

746 XS VALVE WITH TCR ACTUATOR

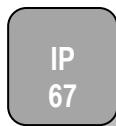
FEATURES

746XS stainless steel 2-way ball-valves are designed for the automatic shut-off of 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. It is EC- and TA-LUFT-approved. The ISO 5211 mounting pad enables the actuator to be directly assembled. The latter is suitable for S4-type service factor, installed indoors or outdoors under shelter.

AVAILABLE MODELS

1/4" to 4" diameters.

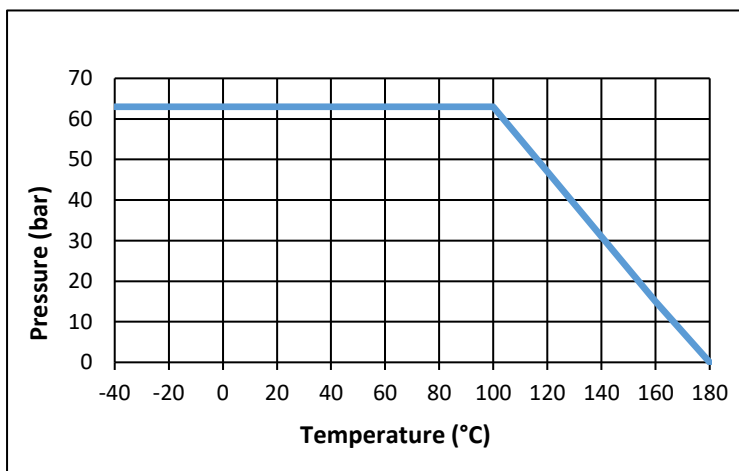
24 V AC / DC and 230 V AC actuators.



Connection	G	SW	BW
stainless steel	746 XS	743 XS	745 XS

LIMITS OF USE

Fluid pressure: PS	64 bar (20°C)
Fluid temperature: WT	- 40°C / +180°C
Ambient temperature	- 20°C / + 60°C
Service factor	S4 - 50%



DIRECTIVES AND MANUFACTURING STANDARDS

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

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



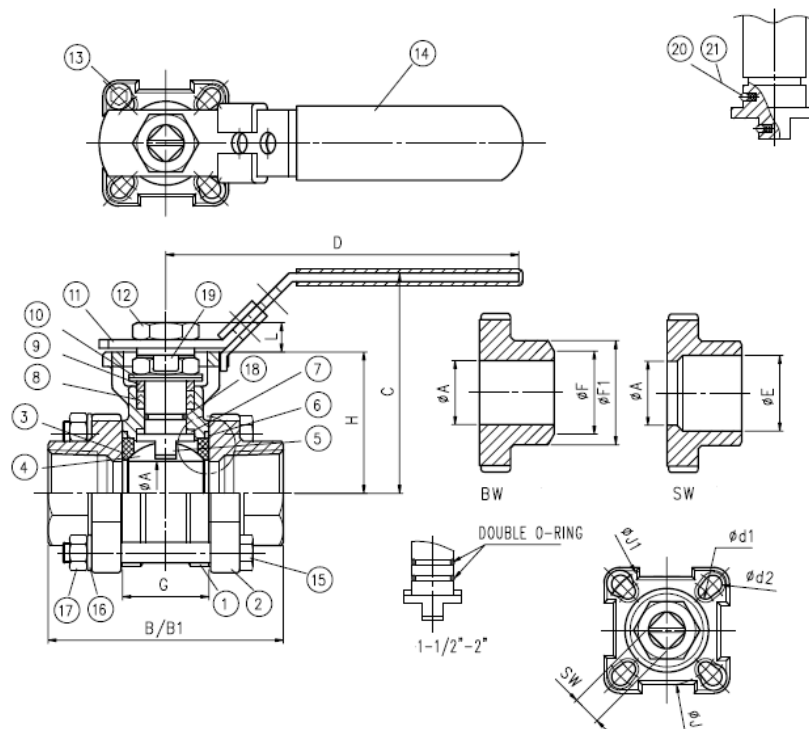
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Rev.	12
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746 XS VALVE WITH TCR ACTUATOR

CONSTRUCTION

No.	Name	Material	No.	Name	Material
1	Body	1.4408	12	Nut	304 SS
2	Ends	1.4408	13	Stop	304 SS
3	Seats	PTFE+15%GF	14	Coupling	PVC
4	Ball	CF8M / 316	15	Tie-bolts	304 SS
5	Stem	316 SS	16	Washer	304 SS
6	Body gasket	PTFE	17	Nuts	304 SS
7	Washer	PTFE+15%GF	18	O-ring	FPM
8	Gasket	PTFE	19	Tab washer	304 SS
9	Spacer	304 SS	20	Anti-static	316 SS
10	B. washer	301 SS	21	Spring	304 SS
11	Lever	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
1/4"	10	65	65	70	46.5	110	14	13	17.0	26.0	41.0	42	9
3/8"	12.5	65	65	70	46.5	110	14	13	17.0	24.5	42.3	42	9
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
2" 1/2	65	185	185	190	155.0	300	77.0	74	76.1	82.1	107.0	102	17
3"	80	205	205	220	165.0	335	90.0	83	88.9	95.8	117.3	102	17
4"	100	240	240	270	180.0	335	115.5	110	114.3	117.8	132.3	102	17

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TCR ELECTRICAL MOTORISATION

The TCR motorisation proposed as standard comprises:

- IP67 plastic 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 230V AC / 24V AC/DC	Time 230V AC	Time 24 V ac-dc	Standard equipment of the actuator
1/4"	TCR-02N	15	10s	10s	2 adjustable limit switches 2 dry auxiliary contacts Thermal protection of the motor 2-3W anti-condensation resistance Stand-by manual control with key 3D Position visual indicator Electrical connection: TRC02: 1 x PE M10 + 1.5m cable TCR05: 1 x PE M20 + 1.5m cable TCR11: 2 x PE M14 + 1.5m cable
3/8"	TCR-02N	15	10s	10s	
1/2"	TCR-02N	15	10s	10s	
3/4"	TCR-02N	15	10s	10s	
1"	TCR-02N	15	10s	10s	
1" 1/4	TCR-05N	25	12s	12s	
1" 1/2	TCR-05N	25	12s	12s	
2"	TCR-05N	25	12s	12s	
2" 1/2	TCR-11N	100	10s	10s	
3"	TCR-11N	100	10s	10s	
4"	TCR-11N	100	10s	10s	

For any other operating conditions, please contact us.

* indicative time for actuator running empty

MOTORISATION OPTIONS

There are many options, so please contact our sales service for more information on these:

1	100mm high height adjustment for installing thermal insulation
2	Actuator dimensioned for an upstream / downstream pressure difference ΔP greater than 10 bar
3	NF actuator – return via condenser – TCR-KT32
4	High-speed actuator - TRC-NH
5	Smart actuator with manoeuvring time adjustment - TCR-C
6	Control actuator – TCR-T
7	NF control actuator – return via condenser – TCR-T-KT32
8	Field bus actuator - TCR-B
9	Actuator with in-built timer – TCR-D
10	Wireless actuator – TCR-R

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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.

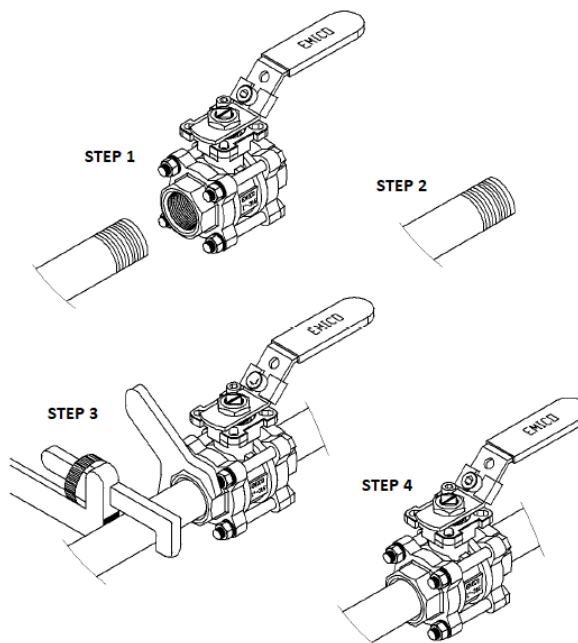
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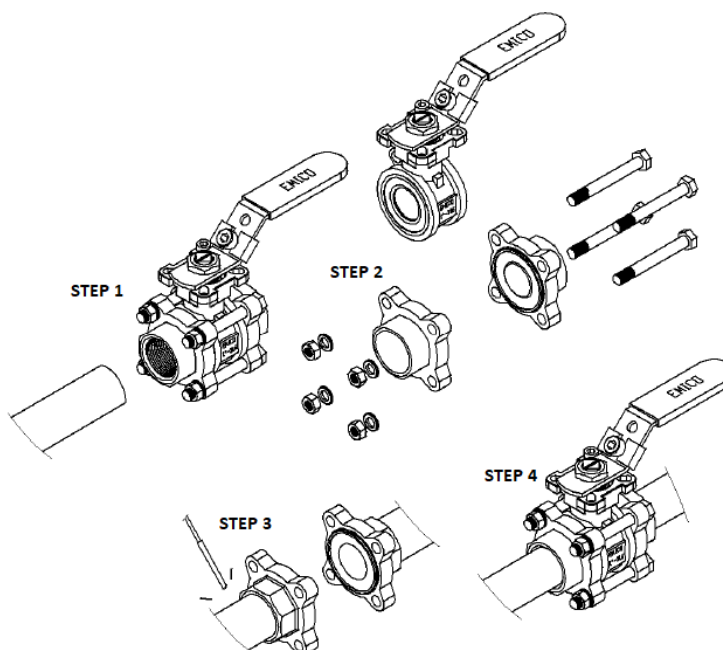
○ Threaded valve connection:

- 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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- 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.

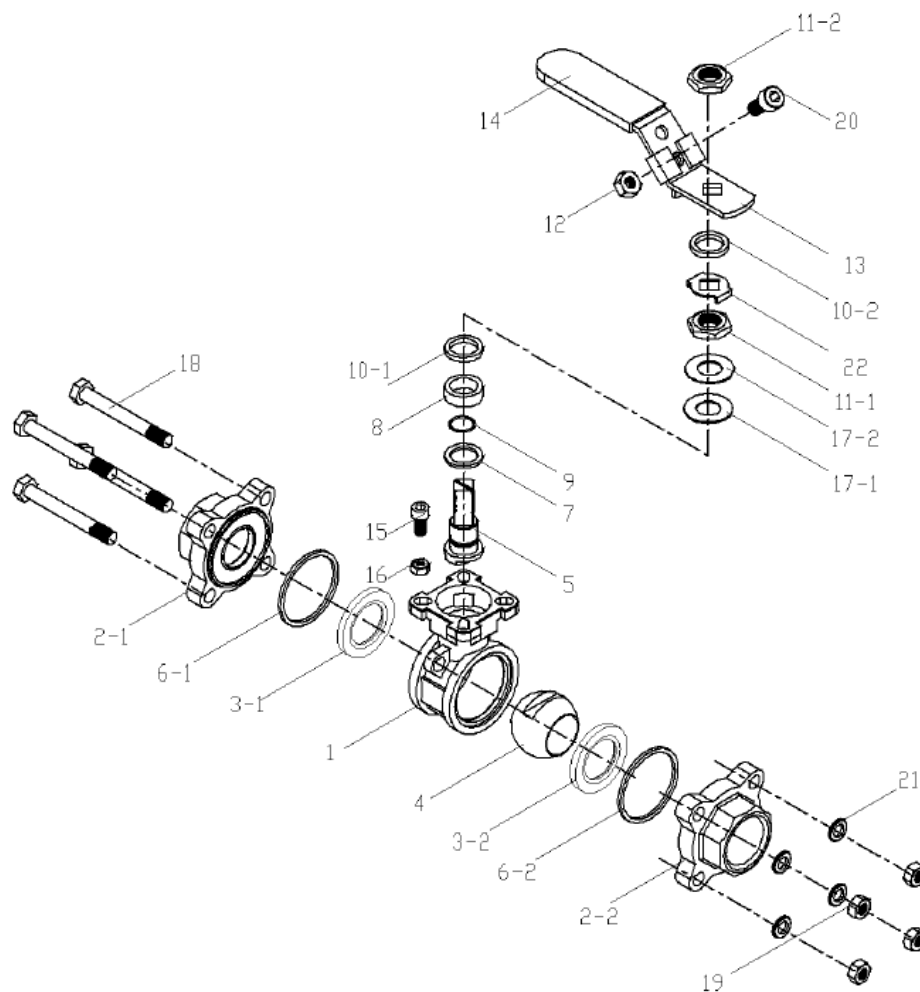
2 - Service

- 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

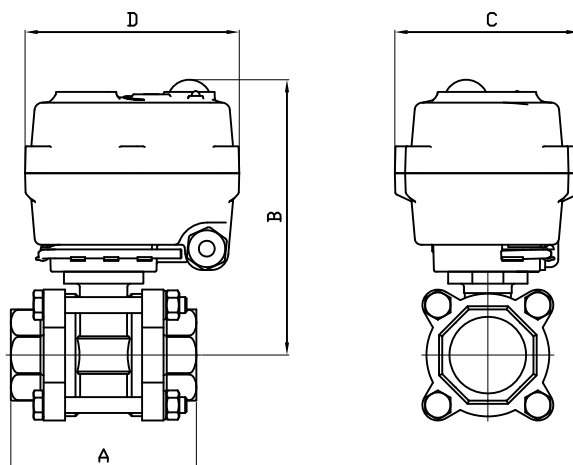
DN	Tie-bolts	Torque (Nm)	Lever nut (Nm)
1/4" - 6	M6	10	4
3/8" - 10	M6	10	4
1/2" - 15	M6	10	4
3/4" - 20	M8	20	4
1" - 25	M8	20	4.5
1 1/4" - 32	M10	35	4.5
1 1/2" - 40	M10	35	5.5
2" - 50	M10	40	5.5
2 1/2" - 65	M12	70	7
3" - 80	M16	120	7
4" - 100	M16	120	7

SPARE PARTS

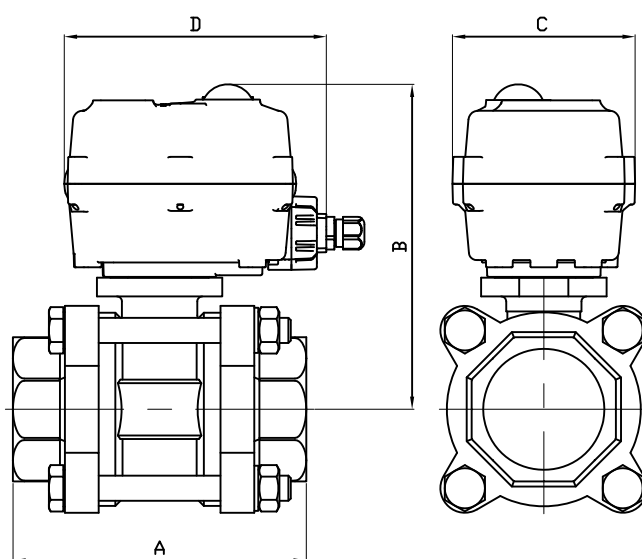
DN	Gasket kit	Ball	V30° ball	V60° ball	Tie-bolt kit	Lever
Reference mark	3-6-7-8-18	4	4	4	15-16-17	11
1/4" - 6	Please contact us.	Please contact us.	Please contact us.	Please contact us.	Please contact us.	Please contact us.
3/8" - 10	Please contact us.	Please contact us.	Please contact us.	Please contact 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-02-05



TCR-11

DN	1/4"	3/8"	1/2"	3/4"	1"
SERVO	TCR02	TCR02	TCR02	TCR02	TCR02
A	65	65	75	80	90
B	132.3	132.3	132.3	132.8	144
C	70	70	70	70	70
D	104	104	104	104	104
KG	1.4	1.34	1.3	1.56	2.1

DN	1 1/4"	1 1/2"	2"	2 1/2"	3"	4"
SERVO	TCR05	TCR05	TCR05	TCR11	TCR11	TCR11
A	110	120	140	184	205	238
B	180.2	194.5	204	229	239.3	254.3
C	111	111	111	115	115	115
D	132	132	132	165	165	165
KG	3.9	4.9	6.5	13.7	17.3	25.1

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

Ech: /	Date :05/09/2019	Dessiné par : E.D.	Tolérances générales : +/- 0.2	Modifications	Date	REV.
ROBINET A TOURNANT SPHERIQUE 736XS A 746XS/BALL VALVE 736XS TO 746XS + SERVOMOTEUR TCR/ ELECTRIC ACTUATOR TCR				Matière :		
				Poids (Kg) :		
				Traitement : SANS		
				Plan n° Ens 1378		

45, Rue du Ruisseau

38297 SAINT QUENTIN FALLAVIER

TCR-N ELECTRICAL ACTUATOR

FEATURES

The TCR-N electric actuators are intended for motorising $\frac{1}{4}$ turn valves with a torque of 15, 20, 50, 110, 200 or 400 Nm. With a compact construction and plastic housing, they are especially well suited for motorising ball valves and butterfly valves. Several variants offer advanced functions. 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: 230V AC, 24V AC/DC, 12V DC.

Dual frequency : 50Hz, 60Hz.

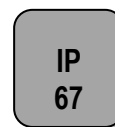
LIMITS OF USE

IP Code	IP 67
Ambient temperature	- 20°C / +60°C
Service factor	S4 - 50% (TCR 02-05-11)
	S3 - 85% (TCR 20-40)



MECHANICAL FEATURES

Gear box	treated steel pinions
Torques	15 - 20 - 50 - 110 - 200 - 400 Nm
Angle of rotation	90° +/- 2°
Declutching	Without (TCR 02-05-11)
	With (TCR 20-40)
Override control	By key



Actuator	TCR 02N			TCR 05N		
Torques (Nm)	15	20	20	50		
Voltage	12V DC	24V AC-DC	95-265V AC-DC	12VDC	24V AC-DC	95-265V AC-DC
Manoeuvring time (s)	15	10	10	12	12	12
ISO 5211:	F03/F05 - star 11			F05/F07 - star 14		

Actuator	TCR 11N			TCR 20N			TCR 40N		
Torques (Nm)	110			200			400		
Voltage	12V DC	24V AC-DC	95-265V AC-DC	12VDC	24V AC-DC	95-265V AC-DC	12V DC	24V AC-DC	95-265V AC-DC
Manoeuvring time (s)	10	10	10	25	25	25	25	25	25
ISO 5211:	F05/F07 - star 17			F07/F10 - star 22			F07/F10 - star 22		

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TCR-N ELECTRICAL ACTUATOR

ELECTRICAL FEATURES

Actuator	TCR 02N	TCR 05N
Motor protection	Thermal switch	
Limit switches	2 adjustable switches	
Auxiliary switches	2 adjustable dry switches	
Anti-condensation	integrated	
Electrical connection	PE M10 + 1.5m cable	PE M20 + 1.5m cable

Actuator	TCR 02N			TCR 05N		
Voltage	12V DC	24V AC-DC	95-265V AC-DC	12V DC	24V AC-DC	95-265V AC-DC
Power (W)	15	15	15	25	25	25
Current (A)	1,5	1,5	0,09	1,67	0,18 - 0,37	
Fuse Protection (A)	5	5	1	8	1 - 2	

Actuator	TCR 11N	TCR 20N	TCR 40N
Motor protection	Thermal switch		
Limit switches	2 adjustable switches		
Auxiliary switches	2 adjustable dry switches		
Anti-condensation	Integrated		
Electrical connection	2 x PE M14 + 1,5m cable	2 x PE M20 + 1.5m cable	2 x PE M20 + 1,5m cable

Actuator	TCR 11N			TCR 20N			TCR 40N		
Voltage	12V DC	24V AC-DC	95-265V AC-DC	12V DC	24V AC-DC	95-265V AC-DC	12V DC	24V AC-DC	95-265V AC-DC
Power (W)	100	100	100	50	50	50	80	80	80
Current (A)	2,5	0,3 - 0,6		2	0,22		3,3	0,36	
Fuse Protection (A)	5	2 - 3		3	5		8	2	

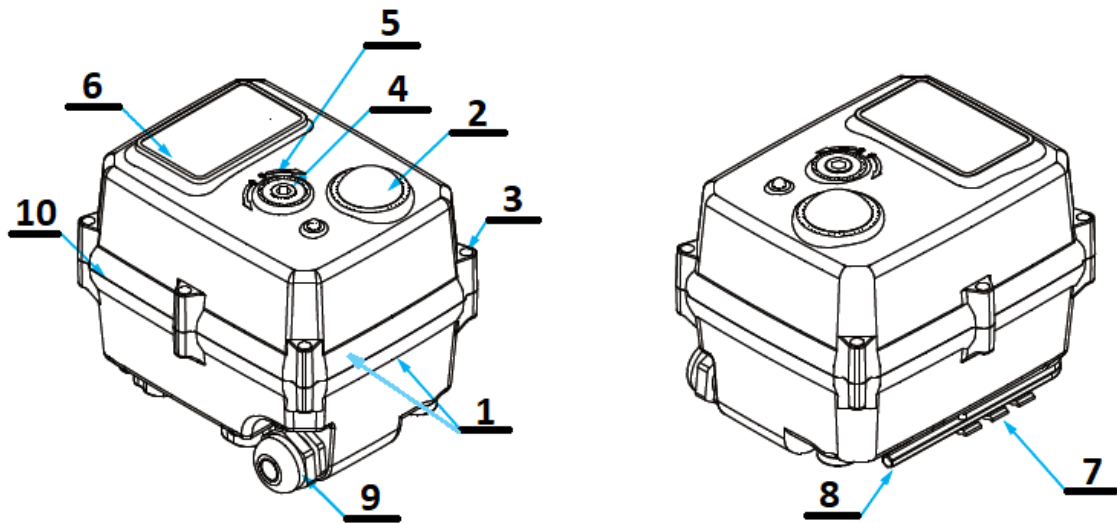
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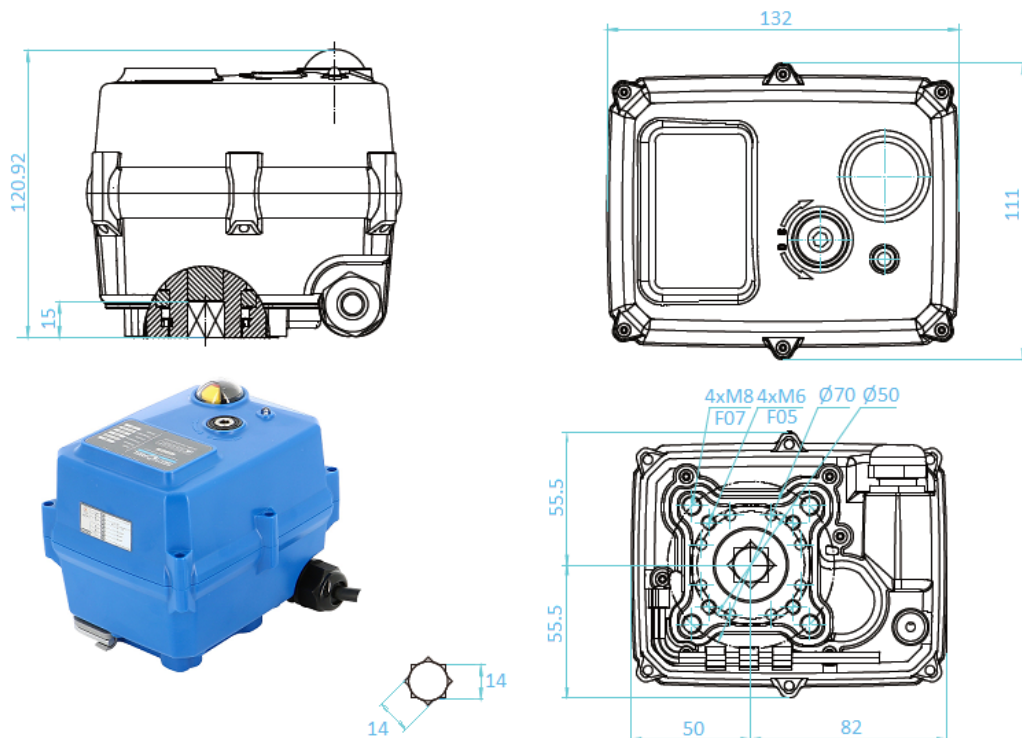
TCR-N ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-05N)

TCR-05N					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
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	Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 1.800					



DIMENSIONS (mm)



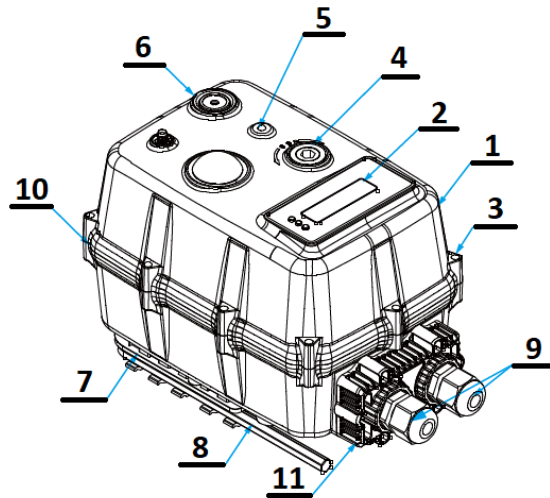
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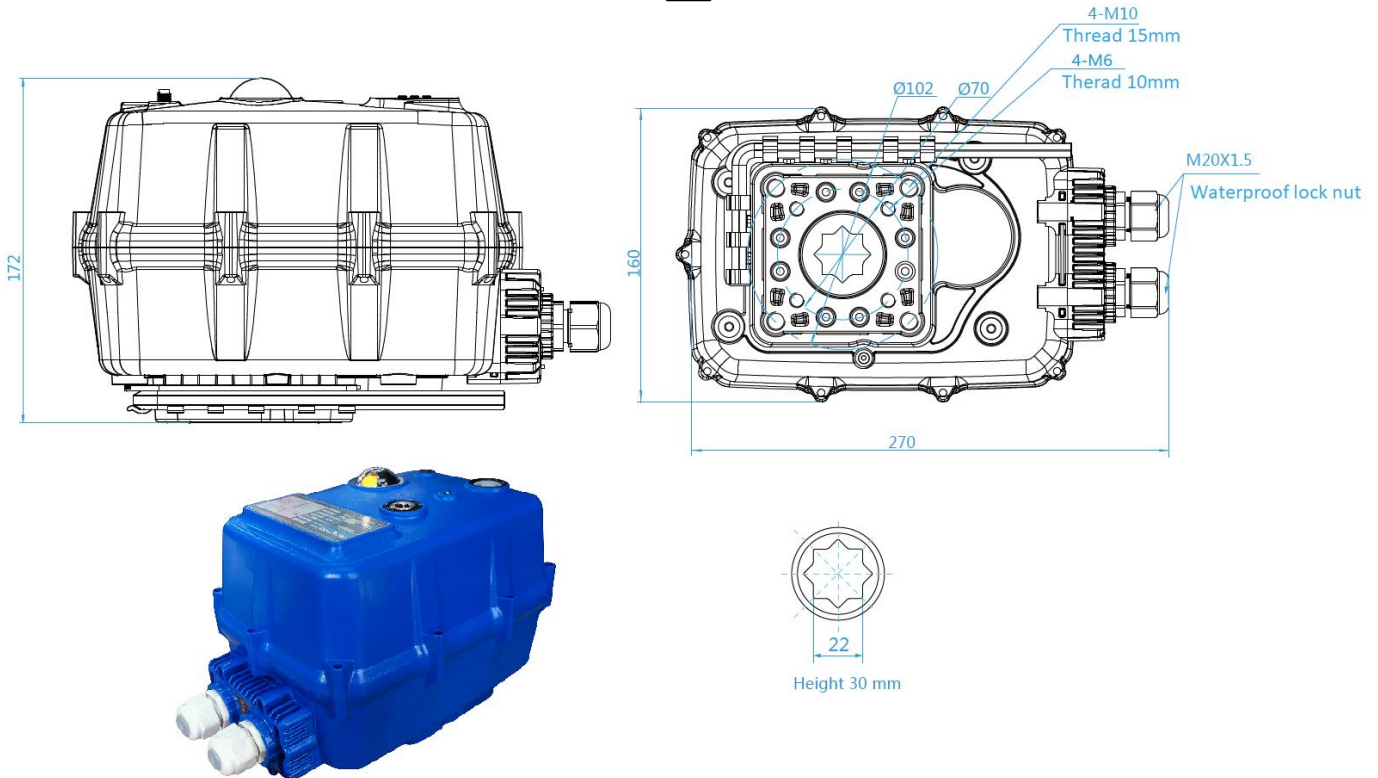
TCR-N ELECTRICAL ACTUATOR

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

TCR-20N / TCR-40N					
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)

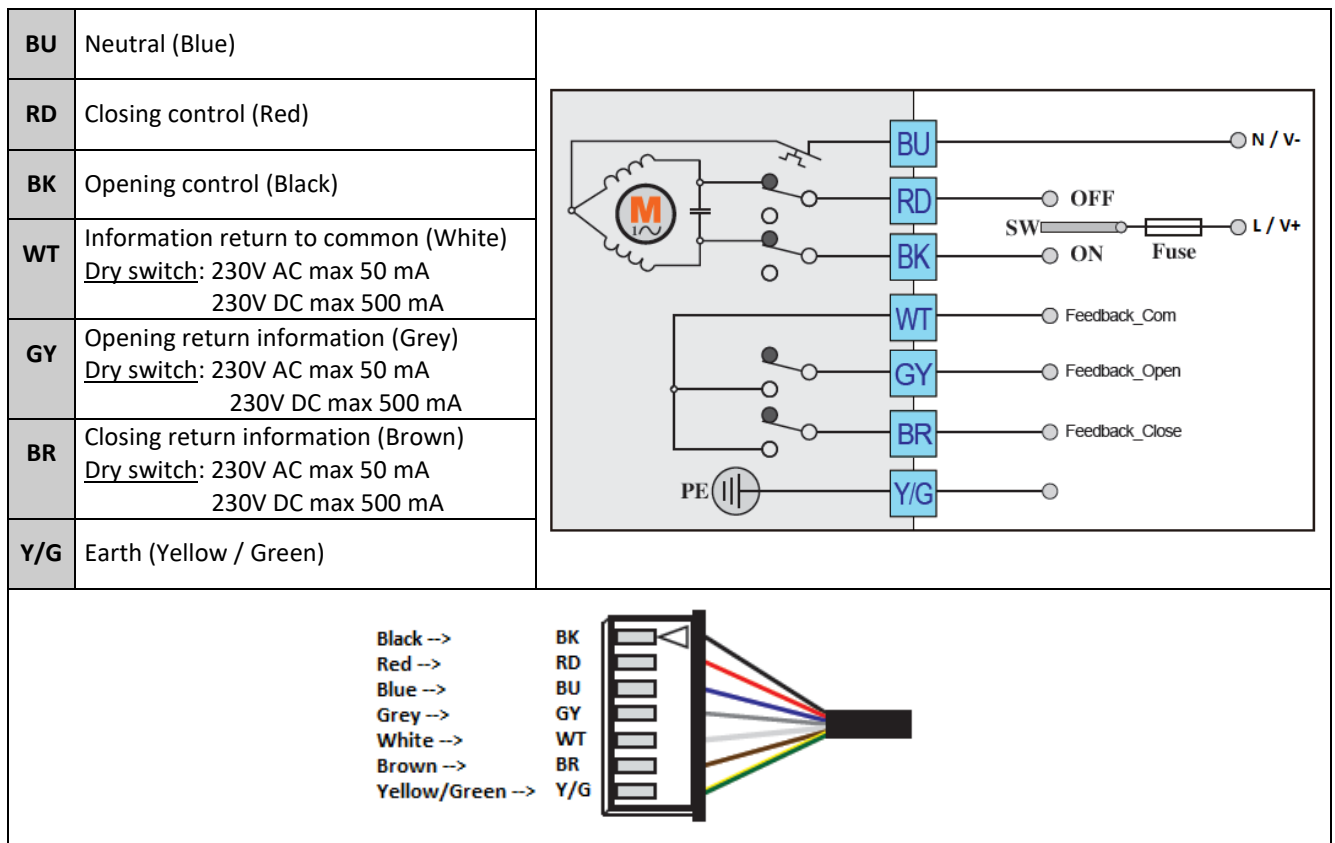


Information given as an indication only, and subject to possible modifications

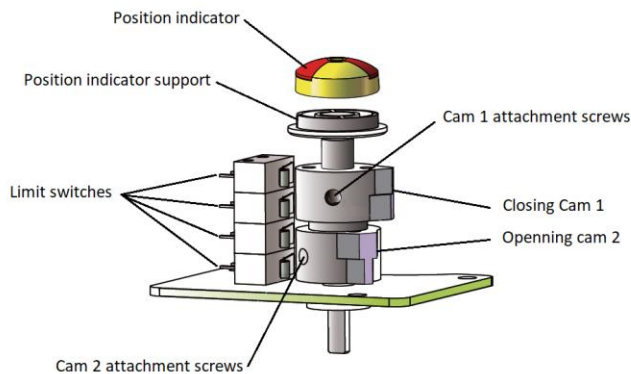
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TCR-N ELECTRICAL ACTUATOR

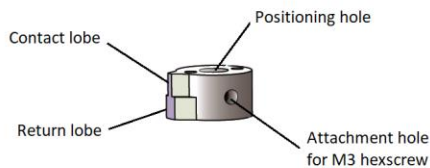
WIRING DIAGRAM



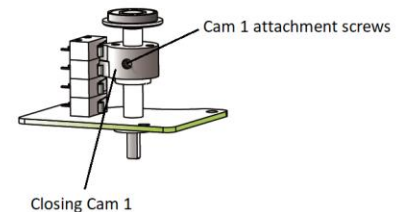
SWITCH SETTING



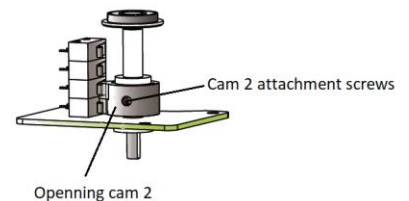
GENERAL VIEW



CAM DETAIL



CLOSING CAM ADJUSTMENT



OPENING CAM ADJUSTMENT

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TCR-N 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-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

FEATURES

The TCR-N-KT electric actuators are intended for motorising ¼ turn valves with a torque of 15, 50, 90 or 200 Nm. **Capacitor return function:** the closing manoeuvre is provided by a capacitor. 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.

AVAILABLE MODELS

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

Dual Frequency: 50Hz, 60Hz.

LIMITS OF USE

IP Code	IP 67
Ambient temperature	- 20°C / +60°C
Service factor	S4 - 50% (TCR 02N-05N-11N)
	S3 - 85% (TCR 20N)



MECHANICAL FEATURES

Gear box	treated steel pinions
Torques	15 - 45 - 95 - 110 Nm
Angle of rotation	90° +/- 2°
Declutching	Without (TCR 02N-05N-11N)
	With (TCR 20N)
Override control	By key



Actuator	TCR 02N-KT32		TCR 05N-KT32		TCR 11N-KT32	
Torques (Nm)	15		50		90	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Manoeuvring time (s)	10	10	12	12	10	10
ISO 5211:	F03/F05 - star 11		F05/F07 - star 14		F05/F07 - star 17	

Actuator	TCR 20N-KT32	
Torques (Nm)	200	
Voltage	24V AC - DC	95-265V AC-DC
Manoeuvring time (s)	25	25
ISO 5211:	F07/F10 - étoile de 22	

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TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

ELECTRICAL FEATURES

Actuator	TCR 02N-KT32	TCR 05N-KT32	TCR 11N-KT32
Motor protection	Thermal switch		
Limit switches	2 adjustable switches		
Auxiliary switches	2 adjustable dry switches		
Anti-condensation	integrated		
Electrical connection	PE M10 + 1.5m cable	PE M20 + 1.5m cable	2 x PE M14 + 1.5m cable

Actuator	TCR 02N-KT32		TCR 05N-KT32		TCR 11N-KT32	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Power (W)	36	36	40	40	100	100
Current (A)	1,5	0,09	1,8	1,6	2,5	0,26 - 0,52
Fuse protection (A)	5	1	10	2	5	2
Charging time (min)*	2	2	3	3	5	5

Actuator	TCR 20N-KT32
Motor protection	Thermal switch
Limit switches	2 adjustable switches
Auxiliary switches	2 adjustable dry switches
Anti-condensation	integrated
Electrical connection	PE M20 + 1.5 m cable

Actuator	TCR 20N-KT32	
Voltage	24V AC - DC	95-265V AC - DC
Power (W)	50	50
Current (A)	2	0.22
Fuse protection (A)	2	5
Charging time (min)*	5	5

*** Charging time :**

- After complete opening (excluding manoeuvring time).
- After prolonged non-use (>1 week) : add 1 minute to the recommended charging time.

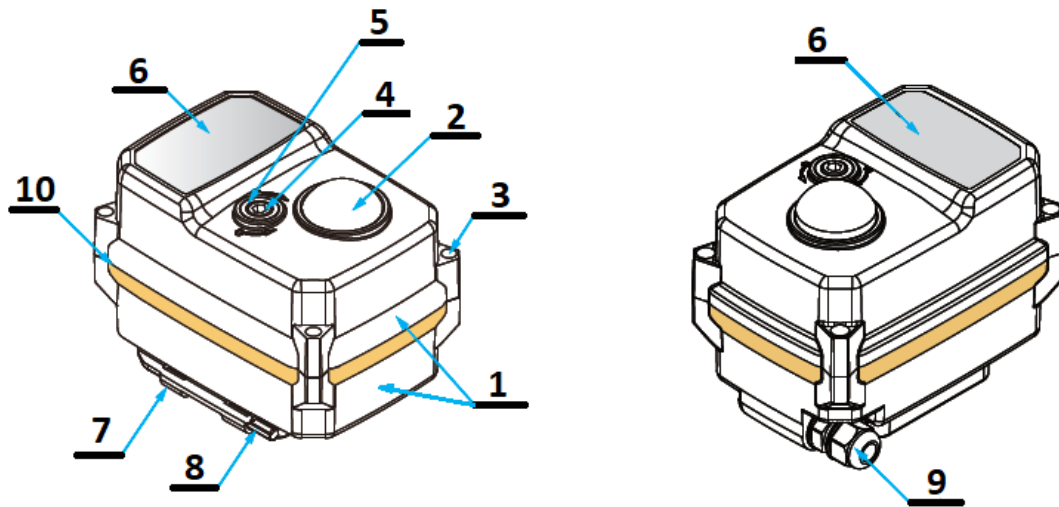
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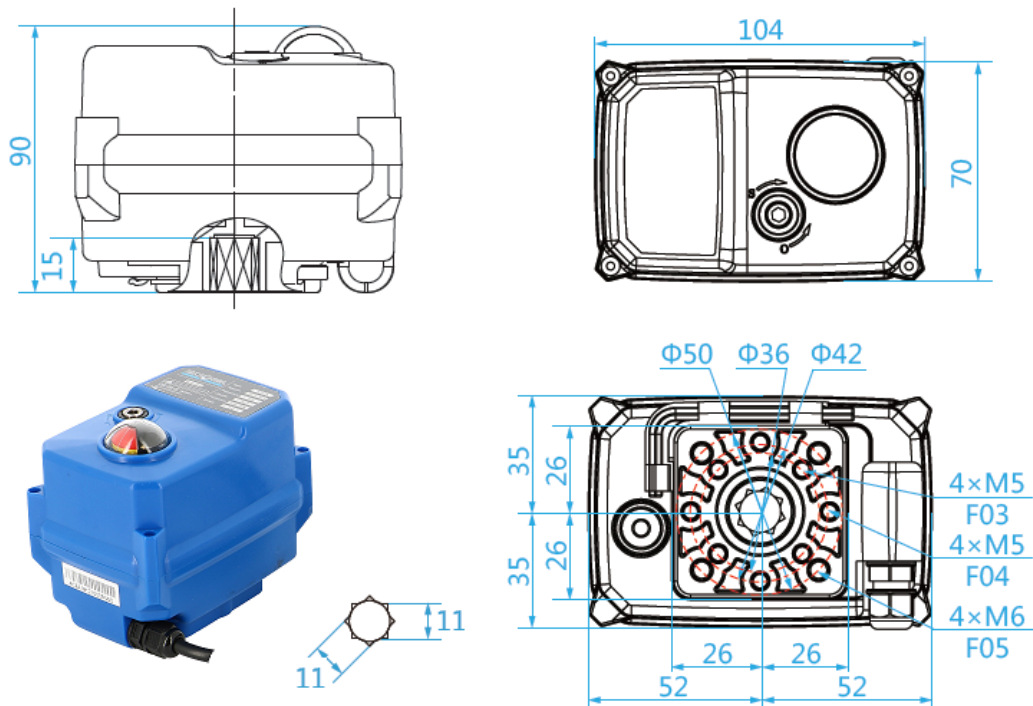
TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-02N-KT32)

TCR-02N-KT32					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic (ABS)
3	Screw x 4	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 0.620					



DIMENSIONS (mm)



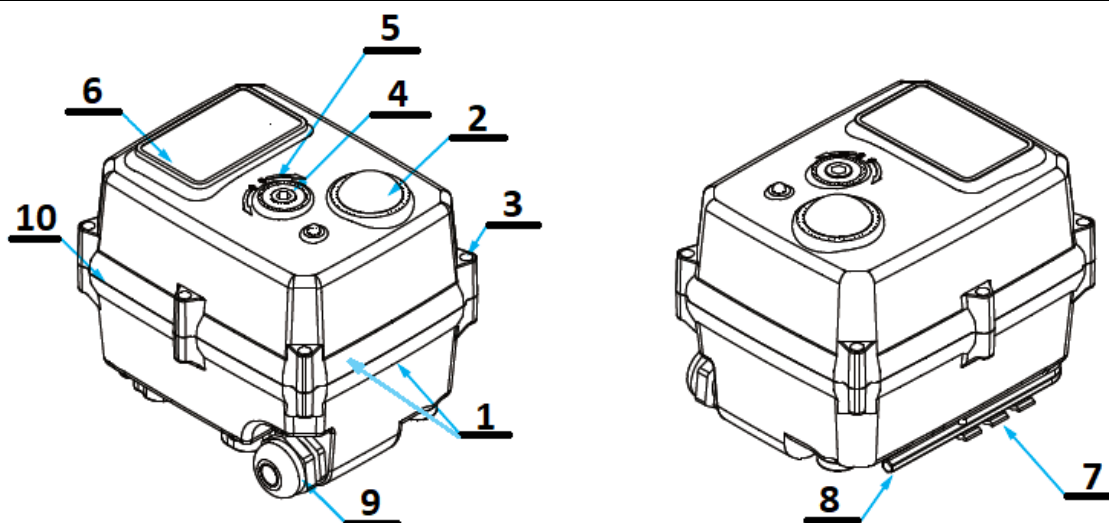
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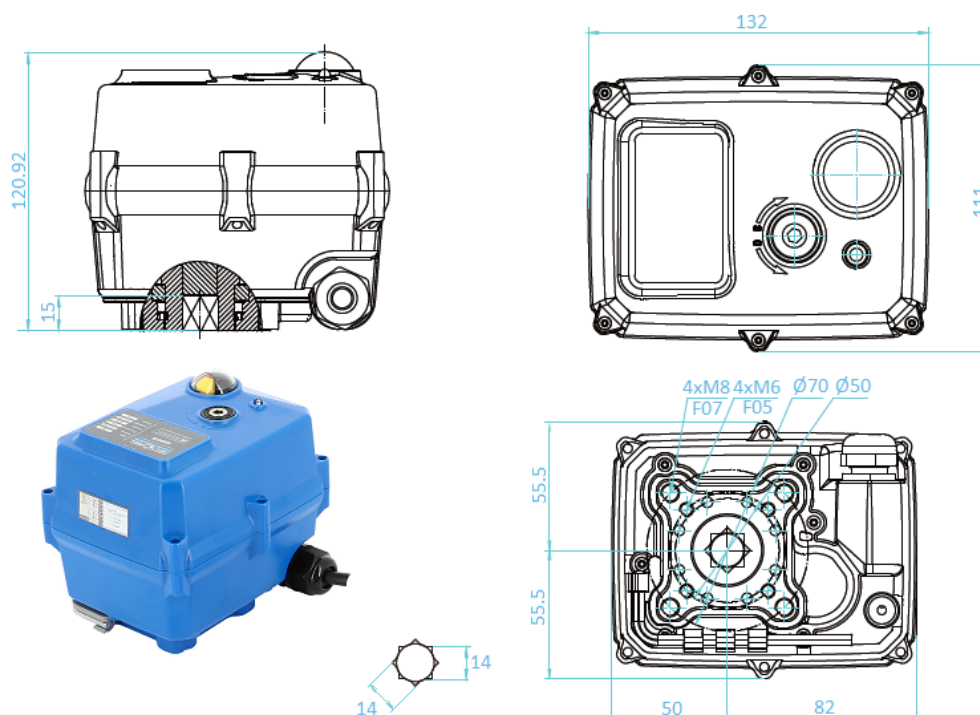
TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-05N-KT32)

TCR-05N-KT32					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
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	Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 1.800					



DIMENSIONS (mm)



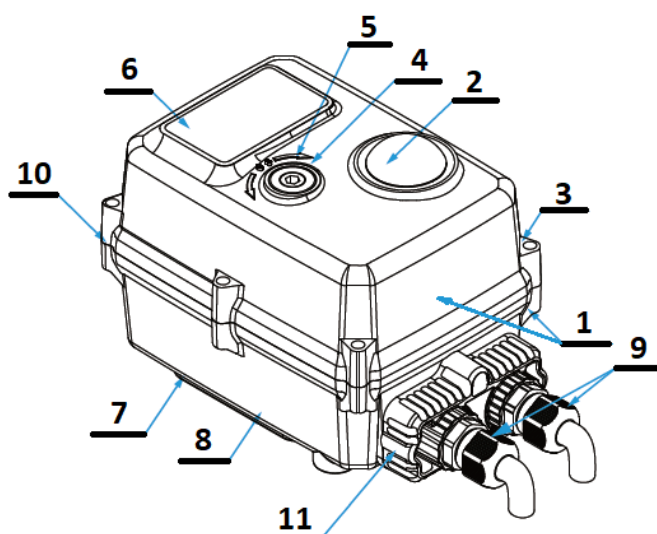
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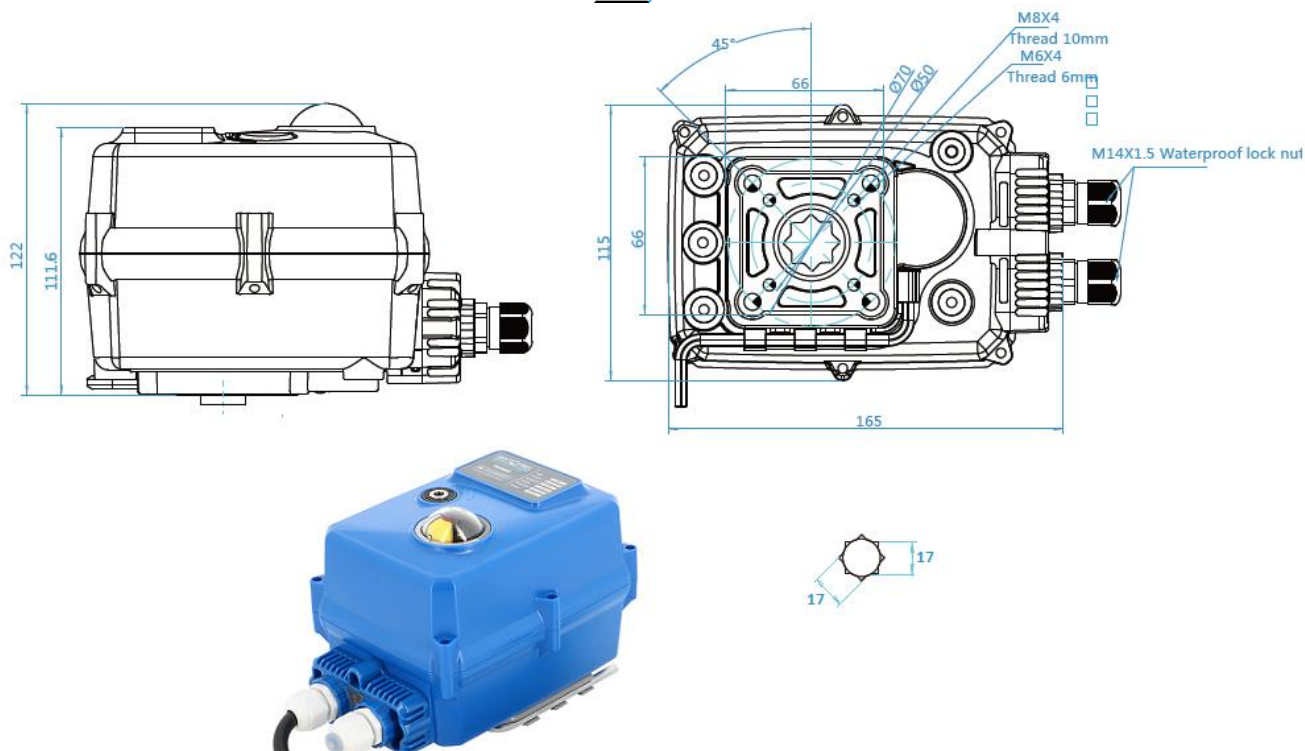
TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-11N-KT32)

TCR-11N-KT32					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
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	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 2.200			11	Cable gland unit	Plastic (ABS)



DIMENSIONS (mm)



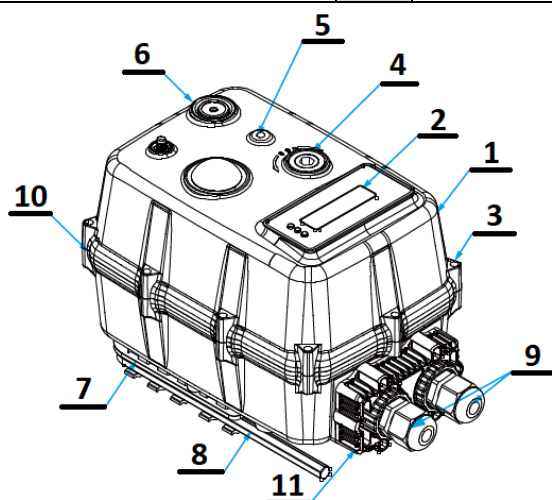
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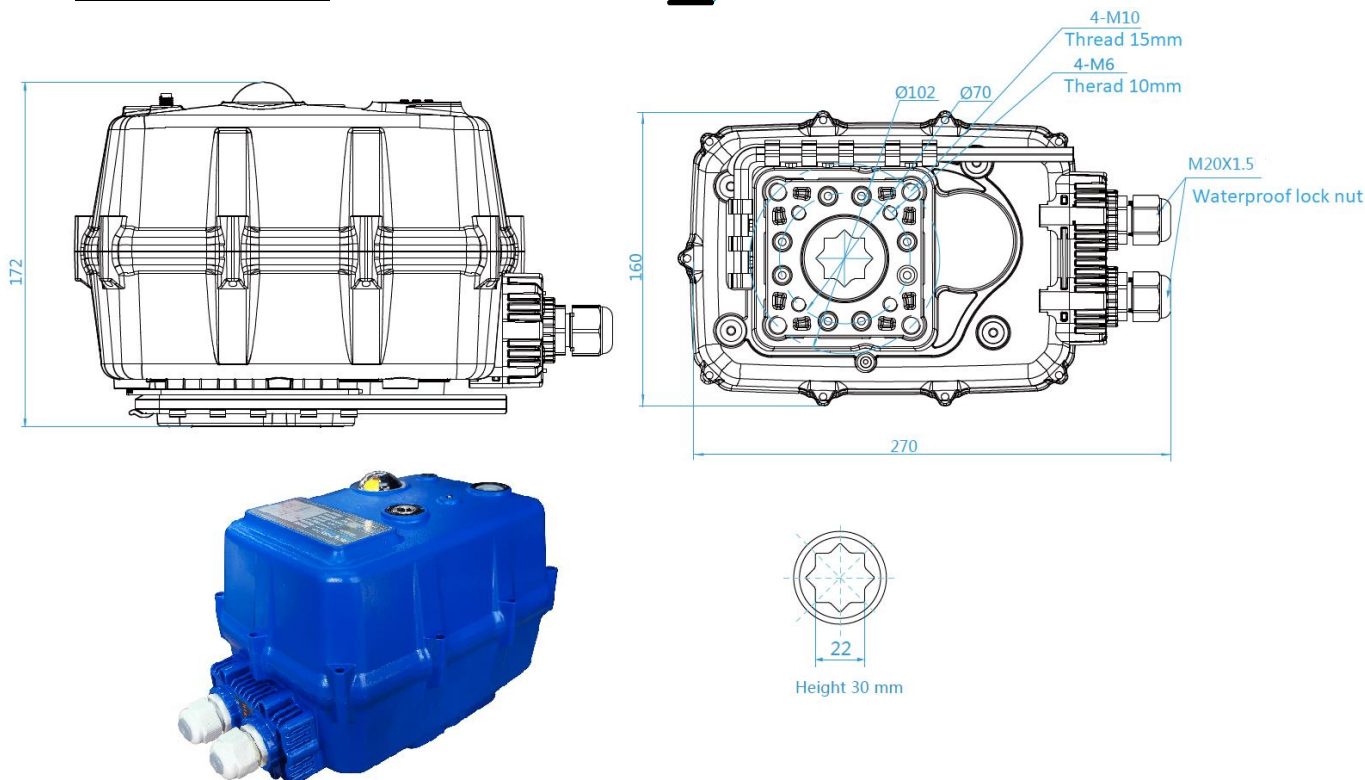
TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-20N-KT32)

TCR-20N-KT32					
N°	Désignation	Matière	N°	Désignation	Matière
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	Plastic PC	10	Cover gasket	NBR
Poids (Kg) : 6,000			11	Cable gland unit	Plastic (ABS)



DIMENSIONS (mm)



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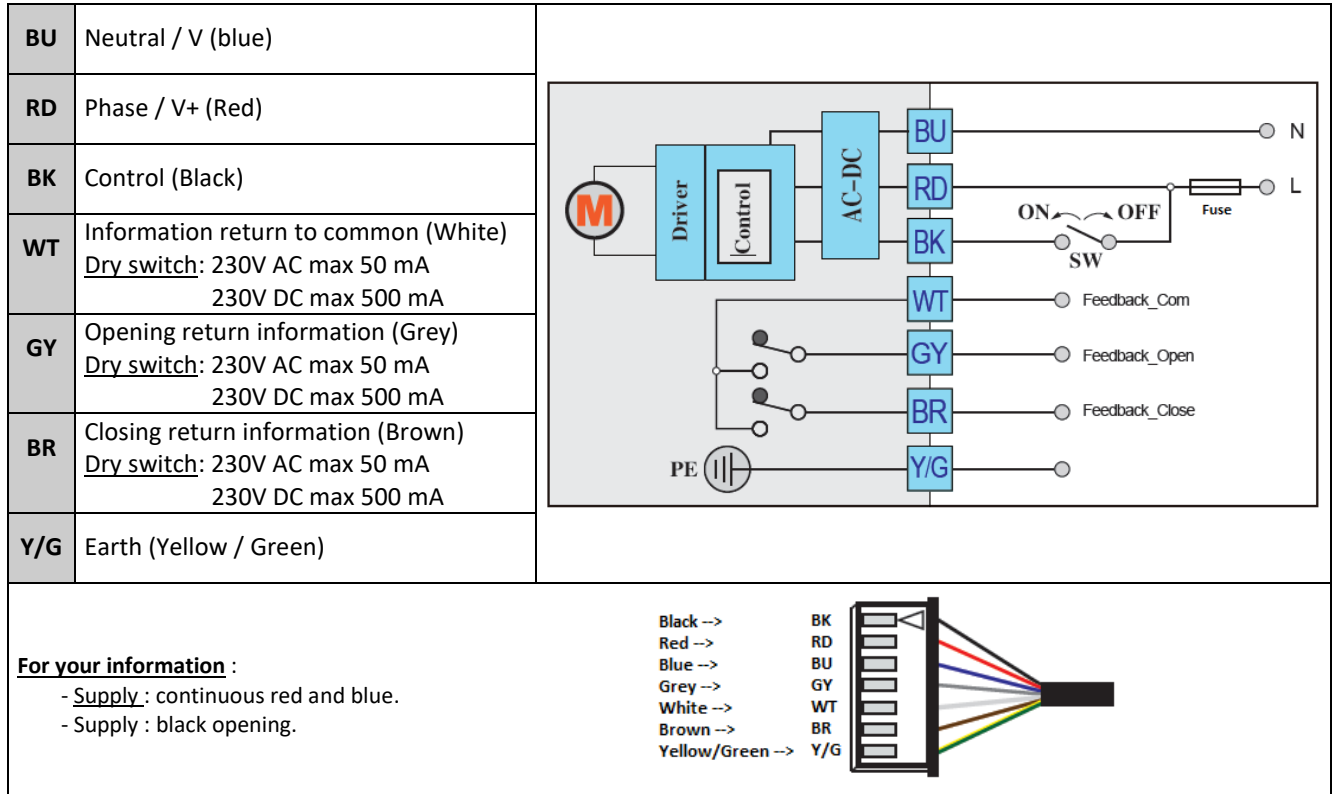
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TCR-N-KT CAPACITOR RETURN ELECTRICAL ACTUATOR

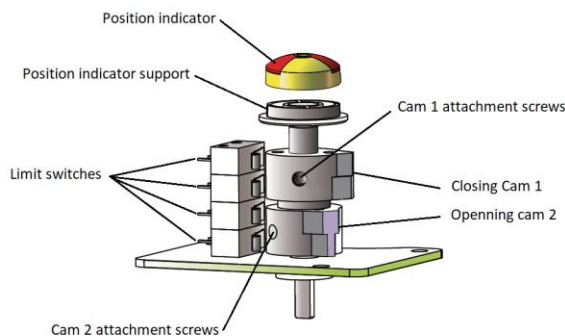
WIRING DIAGRAM

Note :

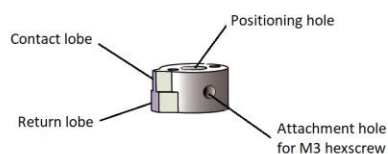
- Follow the wiring diagram carefully. In standard operation, do not systematically use the capacitor for closing.
- For high opening/closing frequencies, it is essential to follow the wiring diagram shown (see page 2 § electrical characteristics - charging time).



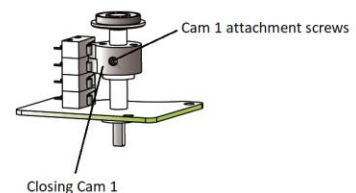
SWITCH SETTING



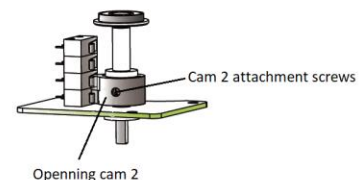
GENERAL VIEW



CAM DETAIL



CLOSING CAM ADJUSTMENT



OPENING CAM ADJUSTMENT

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TCR-N-KT CAPACITOR RETURN 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-NH HIGH-SPEED ELECTRICAL ACTUATOR

FEATURES

The TCR-NH electric actuators are intended for motorising 1/4 turn valves with a torque of 15, 20, 50 or 110 Nm. **High-speed function**: 1 to 6-second manoeuvre time. 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.

AVAILABLE MODELS

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

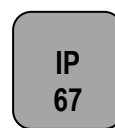
Dual frequency : 50Hz, 60Hz.

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	15 - 20 - 50 - 110 Nm
Angle of rotation	90° +/- 2°
Declutching	without
Override control	By key



Actuator	TCR 02NH		TCR 05NH		TCR 11NH	
Torques (Nm)	20	15	50		110	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Manoeuvring time (s)	1	6	1	5	5	5
ISO 5211:	F03/F05 - star 11		F05/F07 - star 14		F05/F07 - star 17	

ELECTRICAL FEATURES

Actuator	TCR 02NH	TCR 05NH	TCR 11NH
Motor protection	Thermal switch		
Limit switches	2 adjustable switches		
Auxiliary switches	2 adjustable dry switches		
Anti-condensation	integrated		
Electrical connection	PE M10 + 1.5m cable	PE M20 + 1.5m cable	2 x PE M14 + 1.5m cable

Actuator	TCR 02NH		TCR 05NH		TCR 11NH	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Power (W)	85	25	100	40	100	100
Current (A)	3,5	0,12	4,7	1,8	5	0,52
Fuse protection (A)	8	1	10	10	10	2

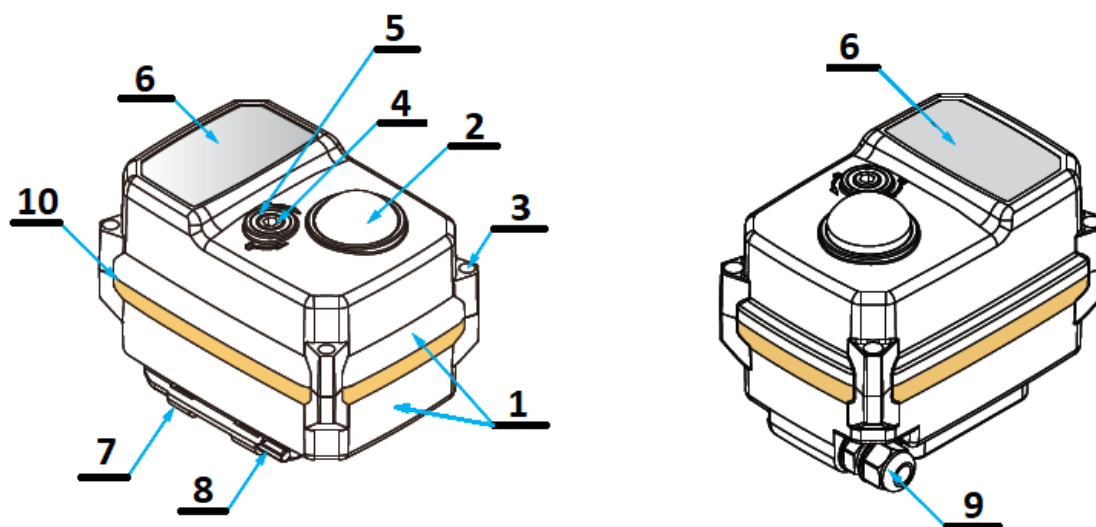
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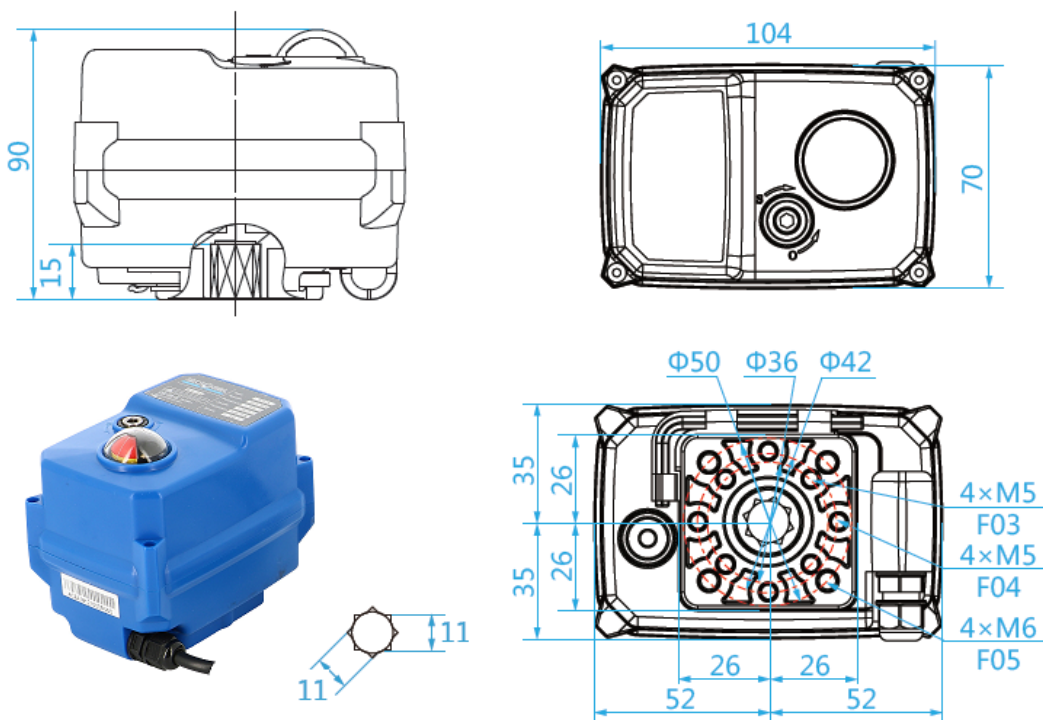
TCR-NH HIGH-SPEED ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-02NH)

TCR-02NH					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
2	Position indicator	Polycarbonate plastic	7	Key support	Plastic (ABS)
3	Screw x 4	Aisi 304	8	Hex key	Steel
4	Backup control stem	Aisi 304	9	Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 0.620					



DIMENSIONS (mm)



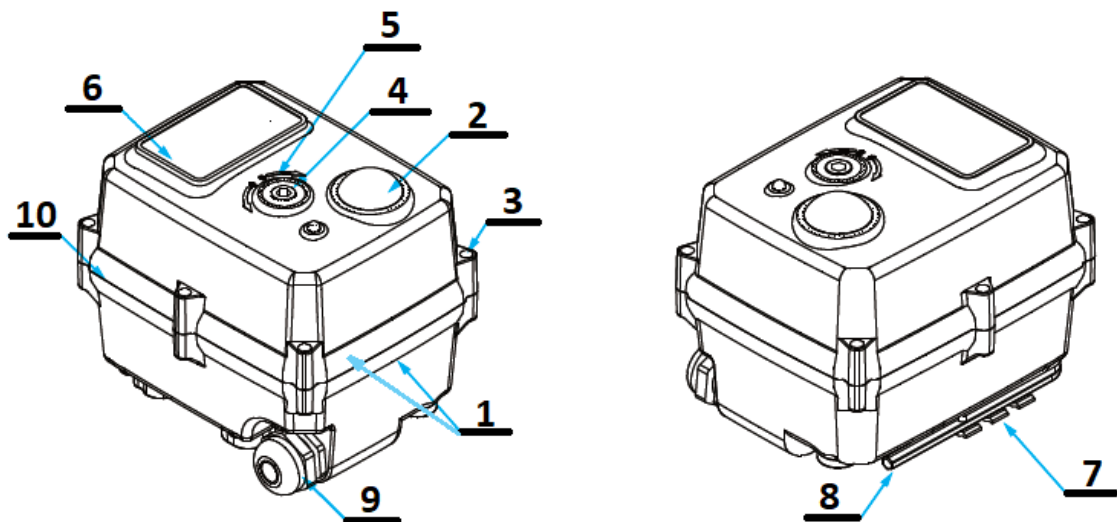
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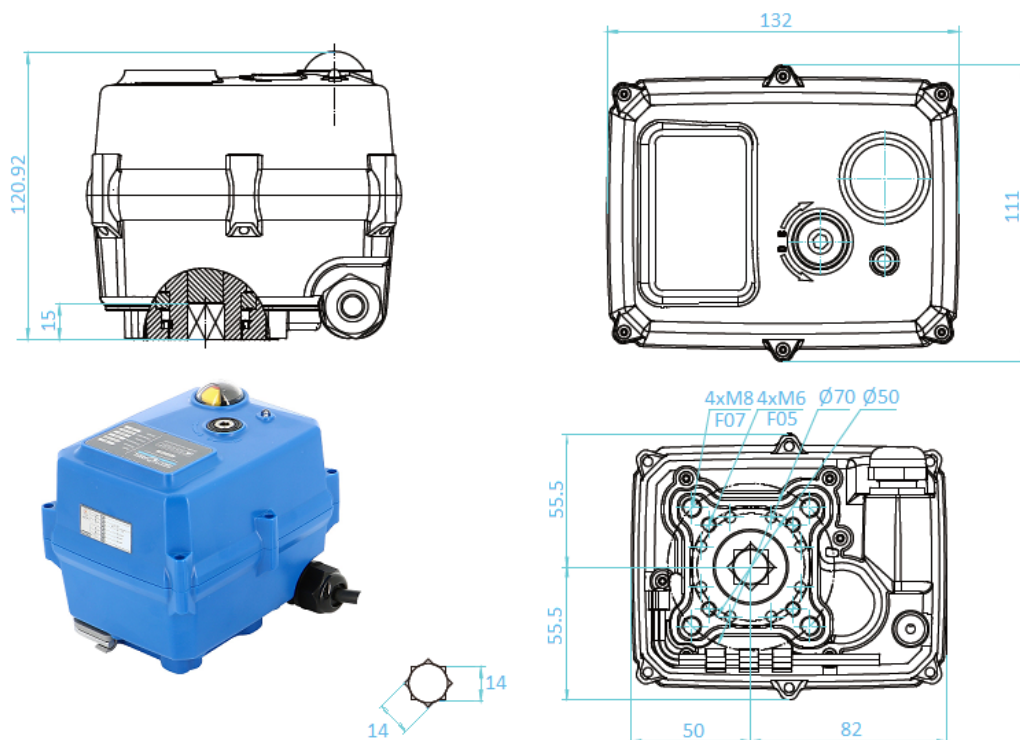
TCR-NH HIGH-SPEED ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-05NH)

TCR-05NH					
No.	Name	Material	No.	Name	Material
1	Casing + lid	Plastic (ABS)	6	Rating plate	PVC
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	Packing gland	Nylon
5	Gasket	NBR	10	Cover gasket	NBR
Weight (kg): 1.800					



DIMENSIONS (mm)

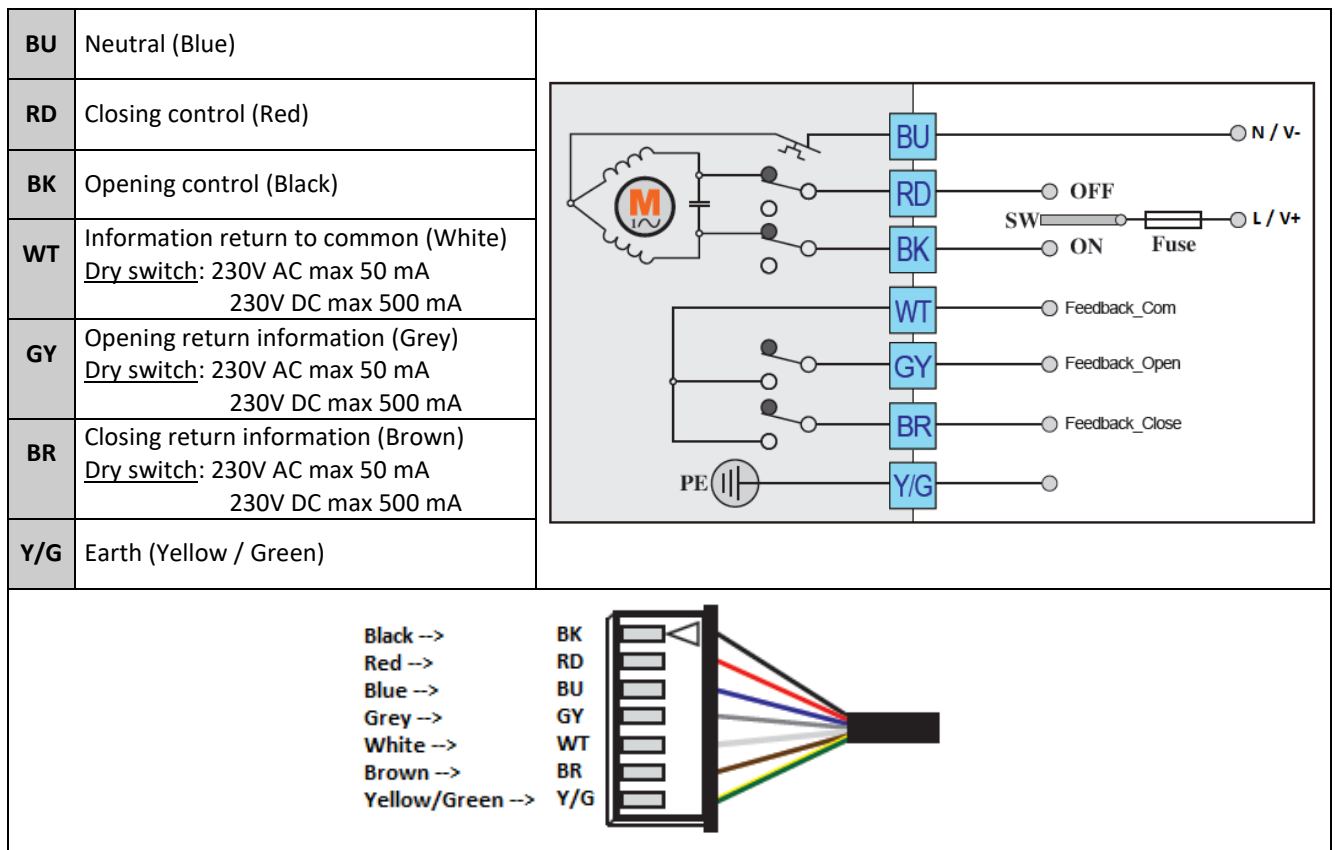


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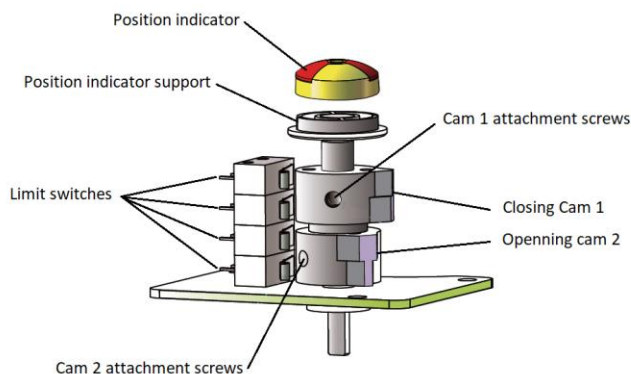
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TCR-NH HIGH-SPEED ELECTRICAL ACTUATOR

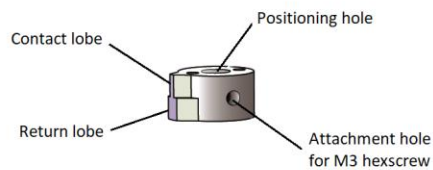
WIRING DIAGRAM



SWITCH SETTING

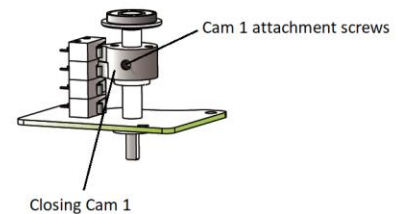


GENERAL VIEW

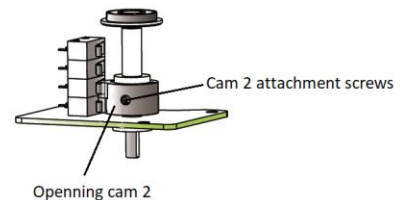


CAM DETAIL

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CLOSING CAM ADJUSTMENT



OPENING CAM ADJUSTMENT



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TCR-NH HIGH-SPEED 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-C SMART / 3P ELECTRICAL ACTUATOR

FEATURES

The TCR-C smart / 3P electric actuators are intended for motorising $\frac{1}{4}$ turn valves with a torque of 20, 50 or 90 Nm.

Smart function: the manoeuvring time is adjustable. 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. As an option, the actuator can take a third position. (see § 3rd position).

AVAILABLE MODELS

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

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



Actuator	TCR 02C		TCR 05C		TCR 11C	
Torques (Nm)	20	20	50		90	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Manoeuvring time (s)	10 to 50	10 to 50	12 to 60	12 to 60	10 to 50	10 to 50
ISO 5211:	F03/F05 - star 11		F05/F07 - star 14		F05/F07 - star 17	

ELECTRICAL FEATURES

Actuator	TCR 02C	TCR 05C	TCR 11C
Motor protection	Thermal switch		
Limit switches	Without		
Auxiliary switches	Without		
Anti-condensation	integrated		
Electrical connection	PE M10 + 1.5m cable	PE M20 + 1.5m cable	2 x PE M14 + 1.5m cable

Actuator	TCR 02C		TCR 05C		TCR 11C	
Voltage	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC	24V AC - DC	95-265V AC-DC
Power (W)	15	15	25	25	100	100
Current (A)	0,35	0,035 - 0,075	0,83	0,035 - 0,075	2,5	0,26 - 0,52
Fuse protection (A)	2	1	4	2	5	2

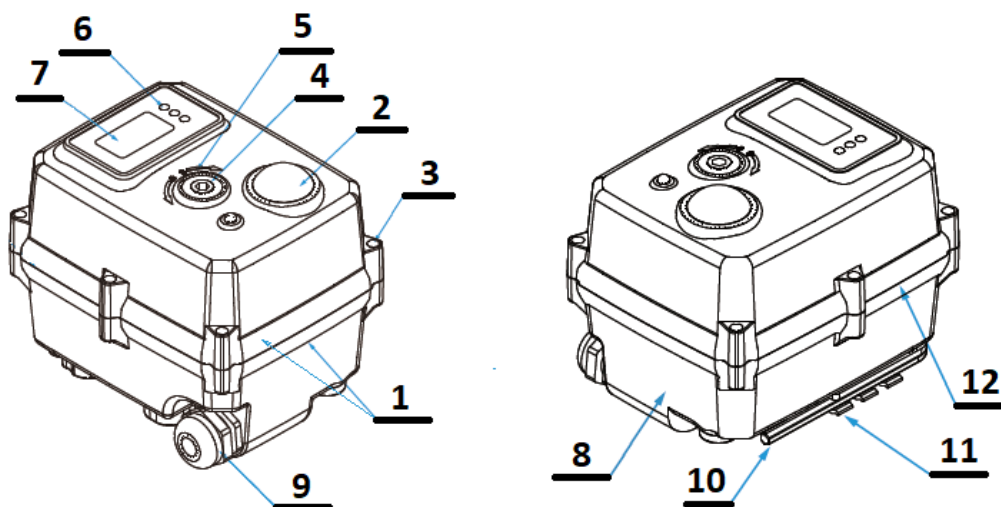
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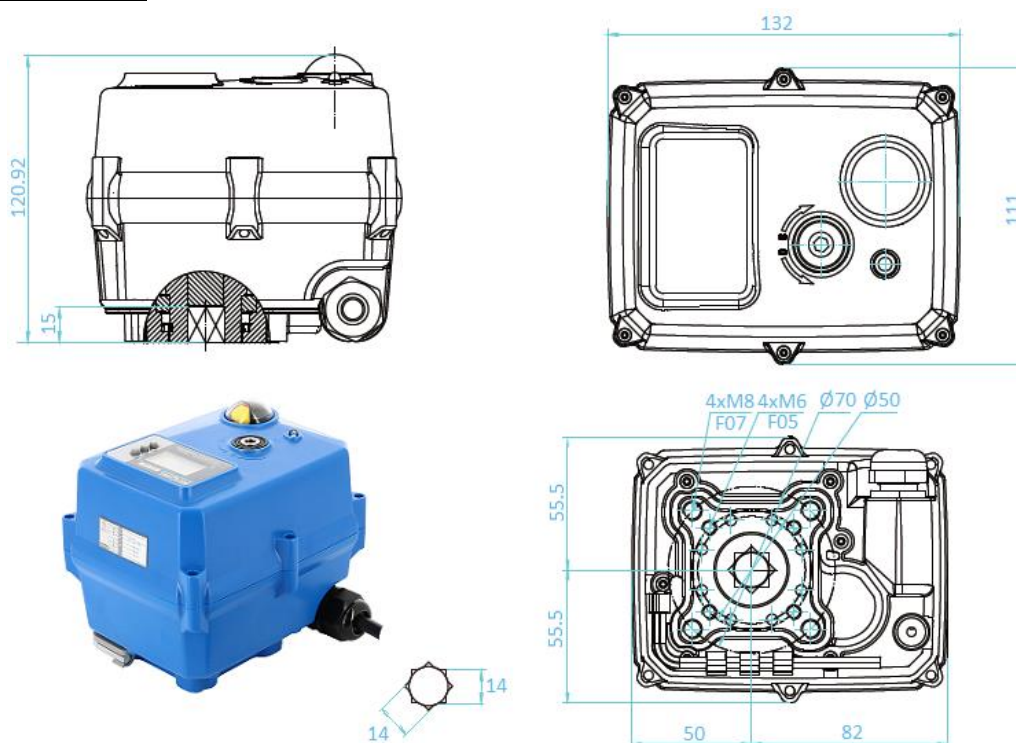
TCR-C SMART / 3P ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-05C)

TCR-05C					
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	Aisi 304	9	Packing gland	Nylon
4	Backup control stem	Aisi 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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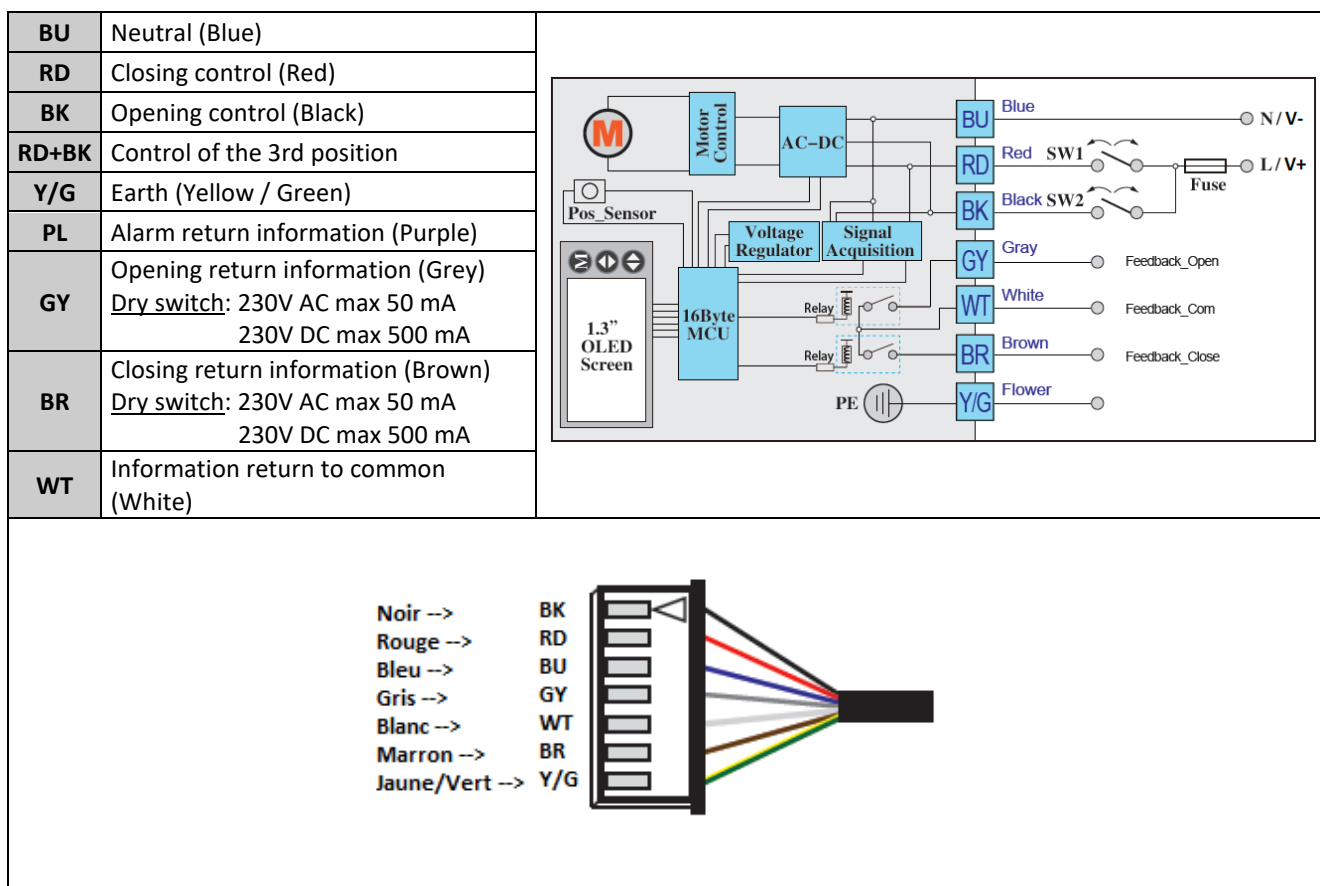
TCR-C SMART / 3P ELECTRICAL ACTUATOR

WIRING DIAGRAM

It is used to provide a third position, other than the “open” and “closed” position. The percentage of opening of the third position is set from the parameter setting menu. On the side of control, the programming of taking the 3 positions is carried out as follows:

SW1	SW2	Actuator position	Returns from limit switches
Engaged	Disengaged	0°	WT connected with BN
Disengaged	Engaged	90°	WT connected with GY
Engaged	Engaged	Can be set from 10% to 220% of the opening, i.e. between 9° and 198° of opening.	WT connected with GY and BN

WIRING DIAGRAM

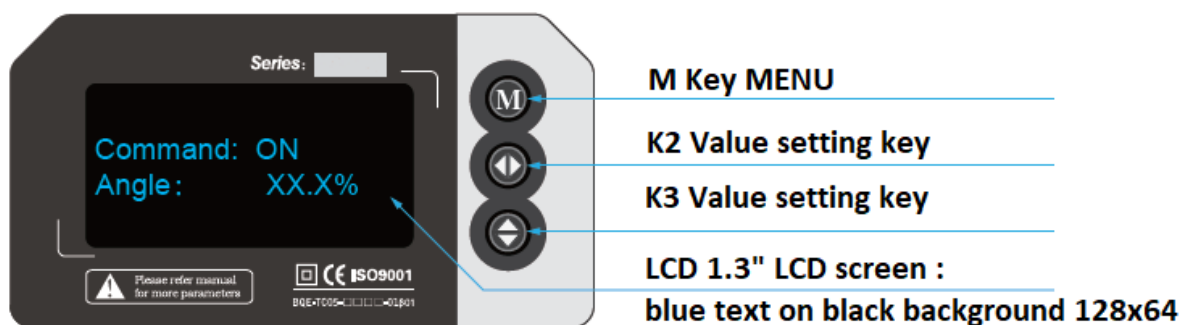


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TCR-C SMART / 3P ELECTRICAL ACTUATOR

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	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: 1% UserSET: DeadZone: X.X% UserSET: DeadZone: 0.1% minimum UserSET: DeadZone: 9.9% maximum
4	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

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5	Hysteresis value	If the previous parameter is "YES", it is possible to set the hysteresis value between 0.1 and 12%. The value by default is 0.5%. 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%
6	Slight adjustment of the closed position	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.
		UserSET: ClPos_Adj: X.X° UserSET: ClPos_Adj: X.X° Offset-Open UserSET: ClPos_Adj: X.X° Offset-Close UserSET: ClPos_Adj: -X.X° This is minimum UserSET: ClPos_Adj: X.X° This is maximum
7	Manual adjustment of the speed of rotation	This function is used for slowing down the motor. Range: 20-100% - Value by default = 100%
		UserSET: Speed_PUL: XX% UserSET: Speed_PUL: 100% This is maximum UserSET: Speed_PUL: 5% This is minimum
8	Setting the operating speed	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. Nota: it is not recommended to combine functions 5 and 6, the actuator could become overcharged.
		UserSET: Speed_PWM: 100%
9	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
10	Parameter setting for the 3 rd position	This function is accessible only on an actuator with a "B33" option (see last §).
		UserSET: B33Posi: 50%

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TCR-C SMART / 3P ELECTRICAL ACTUATOR

11	Inverting the opening and closing controls	The parameter setting is used to invert the opening and closing controls. The B33 parameter setting is not affected. Parameter setting by default: "NO" UserSET: CMD_Swap: Yes
12	Actuator's position when SW1 (RED) and SW2 (BLACK) are engaged	This parameter setting is available only the B33 version: 4 different positions can have their parameters set: open, closed, unchanged or 3rd position Parameter setting by default: KEEP UserSET: BothIN_ON: KEEP UserSET: BothIN_ON: OFF UserSET: BothIN_ON: ON UserSET: BothIN_ON: B33
13	Actuator's position when SW1 (RED) and SW2 (BLACK) are disengaged	This parameter setting is available only the B33 version: 4 different positions can have their parameters set: open, closed, unchanged or 3rd position Parameter setting by default: KEEP UserSET: Both IN_OFF: KEEP UserSET: Both IN_OFF: OFF UserSET: Both IN_OFF: ON UserSET: Both IN_OFF: B33
14	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%
15	Power supply position by default	This parameter setting is not available on the standard version Parameter setting by default: KEEP UserSET: PDAction: KEEP UserSET: PDAction: OFF UserSET: PDAction: ON
16	Super-capacitor charge	This parameter is not available on the standard version Value by default: 95% UserSET: BatCharge: XX% UserSET: BatCharge: 60% Minimum UserSET: BatCharge: 99% Maximum
17	Actuator locking after the intervention of the super-capacitor	This parameter is not available on the standard version Value by default: UNLOCK UserSET: MotLock: LOCK UserSET: MotLock: UNLOCK

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TCR-C SMART / 3P ELECTRICAL ACTUATOR

18	Choice of language	English or Mandarin
		UserSET: DisMode: English UserSET: DisMode: Chinese
19	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
20	Exiting the menu	Press K3 to exit the menu The system will switch back in the automatic checking mode.
		UserSET: ExitSET: Push K3
21	Activate the 3rd position	User should input password '505' enter into user set . Press M to switch to following parameter :
		RD=+ RD=+ RD=+ RD=+ BK=+ BK=+ BK=+ BK=+ OFF 0° ON 90° B33 180° B44 270° RD+BK-:Left-Mid
22	Parameter setting 3rd position	Press K2 to switch to RD+BK+ and then press K3 to switch the option as "B33_SET" as following
		RD=+ RD=+ RD=+ RD=+ BK=+ BK=+ BK=+ BK=+ OFF 0° ON 90° B33 180° B44 270° RD+BK+:B33_SET
23	Parameter setting the percentage value (%) of the 3rd position	Press M to change the following parameter B33Posi and choose the desired percentage value.
		UserSET: B33Posi: 50.0% 
24	Saving parameter settings	Press M until exit and then press K3 to save above setting.

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TCR-C SMART / 3P 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-02-05D TIMER ELECTRICAL ACTUATOR

FEATURES

The TCR-D electric actuator is intended for motorising $\frac{1}{4}$ turn valves with a torque of 20 or 50 Nm., including the "TIMER" function. With a compact construction and plastic housing, it is especially well suited for motorising small dimensions ball valves. The parameters of the TIMER function can be set via a menu. This function is used for programming periodic, automatic openings/closings of a valve (frequency and length of time) under two modes: ON and OFF cycle of lengths of time or clock. 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.

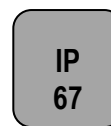
Dual frequency : 50Hz, 60Hz.

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



Actuator	TCR 02D		TCR 05D
Torques (Nm)	20	20	50
Voltage	24V AC - DC	95-265V AC-DC	95-265V AC-DC
Manoeuvring time (s)	10	10	12
ISO 5211:	F03/F04/F05 - star 11		F05/F07 - star 14

ELECTRICAL FEATURES

Actuator	TCR 02D	TCR 05D
Motor protection	Thermal switch	
Limit switches	Without	
Auxiliary switches	Without	
Anti-condensation	integrated	
Electrical connection	PE M10 + 1.5m cable	PE M20 + 1.5m cable

Actuator	TCR 02D		TCR 05D
Voltage	24V AC - DC	95-265V AC-DC	95-265V AC-DC
Power (W)	15	15	25
Current (A)	0,35	0,035 - 0,075	-
Fuse protection (A)	2	1	2

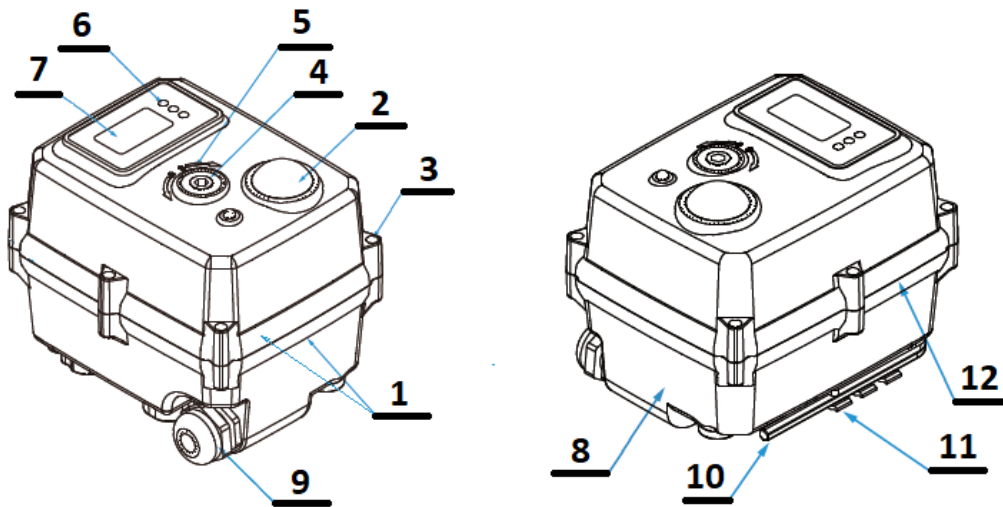
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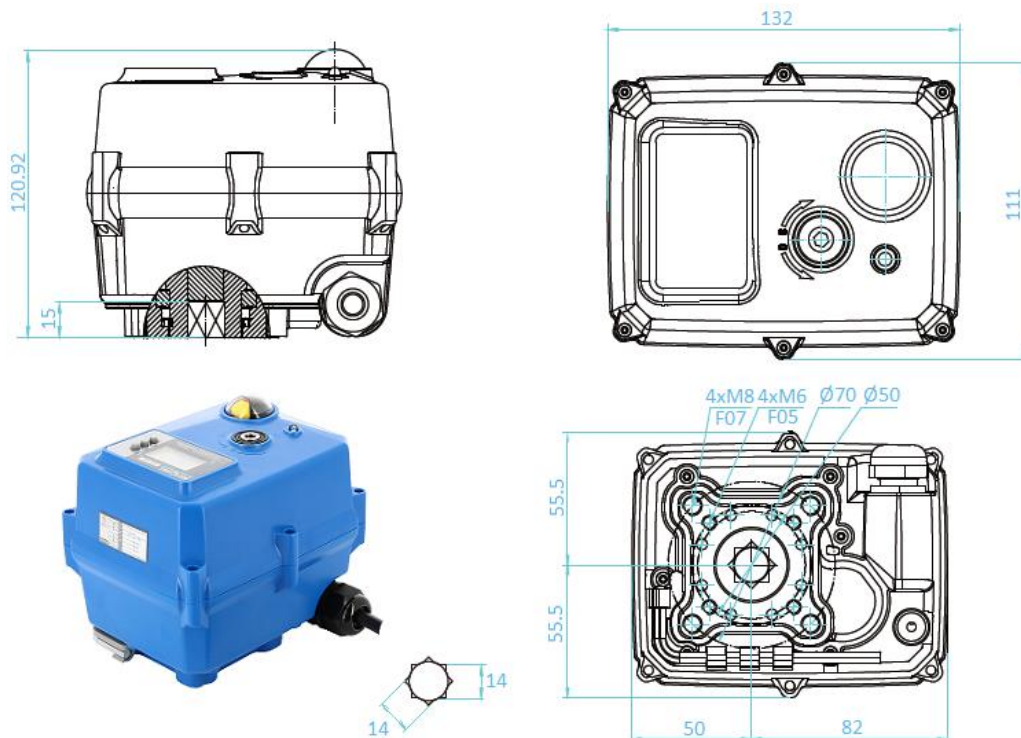
TCR-02-05D TIMER ELECTRICAL ACTUATOR

CONSTRUCTION (TCR-05D)

TCR-05D					
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	Aisi 304	9	Packing gland	Nylon
4	Backup control stem	Aisi 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)

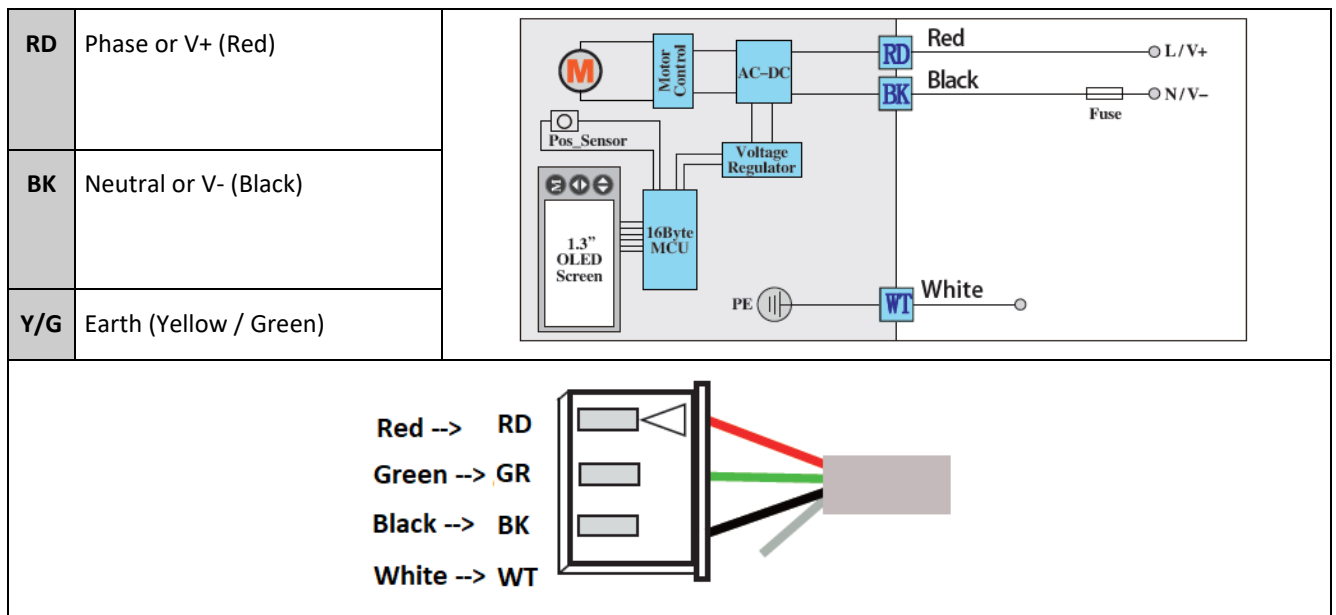


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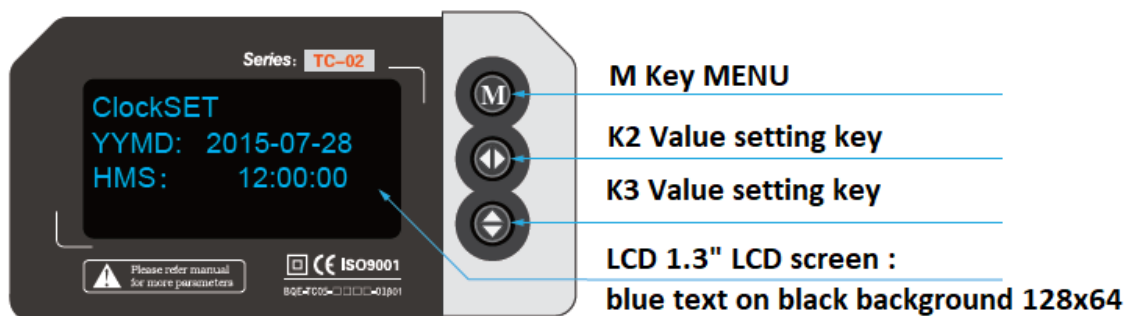
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TCR-02-05D TIMER ELECTRICAL ACTUATOR

WIRING DIAGRAM



DESCRIPTION OF THE 1.3" LCD SCREEN

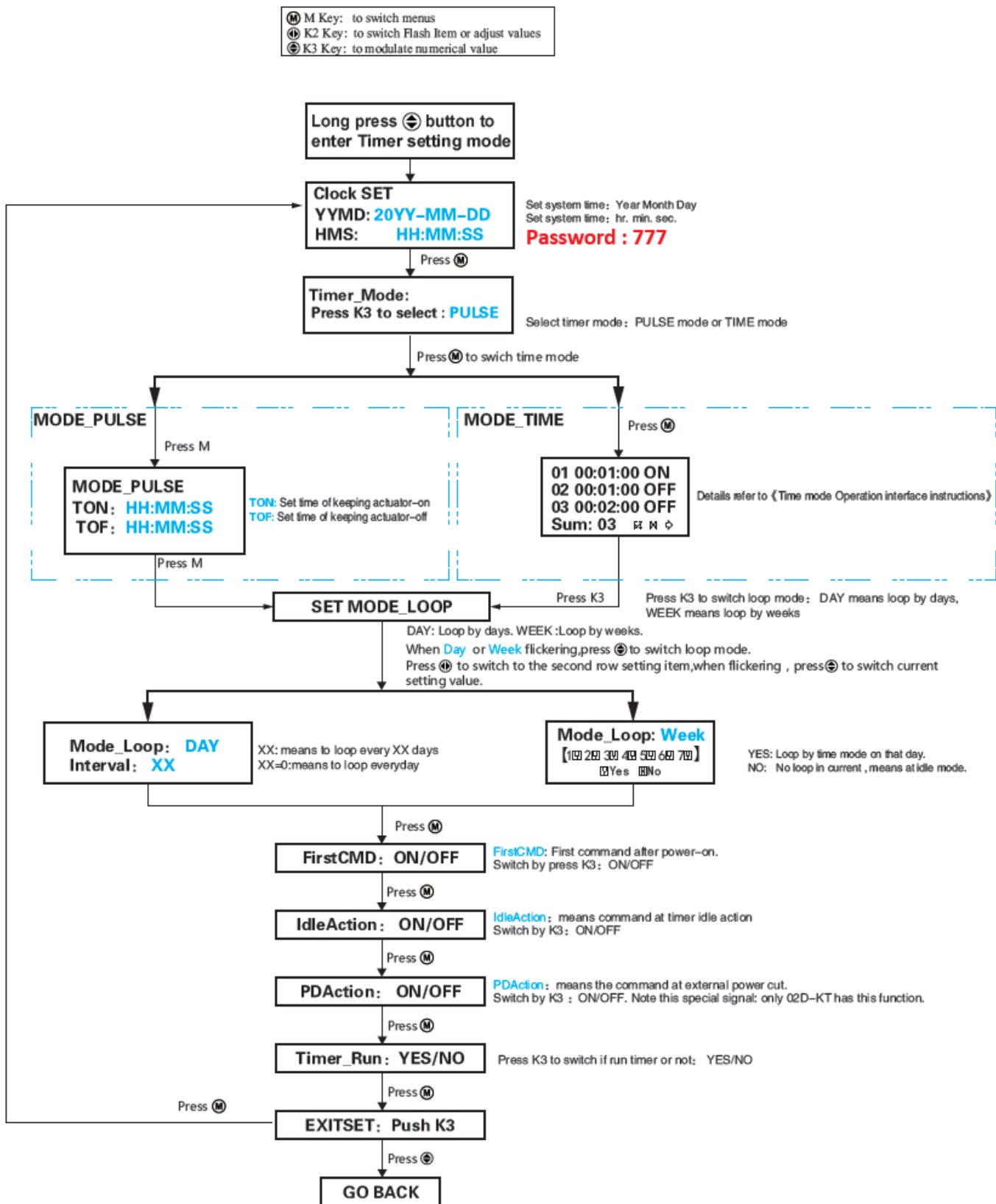


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TCR-02-05D TIMER ELECTRICAL ACTUATOR

PARAMETER SETTING MENU OF THE TIMER



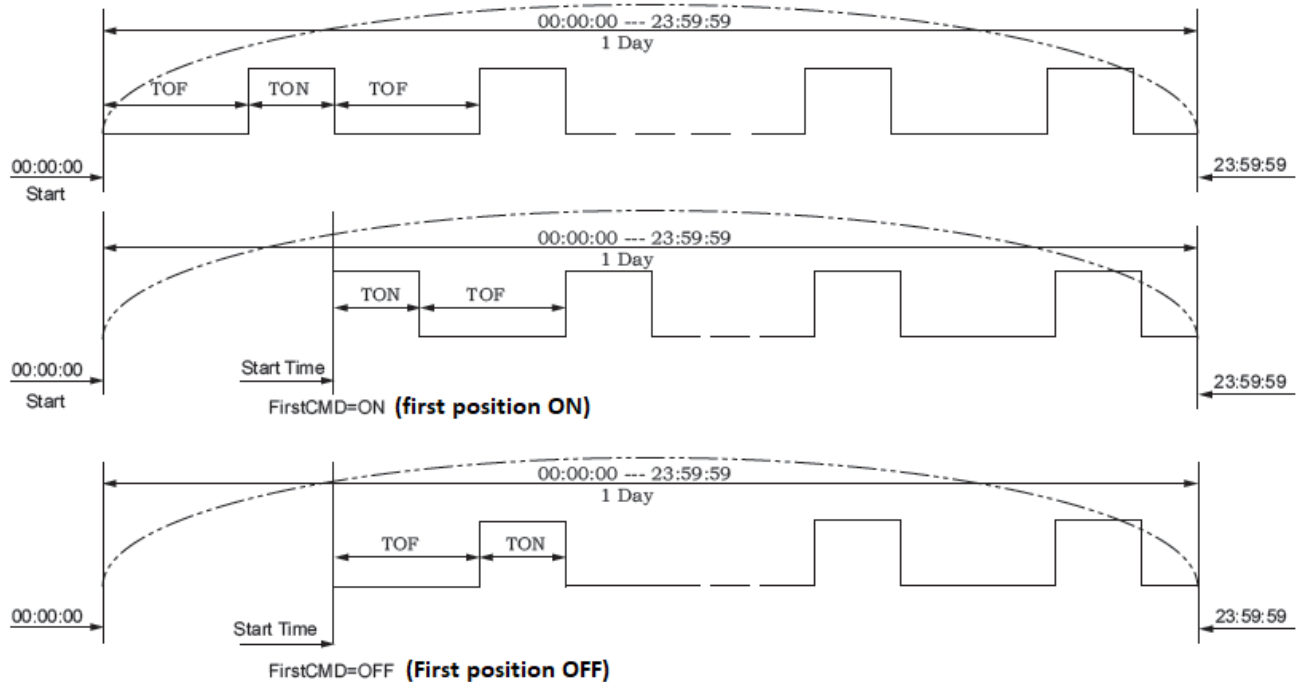
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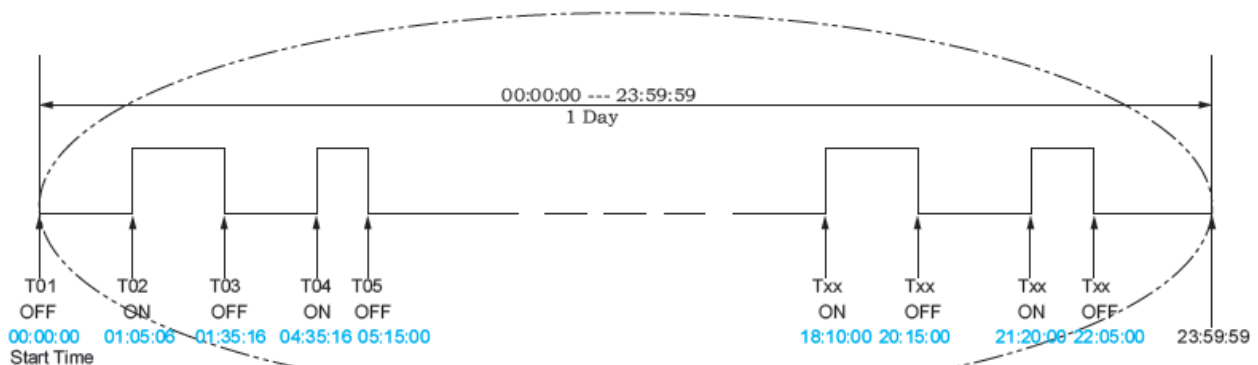
TCR-02-05D TIMER ELECTRICAL ACTUATOR

CHRONOGRAMS

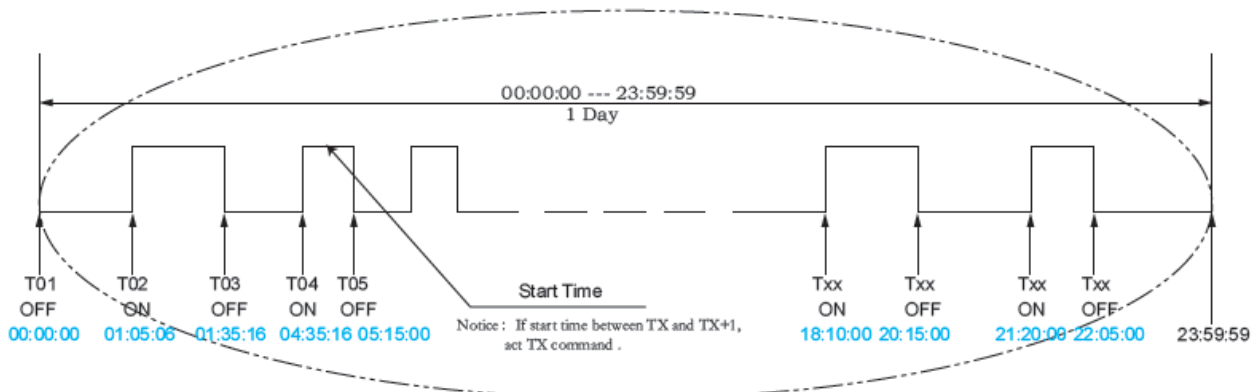
Mode_Pulse



Mode_Time



Notice : Start at 00:00:00 , If T01=00: 00: 00 exists, actuators act T01 command, or it will act FirstCMD command.



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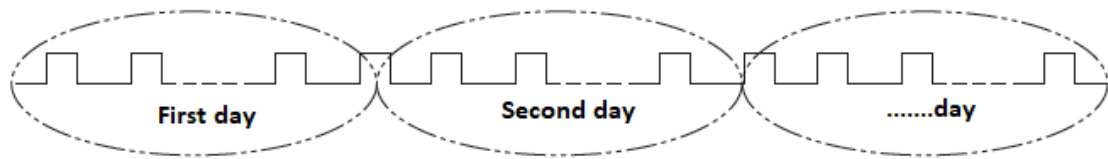
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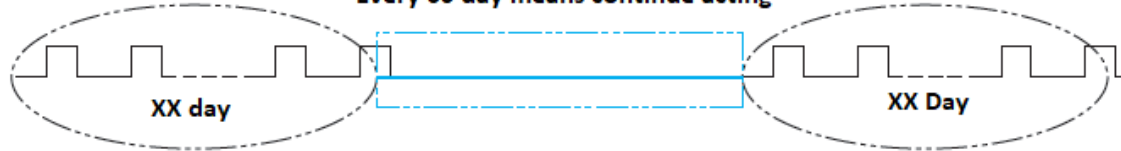
TCR-02-05D TIMER ELECTRICAL ACTUATOR

Loop_Day

Ver: 20161015



Every 00 day means continue acting

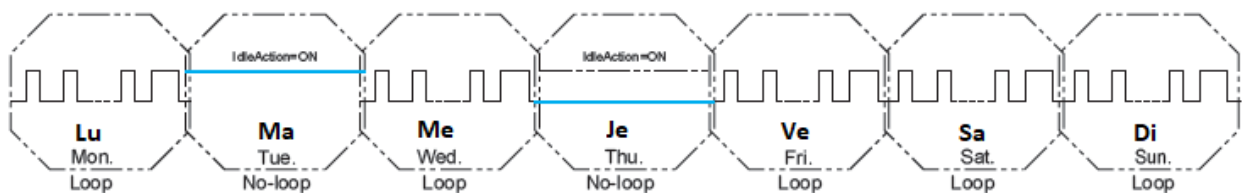
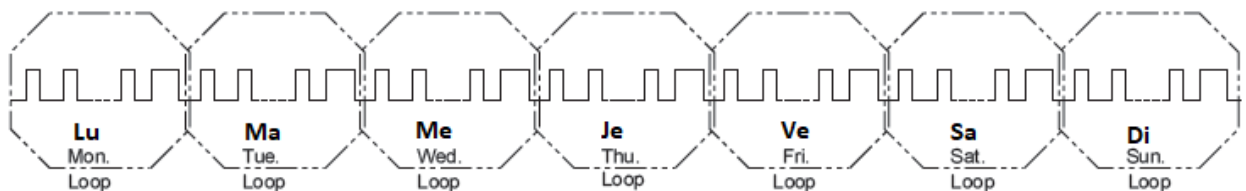


Every XX days : means timer do not loop in blue wireframe
IdleAction = ON



Every XX days : means timer do not loop in blue wireframe
IdleAction = OFF

Loop_Week :



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TCR-02-05D TIMER ELECTRICAL ACTUATOR

ADVANCED PARAMETER SETTING MENU

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

STEP	TITLE	FUNCTION AND VALUES
1	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
2	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%. Press key M to move to the next parameter.
		UserSET: DeadZone: X.X% UserSET: DeadZone: 9.9% This is maximum UserSET: DeadZone: 0.1% This is minimum
3	Hysteresis value	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. Press key M to move to the next parameter.
		UserSET: Hysteres: X.X% UserSET: Hysteres: 0.0% Minimum UserSET: Hysteres: 12.0% Maximum
4	Slight adjustment of the closed position	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.
		UserSET: CIPos_Adj: X.X° UserSET: CIPos_Adj: X.X° Offset-Open UserSET: CIPos_Adj: X.X° Offset-Close UserSET: CIPos_Adj: -X.X° This is minimum UserSET: CIPos_Adj: X.X° This is maximum

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TCR-02-05D TIMER ELECTRICAL ACTUATOR

5	Opening/closing time setting	It is possible to set the opening/closing time of the actuator to 5 to 100% of the rated speed. The value by default, is 100%. Press key K3 to increase the manoeuvre time or K2 to decrease it. Press key M to move to the next parameter.
		UserSET: CIPos_Adj: X.X° UserSET: CIPos_Adj: X.X° Offset-Open UserSET: CIPos_Adj: X.X° Offset-Close UserSET: CIPos_Adj: -X.X° This is minimum UserSET: CIPos_Adj: X.X° This is maximum
6	Setting the operating speed	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. N : it is not recommended to combine functions 5 and 6, the actuator could become overcharged.
		UserSET: Speed_PUL: XX% UserSET: Speed_PUL: 100% This is maximum UserSET: Speed_PUL: 5% This is minimum
7	Setting the angle of rotation	Parameter which is not used on the TCR-02D standard version
		UserSET: Speed_PWM: 100%
8	Response time	Used to set the response speed of the valve. The smaller the value, the less sensitive the rotation. The bigger the value, the more sensitive it is. Increase the value when the response speed of the valve is too low. Setting range: 1 x20x – Value by default 3x
		UserSET: StallTime: xx X UserSET: StallTime: 1 X UserSET: StallTime: 20X
9	Parameter setting for the 3 rd position	This function is accessible only on an actuator with a “B33” option For the TRC-D standard model, the parameter setting is not available.
		UserSET: B33Posi: 50%

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10	The charge of the battery	Parameter which is not used on the TCR-02D standard version
		UserSET: BatCharge: XX% UserSET: BatCharge: 60% Minimum UserSET: BatCharge: 99% Maximum
11	Choice of language	English or Mandarin
		UserSET: DisMode: English UserSET: DisMode: Chinese
12	Exiting the menu	Press K3 to exit the menu The system will switch back in the automatic checking mode.
		UserSET: ExitSET: Push K3

IN-BUILT BATTERY

The TCR-D has an in-built rechargeable Ni-MH (CR) battery which keeps the date and the time when the actuator is not powered. This battery is not used when the actuator is powered. The autonomy of the battery is about 3 months. Past this time, the date and the time have to be updates when switching on the 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-02B MODBUS ELECTRICAL ACTUATOR

FEATURES

The TCR-02B electric actuator is intended for motorising $\frac{1}{4}$ 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/AC.

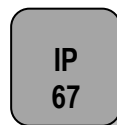
Dual frequency : 50Hz, 60Hz.

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
Manoeuvring time (s)	10
ISO 5211:	F03/F04/F05 - star 11



ELECTRICAL FEATURES

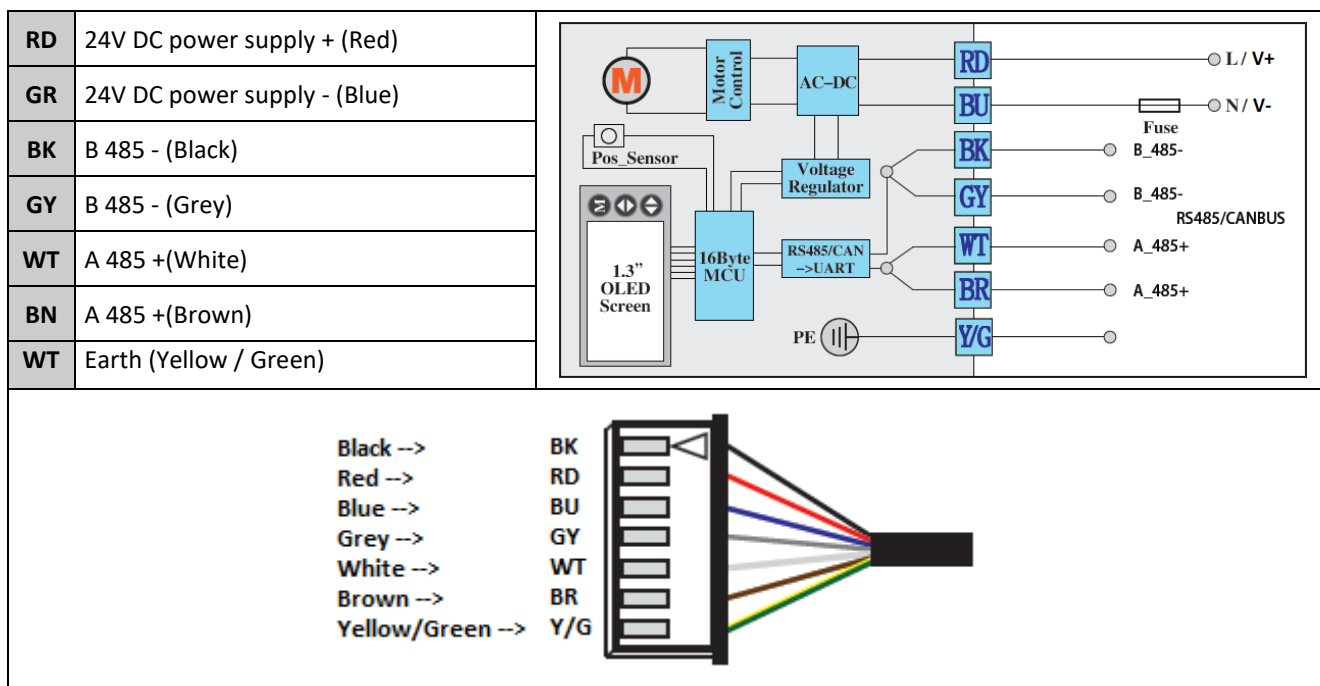
Voltage	24V DC/AC
Power (W)	15
Current (A)	2
Fuse protection (A)	5
Motor protection	Thermal switch
Limit switches	Without
Auxiliary switches	Without
Anti-condensation	In-built and self-controlled (2-3W)
Electrical connection	PE M10 + 1.5m cable

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

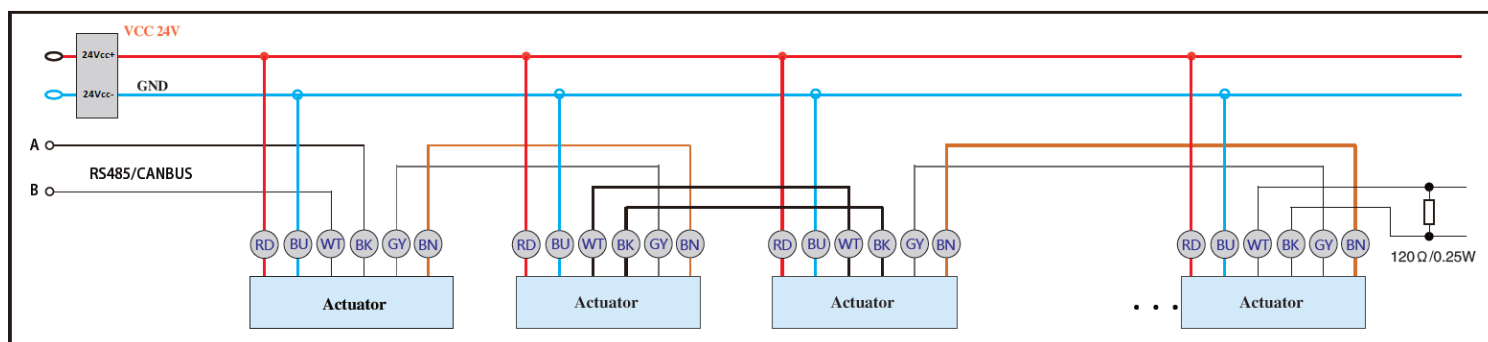
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TCR-02B MODBUS ELECTRICAL ACTUATOR

WIRING DIAGRAM



WIRING DIAGRAM AS RECOMMENDED FOR SEVERAL ACTUATORS IN PARALLEL



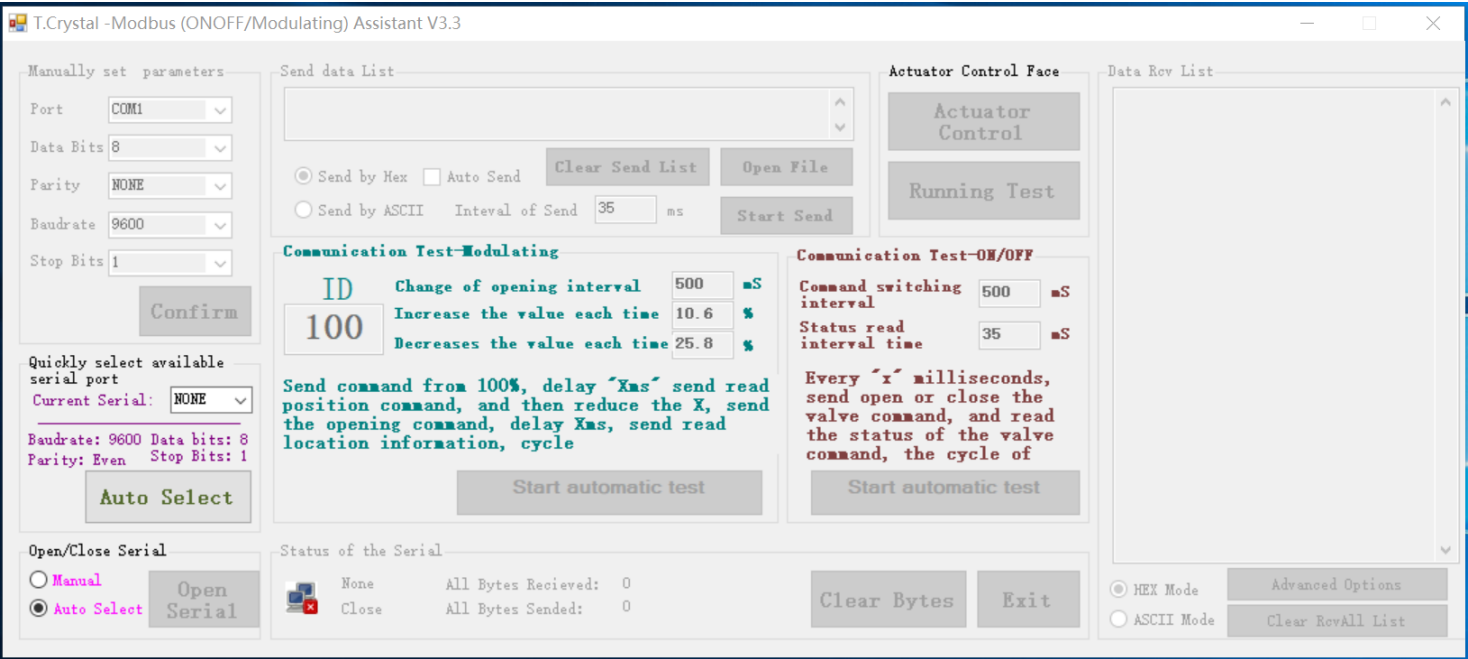
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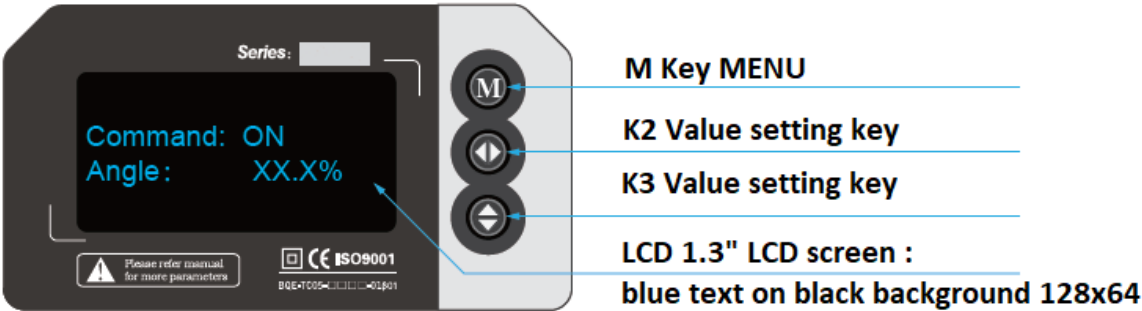
TCR-02B MODBUS ELECTRICAL ACTUATOR

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



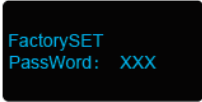
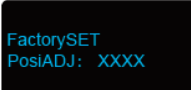
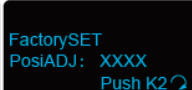
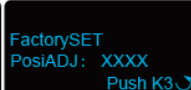
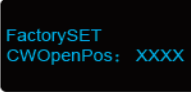
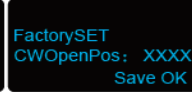
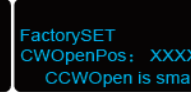
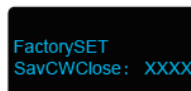
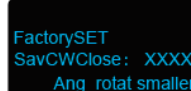
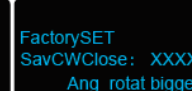
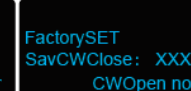
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FACTORY BY DEFAULT PARAMETER SETTING MENU

Access to factory by default parameter setting:

STEP	TITLE	FUNCTION AND VALUES
1	Enter the password	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”
		
2	Setting the “fully open” anti-clockwise position	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
		  
3	Save the “fully open” position	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”
		  
4	Adjusting the “fully closed” clockwise position and saving	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”
		    

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

LOCAL CONTROL MENU

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

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

ADVANCED PARAMETER SETTING MENU

Access to the following parameter settings:

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

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3	Changing the transmission speed	The communication speed will be immediately modified: Press "K2" to navigate through values Possible values: 12, 24, 48, 96, 192. Value by default: 96 (= 9600 bauds) Press "M" to move to the next parameter
		UserSET: BaudRate: 9600
4	Slight adjustment of the closed position	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.
		UserSET: CIPos_Adj: X.X° UserSET: CIPos_Adj: X.X° Offset-Open UserSET: CIPos_Adj: X.X° Offset-Close UserSET: CIPos_Adj: -X.X° This is minimum UserSET: CIPos_Adj: X.X° This is maximum
5	Manual adjustment of the speed of rotation	This function is used for slowing down the motor. Range: 20-100% - Value by default = 100%
		UserSET: Speed_PUL: XX% UserSET: Speed_PUL: 100% This is maximum UserSET: Speed_PUL: 5% This is minimum
6	Setting the operating speed	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. N: it is not recommended to combine functions 5 and 6, the actuator could become overcharged.
		UserSET: Speed_PWM: 100%
7	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-02B MODBUS 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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