

736-746 XS-V-SHAPE + TCR-T CONTROL VALVE

FEATURES

736XS (steel) and 746XS (stainless steel) + TCR-T 2-way ball-valves with V-shaped ball are designed for controlling flow-rate, pressure or temperature in networks of industrial fluids. These 3-piece external tie-bolt ball valves are easy to remove for servicing. This full-bore valve has an anti-static device and double sealing at the cable gland. The ball is available as a 30° "V" or a 60° "V" with different flow-rate coefficients. The TCR-T control actuator is ultra-compact and equipped with a high-performance screen for parameter setting and display.

AVAILABLE MODELS

1/2" to 2" diameters

Supply voltages: 24V AC-DC and 230 V AC

Regulating signal: 4-20 mA, 2-20 mA, 0-10V, 2-10V

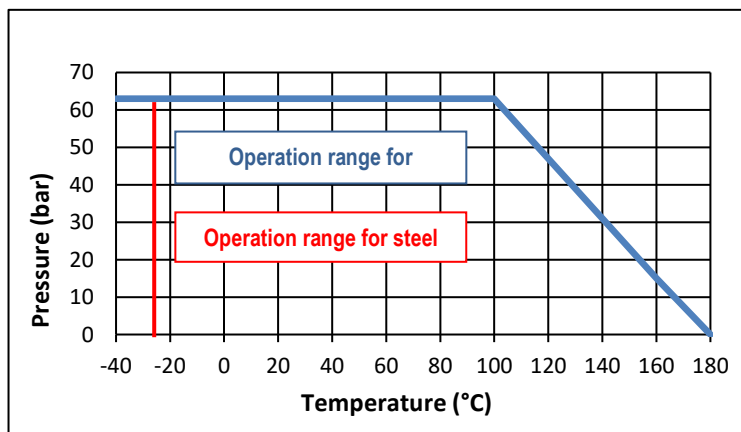
Feedback: 4-20 mA, 2-20 mA, 0-10V, 2-10V

Connection	G	SW	BW
Steel	736 XS	735 XS	734 XS
Stainless steel	746 XS	743 XS	745 XS



LIMITS OF USE

Material	steel	stainless steel
Fluid	Use not recommended on steam or gases with a speed > 10m/s	
Fluid pressure: PS	64 bar (20°C)	
Fluid temperature: WT	-25°C / +180°C	- 40°C / +180°C
Ambient temperature	- 20°C / + 70°C	
Service factor	50 – 70%	



DIRECTIVES AND MANUFACTURING STANDARDS

OBJECT	Standard	ON	OBJECT	Standard
Pressure Equipment Directive 2014/68/EC	1/2" to 1": not subject		Final test	NKS 12266
	1 1/4 à 2": category III	TÜV 0035	Material certificate	NKS 10204
Size	EN 12516-1		Connection Motorisation	ISO 5211:
Steel grades	EN 1503-1			

Information given as an indication only, and subject to possible modifications



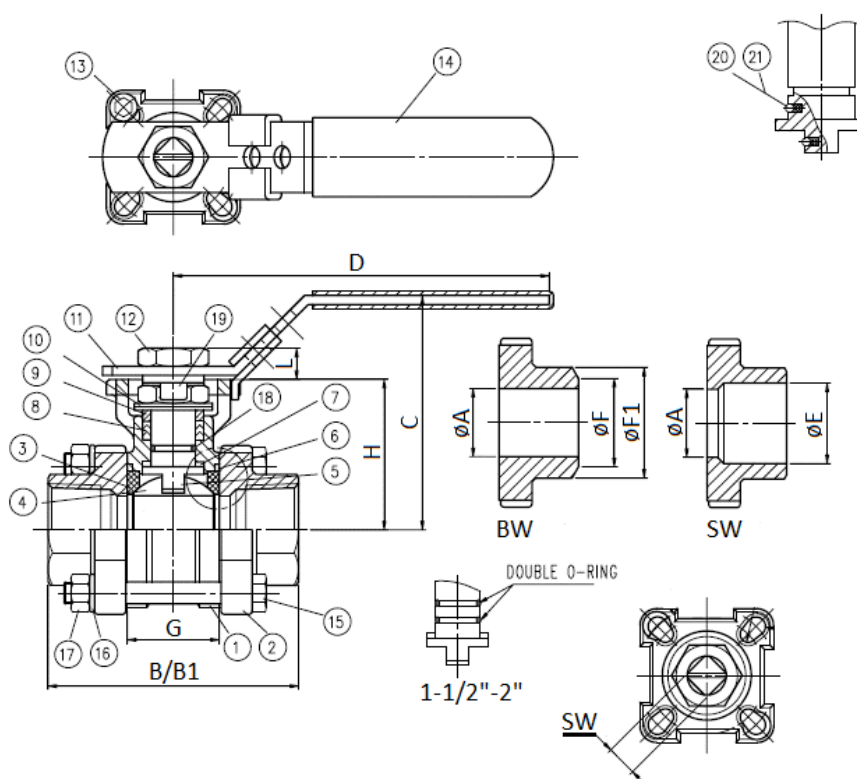
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Rev.	05
Date	06/2026

736-746 XS-V-SHAPE + TCR-T CONTROL VALVE

CONSTRUCTION

No.	Name	Steel	Stainless steel	No.	Name	Steel	Stainless steel
1	Body	1.0619	1.4408	12	Nut	304 SS	304 SS
2	Ends	1.0619	1.4408	13	Stop	304 SS	304 SS
3.	Seats	PTFE+15%GF	PTFE+15%GF	14	Coupling	PVC	PVC
4	Ball	CF8M / 316	CF8M / 316	15	Tie-bolts	304 SS	304 SS
5	Stem	316 SS	316 SS	16	Washer	304 SS	304 SS
6.	Body gasket	PTFE	PTFE	17	Nuts	304 SS	304 SS
7.	Washer	PTFE+15%GF	PTFE+15%GF	18.	O-ring	FPM	FPM
8.	Gasket	PTFE	PTFE	19	Tab washer	304 SS	304 SS
9	Spacer	304 SS	304 SS	20	Anti-static	316 SS	316 SS
10	B. washer	301 SS	301 SS	21	Spring	304 SS	304 SS
11	Lever	304 SS	304 SS	* Parts included in the maintenance kit			



DIMENSIONS (mm)

DN	A	B (G)	B (SW)	B1 (BW)	C	D	E	F	F1	G	H	J1	SW
1/2"	16	75	75	75	70.9	110	21.9	17	22.4	25.2	42.3	42	9
3/4"	20	80	80	90	73.4	110	27.2	22	28.2	27.7	44.8	42	9
1"	24.5	90	90	100	84.1	135	34.0	28	33.7	33.0	54.0	50	11
1 1/4"	32	110	110	110	89.3	135	42.7	37	44.0	41.2	59.2	50	11
1 1/2"	38	120	120	125	109.5	165	48.8	43	50.8	49.3	73.5	70	14
2"	50	140	140	150	118.9	165	61.3	54	62.6	63.6	82.9	70	14

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TCR-T ELECTRICAL MOTORISATION

The TCR-T motorisation proposed as standard comprises:

- IP67 epoxy coated aluminium housing for actuator and steel gear box.
- a safety coefficient of 1.3 minimum compared to the nominal torque of the valve.
- an upstream / downstream pressure difference $\Delta P=10$ bar max.

The actuator's assembly is direct.

DN	Actuator	Power (W)		Intensity 230V AC	Current 24V AC-DC	Time (s)		Input signal	Output signal
		TCR-T	TCR-T-KT32			TCR-T	TCR-T-KT32		
1/2"	TCR-02-T	10	36	1	2	10	15	4-20 mA	
3/4"	TCR-02-T	10	36	1	2	10	15	4-20 mA	
1"	TCR-02-T	10	36	1	2	10	15	4-20 mA	
1"1/4	TCR-02-T	10	36	1	2	10	15	4-20 mA	
1" 1/2	TCR-05-T	25	40	1	2	12		4-20 mA, 2-20 mA, 0-10V, 2-10V	
2"	TCR-05-T	25	40	1	2	12		4-20 mA, 2-20 mA, 0-10V, 2-10V	

For any other operating conditions, please contact us.

* indicative time for actuator running empty



FLOW-RATE COEFFICIENT (Kv)

The Kv (m3/h) values as a function of the degree of opening, are the following

DN	Ball	Kv (m3/h) per opening angle																		
		0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°	55°	60°	65°	70°	75°	80°	85°	90°
15	30°	0	0	0	0	0	0	0	0.1	0.1	0.2	0.4	0.8	1.1	1.5	1.8	2.5	3.1	4.1	5.1
	60°	0	0	0	0	0	0	0	0.2	0.4	0.6	0.9	1.4	1.9	2.6	3.3	4.6	5.9	8.0	10.1
20	30°	0	0	0	0	0	0.1	0.2	0.4	0.6	0.9	1.2	1.6	1.9	2.5	3.1	3.8	4.6	5.7	6.8
	60°	0	0	0	0	0	0.2	0.3	0.6	0.9	1.3	1.8	2.4	2.9	4.0	5.0	6.7	8.4	11.5	14.5
25	30°	0	0.03	0.04	0.3	0.5	0.9	1.2	1.7	2.2	2.8	3.4	4.2	5.0	6.3	7.5	8.9	10.2	11.9	13.7
	60°	0	0.03	0.05	0.4	0.7	1.1	1.5	2.0	2.6	3.2	3.9	5.1	6.2	8.0	9.7	12.6	15.5	20.0	24.5
40	30°	0	0.01	0.02	0.4	0.7	1.3	2.0	2.7	3.4	4.7	5.9	7.4	8.9	11.3	13.7	16.3	18.8	22.1	25.3
	60°	0	0.01	0.02	0.5	0.9	1.7	2.4	3.8	5.2	6.4	7.6	10.1	12.6	15.7	18.8	24.7	30.6	39.3	47.9
50	30°	0	0.16	0.32	1.1	1.9	2.9	3.9	5.0	6.1	7.5	9.0	11.3	13.6	17.0	20.4	24.6	28.8	33.6	38.4
	60°	0	0.22	0.44	1.3	2.1	3.4	4.7	6.7	8.7	11.2	13.6	17.9	22.3	28.6	34.9	43.7	52.4	66.9	81.4
80	30°	0	0.30	0.60	1.7	2.9	5.1	7.4	10.4	13.5	18.2	22.9	29.0	35.1	43.4	51.8	62.6	73.4	85.4	97.4
	60°	0	0.41	0.82	2.1	3.4	6.4	9.3	14.4	19.5	26.6	33.8	45.1	56.3	73.7	91.0	114	137	176	216
100	30°	0	0.37	0.74	2.8	4.8	8.3	11.8	17.7	23.5	31.5	39.5	50.3	61.2	75.6	90	106	123	145	167
	60°	0	0.82	1.6	3.3	5.0	10.3	15.5	24.0	32.5	44.5	56.5	75.7	94.9	123	151	194	236	297	358

TCR-T-KT32 OPTION

The KT32 option on the TCR-T actuator combines two functions on a same valve:

- Control,
- Return to the (open or closed) position in the event of a power supply cut.

Please contact us.

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ASSEMBLY AND MAINTAINANCE INSTRUCTIONS

1 - Installation

1.1 - Checks

- Check that the material of the valve body is chemically compatible with the fluid.
- Check that the pressure and service conditions are compatible with the (P, T) diagram of the valve. See § "Service limits"
- Check that the fluid is clean and free of particles. The latter could scratch the ball and damage the seats, hence causing the valve to leak. If need be, install an upstream filter.
- Check that the upstream and downstream pipes are correctly aligned and that the supports are suitable for the weight of the valve. Do not rely on the valve to compensate for pipe misalignment. For heat transfer fluids, provide for expansion compensation. All these piping defects may lead to leaks, blockages and even mechanical failure.
- Check that there is no risk of thermal expansion of the fluid, which could damage the seats. In the open position, a hole at the top of the ball balances the pressures between the body cavity and the flow of the fluid. As an option, we recommend a relief hole upstream of the valve for balancing the pressures for fluids such as ammonia, LPG, chlorine, etc.
- On a cold service, check that there is no risk of ice forming and blocking the tap spindle. If necessary, provide a spindle extension with suitable insulation or permanent spindle heating. Please consult us for a special model.
- Check that the valve is not used for flow or pressure control since it is not intended for this use and there is a risk of premature wear of the seats, in particular in the event of high pressure and/or temperature. For this special application, preferably use our "V-port" version with a V-shaped hole in the ball. Please contact us.
- Check that the valve is not used on a gas which might condense at certain times during the process. In such a case, the pressure within the body cavity could become negative, which could lead to a significant deformation of the seats. Please contact us.
- Static electricity: the valve will be supplied with a ball-stem-body internal electrical continuity tester. If the service conditions require the electrical continuity of the installation, check its earthing.
- If the valve is installed in an explosive zone, you must follow the additional "IMEVMATEX" instructions.

1.2 - Storage before installation

- Follow our general "IMESTOCK" instructions for storage.
- Check that the tie-bolts of the valves were not loosen during transport.

1.3 - Installation

- Before any installation, isolate the piping upstream and downstream, depressurize the piping and bring the installation to ambient temperature. Carefully clean the piping of any particle (foreign body, dust, rust, etc.) or shavings by water rinsing or air blowing.
- For valves with a size above DN50, plan to use a hoist.
- Remove the protective tips from the valve ends.
- Check the cleanliness of the internal surfaces of the valve and if need be, clean them.
- Direction of mounting: the valves do not have a preferred direction of mounting, unless a relief hole was drilled into the ball.
- Check the perfect alignment and the proper support of the pipe installation upstream and downstream of the valve. Alignment defects cause mechanical deformations which can block the valve or lead to leaks at the body gaskets.

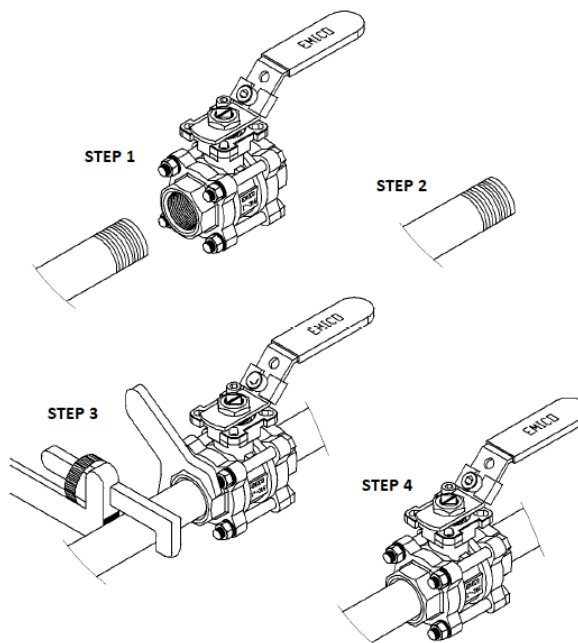
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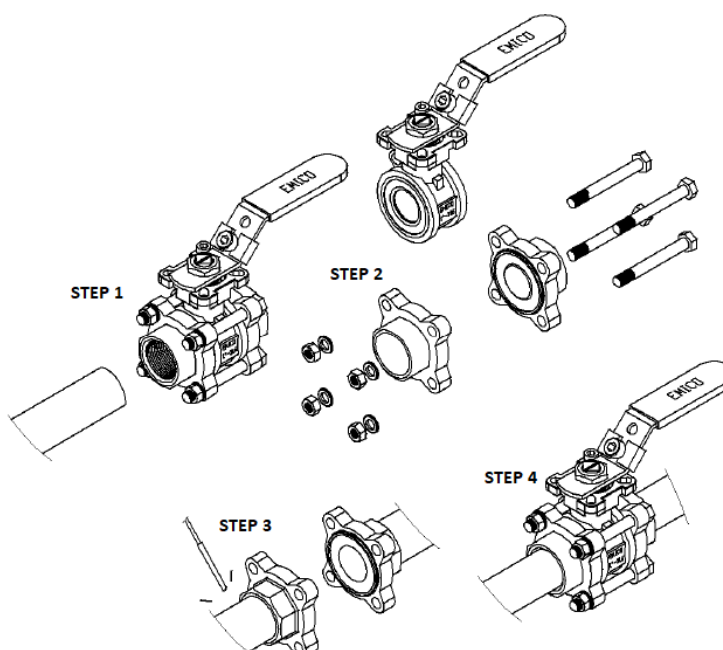
○ Threaded valve connection:

- Check that the standards for the valve internal thread and pipe thread are the same.
- Cover the pipe threads using a sealing material (tow, PTFE tape, sealing glue, etc.) which is suitable for the fluid.
- Screw the tube into the valve end clockwise, as shown in the diagram below.
- Check the sealing of the connection using a suitable test (hydrostatic test or leak detection spray).



○ Connection of weld-on valves:

- Remove the end (items 2) by unscrewing the tie-bolts, and remove the central body.
- Weld each end onto the upstream or downstream pipe, following the alignment of the tie-bolt holes.
- Cool down to the room temperature the welded ends, then put back the central body complying with the tightening torques shown in the table below.
- Check the sealing of the connection using a suitable test (hydrostatic test or leak detection spray).



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736-746 XS-V-SHAPE + TCR-T CONTROL VALVE

- Hydraulic test of the installation
 - Valves were tested at the factory at 1.5 x WP.
 - If a hydrostatic test is carried out on the installation, do not exceed the authorised pressure.

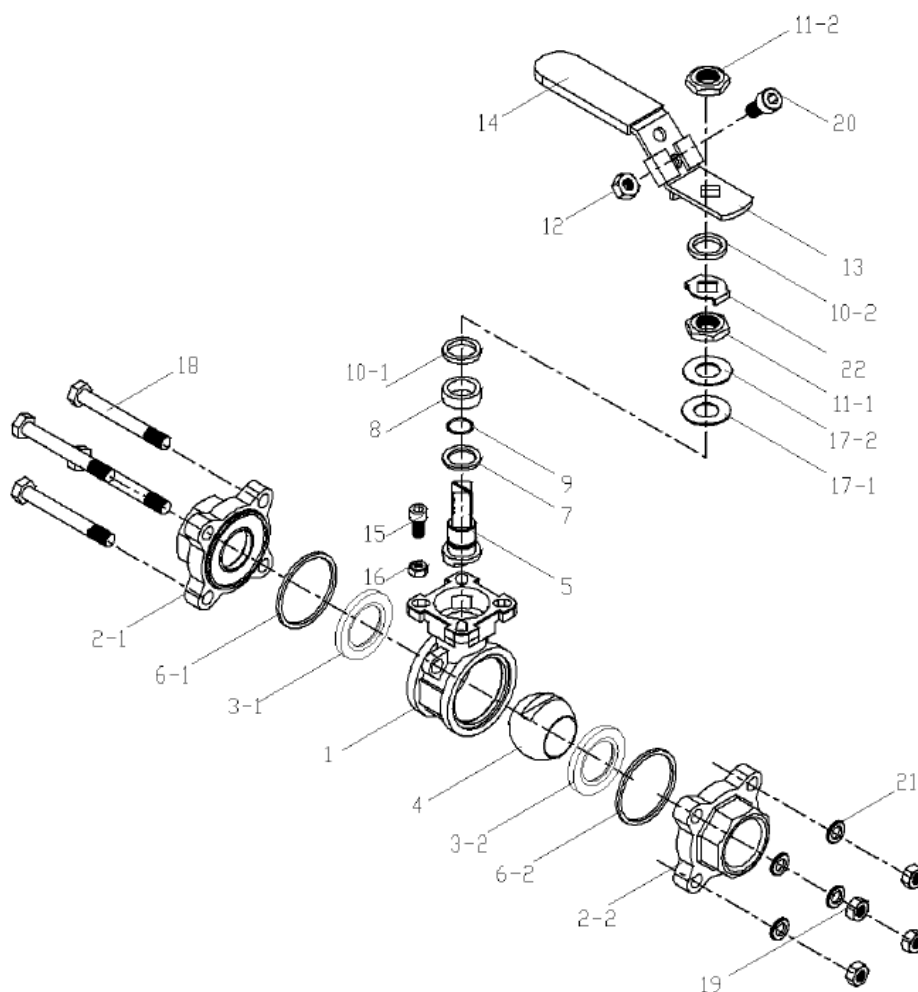
2 - Service

- If a hot fluid flows across the valve, do not touch the valve surface.
- Always operate the valve slowly and smoothly.
- Opening clockwise, closing anti-clockwise.

3 - Servicing

3.1 - Frequency of servicing

- The servicing frequency depends upon the use of the valve, of the type of fluid, of its velocity, of its frequency of operation, of the cycles of rise and fall in pressure and temperature.
- Before any intervention, isolate the upstream and downstream pipe installation using the valves provided for this purpose. Depressurize the pipe installation and bring it to ambient temperature.
- If the lever has to be removed, do that before disassembling the body.
- To remove the central body, unscrew the tie-bolts symmetrically. Then gently remove the central part avoiding to drop the ball.
- To remove the ball from the body, turn the stem by a quarter turn.



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3.2 - Inspecting the state of the valve and possible repair

- Check the state of the ball (Item 4): it has to be clean and unscratched. If the cleaning or polishing is not possible, replace it (see the § on spare parts).
- Check the state of the seats (3.1 and 3.2): they must not be deformed, nor scratched, nor worn, or dirty. Otherwise, replace them with parts from the gasket kit.
- Check the state of the packing gland (7.8 and 9): no leak should be found at the stem and the rings should not be excessively worn. If need be, replace the gaskets.
- Check the state of the body gaskets (6.1 and 6.2). Replace them if necessary.
- Reassemble the different parts of the valve, following the tightening torques shown in the table below.
- Check that the stem manoeuvring is smooth. Perform about ten manoeuvres.

TABLE OF THE TIGHTENING TORQUES OF THE TIE-BOLTS AND OF THE LEVER NUT

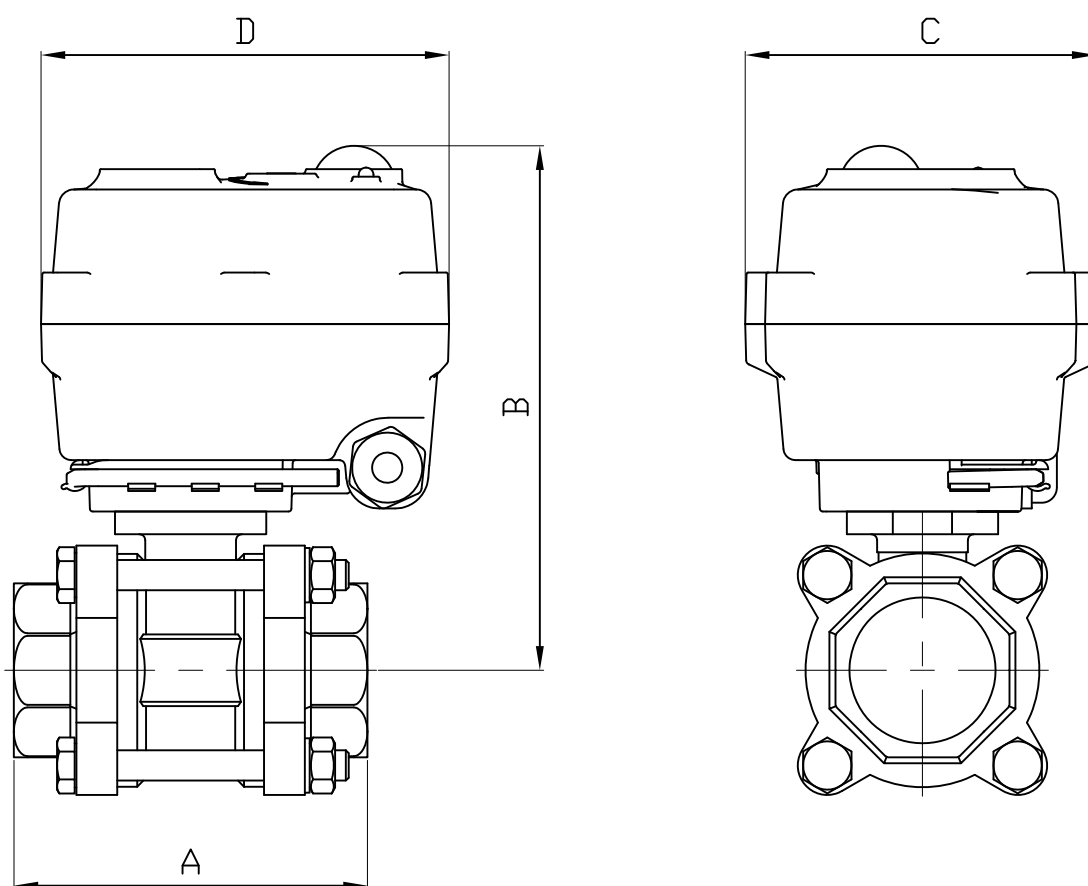
DN	Tie-bolts	Torque (Nm)	Lever nut (Nm)
1/4" - 6	M6	10	4
3/8" - 10	M6	10	4
1/2" - 15	M6	10	4
3/4" - 20	M8	20	4
1" - 25	M8	20	4.5
1 1/4" - 32	M10	35	4.5
1 1/2" - 40	M10	35	5.5
2" - 50	M10	40	5.5
2 1/2" - 65	M12	70	7
3" - 80	M16	120	7
4" - 100	M16	120	7

SPARE PARTS

DN	Gasket kit	Ball	V30° ball	V60° ball	Tie-bolt kit	Lever
Reference mark	3-6-7-8-18	4	4	4	15-16-17	11
1/4" - 6	Please contact us.	Please contact us.	Please contact us.	Please contact us.	Please contact us.	Please contact us.
3/8" - 10	Please contact us.	Please contact us.	Please contact us.	Please contact us.	Please contact us.	Please contact us.
1/2" - 15	982852	980032	980042	980052	982832	982802
3/4" - 20	982853	980033	980043	980053	982833	982802
1" - 25	982854	980034	980044	980054	982834	982804
1 1/4" - 32	982855	980035	980045	980055	982835	982804
1 1/2" - 40	982856	980036	980046	980056	982836	982806
2" - 50	982857	980037	980047	980057	982837	982806
2 1/2" - 65	982858	Please contact us.	Please contact us.	Please contact us.	982838	982808
3" - 80	982859	Please contact us.	Please contact us.	Please contact us.	Please contact us.	982808
4" - 100	982860	Please contact us.	Please contact us.	Please contact us.	Please contact us.	982808

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TCR-02T-05T

DN	1/2"	3/4"	1"	1 1/2"	2"
SERVO	TCR02-T	TCR02-T	TCR02-T	TCR05-T	TCR05-T
A	75	80	90	120	140
B	132.3	132.8	144	194.5	204
C	70	70	70	111	111
D	104	104	104	132	132
KG	1.35	1.64	2.16	5.25	7.5

Informations données à titre indicatif et sous réserve de modifications éventuelles
data subject to alteration

Echelle /	Date : 26/11/2019	Dessiné par : E.D.	Tolérances générales : +/- 0.2	Modifications	Date	REV.
ROBINET A TOURNANT SPHERIQUE 746XS V-PORT/V-PORT BALL VALVE 746XS + SERVOMOTEUR TCR/ ELECTRIC ACTUATOR TCR				Matière :		
				Poids (Kg) :		
				Traitement : SANS		
 45, Rue du Ruisseau 38297 SAINT QUENTIN FALLAVIER				Plan n° Ens 1411		

TCR-02T CONTROL ELECTRICAL ACTUATOR

FEATURES

The TCR-02T electric actuator is intended for motorising ¼ turn valves with a torque of 20 Nm. **Control function:** this motor is used to control the position of the valve depending upon an a 4-20mA or 0-10V input signal. With a compact construction and plastic housing, they are especially well suited for motorising small size ball valves. IP67 leak-tightness: to be used indoors and, possibly, outdoors under a shelter. Possible installation in parallel. Manual control with a key. This actuator has many functions. Parameter setting is done directly on the screen.

AVAILABLE MODELS

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

Control: 4-20mA, 0-10V

Dual frequency: 50Hz, 60Hz

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

Actuator	TCR 02T	
Torques (Nm)	20	
Voltage	24V AC - DC	95-265V AC-DC
Control signal	4-20mA / 0-10V	
Recopy signal	4-20mA / 0-10V	
Manoeuvring time (s)	10	10
ISO 5211:	F03/F05 - star 11	

ELECTRICAL FEATURES

Actuator	TCR 02T	
Motor protection	Thermal switch	
Limit switches	Without	
Auxiliary switches	Without	
Anti-condensation	integrated	
Electrical connection	PE M10 + 1.5m cable	

Actuator	TCR 02T	
Voltage	24V AC - DC	95-265V AC-DC
Power (W)	10	10
Current (A)	0,35	0,035 - 0,075
Fuse protection (A)	2	1

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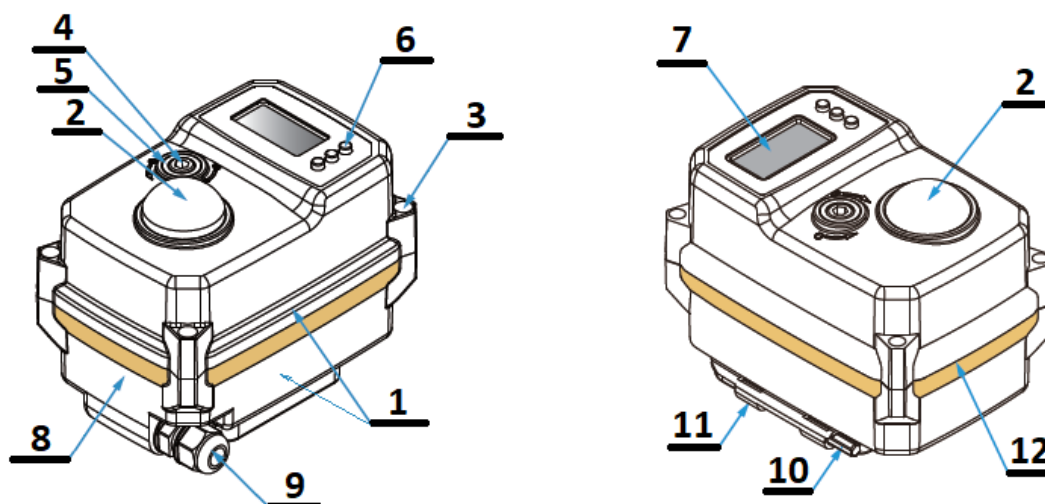
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TCR-02T CONTROL ELECTRICAL ACTUATOR

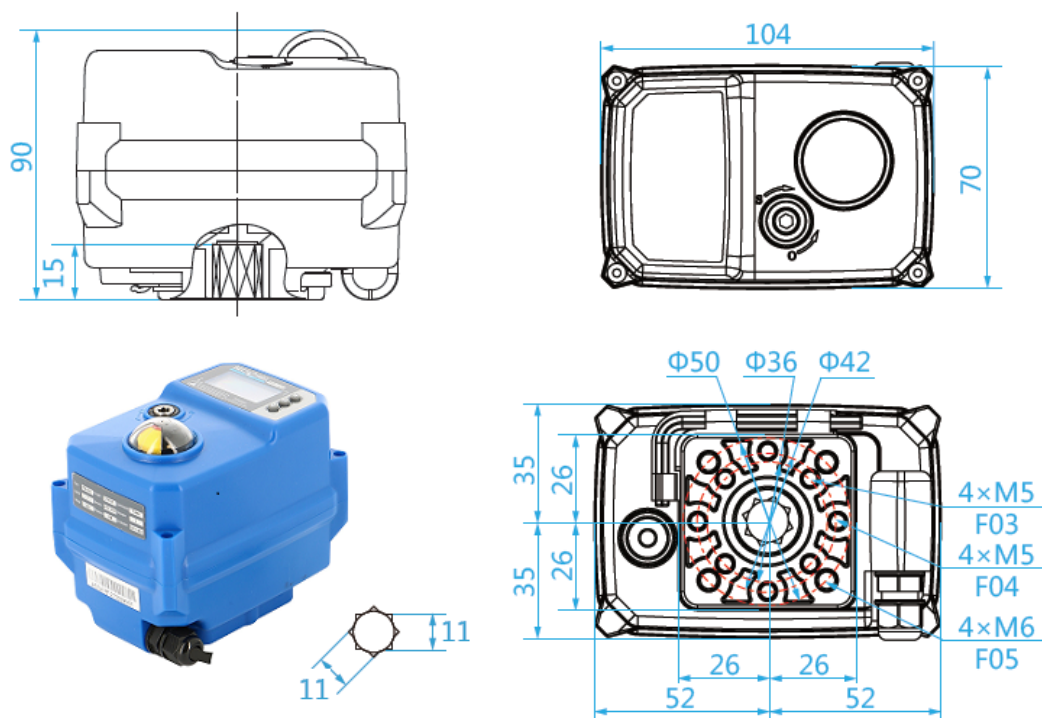
CONSTRUCTION (TCR-02T)

TCR-02T					
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)



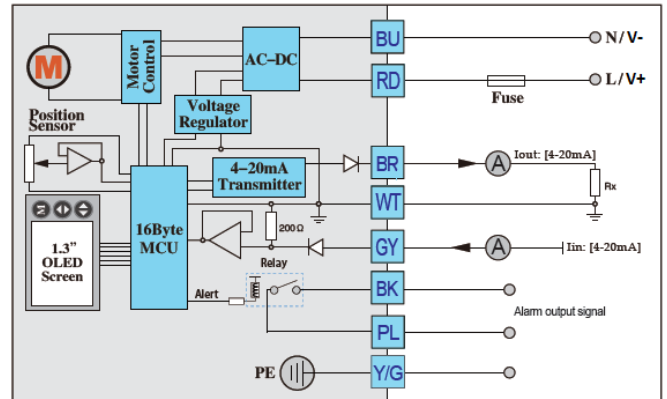
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TCR-02T CONTROL ELECTRICAL ACTUATOR

WIRING DIAGRAM (TCR 02T)

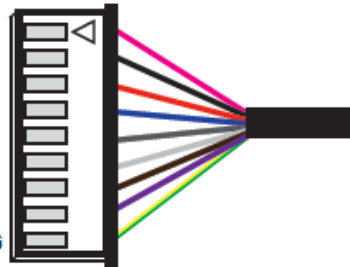
BU	Neutral (Blue)
RD	Phase (Red)
BR	Intensity regulation signal recopy (Brown)
WT	Common (White)
GY	Dimming signal control (Grey)
BK	Alarm signal (Black)
PL	Alarm signal (Purple)
Y/G	Terre (Jaune/Vert)



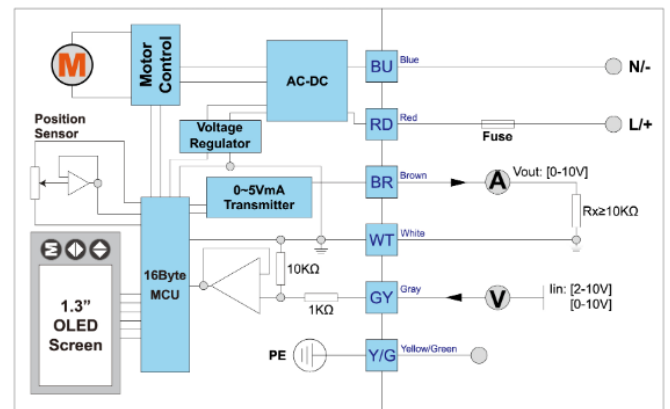
SCHEMA 4-20mA

Version 4-20mA / 0-10V :

Pink --> (Not used) PK
 Black --> BK
 Red --> RD
 Blue --> BU
 Grey --> GY
 White --> WT
 Brown --> BR
 Purple --> PL
 Yellow/Green --> Y/G



BU	Neutral (Blue)
RD	Phase (Red)
BR	Voltage regulation signal feedback (Brown)
WT	Common (White)
GY	Voltage regulation signal control (Grey)
Y/G	Earth (Yellow / Green)
BK	Not used
PL	Not used



SCHEMA 0-10V



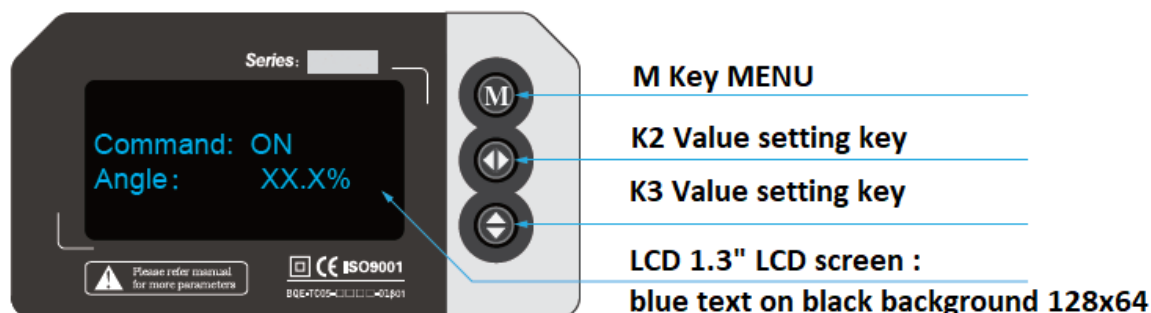
For the 24V version, in analogue control mode, the 24V secondary circuit must remain floating if the PLC GND is connected to earth.

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TCR-02T CONTROL ELECTRICAL ACTUATOR

DESCRIPTION OF THE 1.3" LCD SCREEN



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" UserSET: PassWord: XXX
3	Choice of language	English or Mandarin UserSET: DisMode: English UserSET: DisMode: Chinese
4	Choosing the direction of rotation of the actuator	Direct: 4mA = valve closed / 20 mA = valve open : 0V = valve closed / 10V = valve open UserSET: Ctrl_Mode: Dir UserSET: Ctrl_Mode: Rev Inverted: 4 mA = valve closed / 20 mA = valve open : 0V = valve closed / 10V = 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 UserSET: NoCtr_Act: ON UserSET: NoCtr_Act: OFF UserSET: NoCtr_Act: KEEP

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TCR-02T CONTROL ELECTRICAL ACTUATOR

6	Dead band	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. Setting range: 0.1 to 9.9% - Setting by default: 0.8%
		UserSET: DeadZone: XX% UserSET: DeadZone: 0.1% minimum UserSET: DeadZone: 9.9% maximum
7	Hysteresis adjustment	This parameter setting is a prerequisite for the next. YES = adjustment is possible NO = no adjustment is possible (value by default)
		UserSET: IsGO_Hyste: NO UserSET: IsGO_Hyste: YES
8	Hysteresis value	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.
		UserSET: Hysteres: XX% UserSET: Hysteres: 0.1% UserSET: Hysteres: 9.0%
9	Manual adjustment of the speed of rotation	This function is used for slowing down the motor. Range: 20-100% - Value by default = 100%
		UserSET: Manu_spd: XX% UserSET: Manu_spd: 20 UserSET: Manu_spd: 100
10	Braking time	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. Range: 0-95 ms – Value by default = 1 ms
		UserSET: Brk_Delay: XX% UserSET: Brk_Delay: 0 Ms UserSET: Brk_Delay: 95Ms
11	Setting the maximum speed	This setting affects the available torque. Without a special need, do not change it. Range: 20-100% - Value by default = 100%
		UserSET: Speed_Max: XX% UserSET: Speed_Max: 20% UserSET: Speed_Max: 100%
12	Setting the minimum speed	This setting affects the available torque. Without a special need, do not change it. Range: 20-95% - Value by default = 75%
		UserSET: Speed_Min: XX% UserSET: Speed_Min: 20% UserSET: Speed_Min: 95%

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TCR-02T CONTROL ELECTRICAL ACTUATOR

13	Setting the speed for the stroke	This setting is used for setting a % of the actuator stroke during which it will slow down before reaching the setpoint value position. Range: 0.1-20% - Value by default = 10%
		UserSET: RangeADJ: XX.X% UserSET: RangeADJ: 0.1% UserSET: RangeADJ: 20.0%
14	Redefining the 4 mA or 10V position	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°. Range: -50% +80% - Value by default = 0.0%
		UserSET: Posi4mA: X.X% UserSET: Posi4mA: -50.0% minimum UserSET: Posi4mA: 80.0% maximum
15	Redefining the 20 mA position	Used to set another position than 100% for the 20 mA or 10V value. This function is useful for valves with an opening angle different from 90°. Range: 20% +220% - Value by default = 100.0%
		UserSET: Pos20mA: X.X% UserSET: Pos20mA: 20.0% minimum UserSET: Pos20mA: 220.0% maximum
16	Modification of the 4 mA output signal	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. Range: 000_481_A – Value by default 191_A NB: always limit the lower value to 20 mA
		UserSET: Out_4mA: XXX_A UserSET: Out_4mA: 000_A minimum UserSET: Out_4mA: 481_A maximum
17	Modification of the 20mA output signal	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. Range: 191_1000_A – Value by default 909_A
		UserSET: Out_20mA: XXX_A UserSET: Out_20mA: 191_A minimum UserSET: Out_20mA: 1000_A maximum
18	Response time	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. Setting range: 1x20x – Value by default 3x
		UserSET: StallTime: 3X UserSET: StallTime: 1X minimum UserSET: StallTime: 20X maximum

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TCR-02T CONTROL ELECTRICAL ACTUATOR

19	Checking the feed signal	The actuator periodically tests its electrical power supply. A change of a value will change the interval between two tests. In current use, there is no need to change this parameter.
		UserSET: PDChk_Time: 100%
20	Power supply position by default	This setting is not available on this version (see version T-KT) Value by default: KEEP
		UserSET: PDAction: KEEP UserSET: PDAction: OFF UserSET: PDAction: ON
21	Capacitor charge	This setting is not available on this version (see version T-KT) Value by default: 95%
		UserSET: CapCharge: XX% UserSET: CapCharge: 60% UserSET: CapCharge: 99%
22	Alarm test (version 4-20 mA)	This function is used to control whether a defect alarm is broadcast or not. It is especially used for factory testing Value by default: ON
		UserSET: Test Alarm: ON
23	Exiting the menu	Press K3 to exit the menu The system will switch back in the automatic checking mode.
		UserSET: ExitSET: Push K3

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TCR-02T CONTROL ELECTRICAL ACTUATOR

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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TCR-05-11-20-40T CONTROL ELECTRICAL ACTUATOR

FEATURES

The TCR-T electric actuator is intended for motorising ¼ turn valves with a torque of 50, 110, 200 or 400 Nm.

Control function: this motor is used to control the position of the valve depending upon an a 4-20mA or 0-10V input signal. With a compact construction and plastic housing, they are especially well suited for motorising small size ball valves. IP67 leak-tightness: to be used indoors and, possibly, outdoors under a shelter. Possible installation in parallel. Manual control with a key. This actuator offers many functions (see § parameter setting menu) Parameter setting is done directly on the screen.

AVAILABLE MODELS

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

Control : 4-20mA, 0-20mA, 2-10V, 0-10V.

Dual frequency : 50Hz, 60Hz

LIMITS OF USE

IP Code	IP 67
Ambient temperature	- 20°C / +60°C
Service factor	S4 - 50% (TCR 05-11T)
	S3 - 85% (TCR 20-40T)



MECHANICAL FEATURES

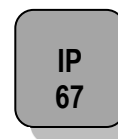
Gear box	treated steel pinions
Torques	50 - 110 - 200 - 400 Nm
Angle of rotation	90° +/- 2°
Declutching	Without (TCR 05-11T)
	With (TCR 20-40T)
Override control	By key



TCR05-11T



TCR20-40T



Actuator	TCR 05T		TCR 11T	
Torques (Nm)	50		110	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Control signal	4-20mA, 0-20mA, 2-10V, 0-10V			
Recopy signal	4-20mA, 0-20mA, 2-10V, 0-10V			
Manoeuvring time (s)	12	12	10	10
ISO 5211:	F05/F07 - star 14		F05/F07 - star 17	

Actuator	TCR 20T		TCR 40T	
Torques (Nm)	200		400	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Control signal	4-20mA, 0-20mA, 2-10V, 0-10V			
Recopy signal	4-20mA, 0-20mA, 2-10V, 0-10V			
Manoeuvring time (s)	25	25	25	25
ISO 5211:	F07/F10 - star 22		F07/F10 - star 22	

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TCR-05-11-20-40T CONTROL ELECTRICAL ACTUATOR

ELECTRICAL FEATURES

Actuator	TCR 05T	TCR 11T
Motor protection	Thermal switch	
Limit switches	Without	
Auxiliary switches	Without	
Anti-condensation	integrated	
Electrical connection	PE M20 + 1.5m cable	2 x PE M14 1.5m cable

Actuator	TCR 05T		TCR 11T	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Power (W)	25	25	100	100
Current (A)	0,83	0,18	2,2	0,26 - 0,52
Fuse protection (A)	4	2	10	2

Actuator	TCR 20T	TCR 40T
Motor protection	Thermal switch	
Limit switches	Without	
Auxiliary switches	Without	
Anti-condensation	integrated	
Electrical connection	2 x PE M20 + 1.5m cable	2 x PE M20 + 1.5m cable

Actuator	TCR 20T		TCR 20T	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Power (W)	50	50	80	80
Current (A)	3,3	0,36	3,3	0,36
Fuse protection (A)	8	2	8	2

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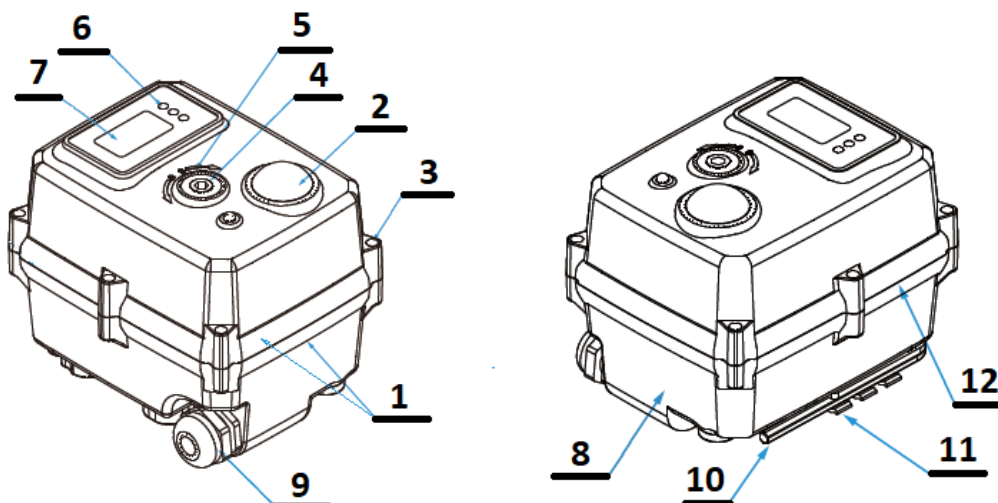
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TCR-05-11-20-40T CONTROL ELECTRICAL ACTUATOR

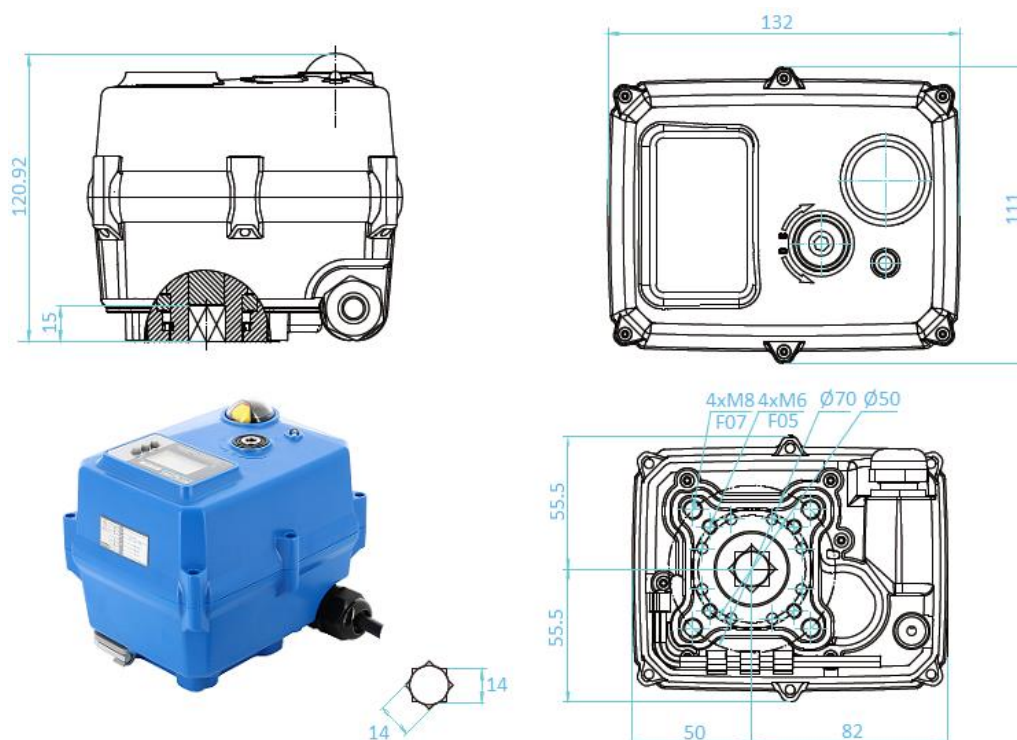
CONSTRUCTION (TCR-05T)

TCR-05T					
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 6	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): 1.800



DIMENSIONS (mm)



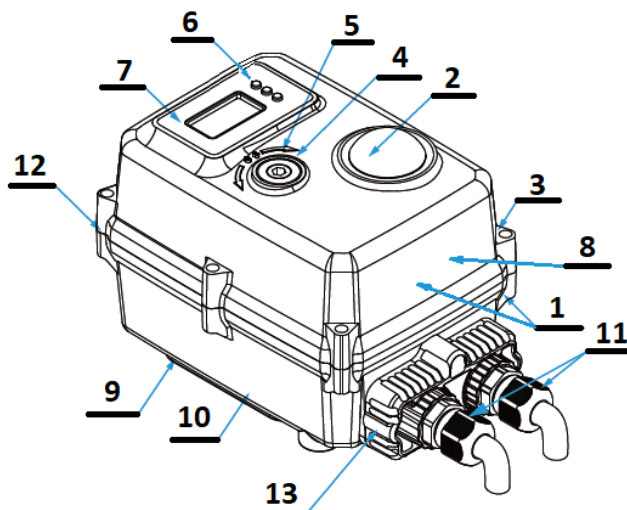
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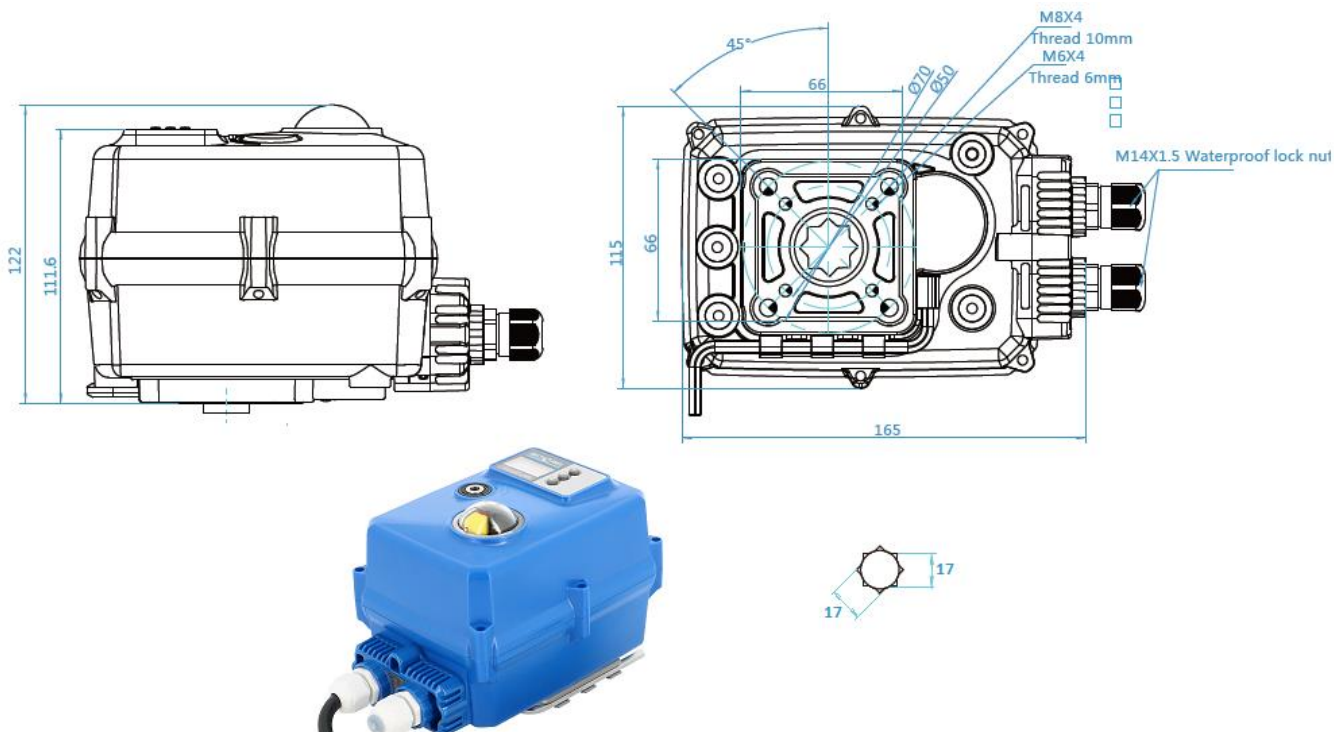
TCR-05-11-20-40T CONTROL ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-11T)

TCR-11T					
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 6	Ansi 304	9	Key support	Plastic (ABS)
4	Backup control stem	Ansi 304	10	Hex key	Steel
5	Gasket	NBR	11	X 2 Packing gland	Nylon
6	Adjustment button	Rubber	12	Cover gasket	NBR
Weight (kg): 2.200			13	Cable gland unit	Plastic (ABS)



DIMENSIONS (mm)



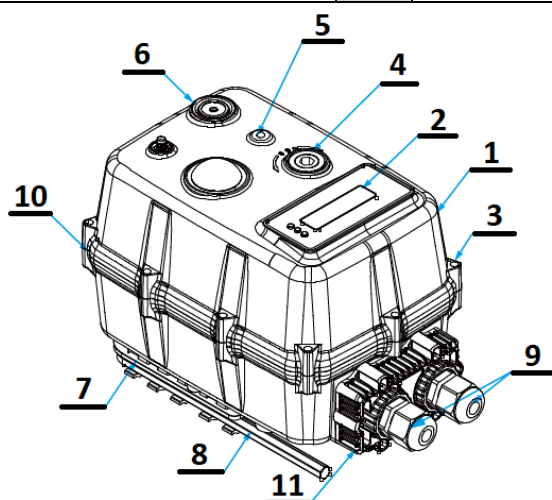
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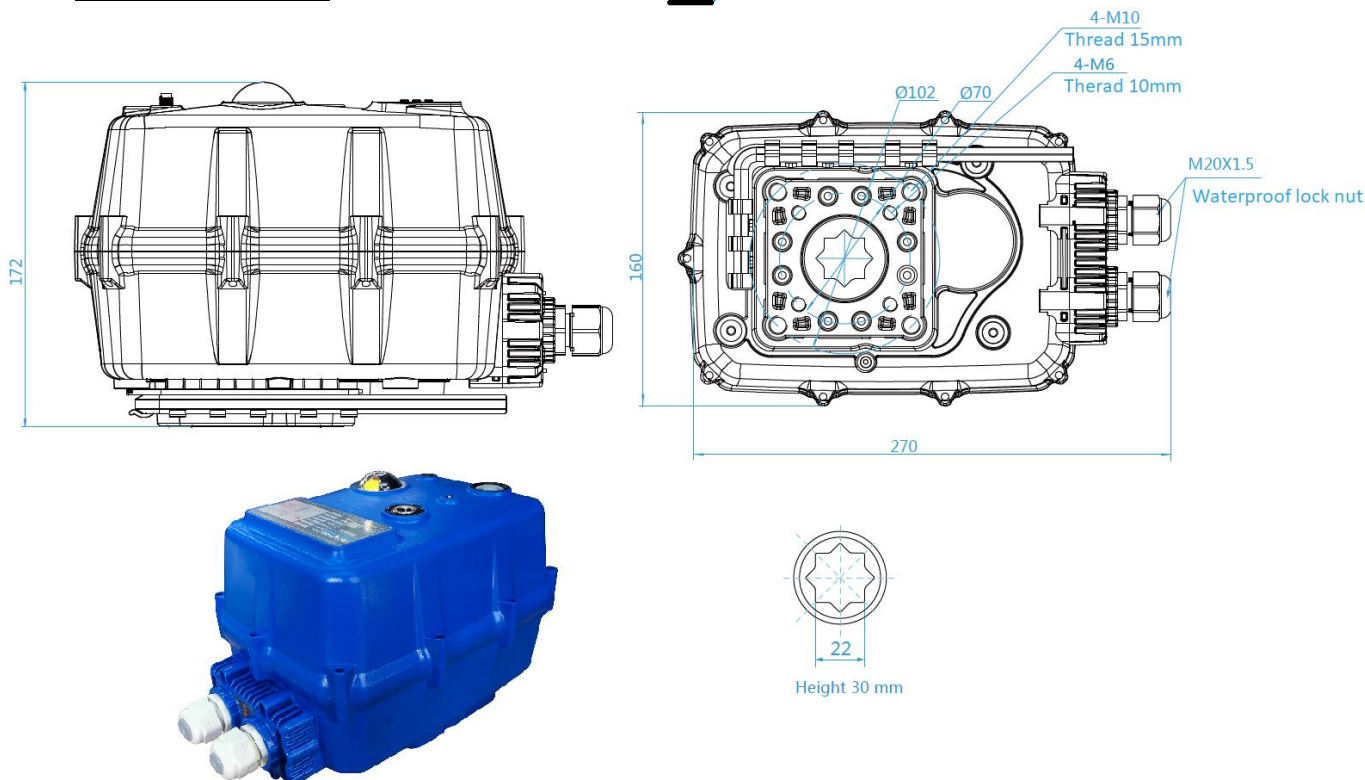
TCR-05-11-20-40T CONTROL ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-20T / TCR-40T)

TCR-20T / TCR-40T					
No.	Name	Material	No.	Name	Material
1	Casing + lid	PC + PET	6	Clutch	Polyoxymethylene POM
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic ABS
3	Screw x 6	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	X 2Packing gland	Nylon
5	LED	Transparent PC	10	Cover gasket	NBR
Weight (Kg) : 6,000			11	Cable gland unit	Plastic ABS



DIMENSIONS (mm)

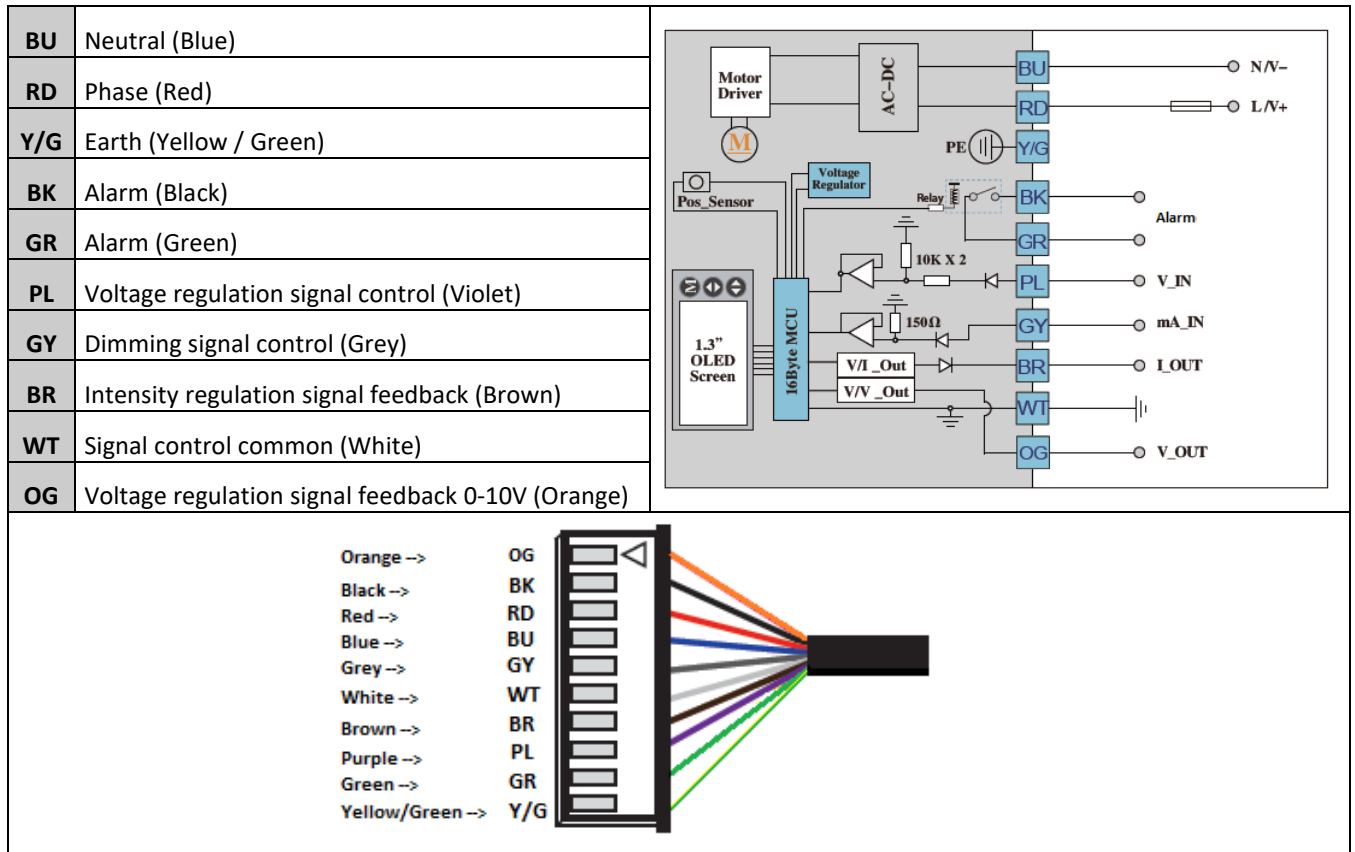


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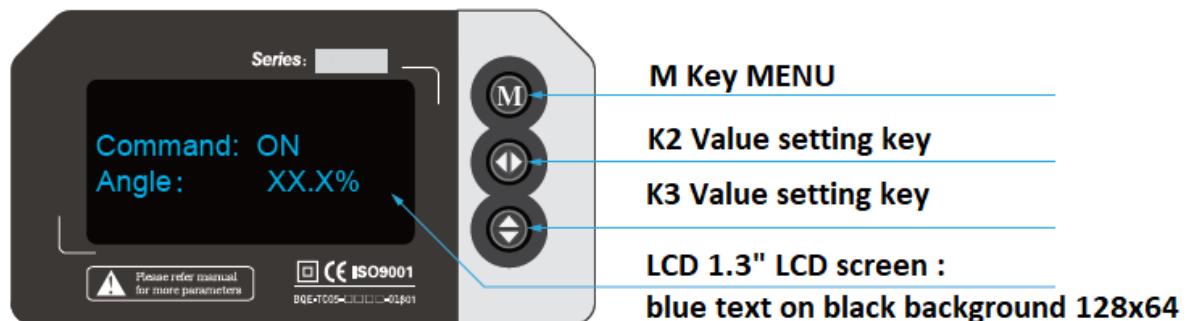
TCR-05-11-20-40T CONTROL ELECTRICAL ACTUATOR

WIRING DIAGRAM



For the 24V version, in analogue control mode, the 24V secondary must remain floating if the PLC GND is connected to earth.

DESCRIPTION OF THE 1.3" LCD SCREEN



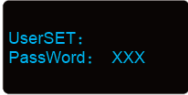
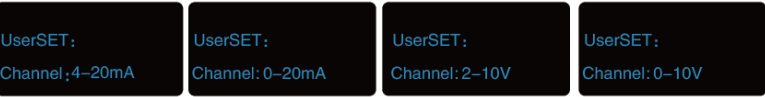
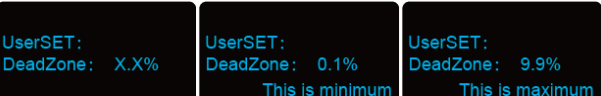
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TCR-05-11-20-40T CONTROL ELECTRICAL ACTUATOR

PARAMETER SETTING MENU OF THE ACTUATOR

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

STEP	TITLE	FUNCTION AND VALUES
1	Standby screen	If the actuator did not receive any signal in the last 5 minutes, the screen switches to standby. Press any button for 5 s. Then reactivate the screen.
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 control signal	Press "K3" to chose the control signal Possible signals: 4-20mA, 0-20mA, 2-10V, 0-10V Press "M" again to continue 
5	Choosing the direction of rotation of the actuator	Direct 4mA = valve closed / 20 mA = valve open Inverted 4 mA = valve closed / 20 mA = valve open 
6	Position by absence of any control signal	In the absence of a control signal, the valve can take 3 positions: ON, OFF or KEEP 
7	Dead band	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. Setting range: 0.1 to 9.9% - Setting by default: 0.8% 

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TCR-05-11-20-40T CONTROL ELECTRICAL ACTUATOR

8	Hysteresis adjustment	This parameter setting is a prerequisite for the next. YES = adjustment is possible NO = no adjustment is possible (value by default)
		UserSET: IsGo_Hyste:Yes UserSET: IsGo_Hyste:No
9	Hysteresis value	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.
		UserSET: Hysteres: XX.X% UserSET: Hysteres: 0%
10	Redefining the 4 mA position	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°. Range: -50% +80% - Value by default = 0.0%
		UserSET: Posi4mA: XX.X% UserSET: Posi4mA: 0.0%
11	Redefining the 20 mA position	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°. Range: +81% +220% - Value by default = 100.0%
		UserSET: Posi20mA: XX.X% UserSET: Posi20mA: 100.0%
12	Manual adjustment of the speed of rotation	This function is used for slowing down the motor. Range: 20-100% - Value by default = 100%
		UserSET: Manu_spd: XX% UserSET: Manu_spd: 20% UserSET: Manu_spd: 100%
13	Setting the maximum speed	This setting affects the available torque. Without a special need, do not change it. Range: 20-100% - Value by default = 100%
		UserSET: SpeedMax: XX% UserSET: SpeedMax: 100%
14	Setting the minimum speed	This setting affects the available torque. Without a special need, do not change it. Range: 20-95% - Value by default = 75%
		UserSET: SpeedMin: XX% UserSET: SpeedMin: XX%

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TCR-05-11-20-40T CONTROL ELECTRICAL ACTUATOR

15	Setting the speed for the stroke	This setting is used for setting a % of the actuator stroke during which it will slow down before reaching the setpoint value position. Range: 1-20% - Value by default = 10%
		UserSET: RangeAdj: XX.X%
16	Braking time	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. Range: 0-50 ms – Value by default = 1 ms
		UserSET: Brk_Delay: XX% UserSET: Brk_Delay: 0 Ms UserSET: Brk_Delay: 50Ms
17	Modification of the output signal 4 mA	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. Range: 000_481_A – Value by default 191_A NB: always limit the lower value to 20 mA
		UserSET: Out_4mA: XX.X% UserSET: Out_4mA: 177_A
18	Modification of the 20mA output signal	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. Range: 191_1000_A – Value by default 909_A
		UserSET: Out_20mA: XX.X% UserSET: Out_20mA: 899_A
19	Response time	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. Setting range: 1x20x – Value by default 3x
		UserSET: StallTime: 3X UserSET: StallTime: 1X minimum UserSET: StallTime: 20X maximum
20	Checking the feed signal	The actuator periodically tests its electrical power supply. A change of a value will change the interval between two tests. In current use, there is no need to change this parameter.
		UserSET: PDChk_Time: 100%
21	Power supply position by default	This parameter setting is not available on this version (see version T-KT) Value by default: KEEP
		UserSET: PDAction: KEEP UserSET: PDAction: OFF UserSET: PDAction: ON

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TCR-05-11-20-40T CONTROL ELECTRICAL ACTUATOR

22	Super-capacitor charge	This setting is not available on this version (see version T-KT) Value by default: 95%
		UserSET: BatCharge: XX% UserSET: BatCharge: 60% Minimum UserSET: BatCharge: 99% Maximum
23	Actuator locking after the intervention of the super-capacitor	This parameter setting is not available on this version (see version T-KT) Value by default: UNLOCK
		UserSET: MotLock: LOCK UserSET: MotLock: UNLOCK
24	Alarm test	This function is used to control whether a defect alarm is broadcast or not. It is especially used for factory testing Value by default: ON
		UserSET: Test Alarm: ON
25	Exiting the menu	Press K3 to exit the menu The system will switch back in the automatic checking mode.
		UserSET: ExitSET: Push K3

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

FEATURES

The TCR-02T-KT electric actuator is intended for motorising $\frac{1}{4}$ 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.

Dual frequency : 50Hz, 60Hz.



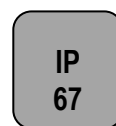
LIMITS OF USE

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/F05 - star 11	



ELECTRICAL FEATURES

Motor protection	Thermal switch	
Limit switches	Without	
Auxiliary switches	Without	
Anti-condensation	integrated	
Electrical connection	PE M10 + 1.5m cable	

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

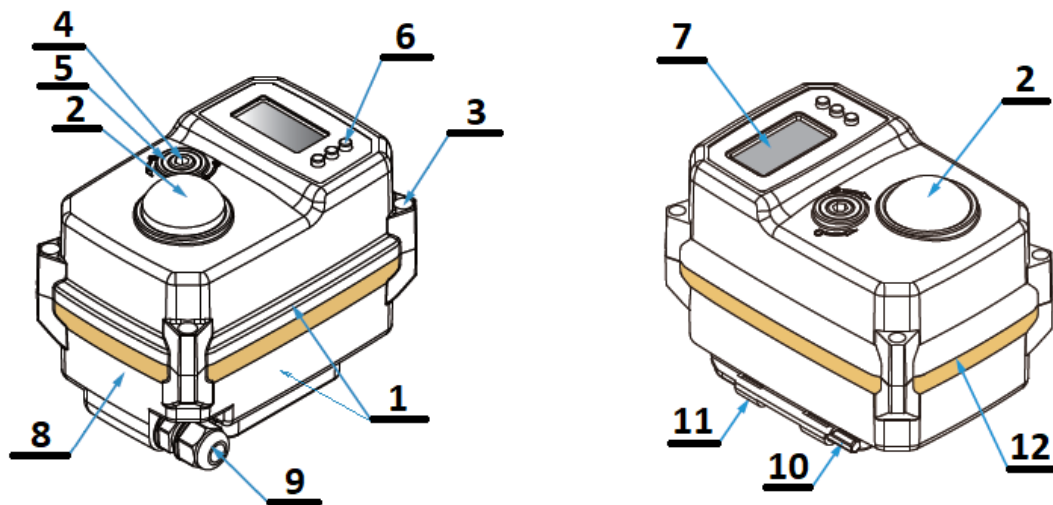
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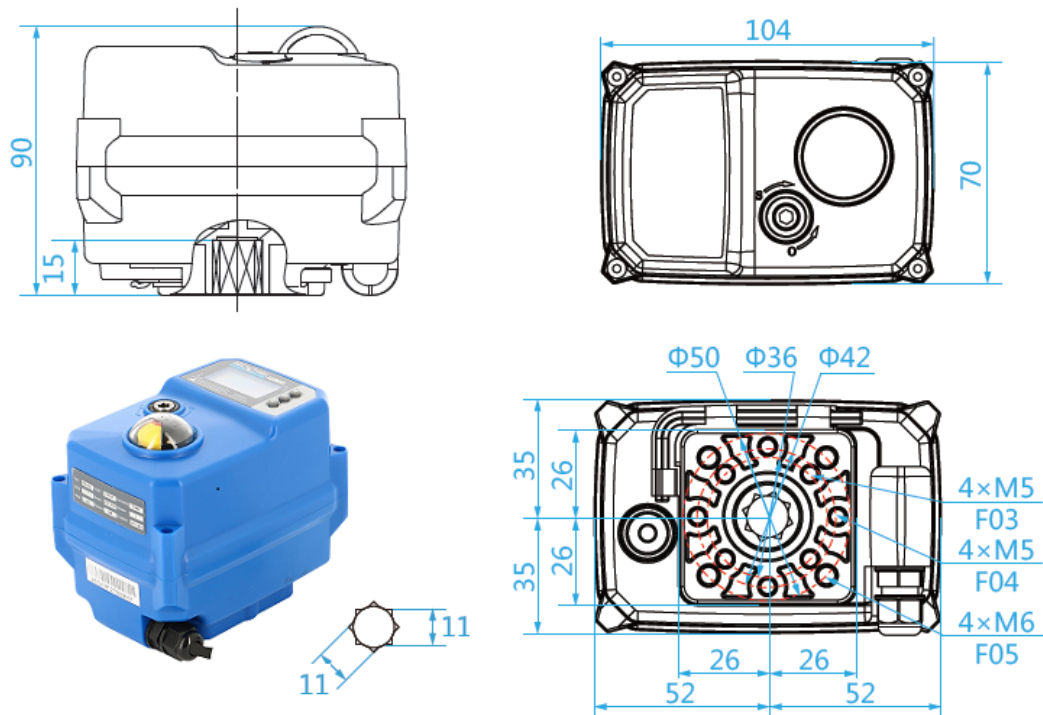
REGULATING ELECTRICAL ACTUATOR + RETURN BY SUPER-CAPACITOR TCR-02T-KT

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)

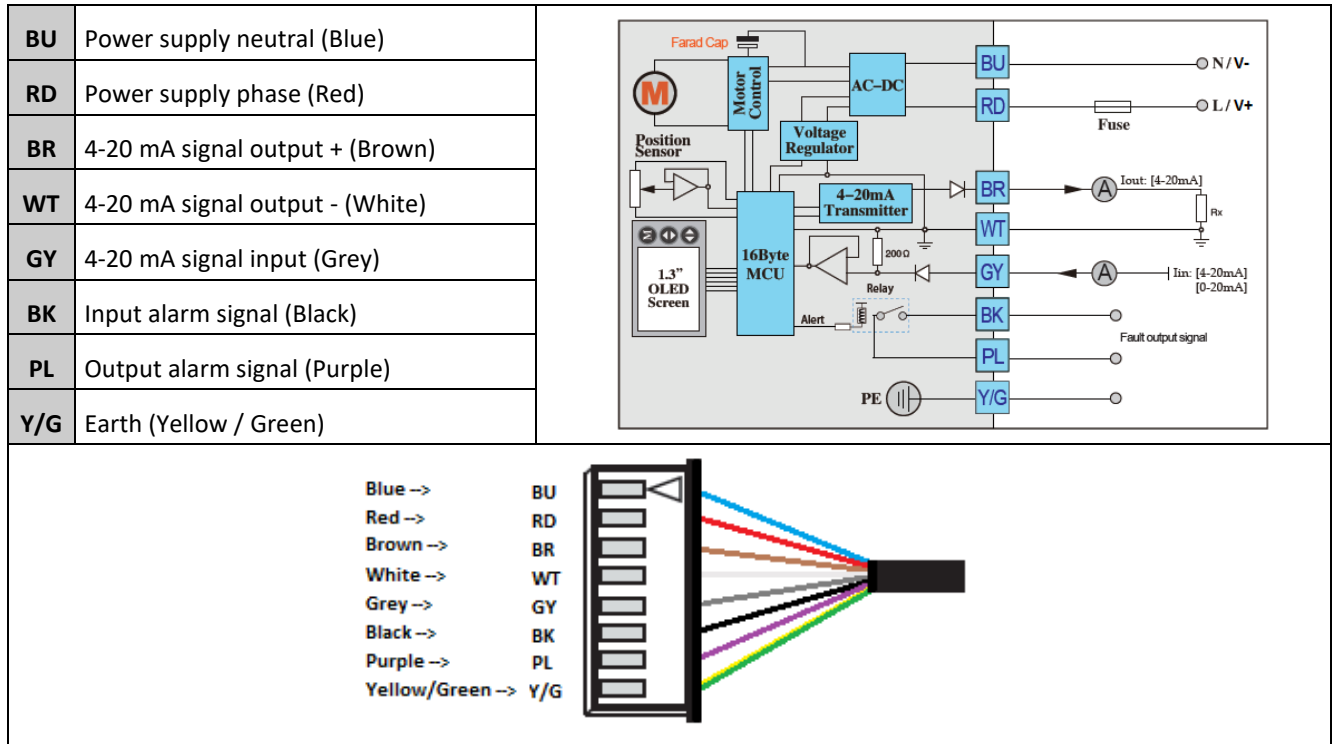


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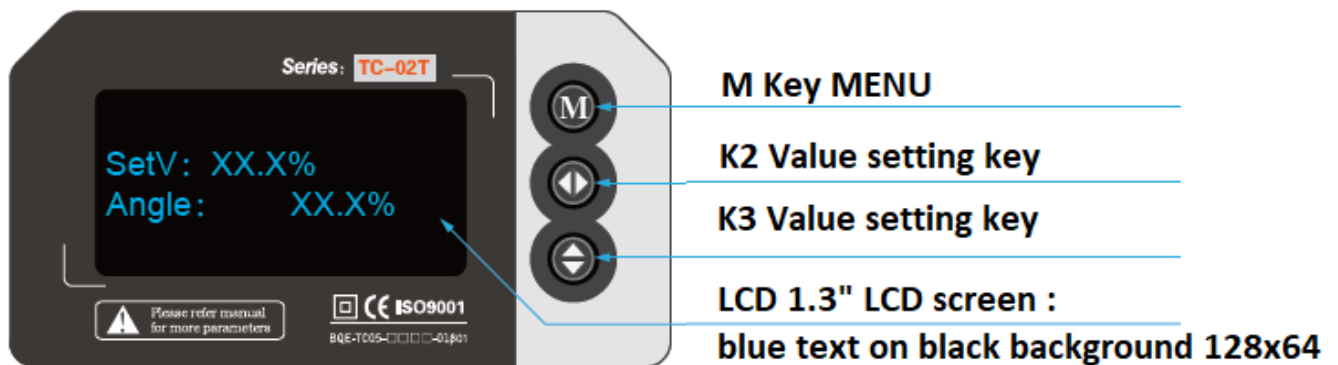
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REGULATING ELECTRICAL ACTUATOR + RETURN BY SUPER-CAPACITOR TCR-02T-KT

WIRING DIAGRAM



DESCRIPTION OF THE 1.3" LCD SCREEN



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

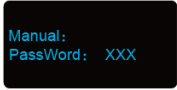
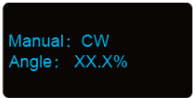
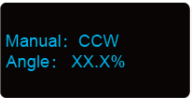
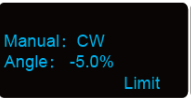
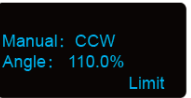
1.3" LCD angle without any blind spot, strong luminosity, automatic switching to the economy saving mode at the end of 5 minutes.

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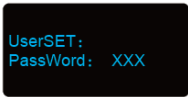
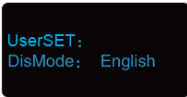
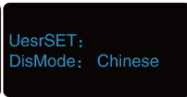
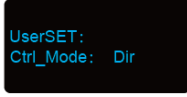
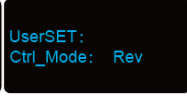
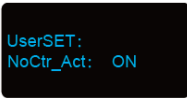
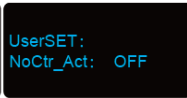
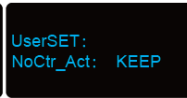
REGULATING ELECTRICAL ACTUATOR + RETURN BY SUPER-CAPACITOR TCR-02T-KT

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	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. Setting range: 0.1 to 9.9% - Setting by default: 0.8%
		UserSET: DeadZone: X.X% UserSET: DeadZone: 0.1% minimum UserSET: DeadZone: 9.9% maximum
7	Hysteresis adjustment	This parameter setting is a prerequisite for the next. YES = adjustment is possible NO = no adjustment is possible (value by default)
		UserSET: IsGO_Hyste: NO UserSET: IsGO_Hyste: YES
8	Hysteresis value	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.
		UserSET: Hysteres: X.X% UserSET: Hysteres: 0.1% UserSET: Hysteres: 9.0%
9	Manual adjustment of the speed of rotation	This function is used for slowing down the motor. Range: 20-100% - Value by default = 100%
		UserSET: Manu_spd: XX% UserSET: Manu_spd: 20 UserSET: Manu_spd: 100
10	Braking time	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. Range: 0-95 ms – Value by default = 1 ms
		UserSET: Brk_Delay: XX% UserSET: Brk_Delay: 0 Ms UserSET: Brk_Delay: 95Ms
11	Setting the maximum speed	This setting affects the available torque. Without a special need, do not change it. Range: 20-100% - Value by default = 100%
		UserSET: Speed_Max: XX% UserSET: Speed_Max: 20% UserSET: Speed_Max: 100%
12	Setting the minimum speed	This setting affects the available torque. Without a special need, do not change it. Range: 20-95% - Value by default = 75%
		UserSET: Speed_Min: XX% UserSET: Speed_Min: 20% UserSET: Speed_Min: 95%

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REGULATING ELECTRICAL ACTUATOR

+ RETURN BY SUPER-CAPACITOR TCR-02T-KT

13	Setting the speed for the stroke	This setting is used for setting a % of the actuator stroke during which it will slow down before reaching the setpoint value position. Range: 0.1-20% - Value by default = 10%
		UserSET: RangeADJ: XX.X% UserSET: RangeADJ: 0.1% UserSET: RangeADJ: 20.0%
14	Redefining the 4 mA position	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°. Range: -50% +80% - Value by default = 0.0%
		UserSET: Posi4mA: X.X% UserSET: Posi4mA: -50.0% minimum UserSET: Posi4mA: 80.0% maximum
15	Redefining the 20 mA position	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°. Range: 20% +220% - Value by default = 100.0%
		UserSET: Pos20mA: X.X% UserSET: Pos20mA: 20.0% minimum UserSET: Pos20mA: 220.0% maximum
16	Modification of the 4 mA output signal	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. Range: 000_481_A – Value by default 191_A NB: always limit the lower value to 20 mA
		UserSET: Out_4mA: XXX_A UserSET: Out_4mA: 000_A minimum UserSET: Out_4mA: 481_A maximum
17	Modification of the 20mA output signal	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. Range: 191_1000_A – Value by default 909_A
		UserSET: Out_20mA: XXX_A UserSET: Out_20mA: 191_A minimum UserSET: Out_20mA: 1000_A maximum
18	Response time	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. Setting range: 1x20x – Value by default 3x
		UserSET: StallTime: 3X UserSET: StallTime: 1X minimum UserSET: StallTime: 20X maximum

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

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

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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REGULATING ELECTRICAL ACTUATOR

+ RETURN BY SUPER-CAPACITOR TCR-05-11-T-KT

FEATURES

TCR-T-KT electrical actuators are intended for motorising 1/4 turn valves with a torque of 50 or 90 Nm.

Double proportional control function 4-20mA + closing manoeuvre provided by a super-capacitor. With a compact construction and plastic housing, they are especially well suited for motorising small size 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, 0-20 mA, 2-10V, 0-10V.

Dual frequency : 50Hz, 60Hz.

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	50 - 90 Nm
Angle of rotation	90° +/- 2°
Declutching	without
Override control	By key



Actuator	TCR 05T-KT32		TCR 11T-KT32	
Torques (Nm)	50		90	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Adjustment signal	4-20 mA, 0-20 mA, 2-10V, 0-10V			
Feedback signal	4-20 mA, 0-20 mA, 2-10V, 0-10V			
Manoeuvring time (s)	12	12	10	10
ISO 5211:	F05/F07 - star 14		F05/F07 - star 17	

ELECTRICAL FEATURES

Actuator	TCR 05T-KT32	TCR 11T-KT32
Motor protection	Thermal switch	
Limit switches	Without	
Auxiliary switches	Without	
Anti-condensation	integrated	
Electrical connection	PE M20 + 1.5m cable	2 x PE M14 + 1.5 cable

Actuator	TCR 05T-KT32		TCR 11T-KT32	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Power (W)	40	40	100	100
Current (A)	1,8	0,18	2,5	0,3 - 0,6
Fuse protection (A)	10	2	5	2

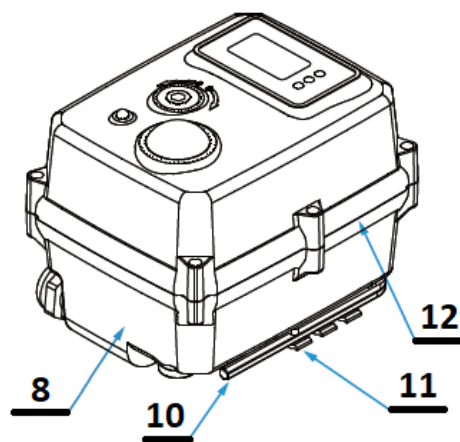
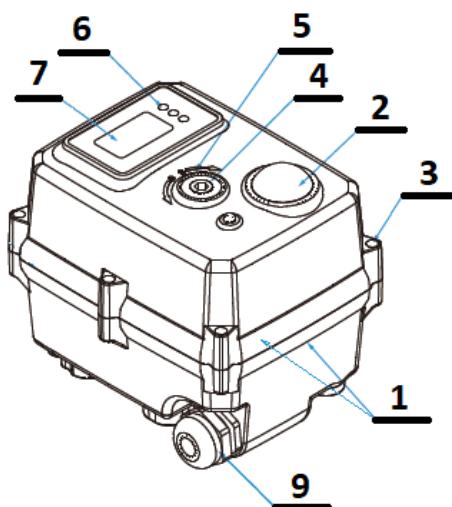
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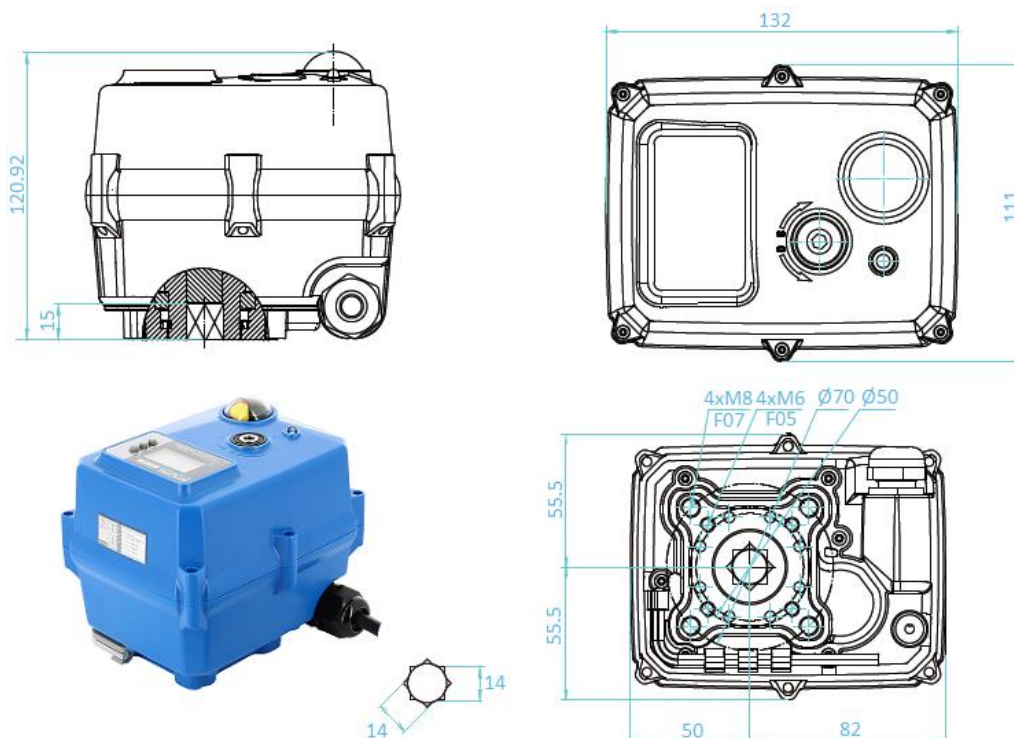
REGULATING ELECTRICAL ACTUATOR + RETURN BY SUPER-CAPACITOR TCR-05-11-T-KT

CONSTRUCTION (TCR-05T-KT32)

TCR-05T-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 6	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): 1.800					



DIMENSIONS (mm)



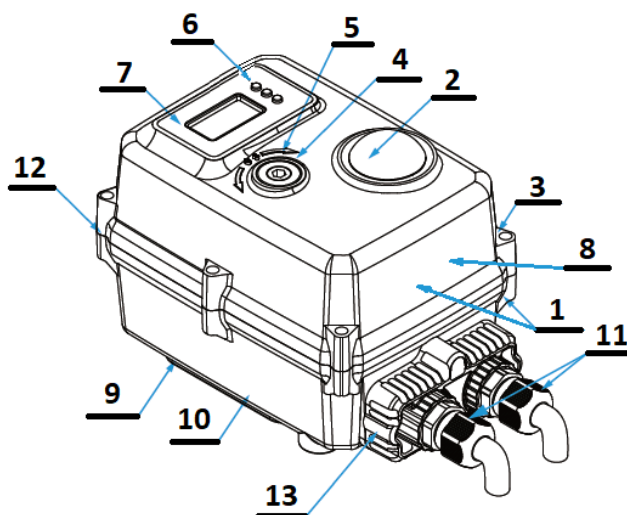
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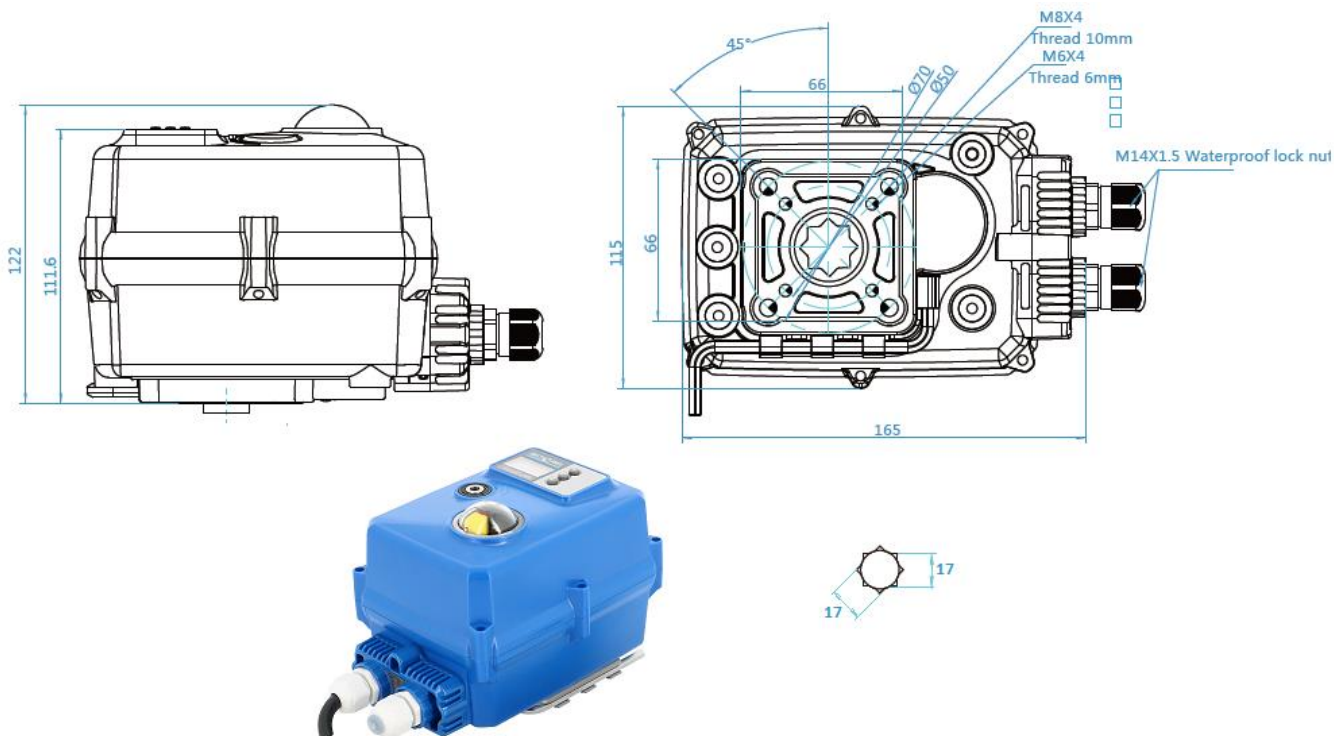
REGULATING ELECTRICAL ACTUATOR + RETURN BY SUPER-CAPACITOR TCR-05-11-T-KT

CONSTRUCTION (TCR-11T-KT32)

TCR-11T-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 6	Ansi 304	9	Key support	Plastic (ABS)
4	Backup control stem	Ansi 304	10	Hex key	Steel
5	Gasket	NBR	11	X 2 Packing gland	Nylon
6	Adjustment button	Rubber	12	Cover gasket	NBR
Weight (kg): 2.200			13	Cable gland unit	Plastic (ABS)



DIMENSIONS (mm)

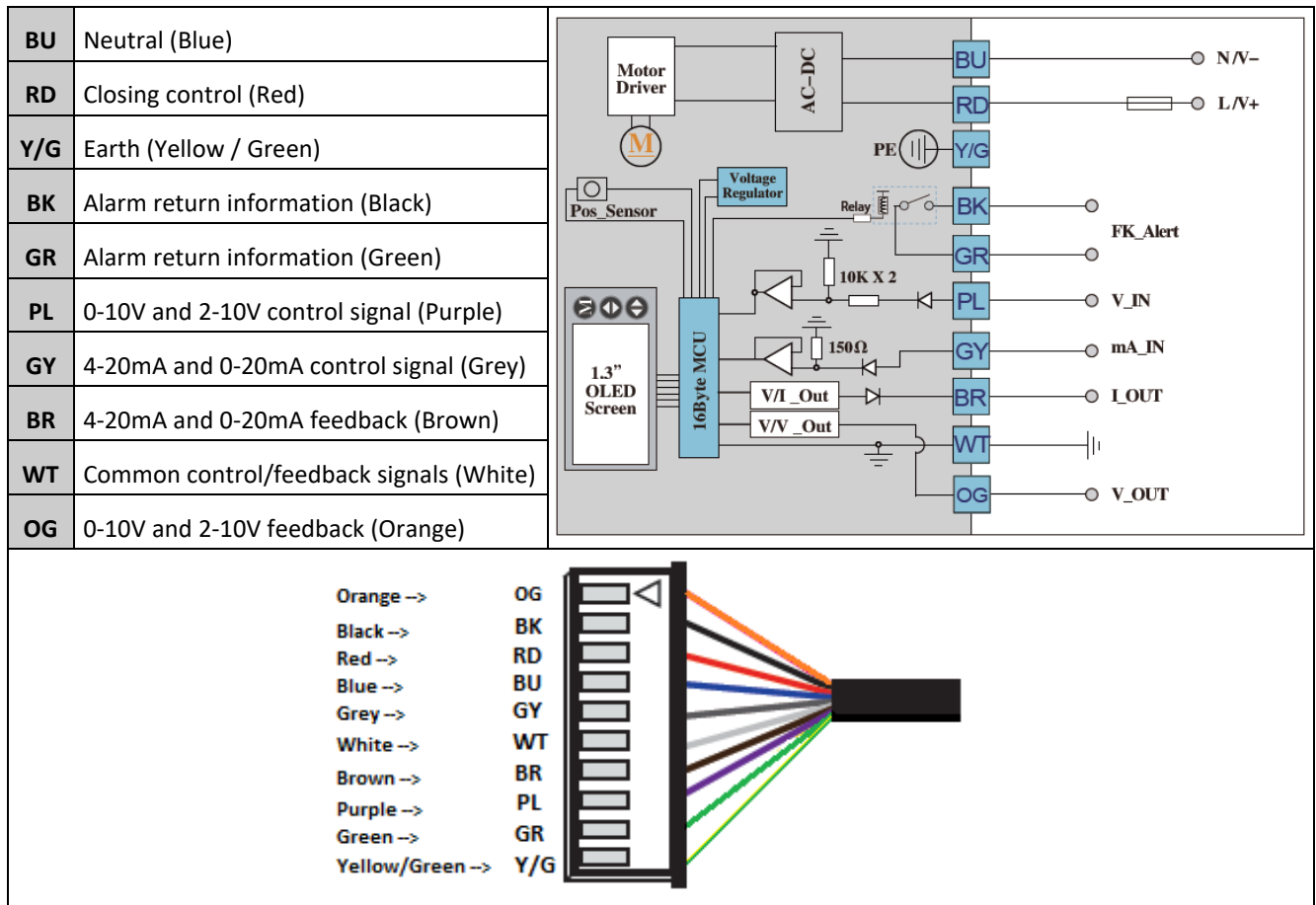


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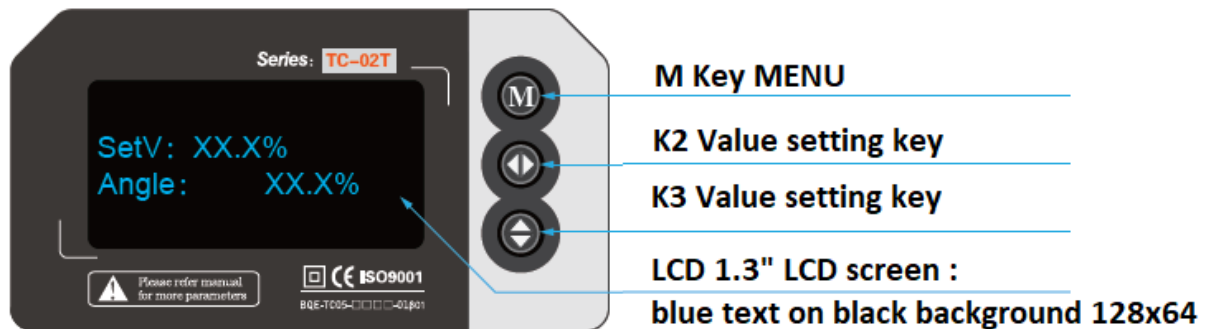
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WIRING DIAGRAM



DESCRIPTION OF THE 1.3" LCD SCREEN



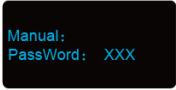
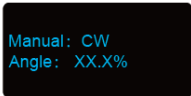
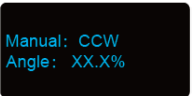
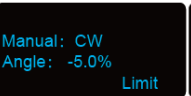
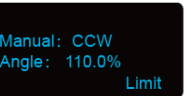
1.3" LCD angle without any blind spot, strong luminosity, automatic switching to the economy saving mode at the end of 5 minutes. The control screen displays the set value and the % of opening of the valve.

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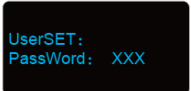
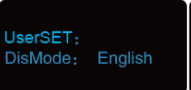
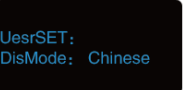
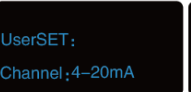
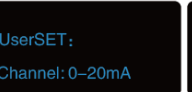
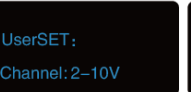
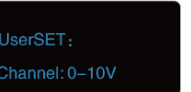
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CONTROL IN LOCAL MODE

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.	

PARAMETER SETTING MENU OF THE ACTUATOR

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

STEP	TITLE	FUNCTION AND VALUES
1	Standby screen	If the actuator did not receive any signal in the last 5 minutes, the screen switches to standby. Press any button for 5 s. Then reactivate the screen.
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 control signal	Press "K3" to chose the control signal Possible signals: 4-20mA, 0-20mA, 2-10V, 0-10V Press "M" again to continue    

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5	Choosing the direction of rotation of the actuator	Direct 4mA = valve closed / 20 mA = valve open Inverted 4 mA = valve closed / 20 mA = valve open
		UserSET: Ctrl_Mode: Dir UserSET: Ctrl_Mode: Rev
6	Position by absence of any control signal	In the absence of a control signal, the valve can take 3 positions: ON, OFF or KEEP
		UserSET: NoCtr_Act: ON UserSET: NoCtr_Act: OFF UserSET: NoCtr_Act: KEEP
7	Dead band	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. Setting range: 0.1 to 9.9% - Setting by default: 0.8%
		UserSET: DeadZone: X.X% UserSET: DeadZone: 0.1% This is minimum UserSET: DeadZone: 9.9% This is maximum
8	Hysteresis adjustment	This parameter setting is a prerequisite for the next. YES = adjustment is possible NO = no adjustment is possible (value by default)
		UserSET: IsGo_Hyste:Yes UserSET: IsGo_Hyste:No
9	Hysteresis value	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.
		UserSET: Hysteres: X.X% UserSET: Hysteres: 0%
10	Redefining the 4 mA position	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°. Range: -50% +80% - Value by default = 0.0%
		UserSET: Posi4mA: XX.X% UserSET: Posi4mA: 0.0%
11	Redefining the 20 mA position	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°. Range: +81% +220% - Value by default = 100.0%
		UserSET: Posi20mA: XX.X% UserSET: Posi20mA: 100.0%

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12	Manual adjustment of the speed of rotation	This function is used for slowing down the motor. Range: 20-100% - Value by default = 100%
		UserSET: Manu_spd: XX% UserSET: Manu_spd: 20% UserSET: Manu_spd: 100%
13	Setting the maximum speed	This setting affects the available torque. Without a special need, do not change it. Range: 20-100% - Value by default = 100%
		UserSET: SpeedMax: XX% UserSET: SpeedMax: 100%
14	Setting the minimum speed	This setting affects the available torque. Without a special need, do not change it. Range: 20-95% - Value by default = 75%
		UserSET: SpeedMin: XX% UserSET: SpeedMin: XX%
15	Setting the speed for the stroke	This setting is used for setting a % of the actuator stroke during which it will slow down before reaching the setpoint value position. Range: 1-20% - Value by default = 10%
		UserSET: RangeAdj: XX.X%
16	Braking time	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. Range: 0-50 ms – Value by default = 1 ms
		UserSET: Brk_Delay: XX% UserSET: Brk_Delay: 0 Ms UserSET: Brk_Delay: 50Ms
17	Modification of the input signal 4 mA	The function is used to modify the 4mA input signal. If the value of the parameter is increased, the signal will be increased. If the value is decreased, the signal will be decreased. It is not recommended to change the factory settings.
		UserSET: PWM_4mA: XXX_V
18	Modification of the 20mA input signal	The function is used to modify the 20mA input signal. If the value of the parameter is increased, the signal will be increased. If the value is decreased, the signal will be decreased. It is not recommended to change the factory settings.
		UserSET: PWM_20mA: XXX_V

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19	Modification of the output signal 4 mA	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. Range: 000_481_A – Value by default 191_A NB: always limit the lower value to 20 mA
		UserSET: Out_4mA: XX.X% UserSET: Out_4mA: 177_A
20	Modification of the 20mA output signal	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. Range: 191_1000_A – Value by default 909_A
		UserSET: Out_20mA: XX.X% UserSET: Out_20mA: 899_A
21	Power supply position by default	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. Possible values: KEEP: unchanged position of the valve ON: opening of the valve OFF: valve closing Value by default: OFF
		UserSET: PDAction: NOCK UserSET: PDAction: KEEP UserSET: PDAction: OFF UserSET: PDAction: ON
22	Response time	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. Setting range: 1x20x – Value by default 3x
		UserSET: StallTime: 3X UserSET: StallTime: 1X minimum UserSET: StallTime: 20X maximum
23	Checking the feed signal	The actuator periodically tests its electrical power supply. A change of a value will change the interval between two tests. In current use, there is no need to change this parameter.
		UserSET: PDChk_Time: 100%

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24	Super-capacitor charge	This parameter is used to set the % of charge on the super-capacitor from which on the actuator switches to the automatic mode. Setting range: 60-99% Value by default: 95% Do not set below 80%, the charge will be insufficient and would set off the motor alarm
		UserSET: BatCharge: XX% UserSET: BatCharge: 60% Minimum UserSET: BatCharge: 99% Maximum
25	Actuator locking after the intervention of the super-capacitor	Used to seal off the valve if an emergency manoeuvre occurred. Value by default: UNLOCK
		UserSET: MotLock: LOCK UserSET: MotLock: UNLOCK
26	Alarm test	This function is used to control whether a defect alarm is broadcast or not. It is especially used for factory testing Value by default: ON
		UserSET: Test Alarm: ON
27	Exiting the menu	Press K3 to exit the menu The system will switch back in the automatic checking mode.
		UserSET: ExitSET: Push K3

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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