

Product overview

- ◎ Rated voltage: DC24V
- ◎ Rated torque: 10Nm@DC24V[12N.m@Max]
- ◎ Running time: about 2s
- ◎ Communication Mode: RF433/868/915MHZ
- ◎ Wireless Module: LORA [Modbus]
- ◎ Communication distance: 0-3km (No shelter)
- ◎ Adopted high-performance brushless motor, Overload protection of internal motor
- ◎ It can be used 20,000 times.*1



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 16 High-performance microcontrollers, 12 high-precision AD conversion, built-in unique algorithm, thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis, especially suitable for 3-way valve adjustment.
- △ Adopt non contact positioning, control unit modularize design and potting processing, greatly improve product service life; Interface uses 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, and adopt button to realize valve on/off locally.
- △ 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 real-time adjust valve running speed of the actuator.
- △ 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

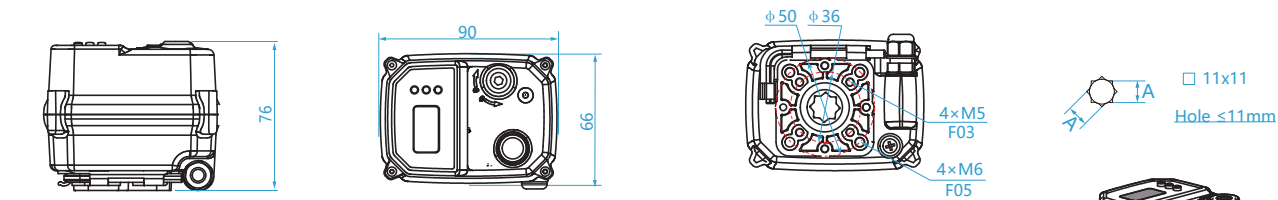
Electrical data	Rated voltage	DC24V
	Rated voltage range	DC22V~28V
	Power consumption	24W@max 12W@running 0.6W@holding
	Peak current	1A@5ms@DC24V
Functional data	Fuse	2A
	Connecting cable	4*0.3mm ² cable, voltage withstand AC300V(Length 800mm)
	Rated torque	10Nm@rated voltage
	Angle of rotation	90±2°
	Max angle of rotation	330±5°
	Manual operation	※ Matching hexagon wrench, using at no power
	Running time	About 2s (per 90°)
	Operating mode	S3-85% (loading ≤85% rated torque refer to IEC60034-1-2017)*1
	Sound power level	65dB(A)
	Position indicator	Mechanical and screen
Working conditions	Electricity safety level	III Type (ground protection)
	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
	Withstand voltage	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	-15℃~+45℃ (ABS) ; -15℃~+60℃ (Aluminum)
	Non-operation temp	≤-40℃ or ≥80℃
	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 F03、 F05
	Output axis specification	Female octagonal
	Hole deepness	≤11mm(Female octagonal)
	Weight	ABS material 0.62kg,Casting aluminum 0.82kg

*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..

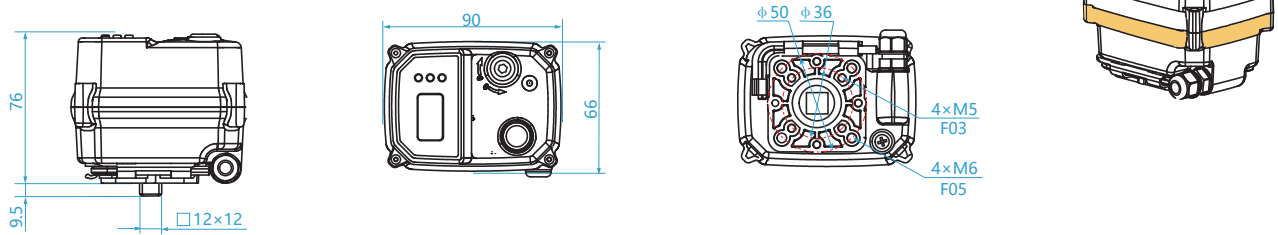
Dimension 【TCR-005X】

unit: mm

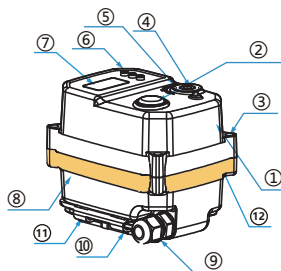
Direct mount [female octagon output shaft]



With bracket [male square output shaft]



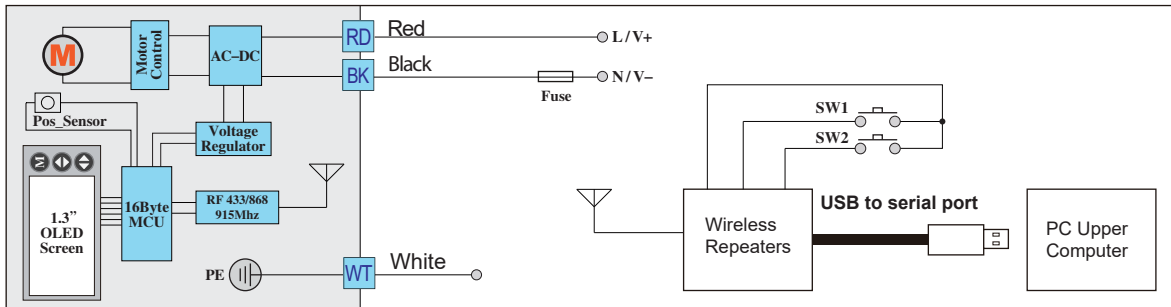
Main parts



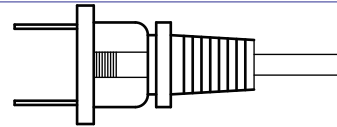
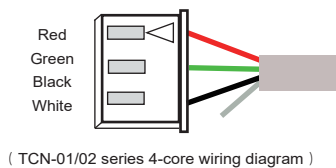
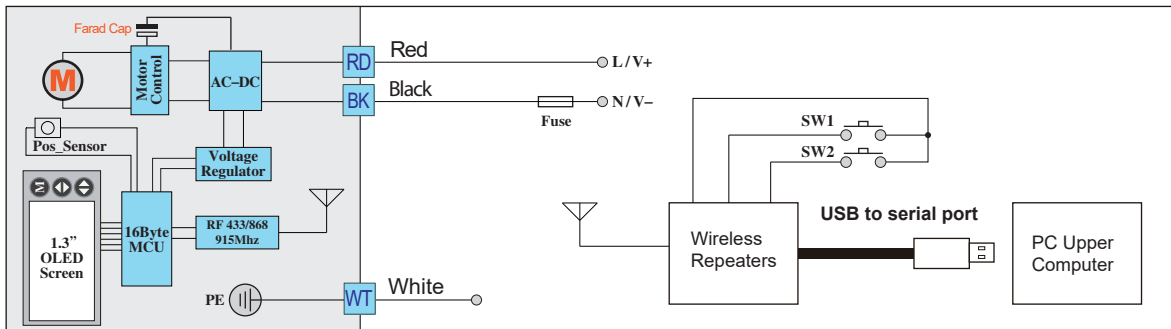
	Parts	Material		Parts	Material
1	Actuator	Heatproof ABS or Casting aluminum	7	1.3" LCD Screen	OLED
2	Indicator	Transparent AS	8	Label	PVC
3	Screw X 4	304	9	Waterproof wire nut	NiLon
4	Manual shaft	304	10	Hexagon spanner	304
5	Oil seal	NBR	11	Wrench fixed	ABS
6	Button	Rubber	12	Sealing	NBR

Wiring Diagrams

RF-LORA

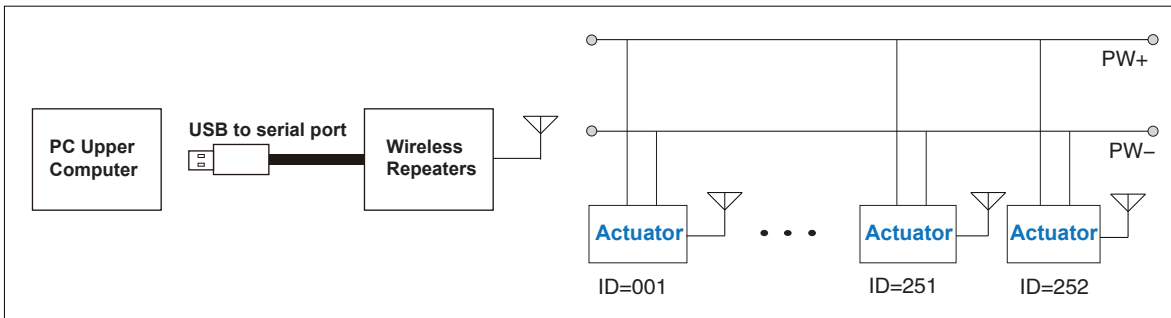


RF-LORA-KT



(TCN-01/02 series ANSI plug diagram)

※ Notice: AC110/230V products could use ANSI plug.



Control instructions:

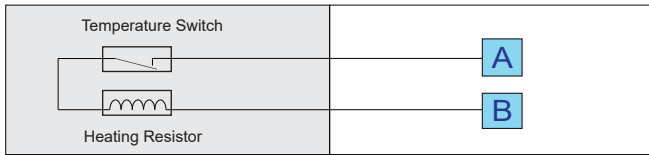
- ☐ When press SW1,controller will send valve-on command code,then controller will show the sending command and received message.
- ☐ When press SW2,controller will send valve-off command code,then controller will show the sending command and receiving message.

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 Modbus protocol .

Anti-condensation heater 【Accessory】



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

※ Notice 2: The range of constant temperature heating is $25^{\circ}\text{C} \pm 20\%$.

Mounting instructions

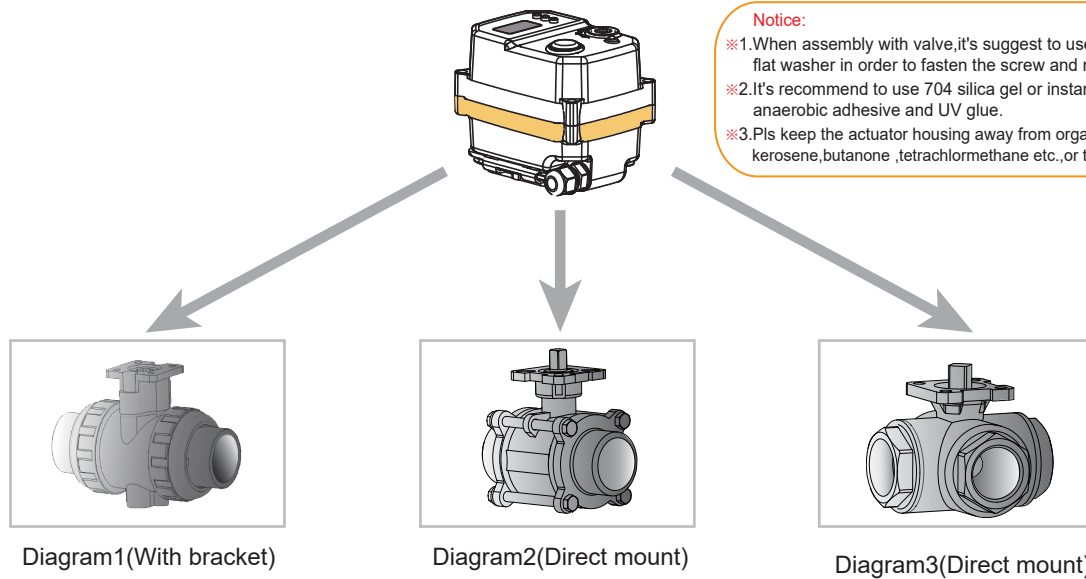


Diagram1 UPVC plastic ball valve+bracket assembly

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 ≥ 2 times valve max torque
flange butterfly valve	actuator rate torque ≥ 1.7 times valve max torque
metal ball valve	actuator rate torque ≥ 1.7 times valve max torque
plastic ball valve	actuator rate torque ≥ 1.5 times 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 $\leq 15\text{mm}$. 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 $\leq 0.2\text{mm}$ in the process of on or off.
 - ※ The parallelism of bracket $\leq 0.5\text{mm}$.
 - ※ 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 $\leq 10^{\circ}$, 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 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 actuator is cut off the power	Connect power and signal will be normal
□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 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.