TCR-C SMART ELECTRICAL ACTUATOR

FEATURES

The TCR-C smart electric actuators are intended for motorising ¼ 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.

IP 67 ISO 9001 CE

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	10	12	12	10	10
ISO 5211:	F03/F04/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	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

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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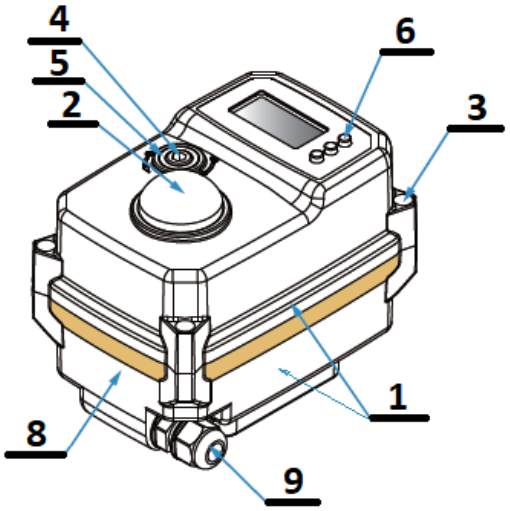
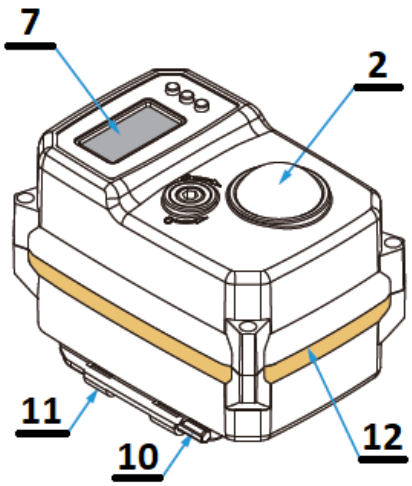
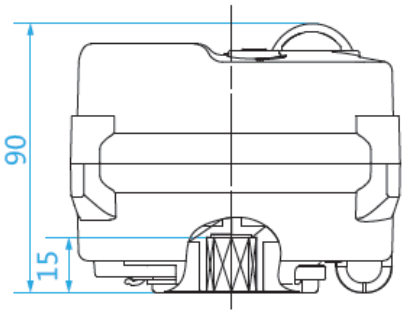
CONSTRUCTION (TCR-02C)

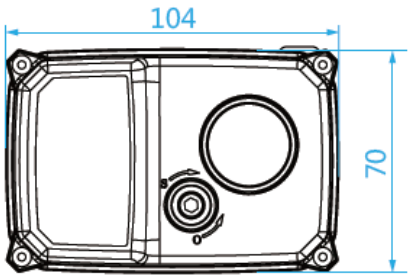
TCR-02C					
No.	**Name**	**Material**	**No.**	**Name**	**Material**
1	Casing + lid	Plastic (ABS)	**7**	1.3” LCD display	OLED
2	Position indicator	Polycarbonate plastic	**8**	Rating plate	PVC
3	Screw x 4	Aisi 304	**9**	Packing gland	Nylon
4	Backup control stem	Aisi 304	**10**	Hex key	Steel
5	Gasket	NBR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

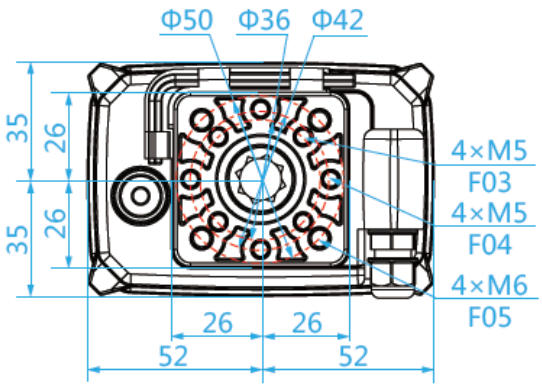




DIMENSIONS (mm)



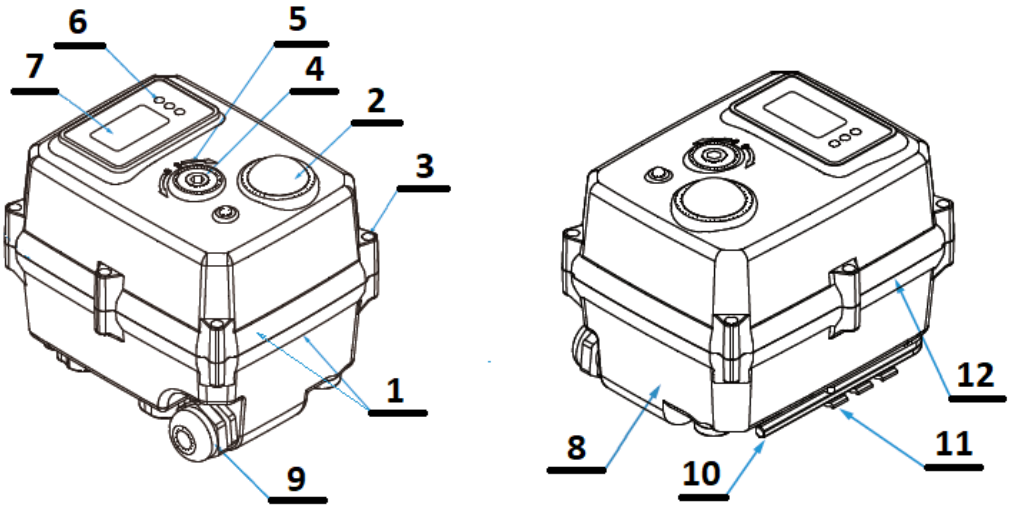




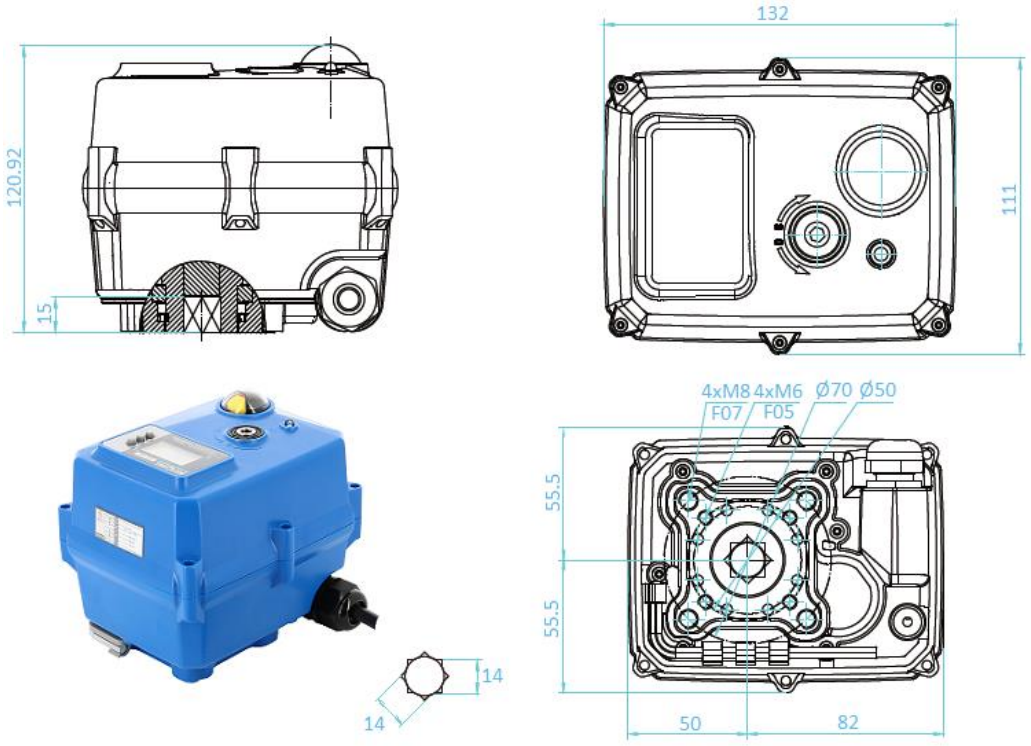
TCR-C SMART ELECTRICAL ACTUATOR

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					



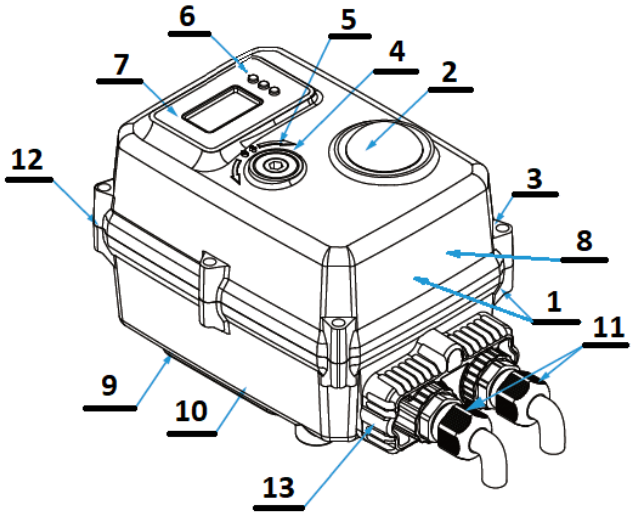
DIMENSIONS (mm)



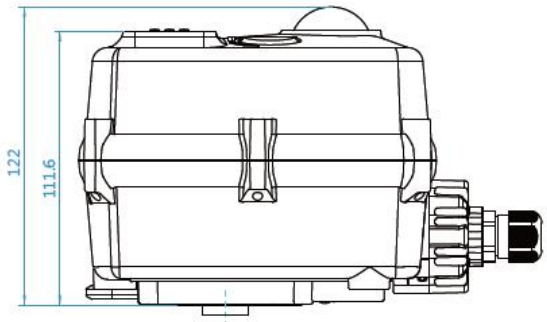
TCR-C SMART ELECTRICAL ACTUATOR

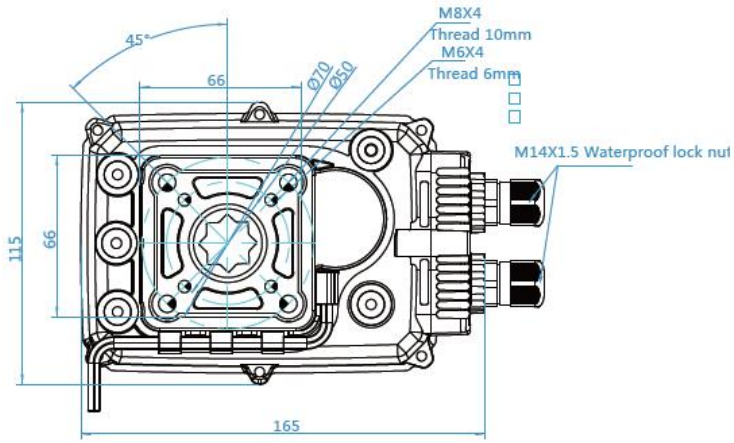
CONSTRUCTION (TCR-11C)

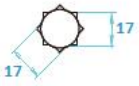
TCR-11C					
No.	**Name**	**Material**	**No.**	**Name**	**Material**
1	Casing + lid	Plastic (ABS)	**7**	1.3” LCD display	OLED
2	Position indicator	Polycarbonate plastic	**8**	Rating plate	PVC
3	Screw x 6	Aisi 304	**9**	Key support	Plastic (ABS)
4	Backup control stem	Aisi 304	**10**	Hex key	Steel
5	Gasket	NBR	**11**	X 2Packing gland	Nylon
6	Adjustment button	Rubber	**12**	Cover gasket	NBR
Weight (kg): 2.200			**13**	Cable gland unit	Plastic (ABS)



DIMENSIONS (mm)



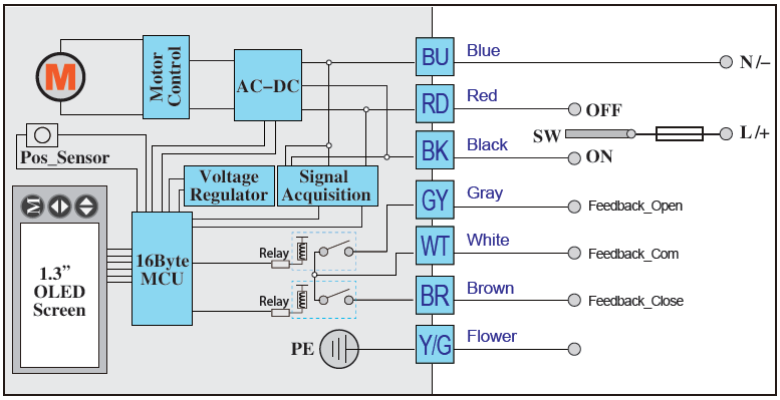


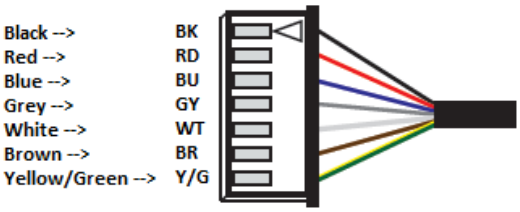


TCR-C SMART ELECTRICAL ACTUATOR

WIRING DIAGRAM (TCR 02C / TCR 05C)

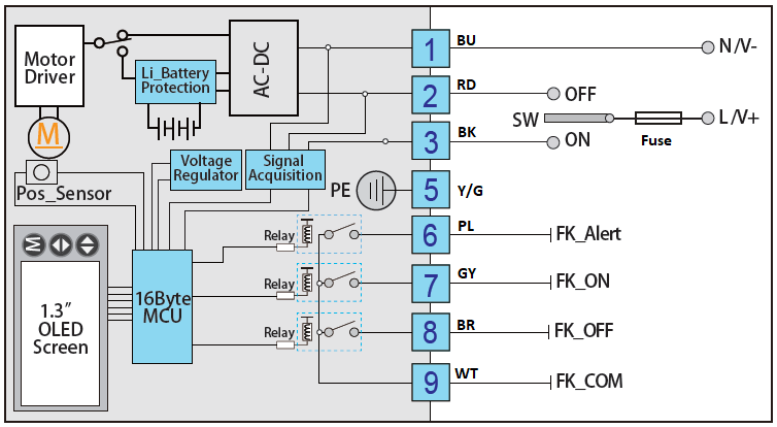
BU	Neutral (Blue)
RD	Closing control (Red)
BK	Opening control (Black)
GY	Opening return information (Grey) Dry switch: 230V AC max 50 mA 230V DC max 500 mA
WT	Information return to common (White) Dry switch: 230V AC max 50 mA 230V DC max 500 mA
BR	Closing return information (Brown) Dry switch: 230V AC max 50 mA 230V DC max 500 mA
Y/G	Earth (Yellow / Green)

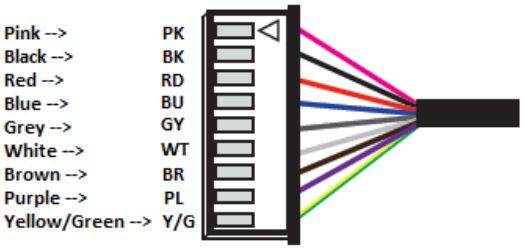




WIRING DIAGRAM (TCR 11C)

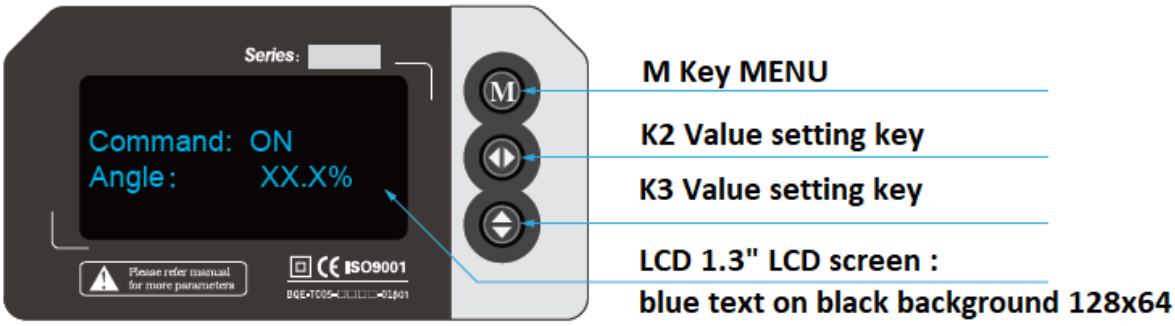
BU	Neutral (Blue)
RD	Closing control (Red)
BK	Opening control (Black)
Y/G	Earth (Yellow / Green)
PL	Alarm return information (Purple)
GY	Opening return information (Grey) Dry switch: 230V AC max 50 mA 230V DC max 500 mA
BR	Closing return information (Brown) Dry switch: 230V AC max 50 mA 230V DC max 500 mA
WT	Information return to common (White) Dry switch: 230V AC max 50 mA 230V DC max 500 mA





TCR-C SMART ELECTRICAL ACTUATOR

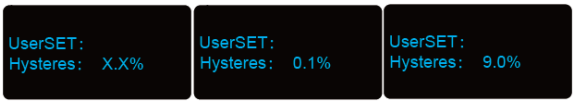
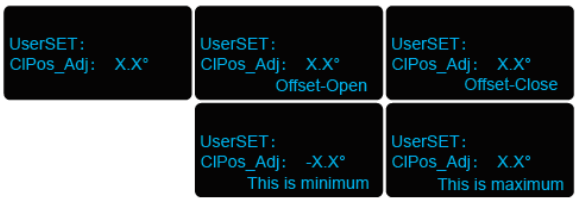
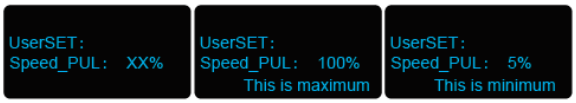
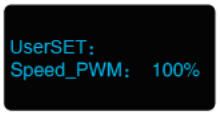
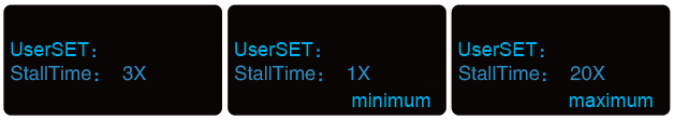
DESCRIPTION OF THE 1.3'' LCD SCREEN

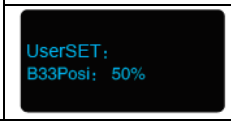
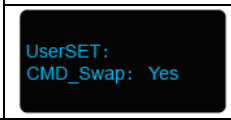


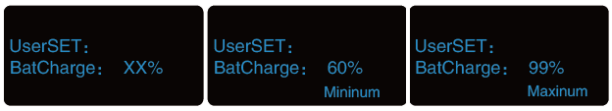
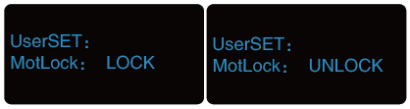
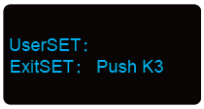
ACTUATOR SETTINGS

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"
		
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%
		
4	Hysteresis adjustment	This parameter setting is a prerequisite for the next. YES = adjustment is possible NO = no adjustment is possible (value by default)
		

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. 
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. 
7	Manual adjustment of the speed of rotation	This function is used for slowing down the motor. **Range**: 20-100% - Value by default = 100% 
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. **N** : it is not recommended to combine functions 5 and 6, the actuator could become overcharged. 
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 

10	Parameter setting for the 3rd position	This function is accessible only on an actuator with a “B33” option (see last §). For the TRC-C standard model, the parameter setting is not available. 
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” 
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 
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 
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. 

15	Power supply position by default	This parameter setting is not available on the standard version **Parameter setting by default** : KEEP 
16	Super-capacitor charge	This parameter is not available on the standard version **Value by default**: 95% 
17	Actuator locking after the intervention of the super-capacitor	This parameter is not available on the standard version **Value by default**: UNLOCK 
18	Choice of language	English or Mandarin 
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 
20	Exiting the menu	Press K3 to exit the menu The system will switch back in the automatic checking mode. 

TCR-C SMART ELECTRICAL ACTUATOR

THE OPTION 3RD POSITION "B33"

The "B33" option 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

BU	Neutral (Blue)
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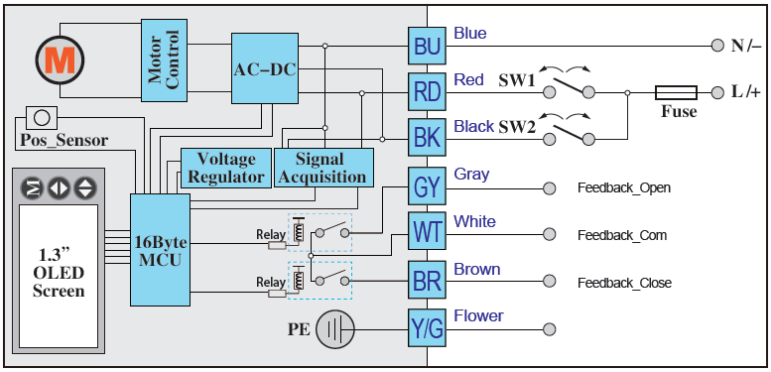
BK	Opening control (Black)
Y/G	Earth (Yellow / Green)
PL	Alarm return information (Purple)
GY	Opening return information (Grey) Dry switch: 230V AC max 50 mA 230V DC max 500 mA
BR	Closing return information (Brown) Dry switch: 230V AC max 50 mA 230V DC max 500 mA
WT	Information return to common (White)



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.