

Product overview

- ⊙ Rated voltage: DC12V
- ⊙ Rated torque: 15Nm
- ⊙ Install valves: 2way,3way ball valve and butterfly valve
- ※ Note: Please reserve torque safety factor when selecting
- ⊙ Communication Mode: RF433/868/915MHZ
- ⊙ Wireless Module: LORA
- ⊙ Communication distance: 0-3km (No shelter)
- ⊙ Adopted high-performance brushless motor,Overload protection of internal motor
- ⊙ It can be used 20,000 times.*1



Technical Data

Electrical data	Rated voltage	DC12V
	Rated voltage range	DC10-15V
	Power consumption	15W@max; 3.5W@running; 1.6W@holding
	Peak current	1.25A@5ms @DC12V
	Fuse	2A
Functional data	Rated torque	15Nm
	Connecting cable	7*0.3mm ² cable, voltage withstand AC300V (Length 800mm)
	Angle of rotation	90±2°
	Max angle of rotation	360°
	Manual operation	※ Matching hexagon wrench, using at no power
	Running time	about 15s
	Operating mode	S3-75%(AC), S3-85%(DC)(loading ≤85% rated torque refer to IEC60034-1)*2
	Sound power level	65dB(A)
Working conditions	Position indicator	Mechanical
	Electricity safety level	III(safety low voltage)
	Inflaming retarding level	HB/ UL94 test method
	Enclosure	IP67 As Per En60529/GB4208-2008 (all directions)
		F type can add bracket or dehumidifying heater
	Insulation resistance	100MΩ/500VDC
	Withstand voltage	500VAC@1Min
	Medium temperature	≤80° can install to actuator directly
		※ >80° need to install 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 them in flammable and explosive environment
	Ambient temp*3	-15°C~+45°C (ABS) ; -15°C~+60°C (Aluminum)
	Non-operation temp	≤-40°C or ≥80°C
	Ambient humidity	5-95%RH non-condensing
	Vibration Shock	≤2g
	Vibration amplitude	※ 10 to 55 Hz, 1.5 mm double amplitude
	Installation notes	360° any angle, need manual operation or allow for wiring space
Dimensions / weight	Maintenance	Free maintenance
	Certification	CE
	Dimensions (LXWXH)	See "Dimensions"
	Connection standard	ISO5211 F03、F04、F05
	Output axis specification	Female octagonal or male square

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

*2. Operating mode: The testing environment temperature is 25 °C 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.

*3. (1) It is customized item when used and stored under special ambient temperature of -20°C~40°C, and special instructions are required.

(2) At the ambient temperature of -40 °C, 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.

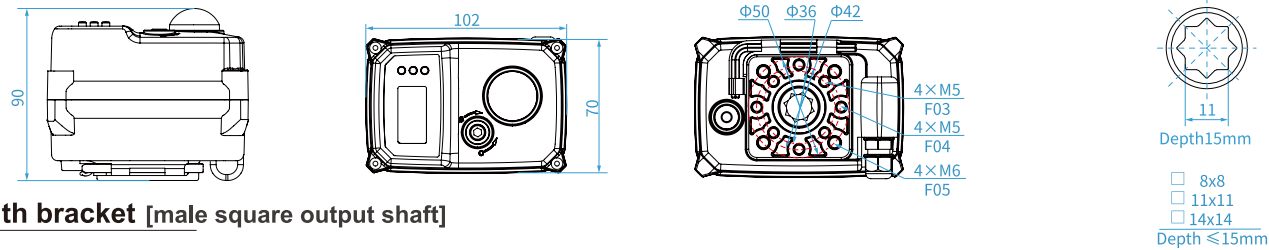
(3) If user use the product at the ambient temperature of -40°C for long time, it needs to be insulated. For example, add heating cable around the actuator. If the ambient temperature is over -20°C, then the heating cable can be canceled.

Hole deepness	≤15mm(Female octagonal)/6.5mm(Male square)
Weight	ABS material 0.62kg,Casting aluminum 0.82kg

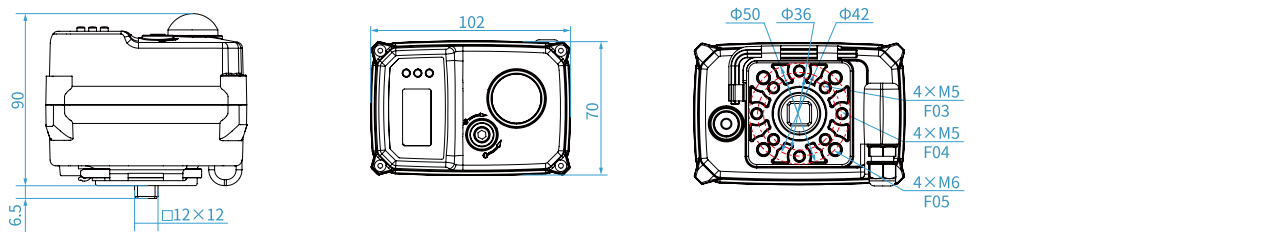
Dimension【TCN-02X- ABS- II / Die-casting Aluminum】

unit:mm

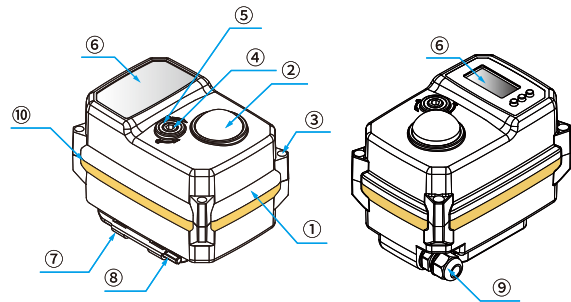
Direct mount [female octagonal output shaft]



With bracket [male square output shaft]



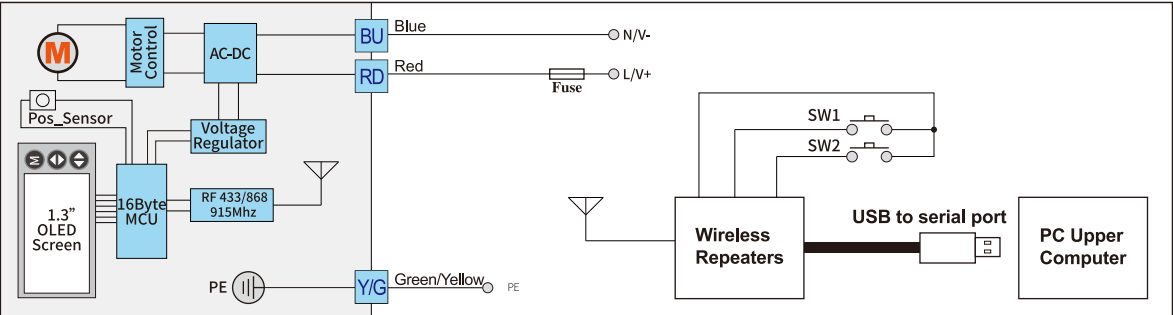
Main parts



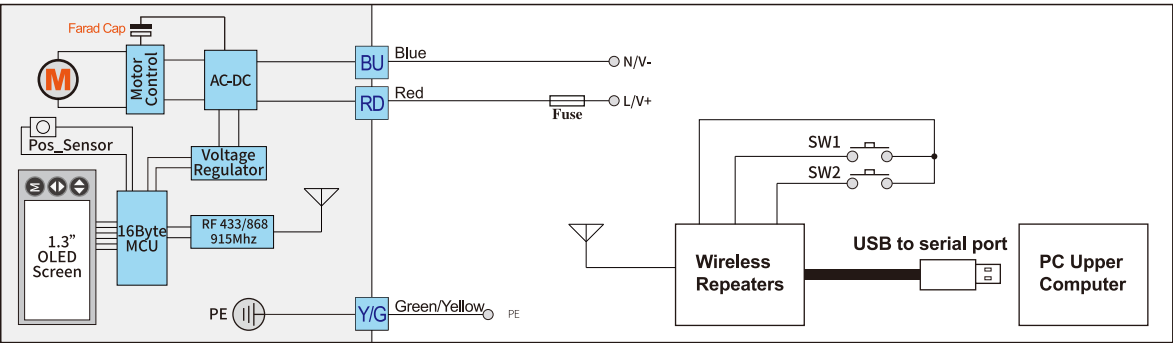
Parts	Material	Parts	Material
1 Actuator	Heatproof ABS or Casting aluminum	6 Label	PVC
2 Indicator	PC	7 Wrench fixed	Heatproof_ABS
3 Screw X 4	304	8 Hexagon wrench	CR-V
4 Manual shaft	304	9 Waterproof cable connector	NiLon
5 Oil seal	NBR	10 Lid seal	Silica gel

Wiring diagrams

RF-LORA



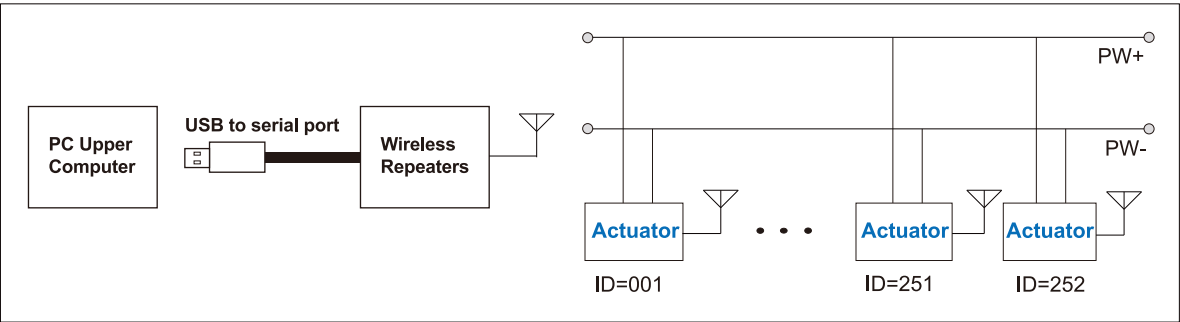
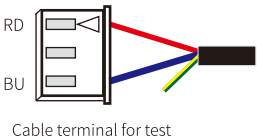
RF-LORA-KT



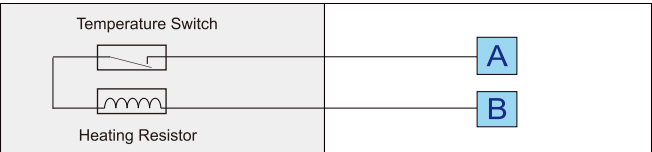
- Control instructions:
- When press SW1,controller will send valve-on command code,then controller will show the sending command and received message.
 - When press SW2,controller will send valve-off command code,then controller will show the sending command and receiving message.
- Note 1: First you should set the controlled actuator ID by OLED menu,which is more suitable for signal actuator control.
- Note 2: If you need to control several actuators ,that could be controlled by PC serial port , controller interior comes with USB-to-Serial Break,then connect controller with PC to install driver. After finished, you could send command code by the Serial Break on PC, which compatible with Modbus,details please refers to ModBusprotocol .

Test terminal for the cable end_wiring instruction

1.Fuse;please refer to manual for more parameters.



Anti-condensation heater [Accessory]



- Notice 1: The range of power is 2W-3W;
- Notice 2:The range of constant temperature heating is 25°C±20%.

Mounting instructions

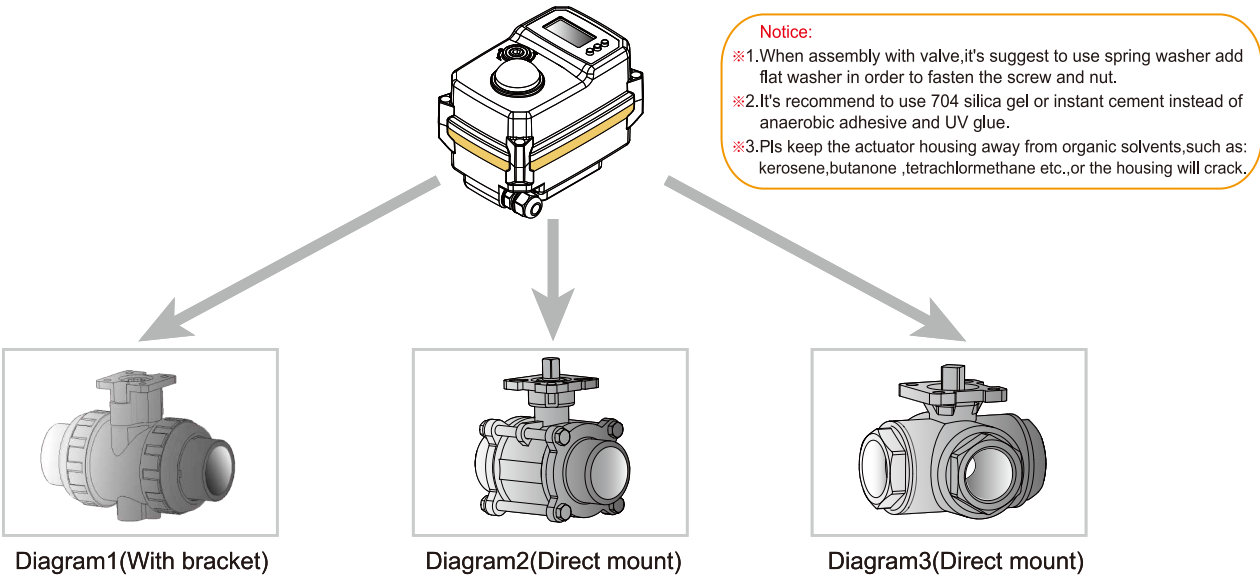


Diagram1 UPVC plastic ball valve+bracket assembly
Diagram2 3piece stainless steel ball valve assembly
Diagram3 3piece stainless steel 3way ball valve assembly

Installed valve technical requirements

Valve type	Recommend install condition
wafer butterfly valve	actuator rate torque $\geq$ 2times valve max torque
flange butterfly valve	actuator rate torque $\geq$ 1.7times valve max torque
metal ball valve	actuator rate torque $\geq$ 1.7times valve max torque
plastic ball valve	actuator rate torque $\geq$ 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 $\leq$ 15mm. It requires cutting if the output shaft is longer than 17mm.
- 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 $\leq$ 0.2mm in the process of on or off.
 - ※ The parallelism of bracket $\leq$ 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 $\leq$ 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.

Common failures and processing methods

	Fault phenomenon	Fault cause	Processing methods
□1	Actuator no action	△1 power not connected	Connect power
		△2 voltage below level or incorrect	Check whether voltage is within the normal range
		△3 overtemperature protection of motor	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 microswitch damage	Change microswitch
□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 technical hysteresis increases due to abrasion between actuator and valve rod	1 Readjust valve-off position 2 Contact the manufacturer to get repair
□4	Actuator interior water ingress	△1 OD of incoming line cable non-standard	Contact the manufacturer to get repair
		△2 waterproof treatment of incoming line 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.