。本产品采用非接触式原理测量物体的倾斜角度，通过内部的微机械单元测量地球引力所产生的分量来解算出实时倾斜角度，安装简单方便，只需固定在被测动作的物体上，不需要固定轴与转动轴，多种安装方式，满足客户测量需求，是工程机械车辆，农用机械，等工业设备的理想配件。

MQJL economic inclination sensor series adopts anti-interference platform design, integrating new micro-mechanical sensing unit, wide-temperature working performance, stable and reliable long-term work. This product adopts non-contact principle to measure the tilt angle of the object, through the internal micro-mechanical unit to measure the component generated by the earth's gravity to solve the real-time tilt angle, simple and convenient to install, only need to be fixed in the measured action of the object, do not need to be fixed axle and rotating axis, a variety of installation methods to meet customer measurement needs, is the engineering machinery vehicles, agricultural machinery, and other industrial equipment, the ideal accessory.

电气连接Electrical Connection

单轴模拟量接线定义 single-axis analog wiring definition	红色 RED	黑色 BLACK	黄色 YELLOW	屏蔽线SHIELDED WIRE	
	电源正极 power positive +12~24VDC	电源负极 power negative 0V	信号输出 signal output OUT	接地 grounding	

双轴模拟量接线定义 dual-axis analog wiring definition	红色 RED	黑色 BLACK	绿色 GREEN	白色 WHITE	屏蔽线SHIELDED WIRE
	电源正极 power positive +12~24VDC	电源负极 power negative 0V	模拟量输出-X analog output-X	模拟量输出-Y analog output-Y	接地 grounding

单/双轴数字量接线定义 single/dual axis digital wiring definitions	红色 RED	黑色 BLACK	绿色 GREEN	白色 WHITE	屏蔽线SHIELDED WIRE
	电源正极 power positive +12~24VDC	电源负极 power negative 0V	RS485 A	RS485 B	接地 grounding

注：以上仅为参考，具体接线定义以产品实物标签上的标注为准。
Note: The above is for reference only, the specific wiring definition is subject to the labeling on the physical product label.

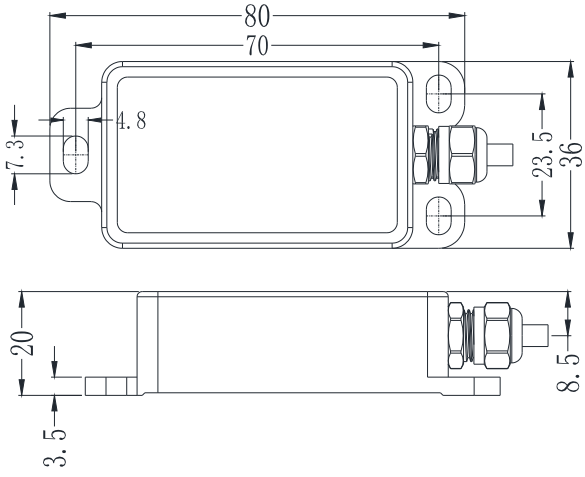
性能参数Performance Parameters

性能指标Performance indicators

测量轴 Measuring axis	单轴/双轴 single axis/dual axis	防护等级 Protection class	IP68
工作温度 Operating temperature	-40~+85°C	工作电流 Operating current	18~45mA(24V)
输出频率 Output Frequency	5Hz	安装 Mounting	M4螺丝 M4 screws
抗震动 Anti-vibration	10grms、10～1000Hz	输出负载 Output load	＞500欧姆 >500 ohms
外壳材质 Shell material	锌合金 zinc alloy	绝缘电阻 Insulation resistance	≥100兆欧 ≥100 megohms
分辨率 Resolution	0.01°	供电电压 Supply voltage	+ 12-24VDC
输出信号 Output signal	RS485 / 0-5V / 0-10V / 4-20mA	工作时间 Working hours	50000小时/次(无故障) 50000 hours/times (trouble-free)
温度漂移特性 Temperature drift characteristics	-35~65°C条件下，±0.5° -35~65°C conditions, ±0.5°	抗冲击 Impact resistance	100g@11ms、三轴向(半正弦波) 100g@11ms, triaxial (half sine wave)
测量范围 Measurement range	±15°、±30°、±60°、±90°、(±180°,限X轴) ±15°, ±30°, ±60°, ±90°, (±180°, X-axis only)		
线性精度 Linear accuracy	0-15°线性精度≤0.05°;15°-30°线性精度≤0.2°;30°-90°线性精度≤0.3° 0-15° linearity accuracy ≤ 0.05°; 15°-30° linearity accuracy ≤ 0.2°; 30°-90° linearity accuracy ≤ 0.3°		

产品尺寸图Product Dimension Drawing

C1/C2/C3型尺寸size：L80*W36*H20(mm)

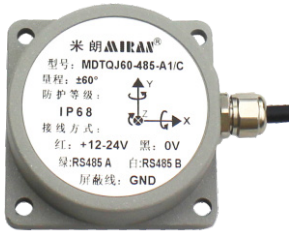


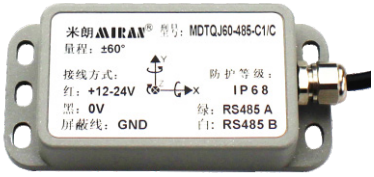




MDTQJ动态倾角传感器
MDTQJ Dynamic Tilt Sensor

产品实物图Product Picture





产品型号选型Product Model Selection

MDTQJ □□ - □□□ - □ / □

MDTQJ 米朗科技动态倾角传感器
miran technology dynamic inclination sensor

□□
- 15:±15°
- 30:±30°
- 90:±90°
- 180:±180°

□□□
- 232:RS232输出
  232:RS232 output
- 485: RS485输出
  485: RS485 output
- TTL: TTL输出
  TTL: TTL output

□
- A1:圆形电子仓水平安装(尺寸L55*W56*H18.8mm)
  A1: Round electronic bin horizontal mounting(dimensions L55*W56*H18.8mm)
- A2:圆形电子仓垂直安装(尺寸L55*W56*H18.8mm)
  A2: Vertical mounting of round electronic bin(dimensions L55*W56*H18.8mm)
- A3:圆形电子仓水平倒置安装(尺寸L55*W56*H18.8mm)
  A3: Round electronic bin horizontal inverted installation(dimensions L55*W56*H18.8mm)
- C1:长方形电子仓水平安装(尺寸L88*W41*H20mm)
  C1: Rectangular electronic bin horizontal installation(dimensions L88*W41*H20mm)
- C2:长方形电子仓垂直安装(尺寸L88*W41*H20mm)
  C2: Vertical mounting of rectangular electronic bin(dimensions L88*W41*H20mm)
- C3:长方形电子仓水平倒置安装(尺寸L88*W41*H20mm)
  C3:Rectangular electronic compartment installed horizontally inverted(dimensions L88*W41*H20mm)

□
- C:防水接头
  C: waterproof connector
- P:航空插头
  P: aviation plugs

例如Example:

MDTQJ90-485-A2/C: 米朗科技动态倾角传感器，测量范围为±90°，RS485输出，圆形电子仓垂直安装(尺寸L55*W56*H18.8mm)，防水接头。如有特殊需求订购时备注。

MDTQJ90-485-A2/C: miran technology dynamic inclination sensor, measuring range ±90°, RS485 output, round electronic compartment mounted vertically (dimensions L55*W56*H18.8mm), waterproof connector. If there is any special requirement make a note when ordering.

产品概述Product Overview

动态倾角传感器（别名：六轴倾角传感器、姿态传感器）传感器内部使用数字型MEMS动态芯片，可测量运动载体的姿态参数（横滚、俯仰以及方位角），适用于运动或振动状态下的倾角测量。产品内置加速度和陀螺传感器，集成了卡尔曼滤波算法，从而可测量运动或振动状态下的载体实时运动数据。产品RS485/232/TTL等信号输出模式可选，扩展性强。

六轴动态倾角传感器采用非接触式测量，能实时输出当前的姿态倾角，使用简单，无需找回相对变化的两个面安装。内部集成精度高的AD以及陀螺单元，可实时对非线性、正交耦合、温漂及离心加速度进行补偿，可以大大消除运动加速度干扰产生的离心误差，提高产品动态测量精度，可长期适应在复杂运动场景及恶劣环境中工作。该产品属于动静双模测量传感器，抗外界电磁干扰能力强，适用各类大型高强度冲击振动工业环境，是工业自动化控制测量姿态的理想选择。

The Dynamic Inclination Sensor (a.k.a. Six-axis Inclination Sensor, Attitude Sensor) utilizes a digital MEMS dynamic chip inside the sensor to measure the attitude parameters (roll, pitch, and azimuth) of the moving carrier, making it suitable for inclination measurements in motion or vibration. Built-in acceleration and gyro sensors with integrated Kalman filtering algorithms allow measurement of real-time carrier motion data in motion or vibration. The product RS485/232/TTL signal output modes can be selected, strong scalability.

The six-axis dynamic inclination sensor with non-contact measurement, and can output the current attitude inclination in real time, which is simple to use and does not need to retrieve the relative change of two surfaces for installation. The internal integration of high-precision AD and gyro unit can compensate for nonlinearity, orthogonal coupling, temperature drift and centrifugal acceleration in real time, which can greatly eliminate the centrifugal error caused by the interference of motion acceleration and improve the dynamic measurement accuracy of the product, which can be adapted to work in complex motion scenes and harsh environments for a long time. This product belongs to static and dynamic dual-mode measurement sensors, strong resistance to external electromagnetic interference, suitable for all kinds of large-scale high-intensity shock and vibration industry. It is suitable for all kinds of large-scale high-intensity shock and vibration industrial environments, and is the ideal choice for industrial automation control and attitude measurement.

性能参数Performance Parameters

性能指标Performance indicators

测量轴 Measuring axis	X 轴/Y 轴/Z 轴 X-axis/Y-axis/Z-axis	防护等级 Protection class	IP68
输出信号 Output signal	RS485、RS232、TTL	分辨率 Resolution	0.01°
上电启动时间 Power-on start-up time	1S	响应时间 Response time	0.01S
平均无故障工作时间 MTBF Mean time between failure MTBF	≥98000H/次 ≥98000H/times	绝缘电阻 Insulation resistance	≥100 兆欧 ≥100 megohms
材质 Material	锌合金 zinc alloy	安装 Mounting	M4 螺丝 M4 screws
抗震动 Anti-vibration	10grms、10～1000Hz		
抗冲击 Material	100g@11ms、三轴向（半正弦波） 100g@11ms, triaxial (half-sine wave)		
电磁兼容性 Electromagnetic compatibility	参照 EN61000 和 GBT17626 refer to EN61000 and GBT17626		
零点温度系数 Zero temperature coefficient	±0.01°/°C (-40～85°C)		
灵敏度温度系数 Sensitivity temperature coefficient	≤100ppm/°C(-40～85°C)		
测量范围 Measurement range	横滚±180°，俯仰±90°,方位±180°（掉电初始值为 0°） roll ±180°, pitch ±90°, azimuth ±180° (initial value 0° at power-down)		
线性精度 Linear accuracy	静态/@25°C：±0.05° static/@25°C: ±0.05°	动态/@25°C：±0.1° dynamic/@25°C : ±0.1°	
陀螺仪 Gyros	行程：±250°/s stroke: ±250°/s		
	角度随机游走系数(allan) 0.25°/sqrt(h) angular random wander coefficient (allan) 0.25°/sqrt(h)		
	零偏稳定性(10s 均值): 8.5°/h zero bias stability (10s average) :8.5°/h	零偏不稳定性(allan) :4.5°/h zero bias instability (allan) :4.5°/h	
加速度 Accelerations	行程：±8g stroke: ±8g		
	速度随机游走系数(allan) 0.005m/s/sqrt(h) velocity random wander factor (allan) 0.005m/s/sqrt(h)		
	零偏稳定性(10s 均值): 0.02mg zero bias stability (10s average) :0.02mg	零偏不稳定性(allan) : 0.005mg zero bias instability (allan) :0.005mg	

电气连接Electrical Connection

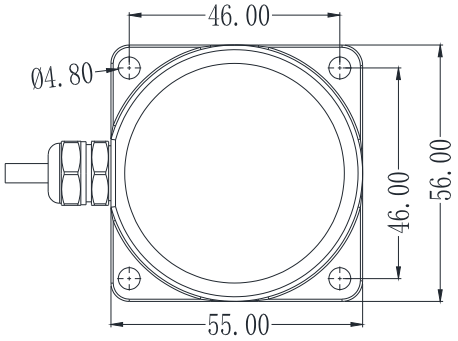
接线定义 Wiring Definitions	红色 RED	黑色 BLACK	绿色 GREEN	白色 WHITE	屏蔽线SHIELDED WIRE
	电源正极 power positive +12~24VDC	电源负极 power negative 0V	信号 RS485 A signal RS485 A	信号 RS485 B signal RS485 B	GND 接外壳,接大地 connect to shell, earth

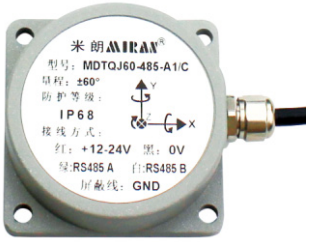
注:以上仅为参考,具体接线定义以产品实物标签上的标注为准。

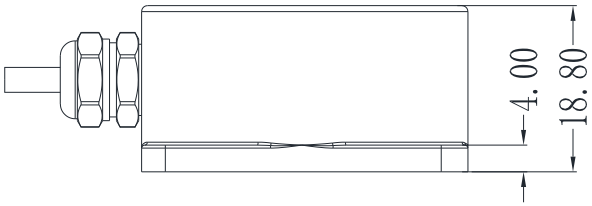
Note: The above is for reference only, the specific wiring definition is subject to the labeling on the physical product label.

产品尺寸图Product Dimension Drawing

A1/A2/A3型尺寸size：L55*W56*H18.8(mm)

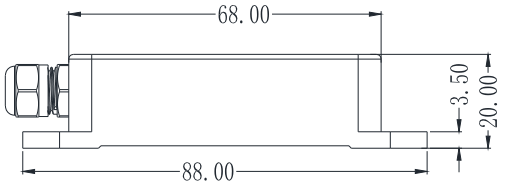


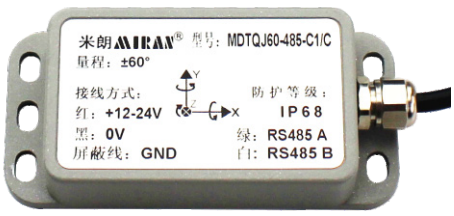


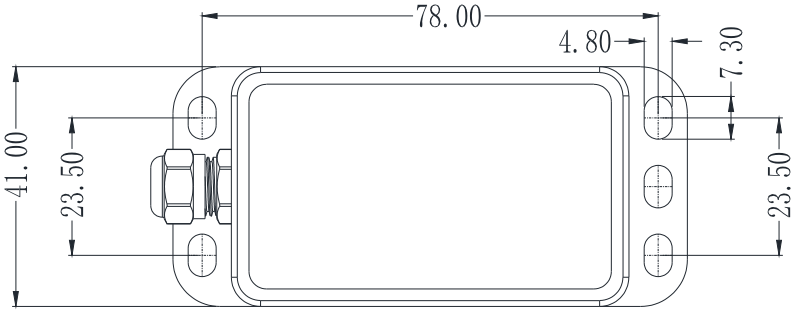




C1/C2/C3型尺寸size：L88*W41*H20(mm)





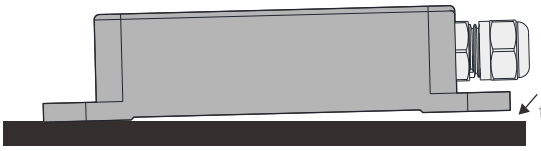




产品安装Product Installation

正确的安装方式可以避免产生测量误差，传感器安装时要做到如下几点：
correct mounting can avoid measurement errors, the sensor should be mounted as follows:

一、要保证传感器安装面与被测量面完全紧靠，被测量面要尽可能水平，不能有夹角产生。如下图所示
一、to ensure that the sensor mounting surface and the measured surface completely close to the measured surface, the measured surface should be as horizontal as possible, there can be no angle generated. as shown in the figure below



被测量面measuring surface

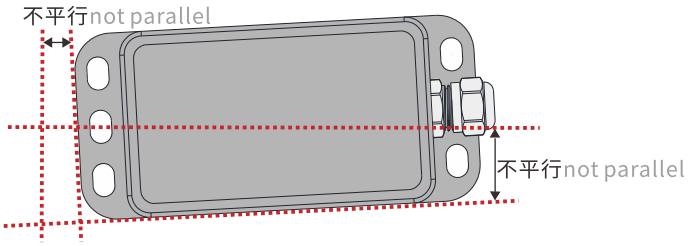
错误incorrect



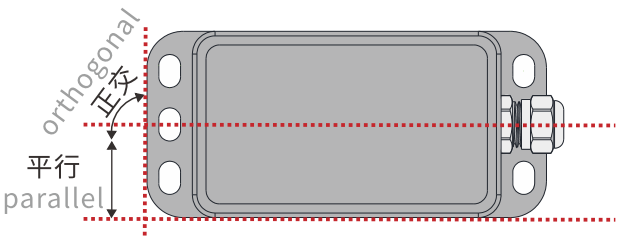
被测量面measuring surface

正确properly

二、传感器底边线和被测物体轴线不能有夹角产生，安装时应保持传感器底边线与被测物体转动轴线平行或正交。如下图所示
二、the bottom edge of the sensor and the axis of the object to be measured can not have the angle generated, the installation should keep the bottom edge of the sensor and the axis of rotation of the object to be measured parallel or orthogonal. as shown in the figure below



错误incorrect

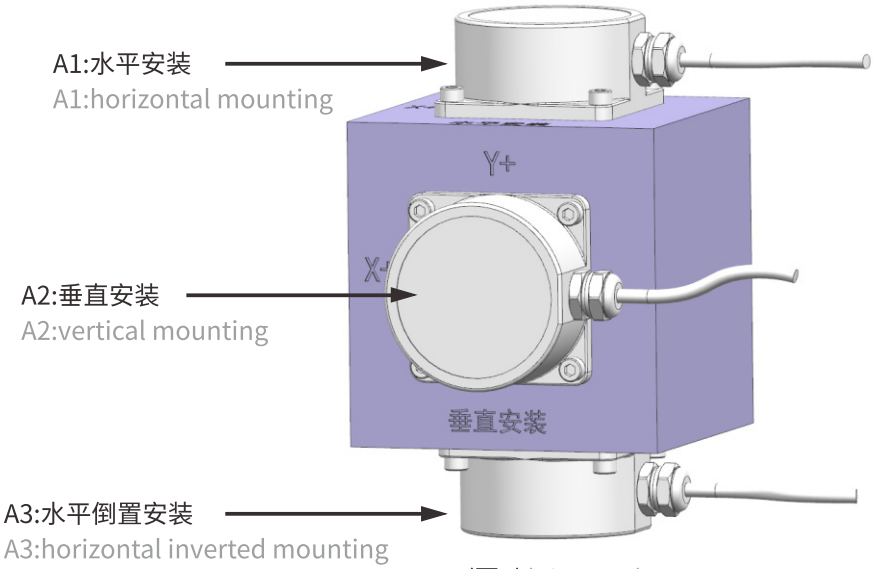


正确properly

三、传感器的安装面与被测量面必须固定紧密、接触平整、转动稳定，要避免由于加速度、振动产生的测量误差。
三、the sensor's mounting surface and the measured surface must be fixed tightly, contact flat, stable rotation, to avoid measurement errors due to acceleration, vibration.

产品安装示意图Product Installation Diagram

A:圆形电子仓产品安装示意图(目前图1示意图只针对A型)
A: Circular electronic warehouse product installation schematic (currently figure 1 schematic only for A type)



(图1)(Figure 1)



多种安装方式可供选择
multiple mounting options available

通讯协议communication protocols

支持的MODBUS传输方式:RTU模式;默认通讯参数:波特率9600、8位数据、无校验、1个停止位,地址默认01。
supported MODBUS transmission mode: RTU mode; Default communication parameters: baud rate 9600, 8-bit data, no parity, 1 stop bit, address default 01.

参数parameters	Modbus保持寄存器地址(16位) Modbus holding register address (16 bits)
角度perspectives	0000H(整数)、0001H(小数)0000H (integer),0001H (decimal)
温度temp	0006H
满量程full scale	000EH(整数)、000FH(小数)000EH (integer), 000FH (decimal)
校验calibration	0014H
地址address	0016H
波特率baud	0017H
保留reservations	0018H(整数)、0019H(小数)0018H (integer), 0019H (decimal)

注:一个寄存器占用两个字节。
如0024H、0025H 占用4个字节
Notes: one register occupies two bytes. for example, 0024H, 0025H occupy 4 bytes.

应用领域Areas of application



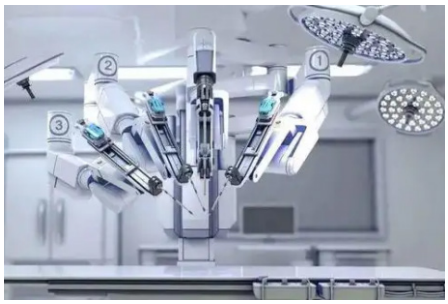
• 铁路机车监测
Railroad locomotive monitoring



• 建筑健康监测
Building health monitoring



• 塔杆倾斜监测
Tower tilt monitoring



• 工业自动化姿态控制
Industrial automation attitude control



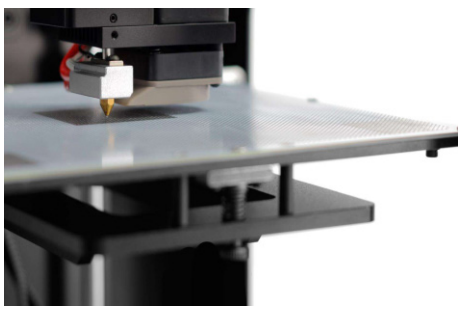
• 工程机械倾角测量
Construction machinery inclination measurement



• 桥梁与大坝监测
Bridge and dam monitoring



• 石油钻井设备
Oil drilling equipment



• 精密平台自动调平
Precision platform with automatic leveling

• • •

倾角传感器应用场所极多，随着MEMS技术的发展，倾角传感器得到越来越广泛的应用。适合应用于工厂、山体、铁路、隧道、船业、机械、建筑业、医疗事业、桥梁铺设、水坝建设、汽车行业、核工业和航空航天事业等。

Inclination sensor application places are extremely many, with the development of MEMS technology, the inclination sensor is more and more widely used. Suitable for applications in factories, mountains, railroads, tunnels, shipbuilding, machinery, construction, medical business, bridge laying, dam construction, automotive industry, nuclear industry and aerospace business.



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质量第一 Quality First

用户至上 Customer First

诚信为本 Credit First

本彩页内产品尺寸，性能等参数仅作为参考，随着产品的不断更新换代，或可能有所调整改变，恕不另行通知，最终尺寸要以产品实物为准。实际产品尺寸和性能参数等，需要在实际购买的时候，与我司业务或者技术人员沟通确认最终数据，以最终书面确认的尺寸和数据为准。

（尤其是在尺寸方面要求特别严格的，或者在产品实物没收到之前，就要先在自己设备上加工做好安装孔位和确定安装空间位置的，要特别注意,要在购买前3天内与我们书面再次确认好产品的实际尺寸，以免造成不必要的返工等损失，若没有在购买前3天内与我们书面确认尺寸而造成后续安装困难等损失，我司不予承担，最终尺寸要以产品实物为准。）

将致力于位移、物位、角度等测控领域

Will be committed to the field of displacement, level, angle measurement and control

为客户提供一站式解决方案的产品与服务

Products and services that provide one-stop solutions for our customers

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20261001-倾角传感器彩页
20261001 - Inclination Sensor Brochure

主要著作人：王工
Main author: Wang artwork

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