Contactless TMR-Element Angle Sensor

MIDORI CP36U-Z00

PROGRAMMABLE

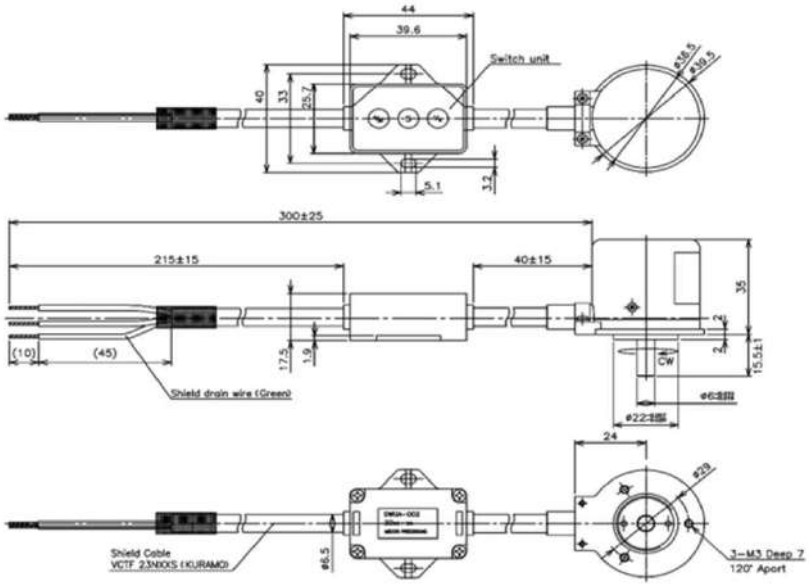
General

- Single-turn TMR-Element Angle Sensor
- Effective Electrical Angle (Standard): 18°~360°
- Absolute Linearity: ±0.2%FS (FS=360°)
- 2-Wires, 4-20mA Current Output
- IP50/ IP67
- Programmable: Equipped with output adj. func.
- Setting Panel: Installed in the fixed wiring cable

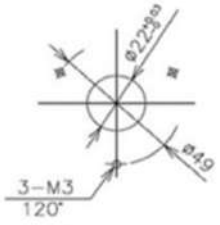
Material

- Housing: Aluminum
- Shaft: Stainless Steel
- Ball Bearing: Stainless Steel

Dimension (mm)

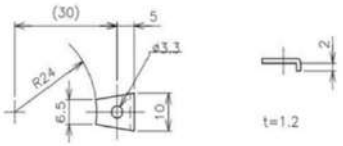


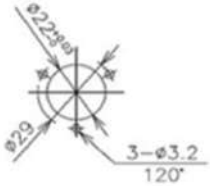
Mounting(mm)



Servo Mount

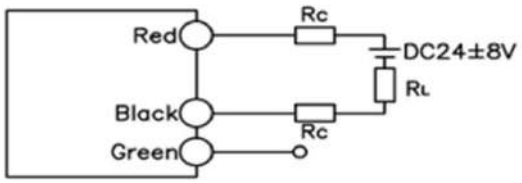
Mounting Cleats: 2pcs





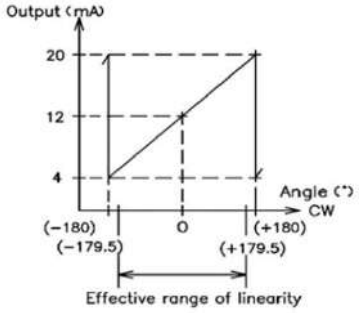
Screw Mount

Schematic



- Red,Black and Green indicate harness colors.
- Green is shield drain wire. Be grounded if necessary.
- Rc: Transmitting wire resistance
- RL: Load resistance

Output Characteristics



Specifications

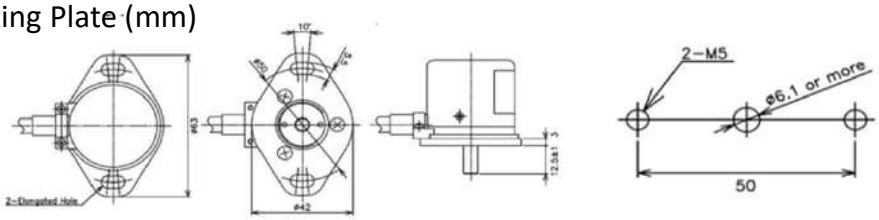
	CP-36U-Z00
Electrical Specifications	
Effective Electrical Travel	18°~360°
Absolute Linearity	See the chart below
Output Range	Adjustable (@4mA±1mA, @20mA±1mA, Output Direction CW/CCW)
Input Voltage	DC24±8V
Load Resistance	600Ω MAX. (Vin=@DC24V)
Update Cycle	1KHz±10%
Output Resolution	See the chart below
Temp. Drift (Category Temp. Range)	±1.0°(FS=360°~91°)/ ±0.5°(FS=90°~18°)
Mechanical Specifications	
Total Mechanical Travel	360° Endless
Torque	(IP50) 1mN・m MAX./ (IP67) 10mN・m MAX.
Environmental Specifications	
Category Temp. Range	-40~+85℃
Storage Temp. Range	-40~+85℃
Vibration	200m/S2 5~500Hz/20min 3axis 2H each (JIS C60068-2)
Shock	1000m/S2 6ms 3axis 6directions 3times each (JIS C60068-2-27)
EMS	100V/m: 10K~1GHz (ISO11452-2, -3)
IP Level	IEC61000-4-2 Contact±4KV, Air±8KV, Classification Criteria B
ESD	IP50/ IP67 (Except Lead Wires)

Linearity/ Output Resolution

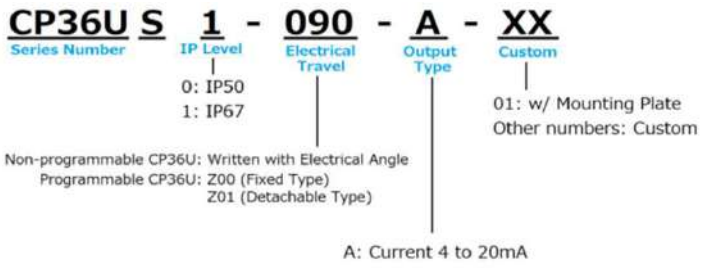
Electrical Travel	Linearity	Resolution
FS=360°	0.2%FS	Approx.12Bit
FS>=180°	0.3%FS	Approx.12Bit
FS>=90°	0.5%FS	Approx.12Bit
FS>=45°	0.9%FS	Approx.11Bit
FS>=30°	1.3%FS	Approx.10Bit
FS>=18°	2.1%FS	Approx.9Bit

Options

Mounting Plate (mm)



Model Number Designation



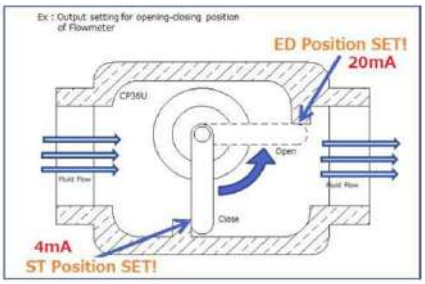
User-adjustable Functions

Programmable type of CP36U provides the following user-adjustable functions by using the setting panel.

1) Electrical Travel Range Setting
2) Zero/ Span Adjustment
3) Output Increase Direction Setting
4) Reset Setting

1) Electrical Travel Range Setting

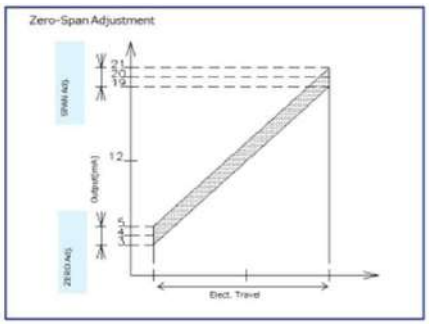
Enable to reset any angle to start (ST: 4mA) and END (ST:20mA) positions



The accuracy guarantee range: FS= 18°~ 360°
Settable angle range: 1°~360°

2) Zero/ Span Adjustment

Configurable resetting the output value of zero and span positions within the 1mA range.

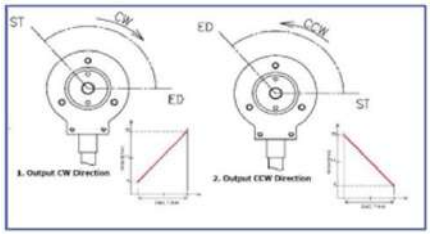


Zero Position: 4mA±1mA
Span Position: 20mA±1mA

Adjustment Resolution: 4.55μA(Theoretical value)

3) Output Increase Direction Setting

Output increase direction CW or CCW can be configured.



1) **Output CW Direction: Positive Linear Output**
2) **Output CCW Direction: Negative Linear Output**

4) Setting Cancellation

1) **Revert to the previous setting**
2) **Reset to factory setting**

Setting Panel Operating Instructions

The First Step

1. Supply DC24V input to CP36U.
2. Have your device ready to monitor sensor output if necessary

1. 『+/20』Button
2. 『S』Button
3. 『-/4』Button

Press the buttons firmly.

1) Electrical Travel Range Setting

1. Press and hold both 『+/20』and 『-/4』buttons for 3 seconds or longer to start setting mode.

2. Rotate the shaft of CP36U unit the angle to be set as the start (4mA) position. Then press the 『-/4』button.
CP36U will create 4mA output at its shaft rotation angle position.

3. Rotate the shaft of CP36U until the angle to be set as the end (20mA) position. Then press the 『+/20』button.
CP36U will create 20mA output at its shaft rotation angle position.

4. After completing the Start and End position setting, press 『S』button for more than 3 seconds to lock the setting.

The setting mode is canceled if none of the buttons were pressed for more than 5 minutes during the setting process.

Pressing and holding 『+/20』, 『S』, 『-/4』buttons at the same time for more than 3 seconds to cancel the setting mode.

2) Zero/ Span Adjustment

1 Fine Adjustment of Zero position (4mA) Output

1. Press and hold 『-/4』buttons for 3 seconds or longer to start setting mode.

2-1. Decrease the ZERO position (4mA) output value

Press the 『-/4』button... ZERO position output value will decrease each time the button is pressed. If pressing and hold the button, the output value will decrease continuously.

2-2. Increase the ZERO position (4mA) output value

Press the 『+/20』button... ZERO position output value will increase each time the button is pressed. If pressing and hold the button, the output value will increase continuously.

3. Press 『S』 button for more than 3 seconds to complete the setting

2 Fine Adjustment of Span position (4mA) Output

1. Press and hold 『+/20』buttons for 3 seconds or longer to start setting mode.

2-1. Decrease the Span position (20mA) output value

Press the 『-/4』button... Span position output value will decrease each time the button is pressed. If pressing and hold the button, the output value will decrease continuously.

2-2. Increase the Span position (20mA) output value

Press the 『+/20』button... Span position output value will increase each time the button is pressed. If pressing and hold the button, the output value will increase continuously.

3. Press 『S』 button for more than 3 seconds to lock the setting.

The setting mode is canceled if none of the buttons were pressed for more than 5 minutes during the setting process.

Pressing and holding 『+/20』, 『S』, 『-/4』buttons at the same time for more than 3 seconds to cancel the setting mode.

3) Output Increase Direction Setting

1 Output increase direction to a CW shaft rotation

1. Press and hold both 『+/20』and 『S』buttons for 3 seconds or longer to start setting mode.

2. Press 『+/20』button... Output increase direction will be set to CW shaft rotational direction.

3. Press 『S』 button for more than 3 seconds to complete the setting.

2 Output increase direction to a CCW shaft rotation

1. Press and hold both 『-/4』and 『S』buttons for 3 seconds or longer to start setting mode.

2. Press 『-/4』button... Output increase direction will be set to CCW shaft rotational direction.

3. Press 『S』button for more than 3 seconds to complete the setting.

The setting mode is canceled if none of the buttons were pressed for more than 5 minutes during the setting process.

Pressing and holding 『+/20』, 『S』, 『-/4』buttons at the same time for more than 3 seconds to cancel the setting mode.

3) Setting Cancelation

1 Reverting to the last setting

1. Stop power supply to CP36U and press and hold 『+/20』, 『S』, and 『-/4』buttons altogether.

Continue to hold the all buttons and supply the power to CP36U again.

Holding the buttons for more than 3 seconds, reset mode starts when releasing them.

2. Press and hold『-/4』button for 3 second or longer to revert to the last setting.

3. Press 『S』button for 3 second or longer to complete the setting.

2 Return to factory setting

1. Stop power supply to CP36U and press and hold 『+/20』, 『S』, and 『-/4』buttons altogether.

Continue to hold the all buttons and supply the power to CP36U again.

Holding the buttons for more than 3 seconds, reset mode starts when releasing them.

2. Press and hold『+/20』 button for 3 seconds or longer, and reset to the factory setting.

3. Press 『S』button for more than 3 seconds to complete the setting.

The setting mode is canceled if none of the buttons were pressed for more than 5 minutes during the setting process.

Pressing and holding 『+/20』, 『S』, 『-/4』buttons at the same time for more than 3 seconds to cancel the reset mode.

NOTE

1) Linearity and output resolution of the total electrical travel

After adjusting the electrical travel range, the accuracy and the output resolution of CP36U at each fixed electrical travel are shown on the chart "Linearity/ Output Resolution" on page 2.

2) Output Display

CP36U and the setting panel are not equipped with the output display device. Please have your device ready to monitor sensor output.

3)

Neither CP36U nor the setting panel has the function to notice that the setting is complete. Therefore, please read this manual and understand the necessary steps before initiating the setting procedure.

4) Product warranty after output adjustment

Although we fully recognize the performance and accuracy of CP36U may be influenced by adjusting the output using the control panel, please use this product once you have thoroughly read and understood the proper procedure.