Manuals+ — User Manuals Simplified.

Rion Technology MCA410 Voltage Output Type Inclinometer Instruction Manual

Contents

Rion Technology MCA410 Voltage Output Type Inclinometer

Product Information

- Brand: RION TECH
- Model: MCA410T/420T
- Voltage Output Type Inclinometer Certifications: CE
- Appearance Patent: ZL 201830752891.5
- Waterproof: Yes Output: 0~5V
- Power Supply: 9~36V
- Working Temperature: -40~+85 degrees
- Celsius High Anti-shock: >3500g
- Applications: Agricultural machinery, Lifting machinery, Crane, Aerial platform, Solar tracking system, Medical equipment, Electric vehicle control Parameters:
- Output Voltage: 0~5V
- Resolution: 0.1
- Accuracy: 0.05
- Response Time: 25s
- Temperature Drift: -40~85 degrees Celsius
- Output Load: >500 ohm
- Working Time: 50000 hours/time (no fault)
- Insulation Resistance: >100 ohm
- Anti-shock: 10grms 10~1000Hz
- Impact Resistance: 100g@11ms, 3 Axial Direction (Half Sinusoid)
- Shell Material: Electroplated metal housing
- Weight: 200g (Including 1 meter standard cable)
- Certificate: CE ; APPEARANCE PATENT
- Quality System: GB/T19001-2016 idt ISO19001:2015 standard (Certificate No.: 128101)
- **Size:**
    - Length: 52.00 mm
   - Width: 10.00 mm
    - Height: 15.00 mm

Product Usage Instructions

1. The working principle of the inclinometer is to sense the gravity of the earth.
    - When installing, ensure that the sensing axis of the sensor is parallel to the tilt axis of the measured object to achieve the best accuracy.
2. The installation surface of the measured object must be flat, stable, and in close contact with thesensor.
    - Errors may occur if the installation surface is not even.
3. Any side of the six sides of the sensor can be used as the installation side.
    - After installation, set the current position as the zero position by using the zero set function.
    - At the same time, set the installation way as well. The set value is stored in the reservoir of the sensor.
    - After zero set, the sensor will work and regard the current position as the zero position.
4. **To perform zero set, follow these steps:**
    - Short circuit the set line (grey) and GND (black) for 3 seconds or more

- The power indicator will shut off at the same time.
- Unbind the set line after the power indicator flickers again.
- Zero set is finished and the indicator will return to its normal on status.

For further information or assistance, please refer to Article 2 of the operating instructions or contact RION TECH at:

- **Tel:** (86) 755-29657137, (86) 755-29761269
- **Email:** sales@rion-tech.net
- **Website:** www.rionsystem.com/en/
- **Address:** Block 1&Block 6, COFCO(FUAN) Robotics Industrial Park, Da Yang Road No. 90, Fuyong Distict, Shenzhen City, China
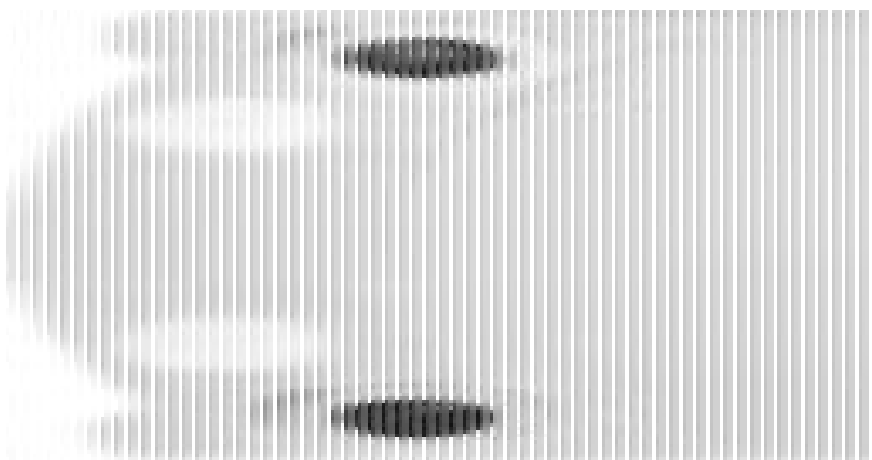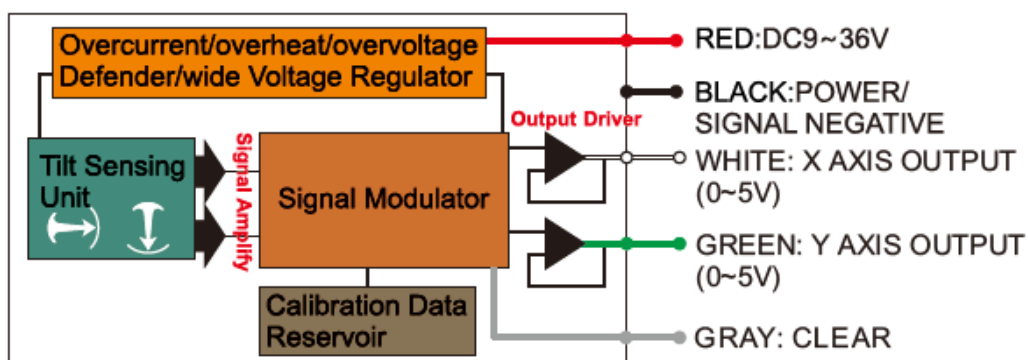
DESCRIPTION

MCA410/420T series tilt sensor is a new low cost tilt angle measurement product developed independently by RION. It adopts the latest ant interference platform design and integrates a new micromechanical sensing unit. It has wide working temperature, excellent antivibration and long-term stable and reliable performance. This product adopts the noncontact principle to measure the tilt angle. The internal capacitive micromechanical unit measures the component generated by the gravity of the earth to solve the real time tilt angle. The installation is simple and convenient. It only needs to be fixed on the object being measured and there is no need to find fixed shaft and rotating shaft. Variety of installation methods could meet customer different measurement needs. It is an ideal sensor for construction machinery vehicles, agricultural machinery, solar tracking and other industrial equipment's.
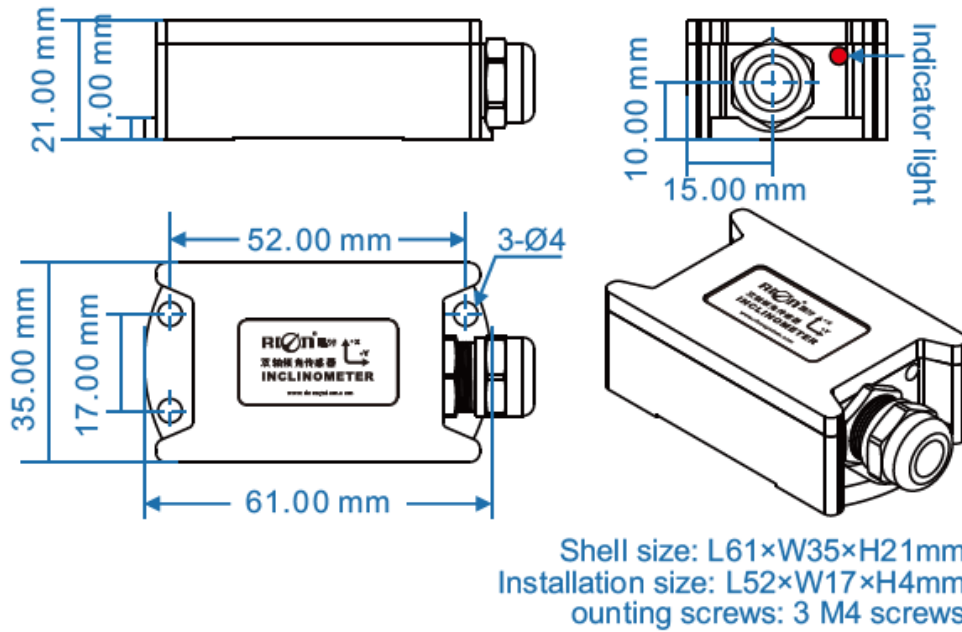
FEATURES

- Resolution:0.1°
- Six installation methods
- Zero set function
- P67
- Output: 0~5V
- Power supply: 9~36V
- Work temperature:-40~+85℃
- High anti-0shock>3500g

SYSTEM DIAGRAM

21.00 mm
4.00 mm

10.00 mm
15.00 mm
Indicator light

52.00 mm
3-Ø4
35.00 mm
17.00 mm
61.00 mm

RION
双轴角度传感器
INCLINOMETER
www.

RION
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Shell size: L61×W35×H21mm
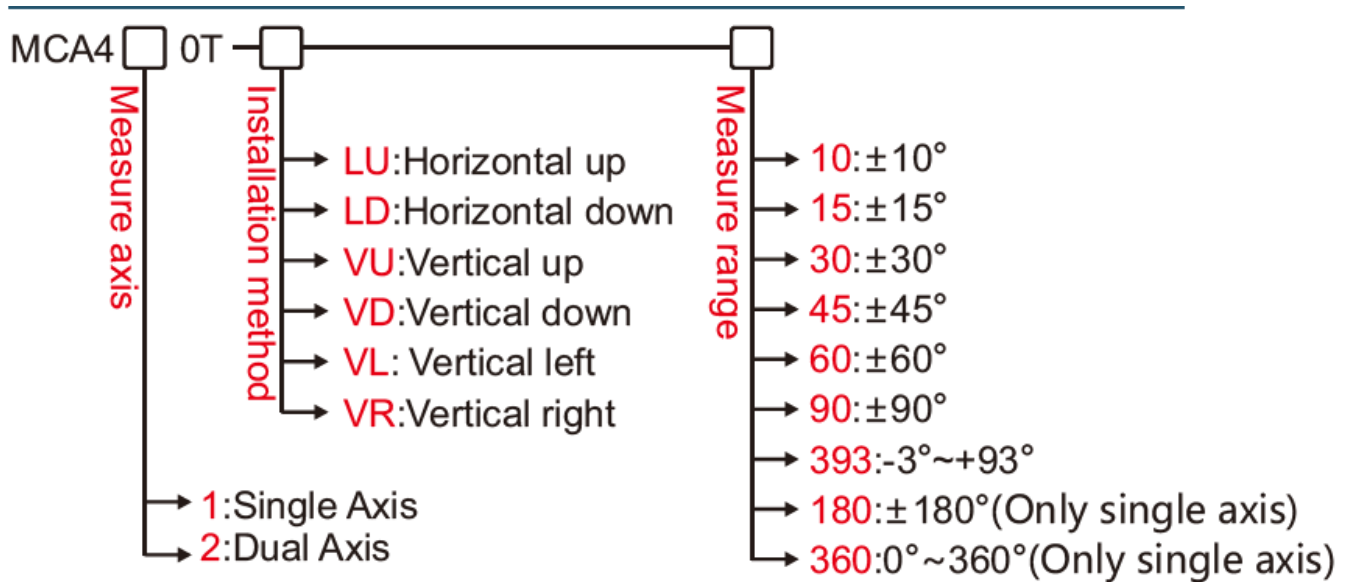Installation size: L52×W17×H4mm
ounting screws: 3 M4 screws

APPLICATION

- Agricultural machinery
- Lifting machinery
- Medical equipment
- Solar tracking system
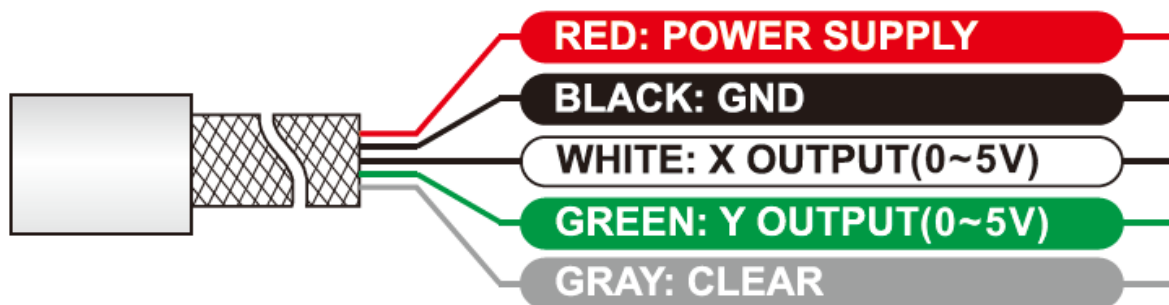- Medical equipment
- Electric vehicle control

PARAMETERS

MCA410T/420T	CONDITIONS	PARAMETER	UNIT
Output Voltage		0~5	V
Resolution		0.1	°
Accuracy	25℃	±0.3	°
Response Time		0.05	S
Temperatu Re Drift	-40℃ ~ 85℃	±0.5	°
Output Load	>500 ohm		
Working Time	50000 hours/time(no fault)		
Insulation Resistance	>100 ohm		
Anti-shock	10grms、10~1000Hz		
Impact Resistance	100g@11ms,3 Axial Direction (Half Sinusoid)		
shell material	Electroplated metal housing		
Weight	≤200g(Including 1 meter standard cable)		
Certificate	CE ; APPEARANCE PATENT		
Quality System	GB/T19001-2016 idt ISO19001:2015 standard (Certificate No.: 128101)		

ORDERING INFORMATION

MCA4 ☐ 0T ☐ ☐

Measure axis

Installation method
- LU:Horizontal up
- LD:Horizontal down
- VU:Vertical up
- VD:Vertical down
- VL: Vertical left
- VR:Vertical right

- 1:Single Axis
- 2:Dual Axis

Measure range
- 10:±10°
- 15:±15°
- 30:±30°
- 45:±45°
- 60:±60°
- 90:±90°
- 393:-3°~+93°
- 180:±180°(Only single axis)
- 360:0°~360°(Only single axis)

E.g: MCA410T-LU-10: Indicates Single-axis, Horizontal Up Installation Method, ±10° Measure range.
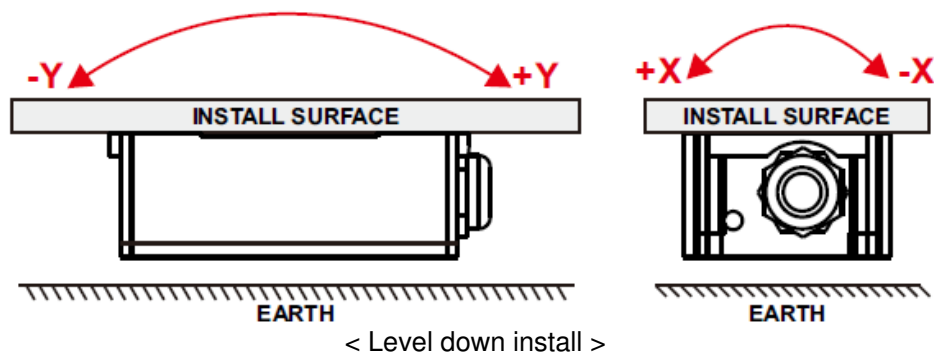
CONNECTION

-

RED: POWER SUPPLY
BLACK: GND
WHITE: X OUTPUT(0~5V)
GREEN: Y OUTPUT(0~5V)
GRAY: CLEAR

Cable diameter Ø5.5mm
- Single core diameter Ø1.3mm

INSTALLATION WAY

-Y +Y   -X +X

EARTH   EARTH

<Level up install>

-Y +Y +X -X

INSTALL SURFACE   INSTALL SURFACE

EARTH   EARTH

< Level down install >

-Y +Y -X +X

INSTALL SURFACE   INSTALL SURFACE

EARTH   EARTH

<Vertical left install>

+X -X +Y -Y

INSTALL SURFACE   INSTALL SURFACE

EARTH   EARTH

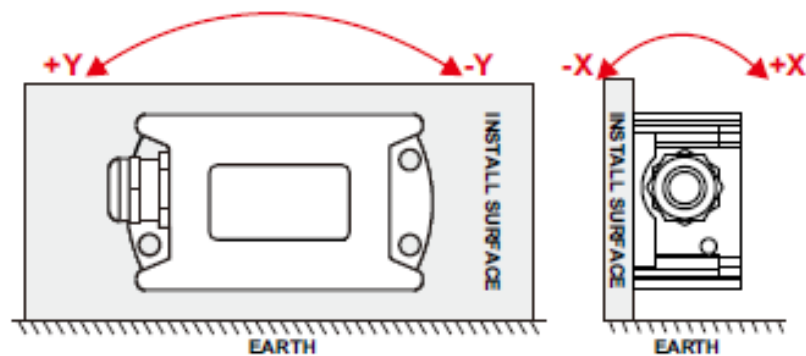<Vertical down install>

<Vertical up install>
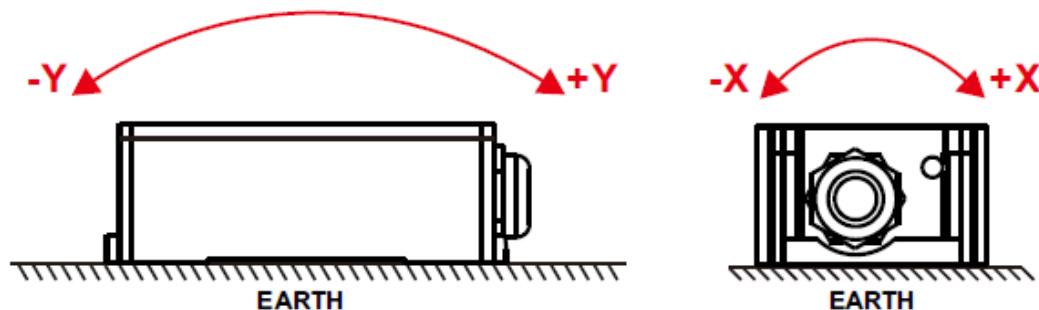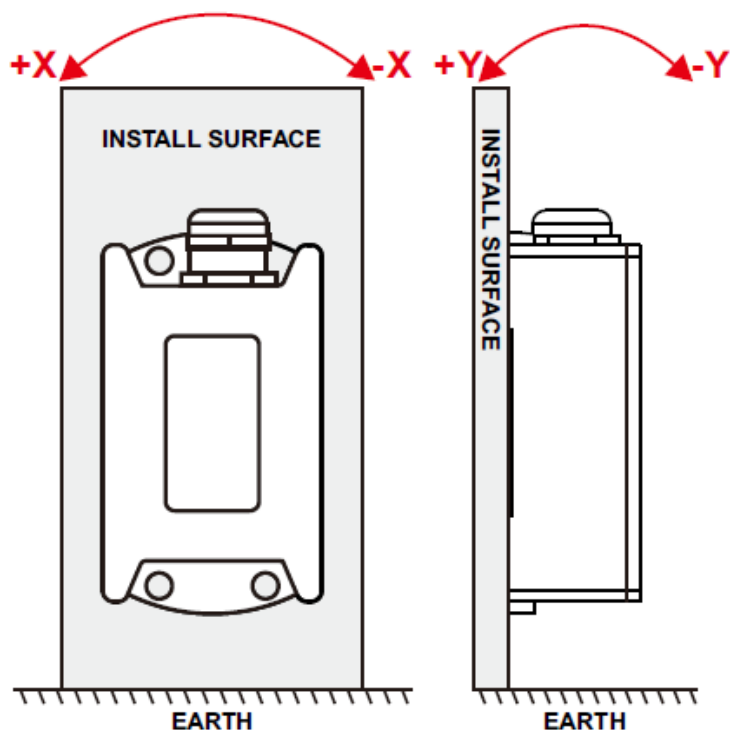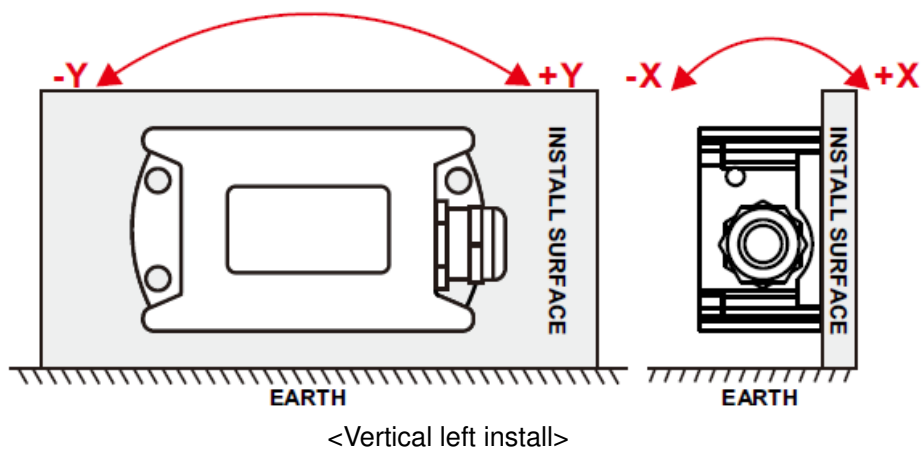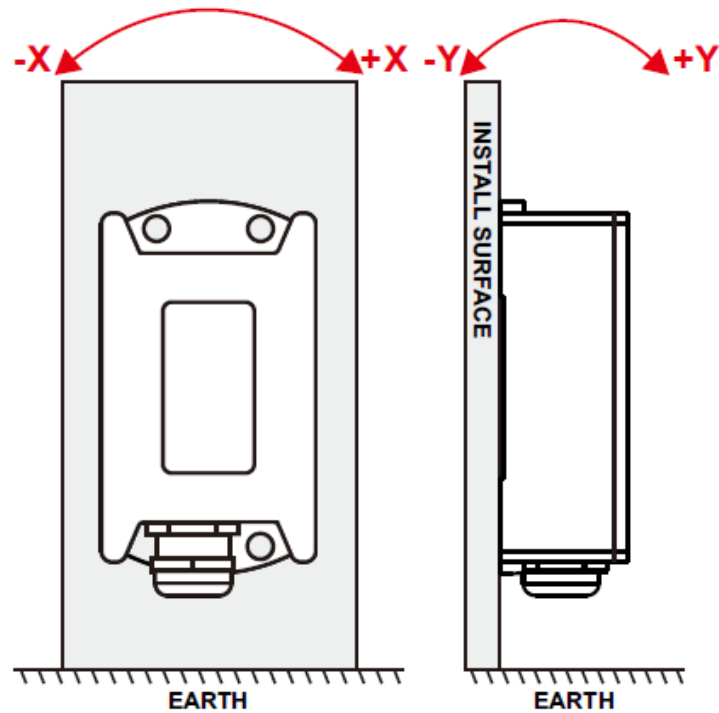
Remarks: The factory default installation is horizontal upward, the user can sets the corresponding installation method according to needs, please refer to Article 2 of the operating instructions, and make the corresponding settings.

USAGE

1. The working principle is sensing gravity of earth, when installation, the sensing axis of the sensor should be parallel with the tilt axis of measured object to achieve the best accuracy. the install surface of the measured object must be flat, stable, contact close, error may be caused if the installation surface is not even.

2. Any side of the six sides of the sensor could be as the installation side. After installation, set current position as zero position by the zero set function, (at the same time, the installation way is set as well, the set value is stored in reservoir of the sensor. After zero set, the sensor will work and regard the current position as zero position). set steps as below: short circuit set line(grey) and GND(black) for 3 second above, the power indicator will shut off at the same time, unbind set line after power indicator flicker again, zero set finished, indicator will back to normally on status.

3. The protection class is IP67, rain or water spray would not affect its proper work, please do not soak it under water for long time in case inner circuit would be damaged, damage caused by which is beyond warranty
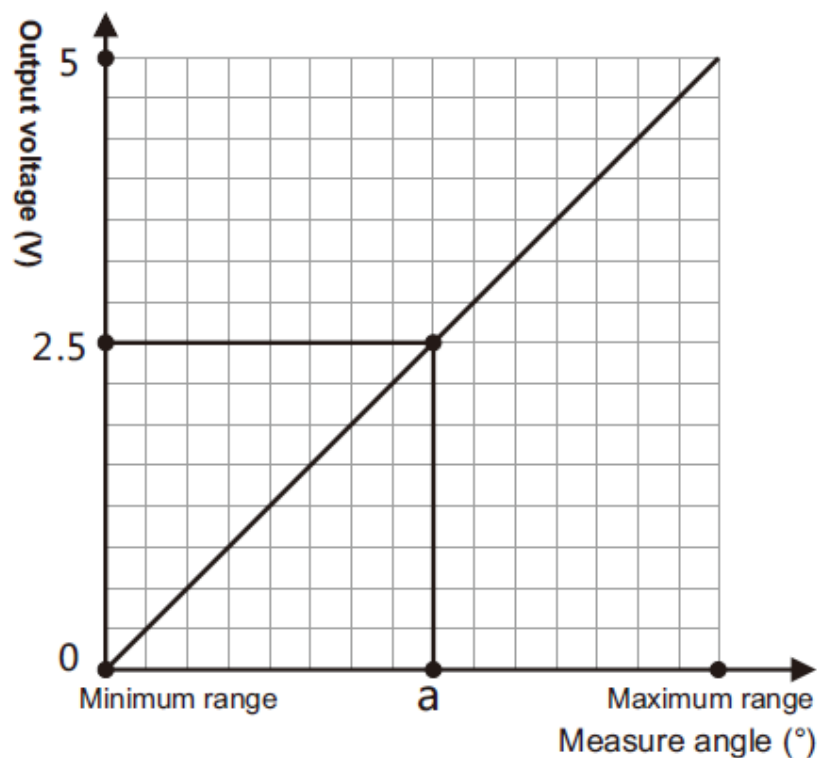
service

4. After installation, please do not short-circuit signal wire and power+ in case of damaging output circuit. the signal- and power- is shared by the same wire, so please connect acquisition signal- end to the power-.

PRODUCT OUTPUT CHARACTERISTICS

The output of this product is a DC voltage of 0V~5V, corresponding to the minimum range and maximum range of the angle measurement range. When calculating the angle, you can get the corresponding angle value by simply assigning it according to the ratio, for example: MCA420T-LU-30: Indicates that the angle range of this product is ±30 degrees, and the output voltage is 0V~5V. The output voltage of 0 degrees is 2.5V and the sensitivity is 0.08333V/degree.
MCA420T-LU-0393: Indicates that the angle range of the product is -3 degrees to +93 degrees, the output voltage is 0V to 5V, and the output voltage of 0 degrees is proportional to 0.156V, and the sensitivity is 0.052V/degree. The figure on the right shows the output characteristic curve: Remarks: a=(maximum range-minimum range)/2

Documents / Resources

Rion Technology MCA410 Voltage Output Type Inclinometer [pdf] Instruction Manual
MCA410, MCA420T, MCA410 Voltage Output Type Inclinometer, Voltage Output Type Inclinometer, Output Type Inclinometer, Type Inclinometer, Inclinometer

References

- 🌐 **tech.net**
- 🌐 **æ·±åœ³å¸‚ç'žèŠ¬ç§'æŠ€æœ‰é™å…¬å¸**
- 🌐 **SHENZHEN RION TECHNOLOGY CO., LTD**