

# REGULATING ELECTRICAL ACTUATOR + RETURN BY SUPER-CAPACITOR TCR-02T-KT

## FEATURES

The TCR-02T-KT electric actuator is intended for motorising ¼ turn valves with a torque of 15 Nm.

**Double proportional control function 4-20mA + closing manoeuvre provided by a super-capacitor.** With a compact construction and plastic housing, it is especially well suited for motorising small dimensions ball valves. The actuator has many advanced control functions which can be set from the screen. IP67 leak-tightness: to be used indoors and, possibly, outdoors under a shelter. Manual control with a key.

## AVAILABLE MODELS

Supply voltages: 230V AC, 24V AC/DC.

Control: 4-20 mA

## LIMITS OF USE

IP Code	IP 67
Ambient temperature	- 20°C / +60°C
Service factor	S4-50%

## MECHANICAL FEATURES

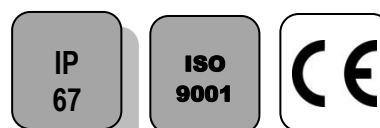
Gear box	treated steel pinions
Torque	15 Nm
Angle of rotation	90° +/- 2°
Declutching	without
Override control	By key

Torque (Nm)	15	
Voltage	24V AC - DC	95-265V AC-DC
Adjustment signal	4-20 mA	
Feedback signal	4-20 mA	
Manoeuvring time (s)	15	15
ISO 5211:	F03/F04/F05 - star 11	


## ELECTRICAL FEATURES

Motor protection	Thermal switch
Limit switches	2 adjustable switches
Anti-condensation	integrated
Electrical connection	PE M10 + 1.5m cable

Voltage	24V AC - DC	95-265V AC-DC
Power (W)	36	40
Current (A)	1,5	0,035 - 0,09
Fuse protection (A)	5	1



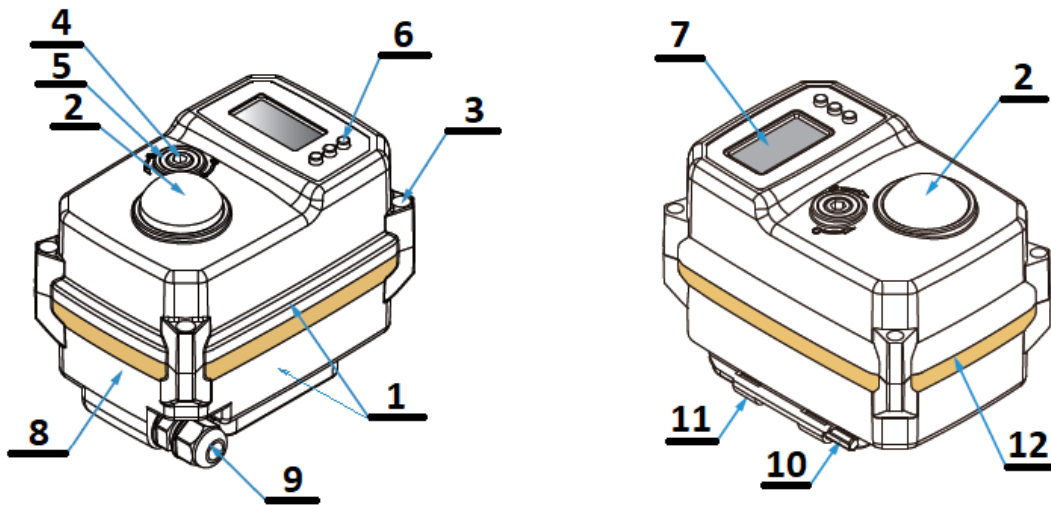
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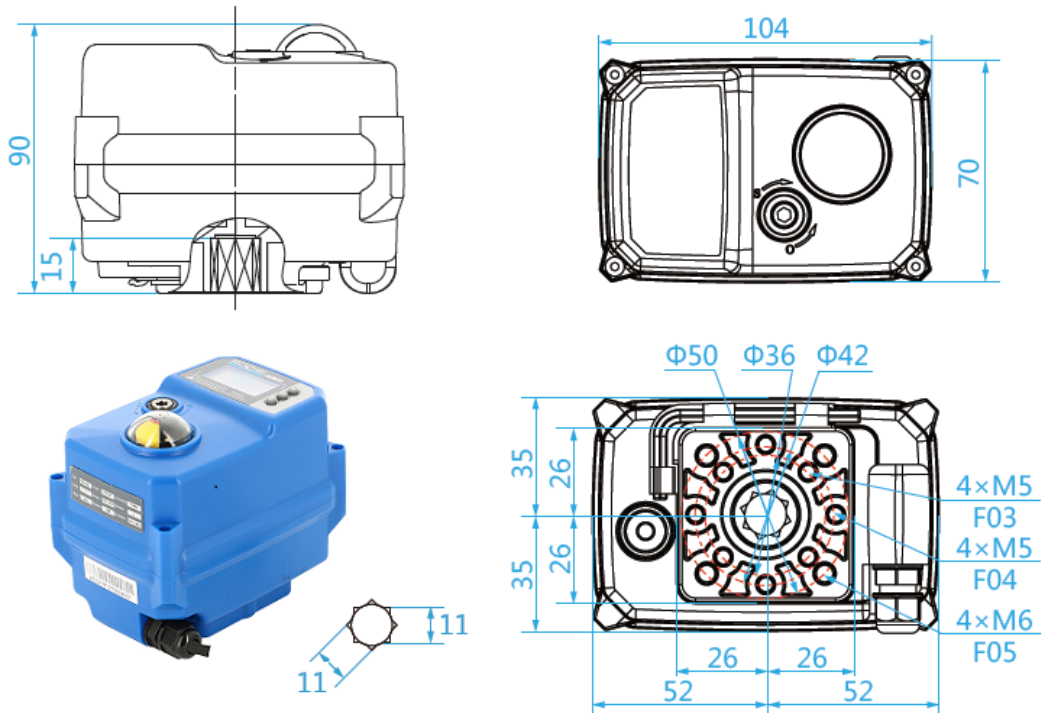
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## CONSTRUCTION

TCR-02T-KT32					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	7	1.3" LCD display	OLED
2	Position indicator	Polycarbonate plastic	8	Rating plate	PVC
3	Screw x 4	Ansi 304	9	Packing gland	Nylon
4	Backup control stem	Ansi 304	10	Hex key	Steel
5	Gasket	NBR	11	Key support	Plastic (ABS)
6	Adjustment button	Rubber	12	Cover gasket	NBR
Weight (kg): 0.620					



## DIMENSIONS (mm)

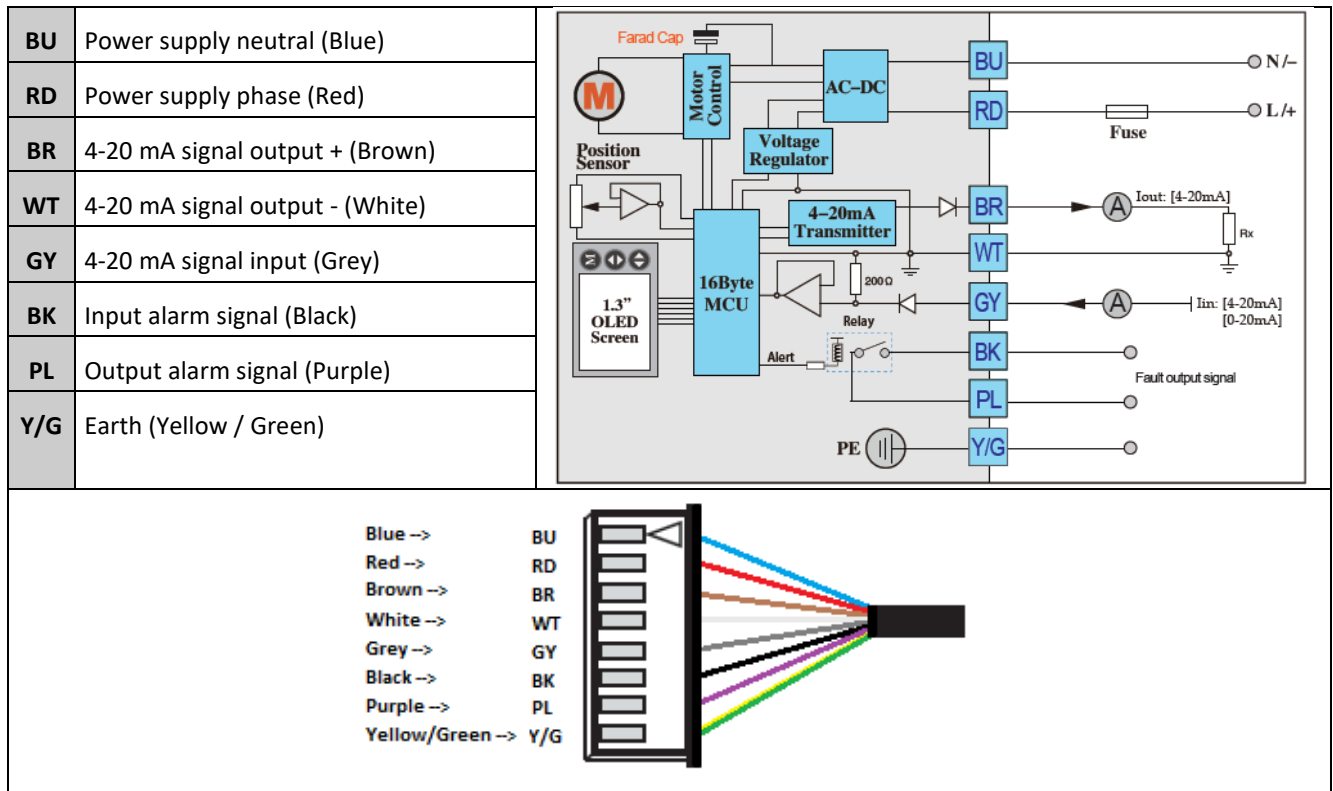


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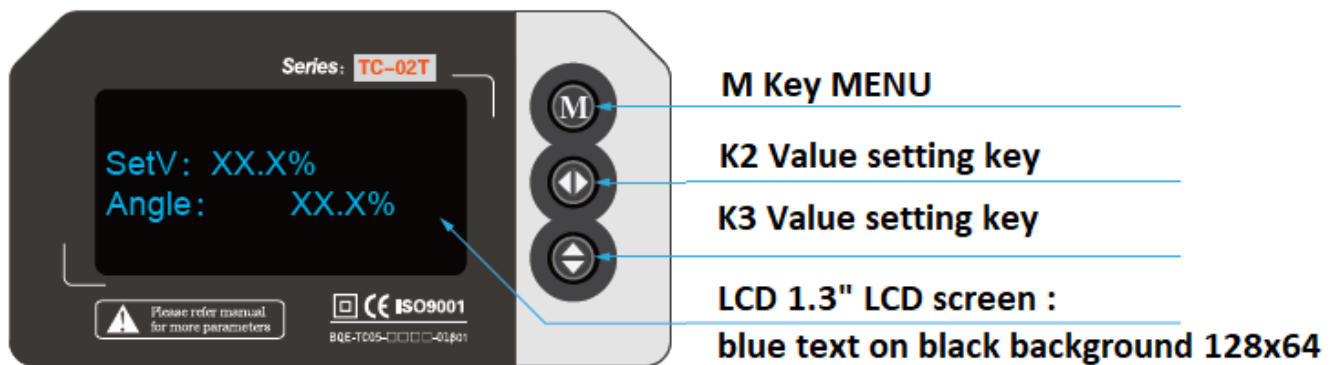
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## WIRING DIAGRAM



## DESCRIPTION OF THE 1.3" LCD SCREEN



The control screen displays the % of opening and the actuator parameter setting.

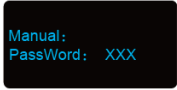
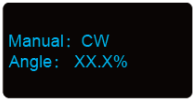
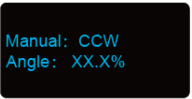
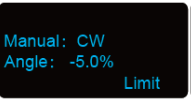
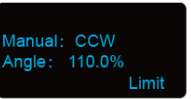
1.3" LCD angle without any blind spot, strong luminosity, automatic switching to the economy saving mode at the end of 5 minutes.

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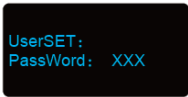
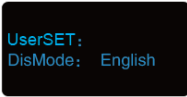

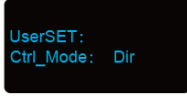
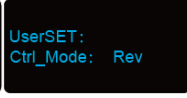
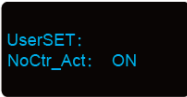
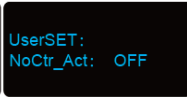
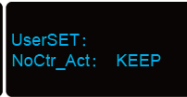
# REGULATING ELECTRICAL ACTUATOR + RETURN BY SUPER-CAPACITOR TCR-02T-KT

## LOCAL OPERATION


1	Press the K3 button for 5 seconds, until "K3" flashes at the top right of the screen.	
2		Enter the password "111"
3	Press the K2 button to manoeuvre clockwise. The screen displays the % of opening. Release when the desired position is reached.	
	   	
	Press the K3 button to manoeuvre anti-clockwise. The screen displays the % of opening. Release when the desired position is reached.	

## ACTUATOR SETTINGS

The following functions can have their parameters set from the menu accessible on the screen:

STEP	TITLE	FUNCTION AND VALUES
1	Entering the menu	Press the "M" button for more than 5 s.
2	Enter the password	Press the "M" button for more than 5 s. Enter the code "333" (use the keys K2 and K3) Press again the button "M" 
3	Choice of language	English or Mandarin  
4	Choosing the direction of rotation of the actuator	<u>Direct</u> : 4mA = valve closed / 20 mA = valve open   <u>Inverted</u> : 4 mA = valve closed / 20 mA = valve open
5	Position by absence of any control signal	In the absence of a control signal, the valve can take 3 positions: ON, OFF or KEEP   

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6	Dead band	<p>This function is used to set the accuracy and the sensitivity of the control: the larger the band, the lower the accuracy; the narrower the band, the more oscillating the system can be.</p> <p><b>Setting range:</b> 0.1 to 9.9% - <b>Setting by default:</b> 0.8%</p>
		<div>UserSET: DeadZone: X.X%</div> <div>UserSET: DeadZone: 0.1% minimum</div> <div>UserSET: DeadZone: 9.9% maximum</div>
7	Hysteresis adjustment	<p>This parameter setting is a prerequisite for the next. YES = adjustment is possible NO = no adjustment is possible (value by default)</p>
		<div>UserSET: IsGO_Hyste: NO</div> <div>UserSET: IsGO_Hyste: YES</div>
8	Hysteresis value	<p>If the previous parameter is "YES", it is possible to set the hysteresis value between 0.1 and 9.9%. The value by default is 0.2%. Do not use the function if there is a play between the valve's stem and the actuator's square.</p>
		<div>UserSET: Hysteres: X.X%</div> <div>UserSET: Hysteres: 0.1%</div> <div>UserSET: Hysteres: 9.0%</div>
9	Manual adjustment of the speed of rotation	<p>This function is used for slowing down the motor.</p> <p><b>Range:</b> 20-100% - Value by default = 100%</p>
		<div>UserSET: Manu_spd: XX%</div> <div>UserSET: Manu_spd: 20</div> <div>UserSET: Manu_spd: 100</div>
10	Braking time	<p>In order to increase the stability of the motor, the motor will slow down after a short time before reaching its setpoint value position. During current use, this function is not useful.</p> <p><b>Range:</b> 0-95 ms – Value by default = 1 ms</p>
		<div>UserSET: Brk_Delay: XX%</div> <div>UserSET: Brk_Delay: 0 Ms</div> <div>UserSET: Brk_Delay: 95Ms</div>
11	Setting the maximum speed	<p>This setting affects the available torque. Without a special need, do not change it.</p> <p><b>Range:</b> 20-100% - Value by default = 100%</p>
		<div>UserSET: Speed_Max: XX%</div> <div>UserSET: Speed_Max: 20%</div> <div>UserSET: Speed_Max: 100%</div>
12	Setting the minimum speed	<p>This setting affects the available torque. Without a special need, do not change it.</p> <p><b>Range:</b> 20-95% - Value by default = 75%</p>
		<div>UserSET: Speed_Min: XX%</div> <div>UserSET: Speed_Min: 20%</div> <div>UserSET: Speed_Min: 95%</div>

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13	Setting the speed for the stroke	<p>This setting is used for setting a % of the actuator stroke during which it will slow down before reaching the setpoint value position.</p> <p><b>Range:</b> 0.1-20% - Value by default = 10%</p>
		<div>UserSET: RangeADJ: XX.X%</div> <div>UserSET: RangeADJ: 0.1%</div> <div>UserSET: RangeADJ: 20.0%</div>
14	Redefining the 4 mA position	<p>Used to set another position than 0% for the 4 mA value. This function is useful for valves with an opening angle different from 90°.</p> <p><b>Range:</b> -50% +80% - Value by default = 0.0%</p>
		<div>UserSET: Posi4mA: X.X%</div> <div>UserSET: Posi4mA: -50.0% minimum</div> <div>UserSET: Posi4mA: 80.0% maximum</div>
15	Redefining the 20 mA position	<p>Used to set another position than 100% for the 20 mA value. This function is useful for valves with an opening angle different from 90°.</p> <p><b>Range:</b> 20% +220% - Value by default = 100.0%</p>
		<div>UserSET: Pos20mA: X.X%</div> <div>UserSET: Pos20mA: 20.0% minimum</div> <div>UserSET: Pos20mA: 220.0% maximum</div>
16	Modification of the 4 mA output signal	<p>If a deviation is found on the 4mA output signal, this function is used to adjust it. If the number is increased, the current is higher. If the number is decreased, the current is lower.</p> <p><b>Range:</b> 000_481_A – Value by default 191_A</p> <p><b>NB:</b> always limit the lower value to 20 mA</p>
		<div>UserSET: Out_4mA: XXX_A</div> <div>UserSET: Out_4mA: 000_A minimum</div> <div>UserSET: Out_4mA: 481_A maximum</div>
17	Modification of the 20mA output signal	<p>If a deviation is found on the 20mA output signal, this function is used to adjust it. If the number is increased, the current is higher. If the number is decreased, the current is lower.</p> <p><b>Range:</b> 191_1000_A – Value by default 909_A</p>
		<div>UserSET: Out_20mA: XXX_A</div> <div>UserSET: Out_20mA: 191_A minimum</div> <div>UserSET: Out_20mA: 1000_A maximum</div>
18	Response time	<p>Used to set the response speed of the valve. The smaller the value, the less sensitive the control. The bigger the value, the more sensitive it is. Increase the value when the response speed is too low.</p> <p><b>Setting range:</b> 1x20x – Value by default 3x</p>
		<div>UserSET: StallTime: 3X</div> <div>UserSET: StallTime: 1X minimum</div> <div>UserSET: StallTime: 20X maximum</div>

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19	Power supply position by default	<p>Setting the position of the valve in the event of a power cut. This manoeuvre will be carried out if the capacitor is sufficiently charged.</p> <p><b>Possible values:</b></p> <p><b>KEEP:</b> unchanged position of the valve</p> <p><b>ON:</b> valve opening</p> <p><b>OFF:</b> valve closing</p> <p><b>Value by default:</b> OFF</p>
		<div>UserSET: PDAction: KEEP</div> <div>UserSET: PDAction: OFF</div> <div>UserSET: PDAction: ON</div>
20	Capacitor charge	<p>Setting the % of charge when the feed current is higher than the set value.</p> <p><b>Setting range:</b> 60-99%</p> <p><b>Value by default:</b> 95%</p> <p>Do not set below 80%, the charge will be insufficient and would set off the motor alarm</p>
		<div>UserSET: CapCharge: XX%</div> <div>UserSET: CapCharge: 60%</div> <div>UserSET: CapCharge: 99%</div>
21	Exiting the menu	<p>Press K3 to exit the menu</p> <p>The system will switch back in the automatic checking mode.</p>
		<div>UserSET: ExitSET: Push K3</div>

## TROUBLESHOOTING

Defect met	Cause of defect	Method of solving
Inactive actuator	Non-connected electrical grid.	Connect to the electrical grid.
	Wrong voltage.	Check the actuator's voltage.
	Motor overheating.	Check the torque on the valve.
	Faulty connection.	Check the connection to the terminal box.
	Damaged start capacitor.	Contact the supplier for repair.
No switch signal	Faulty connection.	Check the connections.
	Damaged microswitch	Change the microswitch
Valve that is not fully closed	Use the return signal from the actuator check.	Receiving a return signal does not mean that the actuator is fully closed, hence do not cut the power supply.
	The hysteresis increases due to wear or between the actuator and the valve's stem.	Readjust the limit cams. Contact the supplier for repair.
Presence of humidity or water in the actuator	Unsuitable cable cross-section being used.	Contact the supplier for repair.
	The cable connection is not leak-tight.	
	Worn sealing gaskets.	
	Loose cover screws.	Dry the internal parts and tighten the cover screws.

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