



Quality

Appearance

Service



Delicate appearance  
extremely long life span



High performance  
brushless motor



Precision machining  
technology



Industrial grade component



Precise transmission

## Electric Actuator

TCR02/TCN02

# PSI TCR02/TCN02 Actuator Selection Guide

CE ISO9001

## Product overview

- ◎ Matched valves: 2-way,3-way ball valve and butterfly valve
- ◎ Rated voltage: DC12V,DC24V, AC24V/110V/230V
- ◎ Control feedback mode: B3S,B3P,B3R,BD3S
- ◎ High performance brushless motor,overheat/overload protection
- ◎ It can be used up to 20,000 times<sup>\*1</sup>
- ※ For AC series,it is forbidden to use two or more actuators in parallel



## Purchase guide

Model	Torque	Voltage	Wiring	Feedback <sup>*2</sup>	Time	Speed regulation	Rotation angle	Enclosure <sup>*3</sup>	Manual override	Position indicator	Housing material	Output shaft
TCR-02N TCN-02N	20Nm	DC12V	B3/ BD3	S Type P Type R Type	10S	None	90°/180° ≤330°	IP67 or F Type	Hexagon spanner	Mechanical indicator	ABS or Die casting aluminium	Female octagon or male square
		DC24V			15S							
		AC24V										
		AC110V										
		AC230V										

※ Female octagon output shaft selectable type:8x8,11x11,14x14mm

※ TCN-02 Series: die casting aluminium ;TCR-02 Series : ABS

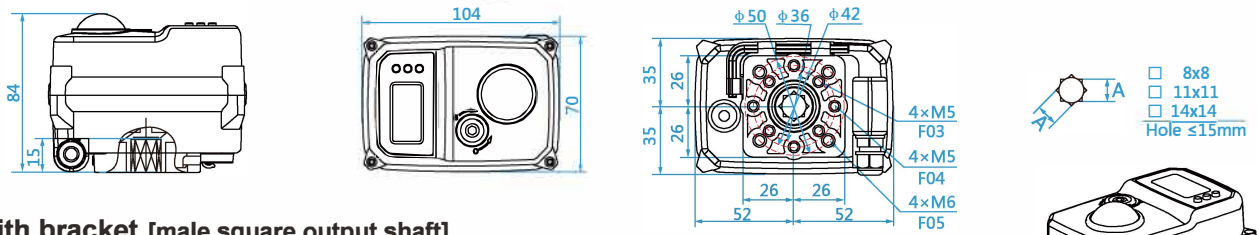
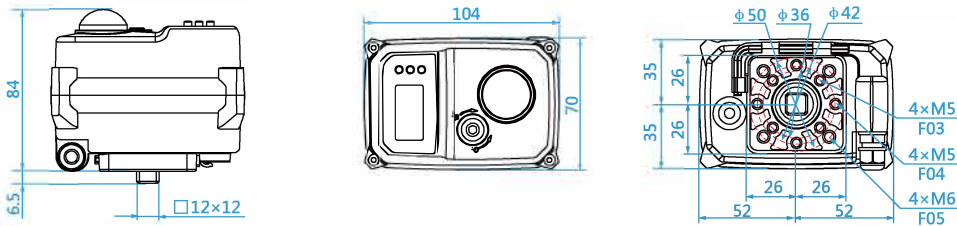
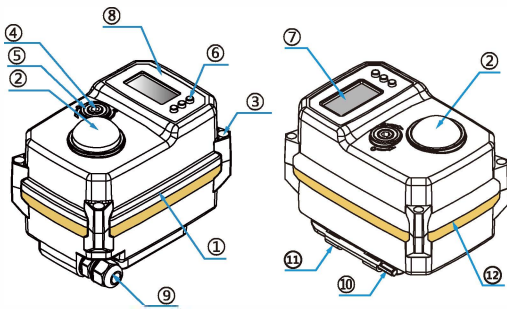
Notice <sup>\*1</sup>. Service life testing condition:The result is measured under rated load,test circle (2 times of switching time),at 25℃ working temperature and 50% humidity which will be influenced by different load and working environment.

<sup>\*2</sup>. S type is passive contact feedback,P type is active feedback,while R type is potentiometer feedback,SR type needs to be customized.

<sup>\*3</sup>. F type is available in the ambient of high humidity(≥90%) but without long-term rain.

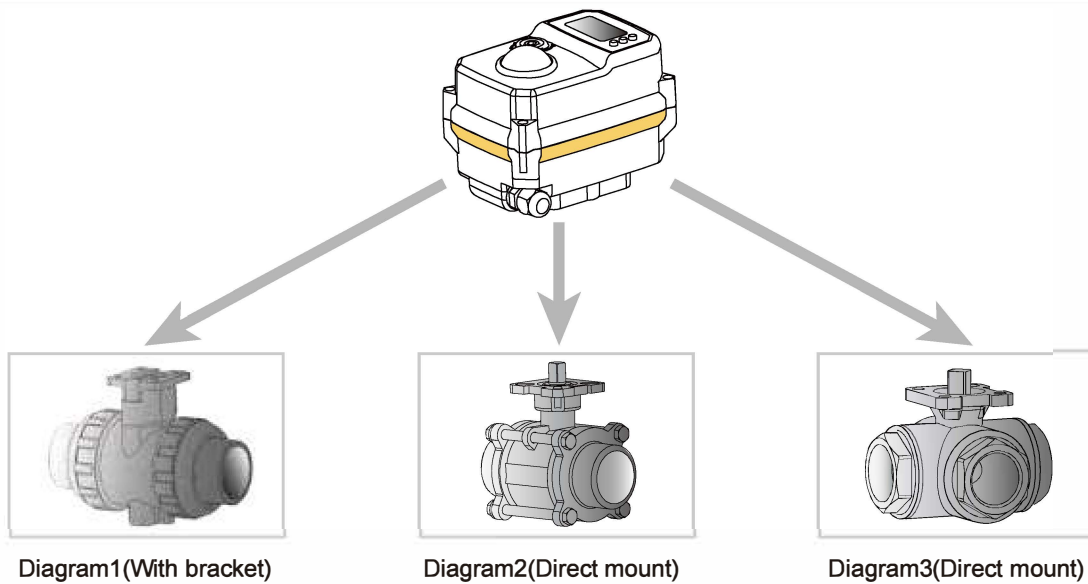
**Dimension 【TCR/TCN-02X】**

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

## TCN/TCR-02 series assembling instructions



Assembly Diagram1 UPVC plastic ball valve added with bracket

Assembly Diagram2 3-piece stainless steel ball valve

Assembly Diagram3 Stainless steel 3-way ball valve

### NOTICE

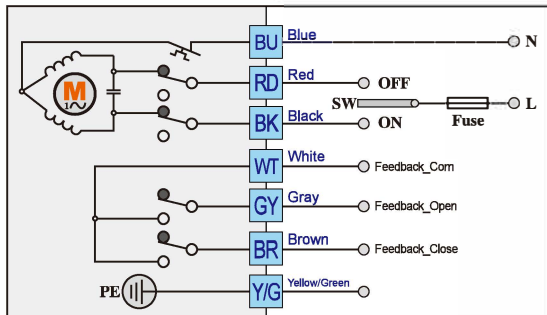
- ※1. When assembling with valve, it's recommend to use spring washer and flat washer to fix screw nut.
- ※2. It's forbidden to use anaerobic glue or UV glue, if needed, please use 704 glue and adhere quickly.
- ※3. Casing is avoided to contact with organic solvent, such as kerosene, butanone and etc, or the casing will be damaged.

## Matched valve technical requirements

- 1. When installing ball valve, the torque value should be  $\leq 15\text{Nm}$ . If the ball valve is out of operation for a long time, the torque value of its first on or off is the maximum torque. Or you can choose ball valve with low torque.
- 2. When installing butterfly valve, the maximum torque should be  $\leq 13\text{Nm}$ . Because the torque value will increased by 10-20% after installing.
- 3. When installing direct mount type valve, the hole depth should be  $\leq 15\text{mm}$ . It requires cutting if the output shaft is longer than 15mm.
- 4. Please 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 range should be  $\leq 0.2\text{mm}$  in the process of valve opening or closing.
  - ※ The parallelism of bracket should be  $\leq 0.5\text{mm}$ .
  - ※ When processing the shaft hole at both end of the coupling, ensure the accuracy and concentricity. The purpose is to ensure the mechanical hysteresis  $\leq 10^\circ$ , otherwise it will cause the actuator unable to work.
- 5. Screw should be installed with spring washer and flat washer, and we suggest you daub some sealing glue around the screw in case of screw loosening.
- 6. After installation, user should switch the valve on and off one time with hexagon spanner first. Adjust the valve after ensure it works well.

## Normal on/off model-wiring diagrams 【TCN/TCR-02N】

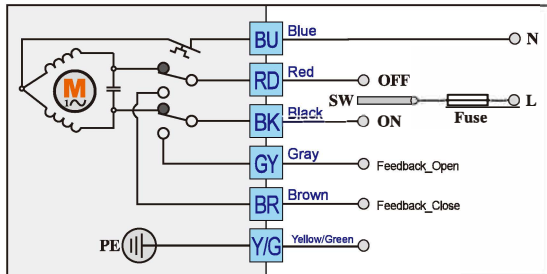
## B3S



## Control instructions:

- ☐ SW is connected with **RD**, the actuator will rotate clockwise ↻. When the valve is closed completely, **WT** is connect with **BR**, giving signal of full closing.
- ☐ SW is connected with **BK**, the actuator will rotate counterclockwise ↻. When the valve is open completely, **WT** is connect with **GY**, giving signal of full opening.
- ※ Notice 1: **WT** is not connected with **GY** and **BR**, when the actuator is rotating.
- ※ Notice 2: The time of feedback signal is a little earlier than the time when actuator reaches its actual position, so please do not cut power immediately after you get the feedback signal.

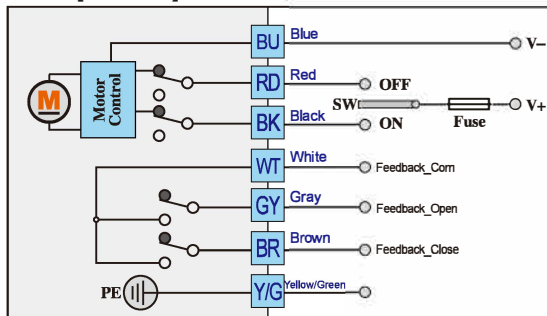
## B3P



## Control instructions:

- ☐ SW is connected with **RD**, the actuator will rotate clockwise ↻. When the valve is closed completely, **RD** is connect with **BR**, giving signal of full closing.
- ☐ SW is connected with **BK**, the actuator will rotate counterclockwise ↻. When the valve is open completely, **BK** is connect with **GY**, giving signal of full opening.
- ※ Notice 1: **RD** is not connected with **BR**, **BK** is not connected with **GY** when the actuator is rotating.
- ※ Notice 2: The time of feedback signal is synchronous with the time when valve reaches targeted position.

## B3S- (DC series)



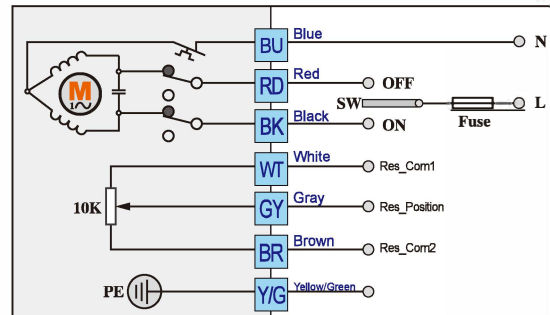
## Control instructions:

- ☐ SW is connected with **RD**, the actuator will rotate clockwise ↻. When the valve is closed completely, **WT** is connect with **BR**, giving signal of full closing.
- ☐ SW is connected with **BK**, the actuator will rotate counterclockwise ↻. When the valve is open completely, **WT** is connect with **GY**, giving signal of full opening.
- ※ Notice 1: **WT** is not connected with **GY** and **BR**, when the actuator is rotating.
- ※ Notice 2: The time of feedback signal is a little earlier than the time when actuator reaches its actual position, so please do not cut power immediately after you get the feedback signal.

## Wiring instructions:

1. Fuse: please refer to manual for more parameters.
2. SW load capability: please refer to manual for more parameters.
3. Feedback signal contact load capacity: 0.1A/250VAC 0.5A/30VDC.
4. Please make sure actuator connect ground reliably (only KT32S).

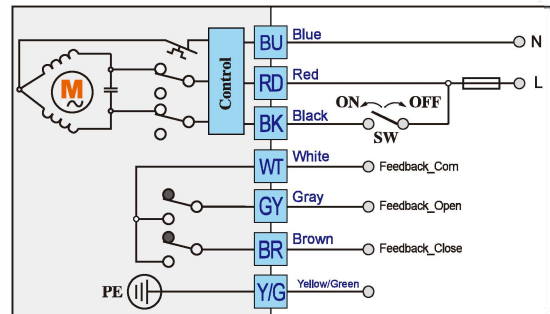
## B3R



## Control instructions:

- ☐ SW is connected with **RD**, the actuator will rotate clockwise ↻. The resistance value between **WT** and **BR** will decrease, the actuator will stop when the valve is closed completely.
- ☐ SW is connected with **BK**, the actuator will rotate counterclockwise ↻. The resistance value between **WT** and **GY** will increase, the actuator will stop when the valve is full open.

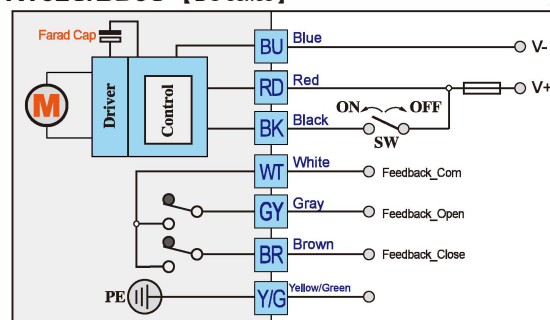
## BD3S



## Control instructions:

- ☐ If SW is disconnected, the actuator will drive valve close clockwise ↻. When the valve is closed completely, **WT** is connect with **BR**, giving signal of full closing.
- ☐ If SW is connected, the actuator will drive valve open counterclockwise ↻. When the valve is open completely, **WT** is connect with **GY**, giving signal of full opening.
- ※ Notice 1: **WT** is not connected with **GY** and **BR**, when the actuator is running.
- ※ Notice 2: The time of feedback signal is a little earlier than the time when actuator reaches its actual position, so please do not cut power immediately after you get the feedback signal.

## KT32S/BD3S- (DC series)



## Control instructions:

- ☐ If SW is disconnected, the actuator will drive valve close clockwise ↻. When the valve is closed completely, **WT** is connect with **BR**, giving signal of full closing.
- ☐ If SW is connected, the actuator will drive valve open anticlockwise ↻. When the valve is open completely, **WT** is connect with **GY**, giving signal of full opening.
- ※ Notice 1: **WT** not connected with **BR** and **GY**, when the actuator is running.
- ※ Notice 2: The time of feedback signal is a little earlier than the time when actuator reaches its actual position, so please do not cut power immediately after you get the feedback signal.
- ※ Notice 3: When power cut, actuator will drive valve to close.



( Wiring Diagram )

## Working environment

- ☐ This product can be used indoor and outdoor.
- ☐ This product is not explosion proof , ⚠ 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.
- ☐ ✖ Forbid the dropped thing hit the device and lead to improper operation.
- ☐ ✖ Forbid step on it 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 time, please pre-read the manual carefully to ensure correct use.
- ☐ Notice item: Please understand the product specification and using method clearly to ensure personal safety danger or prevent device from 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.

**TCN/TCR series assemble with valve real photos**