

Product overview

- ⊙ Rated voltage: AC/DC95-265V, AC/DC24V
- ⊙ Rated torque: 80N.m
- ⊙ Running time: **about 5s**
- ⊙ Install valves: 2way, 3way ball valve and butterfly valve
 - ※ **Note: Please reserve torque safety factor when selecting**
- ⊙ Control signal: 4-20mA、0-20mA、0-5V、1-5V、0-10V、2-10V(A: Alarm Output)
- ⊙ Position feedback: 4-20mA、0-20mA、0-5V、1-5V、0-10V、2-10V
- ⊙ Alarm Output: -A (Relay Contact)
- ⊙ Position accuracy: $\pm 1\%$ (set by software)
- ⊙ Adopted high-performance brushless motor, Overload protection of internal motor
- ⊙ It can be used 20,000 times*1
- ⊙ Two or more actuators can be used in parallel



Product features

- △ 1.3" OLED screen, no visual dead angle, highly bright, energy saving and eco-friendly, real time to show valve opening angle and external control command. Enter sleeping state automatically after about 5 minutes, while it could prompt location state and its control command at sleeping time.
- △ Original valve adjustment mode--free cover-opening and interactive:
 - step1: saving "anticlockwise full open position" by using the button to control valve;
 - step2: saving "clockwise full close position" by using the button to control valve; it makes valve adjustment easier.
 Thoroughly eliminate the complex and inconvenience caused by mechanical positioning.
- △ Adopt 32 High-performance microcontrollers, 12 high-precision AD conversion, built-in unique algorithm, thoroughly eliminate mechanical hysteresis, greatly reduce valve position control error.
- △ Built-in motor control module, motor frequency speed control can realize accurate positioning.
- △ Adopt non contact positioning, control unit module design and potting processing, guarantee components reliability and greatly improve product service life; Interface use standard connectors, convenient for installment, adjustment and replacement.
- △ Menu can report real-time failure, including stuck or other reasons which lead actuator fail to realize valve on/off integrally, and output failure warning signal.
- △ Menu can realize valve control command exchange.
- △ Menu can switch freely between remote control and local setting, by pressing the button to adjust valve position locally, built in position limit and show limit status.
- △ Menu can set valve close position deviation to on or off direction, thoroughly eliminate the complex and inconvenience bring by "Normal On/Off mechanical positioning" to local valve adjustment.
- △ Menu can realize the control way 4-20mA、0-20mA、0-5V、1-5V、0-10V、2-10V, it is very convenient to choose for customer.
- △ Menu can restore factory default setting.

*1. Test condition: Rated load, test at under 25℃ working temperature and 50% humidity, lead the result from 2 times switching cycle, which will be influenced by different load and working environment.

Technical data

Electrical data	Rated voltage	AC/DC95-265V	AC/DC24V
	Rated voltage range	AC95-265V/DC100-300V	AC20-26V/DC22-30V
	Power consumption	60W@max;19.2W@running; 2.5W@keep	60W@max;19.2W@running ;2.5W@keep
	Peak current	0.27A@5ms@AC230V	2.5A@5ms@DC24V
	Fuse	2A	4A
	Connecting cable	10P-5.08-500V × (0.5-1.5)mm ² terminal 10*0.5mm ² cable, voltage withstand AC300V(Length 800mm) 7*0.5mm ² cable, voltage withstand AC300V(Length 800mm)	
Functional data	Rated torque	80Nm@rated voltage	
	Angle of rotation	90±2°	
	Max angle of rotation	330±5°	
	Manual operation	※ Matching hexagon wrench, using at power cut	
	Running time	About 5s	
	Operating mode	S3-75%(AC),S3-85%(DC)(loading ≤85% rated torque refer to IEC60034-1)*1	
	Sound power level	65dB(A)	
	Position indicator	Mechanical and screen	
Working conditions	Electricity safety level	I Type (ground protection)	III Type(safety low voltage)
	Inflaming retarding level	HB/UL94 test method	
	Enclosure	IP67 As Per En60529/GB4208-2008 (all directions) F type can add dehumidifying heater	
	Insulation resistance	100MΩ/500VDC	100MΩ/500VDC
	Withstand voltage	1500VAC@1Min	500VAC@1Min
	Medium temperature	≤80°can install with actuator directly ※ >80° need to install bracket or heat radiation stand	
	Working environment	Indoor or outdoor; if exposed to the rain or sunshine, need to install protective device for the actuator	
	Explosion-proof level	⚠ Not explosion proof products, do not use in flammable and explosive environment.	
	Ambient temp*2	-15℃~+45℃ (ABS) ; -15℃~+60℃ (Aluminum)	
	Non-operation temp	≤-40℃ or ≥80℃	
	Ambient Humidity	5-95%RH non-condensing	
	Vibration Shock	≤5g	
	Vibration amplitude	※ 10 to 55 Hz, 1.5 mm double amplitude	
	Installation notes	360°any angle, The need for manual operation or the wiring space	
	Maintenance	Free maintenance	
	Certification	CE	
Dimensions / weight	Dimensions (LXWXH)	See "Dimensions"	
	Connection standard	ISO5211 F05、 F07	
	Output axis specification	Female octagonal	
	Hole deepness	≤20mm(Female octagonal)	
	Weight	ABS material 2.2kg Aluminum material 2.5kg	

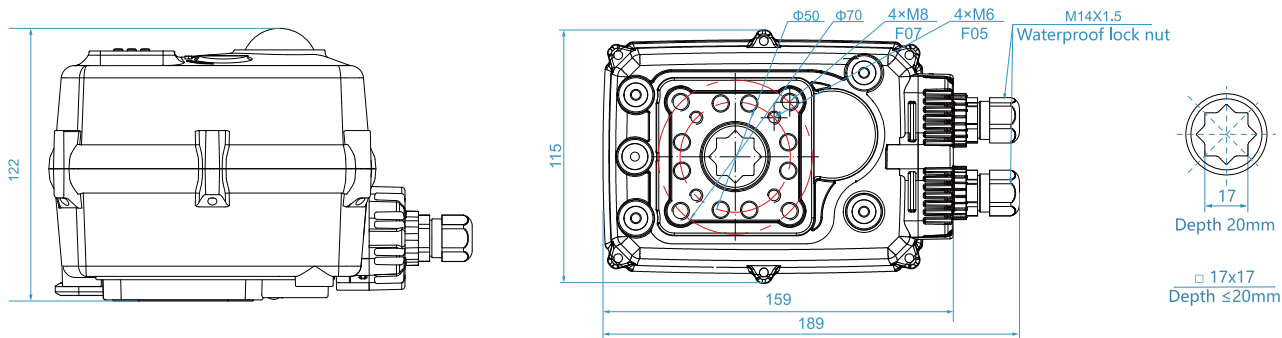
*1 Operating mode: The testing environment temperature is 25℃ inside the factory. The testing standard as per IEC 60034-1-2017. The operation mode will be S3-90% if the loading less than 60% rated torque..

*2.(1) It is customized item when used and stored under special ambient temperature of -20℃~+40℃, and special instructions are required.
(2) At the ambient temperature of -40℃, power on is required for more than 15 minutes (30 minutes is recommended) before use. The higher the ambient temperature is, the shorter the power on time can be.
(3) If user use the product at the ambient temperature of -40℃ for long time, it needs to be insulated. For example, add heating cable around the actuator. If the ambient temperature is over -20℃, then the heating cable can be canceled.

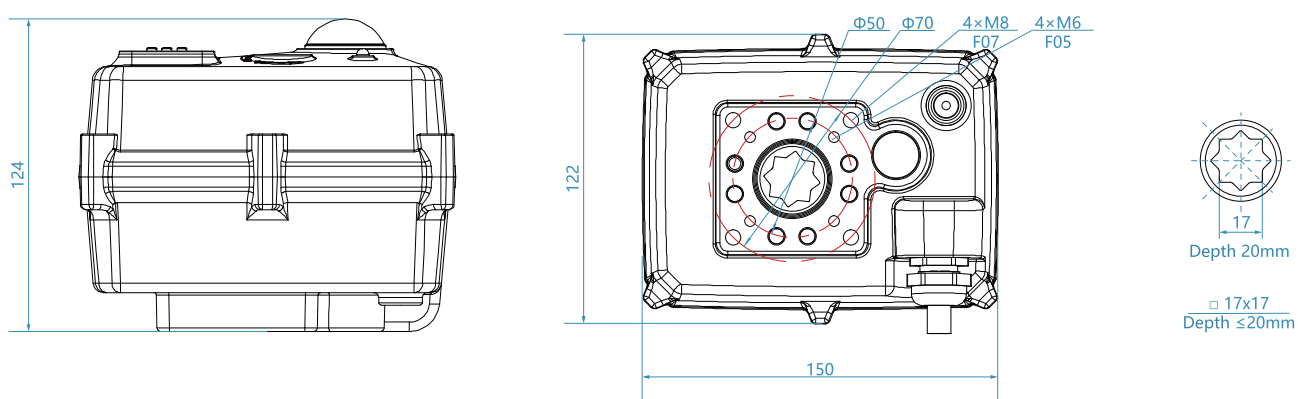
Dimension 【Female octagonal】

Unit: mm

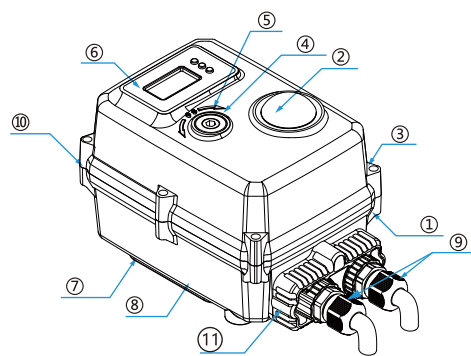
TCR-08/11



TCN-08/11



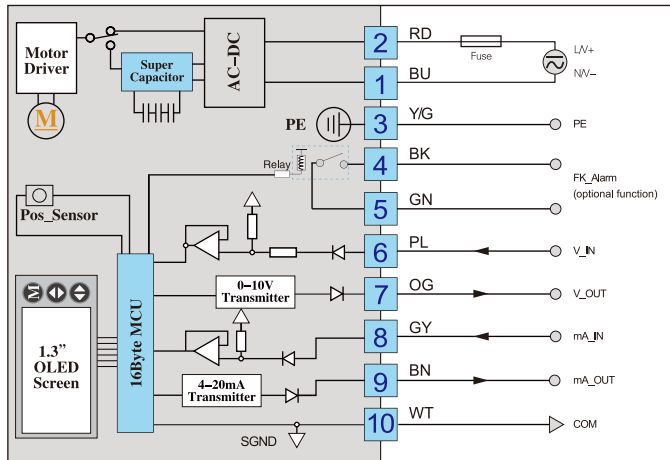
Main parts



	Parts	Material		Parts	Material
1	Actuator	Heatproof ABS or Casting aluminum	8	Hexagon wrench	CR-V
2	Indicator	PC	9	Waterproof cable connector	NiLon
3	Screwx4	304	10	Lid seal	Silica gel
4	Manual shaft	304	11	Terminal cover	PC+PET
5	Oil seal	NBR			
6	Label	PVC			
7	Wrench fixed	Heatproof_ABS			

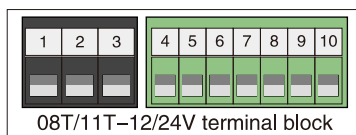
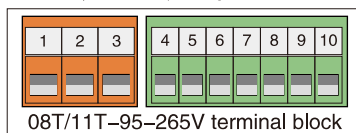
Wiring diagrams

4-20mA/0-20mA/0-5V/1-5V/0-10V/2-10V



Terminal block for product without cable_Wiring instruction

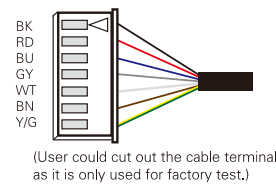
1. Fuse: Refer to the detail corresponding instruction.
2. Orange terminal is for the product in 95-265V (include 220V) .
Black terminal is for the product DC12V/DC24V.
3. Some products adopt wiring box ,user could wiring according to the order of number.



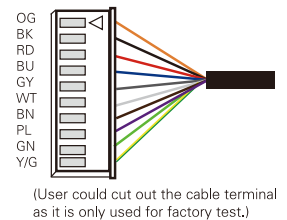
Terminal block of the product without cable.

Test terminal for the cable end_wiring instruction

1. Fuse: Refer to the detail corresponding instruction.
2. Some products adopt fly cable ,user could wiring according to cable colour.



Cable terminal for test(7pin)



Cable terminal for test(10pin)

1. User could choose different type of control signal voltage or current. The option available 0-5V, 0-10V, 2-10V, 1-5V, 0-20mA, 4-20mA.
2. User should mark the alarm function on purchase order if need.

Wiring instruction

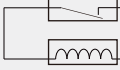
- 1、**1** **2** are used to connected with supply power. Orange terminal is for the product in 95-265V (include 220V) . Black terminal is for the product DC12V/DC24V.

Please confirm the voltage before using .※Otherwise , the wrong voltage will damage the control module.

- 2、**3** is used to connected PE. Please ensure the actuator is connected with ground .
- 3、**4** **5** will output alarm signal. This is optional function . Customer should mark this function on purchase order if need.
- 4、**6** **7** **8** **9** **10** is the input and output end. These 5 lines are forbidden to short connect directly.
- 6** is 1-5V, 2-10V, 0-5V, 0-10V input signal. Impedence refers to the corresponding wiring diagram.
- 7** is 1-5V, 2-10V, 0-5V, 0-10V feedback output signal. User could set the output voltage range through menu.
- 8** is 0-20mA, 4-20mA, the signal input impedance refers to the corresponding wiring diagram.
- 9** is 0-20mA, 4-20mA . User could set the output current range for the feedback output signal through menu.
- 5、Current output type load RX:
- $\Delta V_{out} = I_{out} \cdot R_x$
- ΔR_x is recommended to use resistor with low TCR.
- $\Delta V_{OUT} \leq 8V$, so $R_x \leq 400 \Omega$ (recommended $V_{OUT} = 5V$, $R_x = 250 \Omega / 0.25W$)
- 6、※User could set the control mode (0-20mA/4-20mA/0-10V/2-10V) through the parameter 'control mode' in menu.
- 7、Once actuator is struck or other working failures ,the screen will show alarm information although not alarm signal.
- Notice the contactor loading capacity is :0.1A/DC24V, 50mA/230V
- 8、Loading capacity $\geq 10K \Omega$ when output is 0-10V ,the length of wire and resistor will affect the accuracy ,please use the littler wire resistor.

Anti-condensation heater 【Accessory】

Temperature Switch

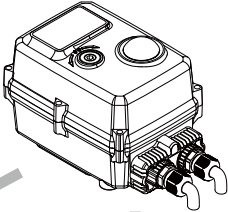


Heating Resistor

※ Notice 1: The range of power is 2W-3W;

※ Notice 2:The range of constant temperature heating is 25℃ ± 20%.

Mounting instructions



Notice:

※1.When assembly with valve,it's suggest to use spring washer add flat washer in order to fasten the screw and nut.

※2.It's recommend to use 704 silica gel or instant cement instead of anaerobic adhesive and UV glue.

※3.Pls keep the actuator housing away from organic solvents,such as: kerosene,butanone ,tetrachlormethane etc.,or the housing will crack.

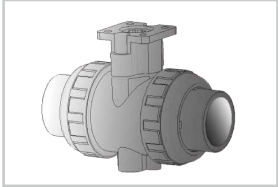


Diagram1(With bracket)

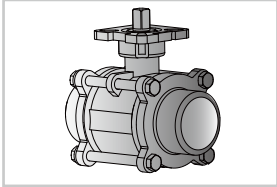


Diagram2(Direct mount)

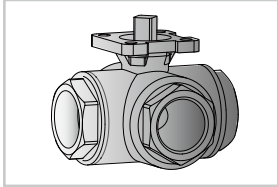


Diagram3(Direct mount)

Diagram1 UPVC plastic ball valve+bracket assembly
Diagram2 3piece stainless steel ball valve assembly
Diagram3 3piece stainless steel 3way ball valve assembly

Installed valve technical requirements

Valve type	Recommend install condition
wafer butterfly valve	actuator rate torque≥2times valve max torque
flange butterfly valve	actuator rate torque≥1.7times valve max torque
metal ball valve	actuator rate torque≥1.7times valve max torque
plastic ball valve	actuator rate torque≥1.5times valve max torque

☐1.

If the ball valve is out of operation for a long time, and the torque value of first on or off is the max torque

☐2.

When installing direct mount model valve, the hole deep ≤20mm. It requires cutting if the output shaft is longer than 20mm.

☐3.

Pls pay attention to the following items if you install the bracket and coupling by yourself:

※

The intensity of bracket should meet the using requirements: the bracket twisting extent ≤0.2mm in the process of on or off.

※

The parallelism of bracket ≤0.5mm.

※

When processing the shaft hole at both end of the coupling, it is necessary to ensure the accuracy and concentricity. The purpose is to make sure the mechanical hysteresis ≤10°, otherwise it will cause the actuator unable to work.

☐4.

Screw should be installed spring washer、flat washer, and we suggest you daub some glue cement around the screw in case of screw loosening.

☐5.

After installation, user should switch the valve on and off one time with handle device first. Modifying the valve after make sure it works well.

5

PART 2
User Manual

Success comes from our persistent pursue of perfect details.
Excellence originates from our persistence of win-win philosophy.

Actuator

Common failures and processing methods

	Fault phenomenon	Fault cause	Processing methods
□1	Actuator no operation	△1 power not connected	Connect power
		△2 voltage below level or incorrect	Check whether voltage is within the normal range
		△3 overload protection of motor after 3s	Check whether valve gets stuck or torque value is too big
		△4 terminal loose or poor contact	Check and correctly connect terminal
		△5 starting capacitance poor run	Contact the manufacturer to get repair
□2	No feedback signal	△1 line barrier of user acquisition signal	Connect user acquisition signal
		△2 4-20mA deviation is too big	Adjust the reference value of PWM-4mA by the menu
		△3 4-20mA transducing circuit damage	Contact the manufacturer to get repair
□3	Actuator not fully closed	△1 use feedback signal to control actuator	Receive feedback signal doesn't mean actuator is fully closed, so don't cut power off
		△2 return difference increases due to abrasion between actuator and valve rod	1 Adjust valve-off position to realize deviation by the menu 2 Contact the manufacturer to get repair
□4	Actuator interior water ingress	△1 OD of incoming line cablenon-standard	Contact the manufacturer to get repair
		△2 waterproof treatment of incomingline incomplete	
		△3 actuator lens wearout	
		△4 screws on connection cover/head cover /slide cover loose	

Working environment

- Indoor and outdoor are both optional.
- Not explosion proof products, ⚠ do not use them in flammable and explosive environment.
- You need to install protective device for the actuator if it is exposed to the rain or sunshine.
- Please pay attention to the ambient temp.
- When installing, you need to consider the reserved space for wiring and repairing.
- When power on, ⚠ it is not allowed to dismantle actuator and valve.
- When power on, ⚠ it is not allowed to do wiring.
- ✖ Absolutely no falling down the ground, which will hit the device and lead to improper operation.
- ✖ Absolutely no standing on the device, which will cause device malfunction or personal accident.
- ✖ It is forbidden to do wiring project in rainy day or when there is water splash.

Safety notice

- In order to use the device safely for a long term, please pre-read the manual carefully to ensure correct use.
- Notice item: Please understand the product specification and using method clearly to prevent personal safety danger or device damage.
- In order to indicate damage and danger, here we classify them as “warning ⚠” and “notice ✖”.
- Both of contents are very important, which should be obeyed strictly.
- “Warning ⚠”: It will cause death or serious injury if not obeyed.
- “Notice ✖”: It will cause slight injury or device damage if not obeyed.
- Subject to technical changes.