



Rion Technology MCA416T Digital Output Type Inclinometer Instruction Manual

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Rion Technology MCA416T Digital Output Type Inclinometer



PRODUCT DEBUGGING SOFTWARE

DATA FRAME FORMAT:(8 bits data, 1 bit stop, No check, Default baud rate 9600

Identifier (1byte)	Date Length (1byte)	Address code (1byte)	Command word (1byte)	Date domain	Check sum (1byte)
68					

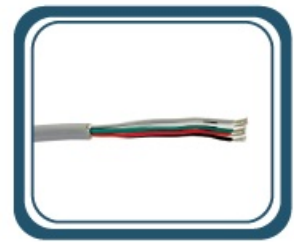
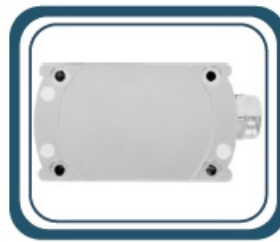
- Date format:hexadecima
- Identifier: Fixed68H,
- Data length: From data length to check sum(including check sum) length,
- Address code:acquisition module address
- Default :00
- Data field will vary with content and length of command word
- Check sum:sum of Data length,Address code,Command word and data field, not include identifier.

COMMAND WORD ANALYSIS

Desc	Meaning/Example	Description
0X04	Read angle command at the same time E.g : 68 04 00 04 08	Data domain(0byte) No Data domain command
0X84	Sensor respond E.g: 68 0A 00 84 00 20 10 10 05 20 F3	Data domain (6byte) AAAB BB CC CD DD AAAB BB:3 character indicate X axis CC CD DD:3 character indicate Y axis Angle format analysis is as the same with X and Y axis The angle of the left example is X axis 020.1 deg, Y axis -05.2 degree
0X05	Setting relative/absolute ZERO : Can set the current angle to Zero degree, relative measurement, can also be set to absolute ex-factory zero, power off save. E.g: 68 05 00 05 00 0A	Data domain(1byte) 00: absolute ZERO 01: relative ZERO
0X85	Sensor answer reply command E.g: 68 05 00 85 00 8A	Data domain(1byte) Data domain in the number means the sensor response results 00: successfully FF: failure
0X0B	Setting communication rate E.g: 68 05 00 0B 03 13 The command setting is effective after power off then restart (power off with save function)	Data domain(1byte)default value is :9600. Baud rate: 00: 2400 01: 4800 02: 9600 03: 19200 04: 38400 04: 115200
0X8B	Sensor answer reply command E.G:68 05 00 8B 90	Data domain(1byte) Data domain in the number means the sensor response results 00: Success FF: Failure
0X0C	Setting sensor output mode Response mode:Need upper computer send reading angle command , the sensor answer thecorresponding angle. Automatic output mode:The sensor with power on can Automatically output X angle , output frequency is 20HZ . (Power off with save function) E.g: 68 05 00 0C 00 11	Data domain(1byte)factory default value:00 00: Answer reply mode 01: 5Hz automatical output mode 02: 10Hz automatical output mode 03: 15Hz automatical output mode 04: 20Hz automatical output mode
0X8C	The sensor answer reply command E.g: 68 05 00 8C 00 91	Data domain(1byte) Data domain in the number means the sensor response results 00: Success FF: Failure
0X0F	Setting module address command The sensor default address is 00; 1>such as a plurality of sensor to be connected with a bus cable; E.g RS485 .requires each sensor is set to a different address, in order to achieve control and response angle . 2>If successfully changed the new address, follow all of the commands and responding Packet address code has to switch to the new address code which already changed then to be effective, otherwise the sensor will not respond to commands. (power off with save function) E.g: 68 05 00 0F 01 15 Setting the address to 01 68 05 FF 0F 00 13 Use the common addre	Data domain (1byte)XX Module address Address from 00 to EF range Note: All products have a common address :FF, If forget the address what has been set during operation , can use FF address to operate the product can still normally respond
0X8F	The sensor answer reply command E.g: 68 05 00 8F 94	Data domain(1byte), Data domain in the number means the sensor response results 00: Success FF: Failure
0X0D	Query relative/absolute ZERO Used to query the sensor current ZERO mode is relative ZERO or absolute ZERO E.g : 68 04 00 0D 11	Data domain(0byte) No data domain commands
0X8D	The sensor answer reply command E.g:68 05 00 8D 00 92	Data domain (1byte), Data domain in the number means the sensor response results 00: Absolute ZERO 01: Relative ZERO



CE CERTIFICATION: ATSHAHE181129003
APPEARANCE PATENT : ZL 201830752891.5



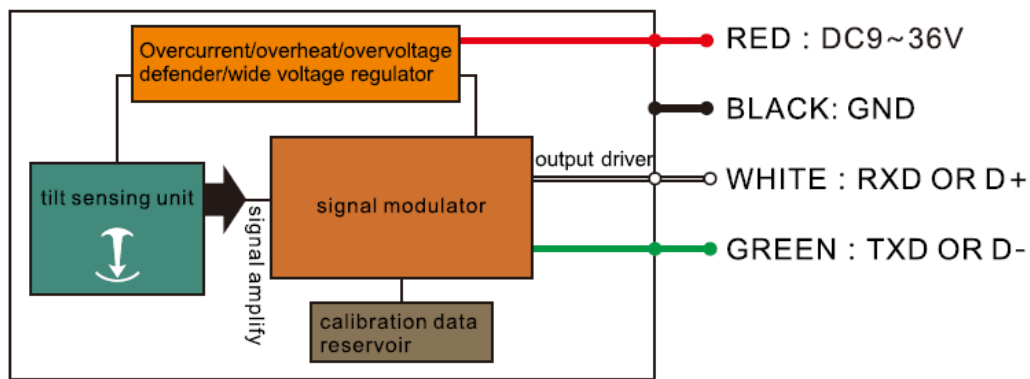
DESCRIPTION

- MCA416/426T series inclinometer sensor is a new low-cost full attitude tilt angle measurement product independently developed by RION. Adopting the latest anti-interference platform design, integrating new micro-mechanical sensing unit, wide temperature working performance, excellent anti-vibration performance, stable and reliable long-term work, and effective working life of up to 10 years.
- This product uses a non-contact principle to measure the tilt angle of an object, and calculates the real-time tilt angle by measuring the component produced by the earth's gravity through an internal capacitive micromechanical unit. The installation is simple and convenient, and it only needs to be fixed on the object to be tested, and does not need to fix the shaft and the rotating shaft. A variety of installation methods to meet customer measurement needs. It is an ideal accessory for engineering machinery, agricultural machinery, and other industrial equipment.

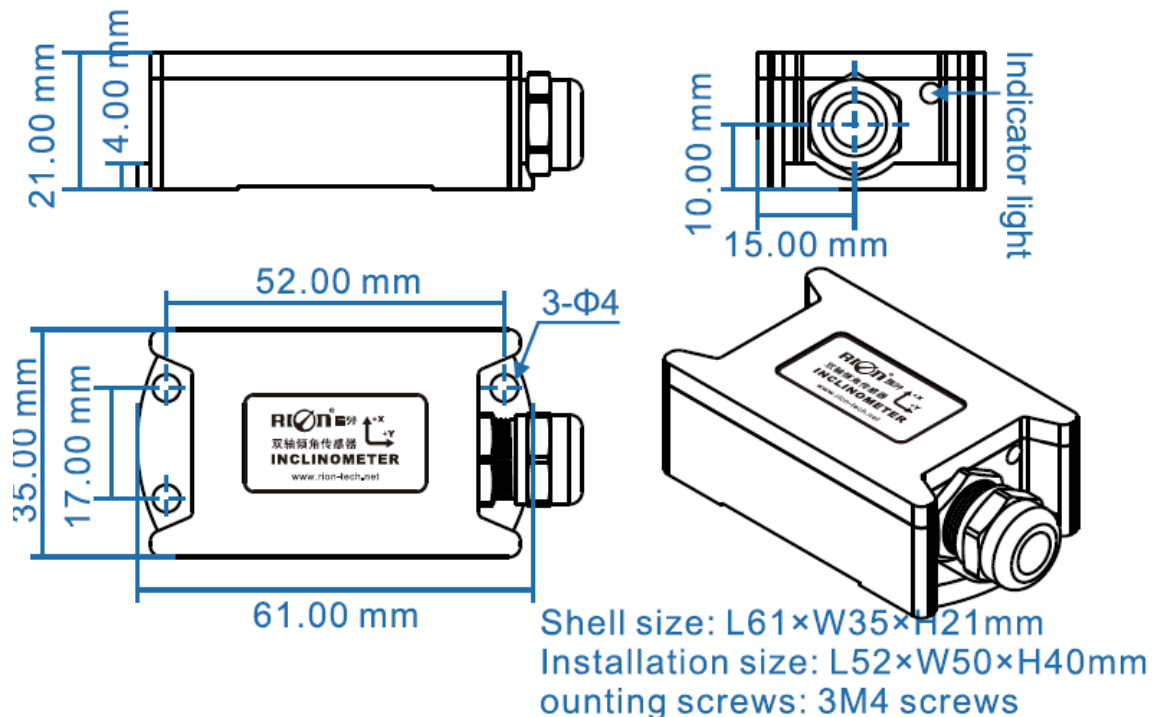
FEATURES

- Resolution: 0.1°
- Six installation methods
- Zero set function
- IP67
- Output: RS232/RS485/TTL
- Power supply: 9~36V
- Work temperature: -40~+85°C
- High anti-shock >3500g

SYSTEM DIAGRAM



SIZE



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 lose, 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 seconds 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 Ip66, 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-.

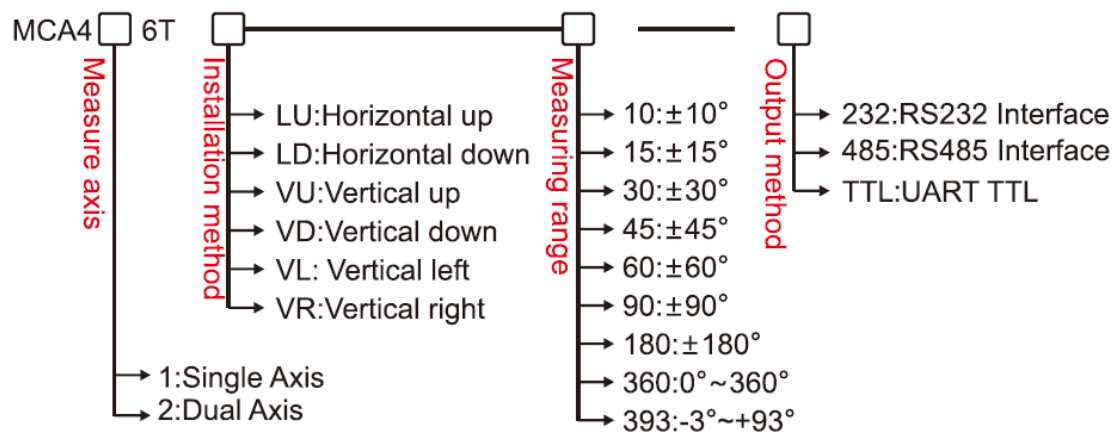
APPLICATION

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

PARAMETERS

MCA416&426T	CONDITIONS	PARAMETER	UNIT
Resolution		0.1	°
Accuracy	25°C	±0.3	°
Response Time		0.05	S
Temperature Drift	-40 ~ 85°C	±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)		
Weight	≤200g(Including 1 meter standard cable)		
Certificate	CE ; APPEARANCE PATENT		
Quality System	GB/T19001-2016 idt ISO19001:2015 standard (Certificate No.: 128101)		

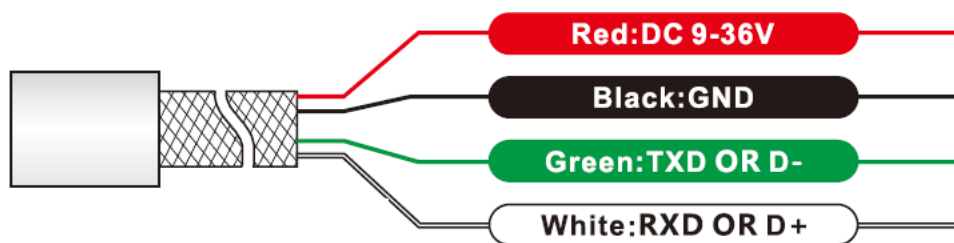
ORDER GUIDE



E.g: MCA416T-LU-10: Indicates Single-axis, Horizontal Up Installation Method, +10° Measure range.

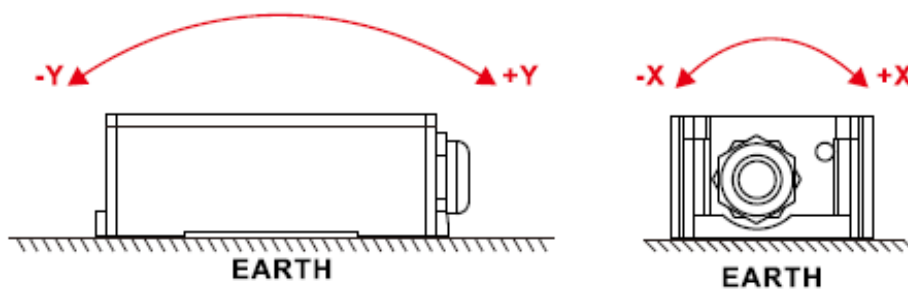
CONNECTION

- Cable diameter : 05.5mm
- Single core diameter : 01.3mm

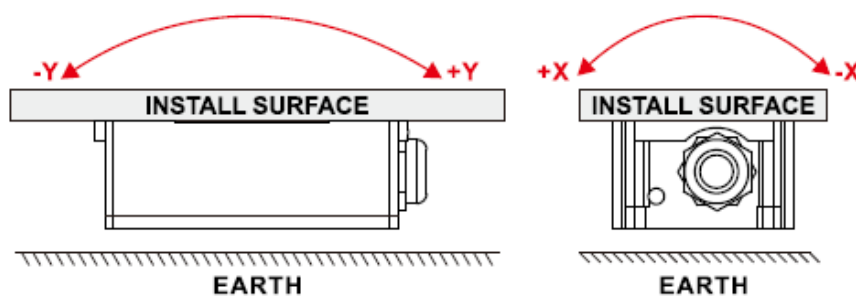


INSTALLATION WAY

- HORIZONTAL MEASUREMENT INSTALLATION DIRECTION

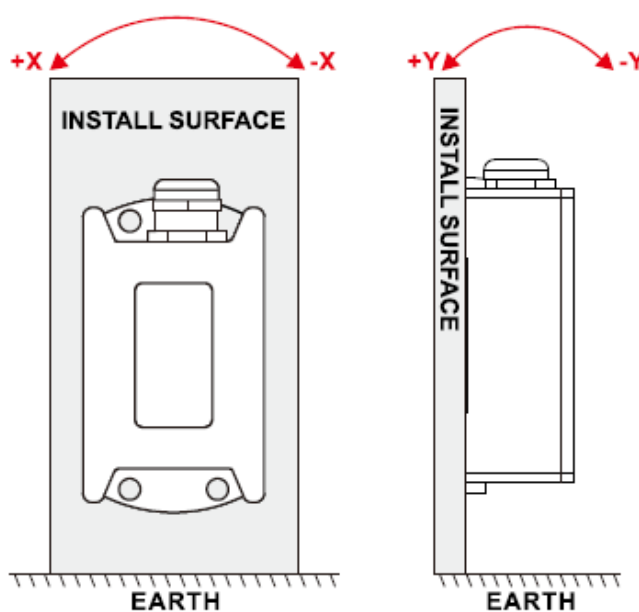


<Level Up Install>

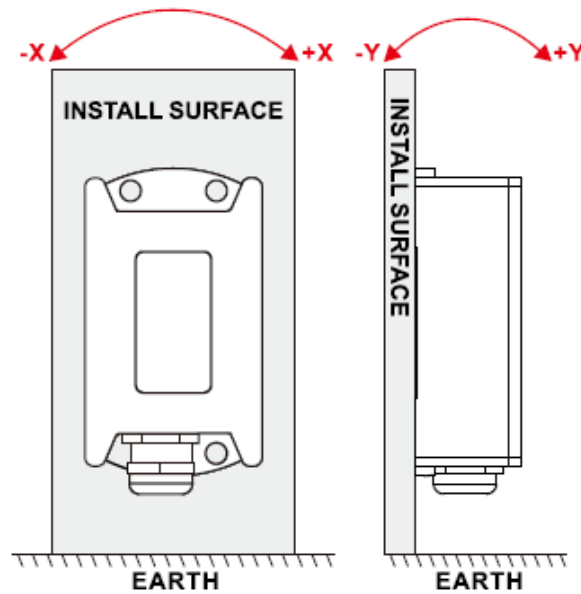


<Level Down Install>

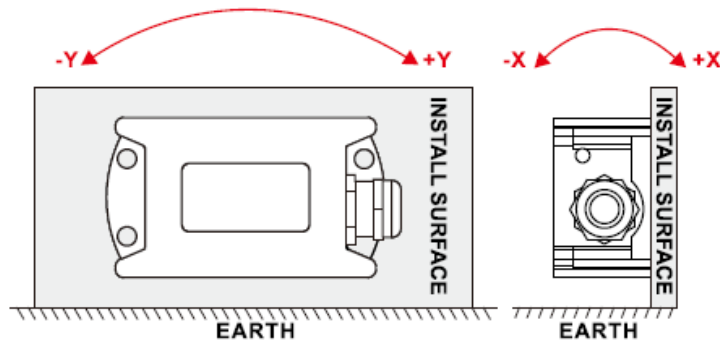
- VERTICAL MEASUREMENT INSTALLATION DIRECTION



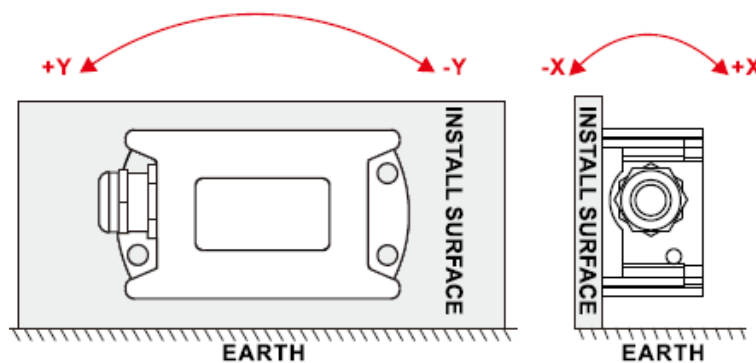
<Vertical Down Install>



<Vertical Up Install>



<Vertical Right Install>



<Vertical Left 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.

Add:Block 1, COFCO(FUAN) Robotics Industrial Park , Da Yang Road No. 90, Fuyong District, Shenzhen City, China

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Documents / Resources



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MCA416T, MCA426TDIGITAL, MCA416T Digital Output Type Inclinometer, Digital Output Type I
nclinometer, Output Type Inclinometer, Type Inclinometer, Inclinometer

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