

# TCR-02B MODBUS ELECTRICAL ACTUATOR

## FEATURES

The TCR-02B electric actuator is intended for motorising ¼ turn valves with a torque of 20 Nm., **BUS function:** the TCR-02B operates on a RS485-Modbus network. Moreover, different operating parameters can be set from the screen. With a compact construction and plastic housing, it is especially well suited for motorising small dimensions ball valves. Brushless motor with electronic torque limiter. IP67 leak-tightness: to be used indoors and, possibly, outdoors under a shelter. Possible installation in parallel. Manual control with a key.

## AVAILABLE MODELS

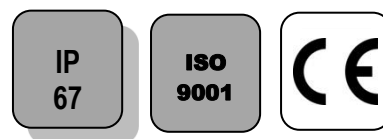
Supply voltages: 24V DC.

## LIMITS OF USE

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

## MECHANICAL FEATURES

Gear box	treated steel pinions
Torques	20 Nm
Angle of rotation	90° +/- 2°
Declutching	Without
Override control	By key
Manoeuvring time (s)	10
ISO 5211:	F03/F04/F05 - star 11



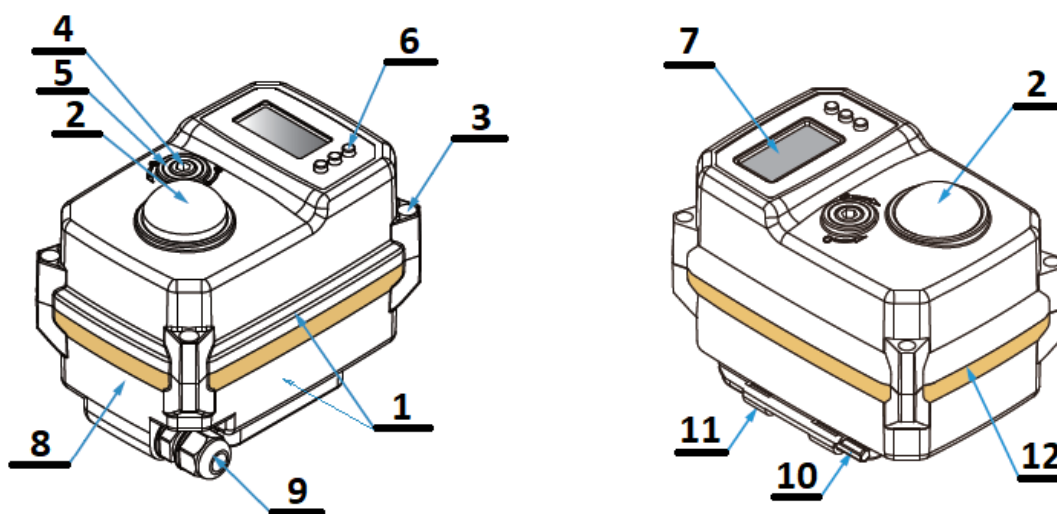
## ELECTRICAL FEATURES

Voltage	24V DC
Power (W)	15
Current (A)	2
Fuse protection (A)	5
Motor protection	Thermal switch
Anti-condensation	In-built and self-controlled (2-3W)
Electrical connection	PE M10 + 1.5m cable

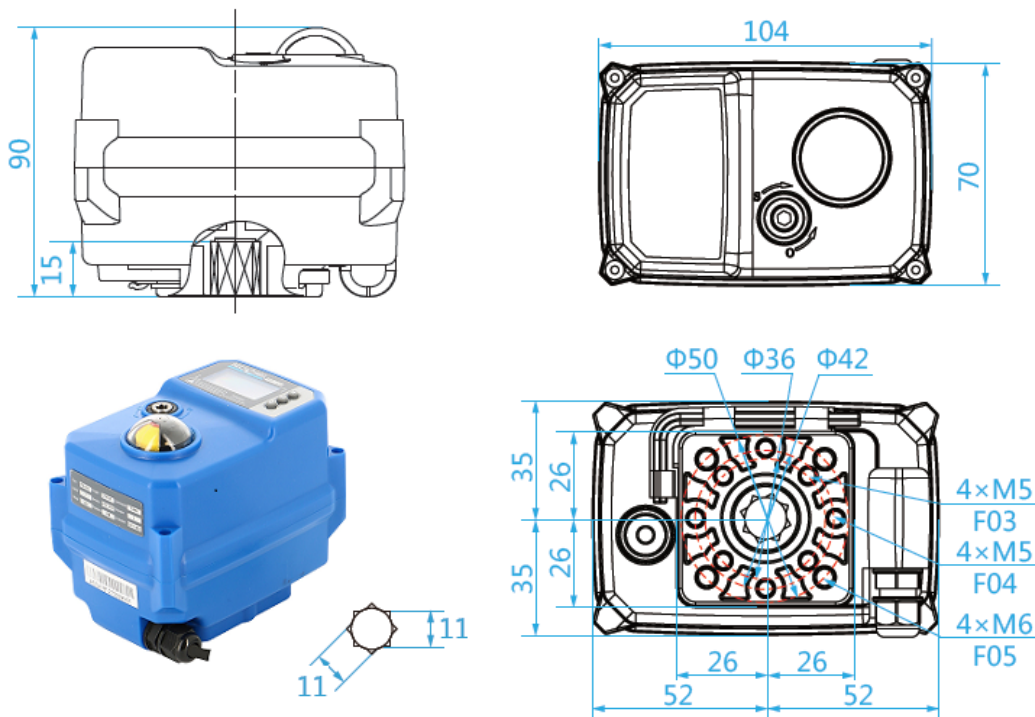
# TCR-02B MODBUS ELECTRICAL ACTUATOR

## CONSTRUCTION

TCR-02B					
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					

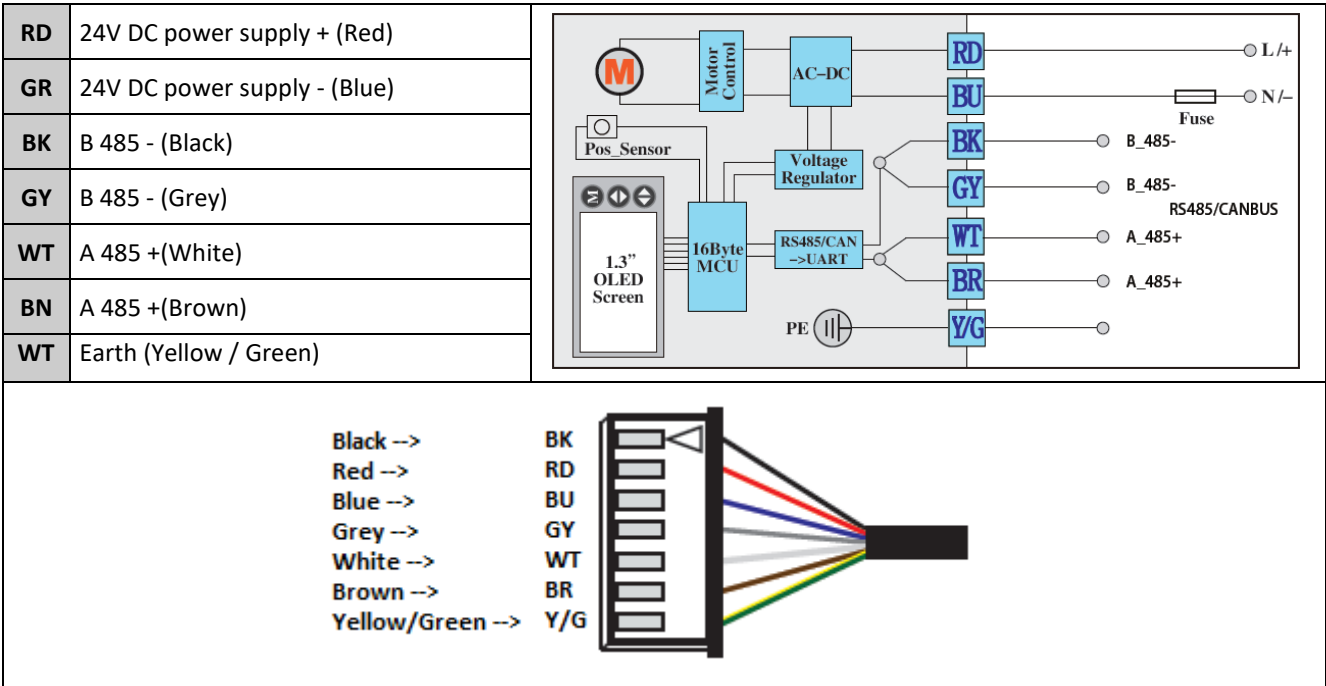


## DIMENSIONS (mm)

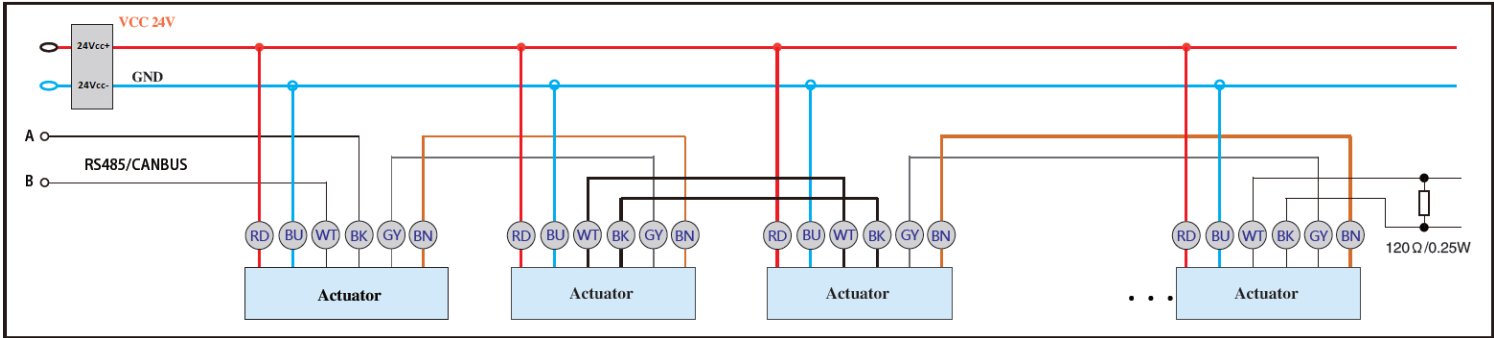


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## WIRING DIAGRAM



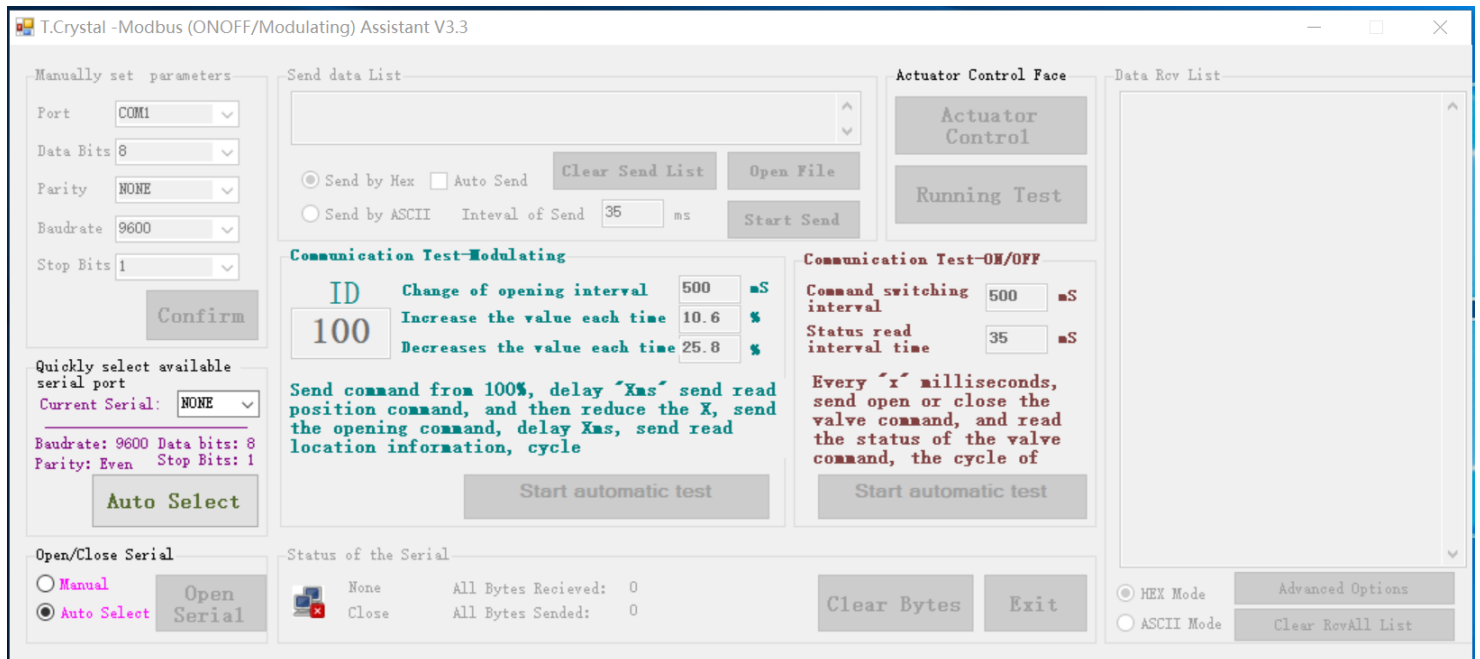
## WIRING DIAGRAM AS RECOMMENDED FOR SEVERAL ACTUATORS IN PARALLEL



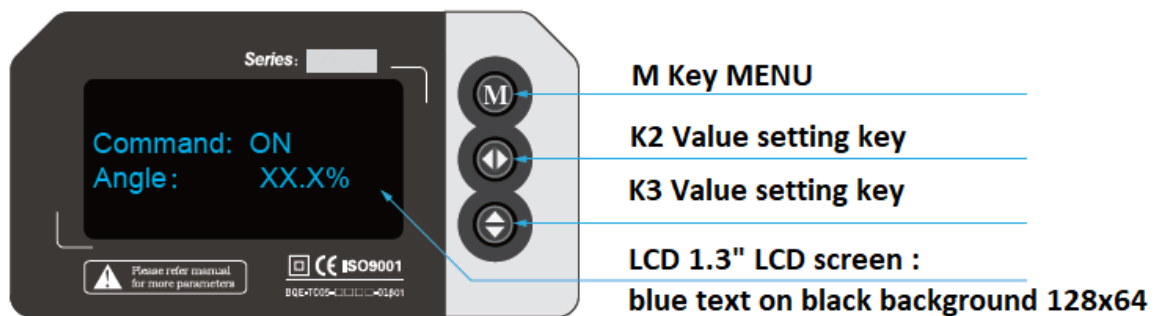
# TCR-02B MODBUS ELECTRICAL ACTUATOR

## TCR-02B ACTUATOR MANAGEMENT SOFTWARE

The management software for TCR-02B actuators is used to set the communication parameters for every actuator of the network and different other functions. Please contact us.



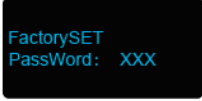
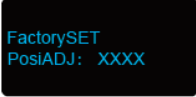
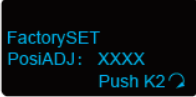
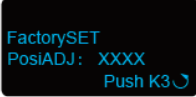
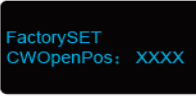
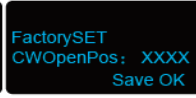
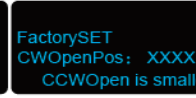
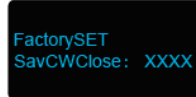
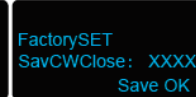
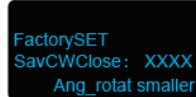
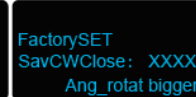
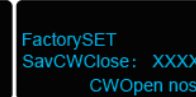
## DESCRIPTION OF THE 1.3" LCD SCREEN



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## FACTORY BY DEFAULT PARAMETER SETTING MENU

Access to factory by default parameter setting:

STEP	TITLE	FUNCTION AND VALUES
1	Enter the password	<p>Simultaneously press the “M” and “K33” buttons for more than 5 seconds Enter the code “123” (use the keys K2 and K3) Press again the button “M”</p>
		
2	Setting the “fully open” anti-clockwise position	<p>The XXXX current position is displayed (0-4096) By pressing “K2”, the actuator will start clockwise and the XXXX value will decrease. By pressing “K3”, the actuator will start anti-clockwise and the XXXX value will increase. Press “M” to move to the next step</p>
		  
3	Save the “fully open” position	<p>Press “K3” to save the selected position. If the saved position is validated, “Save OK” is displayed. If the value is too small to make a rotation of 90°, it has to be reset by pressing “M” and then using “K2” and “K3”</p>
		  
4	Adjusting the “fully closed” clockwise position and saving	<p>The XXXX current position is displayed (0-4096) By pressing “K2”, the actuator will start clockwise and the XXXX value will decrease. By pressing “K3”, the actuator will start anti-clockwise and the XXXX value will increase. Press “M” to move to the next step: Press “K3” to save the displayed position. If the saved position is validated, “Save OK” is displayed. If the value is too small to make a rotation of 90° or it is too large, it has to be reset by pressing “M” and then using “K2” and “K3”</p>
		    

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5	Exiting the menu	<p>Press K3 to exit the menu</p> <p>The system will switch back in the automatic checking mode.</p> <p>If one of the above parameters could not be saved, it will not be possible to exit the menu.</p>
		<div>FactorySET: ExitSet: Push K3</div> <div>FactorySET: ExitSet: Push K3 CCWOpen-NoSet</div> <div>FactorySET: ExitSet: Push K3 CWClose-NoSet</div>

## LOCAL CONTROL MENU

It is possible to use the the screen as local control for closing or opening:

1	Switching to the manual mode	<p>Press the “M” button until “K3” flashes in the corner at the top right of the screen.</p> <p>The “Manual operation mode” message is displayed</p>
2	Local control	<p>Press “K2” to manoeuvre clockwise</p> <p>Press “K3” to manoeuvre anti-clockwise</p>
		<div>Manual: ON Angle: XX.X%</div> <div>Manual: OFF Angle: XX.X%</div> <div>Manual: ON Angle: XX.X% Limit</div> <div>Manual: OFF Angle: XX.X% Limit</div>

## ADVANCED PARAMETER SETTING MENU

Access to the following parameter settings:

STEP	TITLE	FUNCTION AND VALUES
1	Enter the password	<p>Press the “M” button for more than 3 seconds</p> <p>Enter the code “333” (use the keys K2 and K3)</p> <p>Press again the button “M”</p>
		<div>FactorySET PassWord: XXX</div>
2	Setting the parameters of the 485 address	<p>Address of the actuator on the network</p> <p>Press “K3” to increase by one unit</p> <p>Press “K2” to decrease by one unit</p> <p><b>Range:</b> 0x01 – 0xFC</p> <p><b>Value by default:</b> 001</p> <p>Press “M” to move to the next parameter</p>
		<div>UserSET: RS485ID: 001</div>

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3	Changing the transmission speed	<p><b><u>The communication speed will be immediately modified:</u></b>            Press "K2" to navigate through values  <b><u>Possible values:</u></b> 12, 24, 48, 96, 192.  <b><u>Value by default:</u></b> 96 (= 9600 bauds)            Press "M" to move to the next parameter</p> <div data-bbox="683 383 885 483">           UserSET:            BaudRate: 9600         </div>
4	Slight adjustment of the closed position	<p>It is possible to change the closed position of the automatic valve, by a few degrees. This function is interesting if a leak is found along the line. Press key K3 to decrease the opening angle 0.1° (down to -8.5° max) and K2 to (up to -8,5° max). Press key M to move to the next parameter.</p> <div data-bbox="683 734 1284 936"> <div data-bbox="683 734 885 835">           UserSET:            ClPos_Adj: X.X°         </div> <div data-bbox="885 734 1088 835">           UserSET:            ClPos_Adj: X.X°            Offset-Open         </div> <div data-bbox="1088 734 1284 835">           UserSET:            ClPos_Adj: X.X°            Offset-Close         </div> <div data-bbox="885 835 1088 936">           UserSET:            ClPos_Adj: -X.X°            This is minimum         </div> <div data-bbox="1088 835 1284 936">           UserSET:            ClPos_Adj: X.X°            This is maximum         </div> </div>
5	Manual adjustment of the speed of rotation	<p>This function is used for slowing down the motor.  <b><u>Range:</u></b> 20-100% - Value by default = 100%</p> <div data-bbox="683 1070 1284 1171"> <div data-bbox="683 1070 885 1171">           UserSET:            Speed_PUL: XX%         </div> <div data-bbox="885 1070 1088 1171">           UserSET:            Speed_PUL: 100%            This is maximum         </div> <div data-bbox="1088 1070 1284 1171">           UserSET:            Speed_PUL: 5%            This is minimum         </div> </div>
6	Setting the operating speed	<p>It is possible to set the operating speed of the actuator to 5 to 100% of the rated speed. The value by default, is 100%. Press key K3 to increase the speed (max 100%) or K2 to decrease it (min 5%). Press key M to move to the next parameter.  <b><u>N</u></b> : it is not recommended to combine functions 5 and 6, the actuator could become overcharged.</p> <div data-bbox="683 1451 885 1552">           UserSET:            Speed_PWM: 100%         </div>
7	Exiting the menu	<p>Press K3 to exit the menu            The system will switch back in the automatic checking mode.</p> <div data-bbox="683 1680 885 1780">           UserSET:            ExitSET: Push K3         </div>

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## 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.