



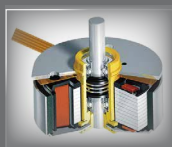
Quality

Appearance

Service



Delicate appearance
extremely long life span



High performance
brushless motor



Precision machining
technology



Industrial grade component



Precise transmission

Electric Actuator

Ex db II B T6 Gb; Ex tb IIIC T80 °C Db

TCN 02EX Explosion-proof Actuator Selection Guide

Made in china Global service



ISO9001

CONTENTS

- [01] Simple On/Off Actuator Selection Guide
 - Standard Series 1
 - Highspeed Series / Failsafe Series 2
- [02] Intelligent On/Off Actuator Selection Guide
 - Standard Series 3
 - High speed Series 4
 - Failsafe Series 5
- [03] Intelligent Modulating Actuator Selection Guide
 - Standard Series 6
 - High speed Series 7
 - Failsafe Series 8
- [04] Intelligent Bus Actuator Selection Guide
 - Standard Series 9
 - High speed Series 10
 - Failsafe series 11
- [05] Intelligent Timer Actuator Selection Guide
 - Standard Series 12
 - High speed Series 13
 - Failsafe Series 14
- Appendix
 - 01:Actuator Appearance Dimension 15
 - 02:Actuator Assembly Diagram 16
 - 03:Actuator Wiring Diagrams
 - Simple on/off type 17
 - Intelligent on/off type 18
 - Intelligent modulating type 21
 - Intelligent bus type 22
 - Intelligent timer 23
 - 05:Working Enviroment and Safety Precautions 24
 - 06:Certificate and Assembly Photos 25

Product Overview

- Matched valves：2-way,3-way ball valve and butterfly valve
- Rated voltage：DC12V,DC24V,AC24V/110V/230V,AC/DC95V-265V,AC/DC24V
- Control feedback mode：B2S、B3S、B3P、B3R、BD3S
- High performance brushless motor,overheat/overload protection
- It can be used up to 20,000 times^{*1}
- Explosion-proof level：Ex db II B T6 Gb;Ex tb IIIC T80°CDb
- ✗ For AC series,it is forbidden to use two or more actuators parallelly



Purchase Guide TCN-02NEX

Voltage	Torque	Power	Wiring	Feedback ^{*2}	Time	Speed regulation	Rotation angle	Enclosure	Manual override	Position indicator	Housing material	Output shaft	
DC12V	15Nm	15W	B3/ BD3	S Type P Type R Type C Type	15S	None	90°/180° ≤330°	IP68	Hexagon spanner	Mechanical indicator	Die casting aluminium	Female octagon	
DC24V	20Nm				10S								
AC24V					15S								
AC110V													
AC230V													
AC/DC 24V													10S
AC/DC 95-265V													

Notice

^{*1}.Test condition:Test under rated load, 25℃ working temperature and 50% humidity,one test circle(twice the time of running cycle),which will be influenced by different load and working environment.

^{*2}. S type is passive contact feedback,P type is active feedback,while R type is potentiometer feedback,SR type needs to be customized.

Product Overview [Highspeed Series]

- ◎ Matched valves: 2-way,3-way ball valve and butterfly valve
- ◎ Rated voltage: DC24V,AC/DC95V-265V,AC/DC24V
- ◎ Control feedback mode: B2S、B3S、B3P、B3R、BD3S
- ◎ High performance brushless motor,overheat/overload protection
- ◎ It can be used up to 20,000 times^{*1}
- ◎ Explosion-proof level: Ex db II B T6 Gb;Ex tb IIIC T80°CDB
- ※ For AC series,it is forbidden to use two or more actuators parallelly



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Voltage	Torque	Power	Wiring	Feedback ^{*2}	Time	Speed regulation	Rotation angle	Enclosure	Manual override	Position indicator	Housing material	Output shaft
DC24V	20Nm	85W	B2/B3 /BD3	S Type	1S	None	90°/180° ≤330°	IP68	Hexagon spanner	Mechanical indicator	Die casting aluminium	Female octagon
AC/DC 24V	15Nm	25W			6S							
AC/DC 95-265V												

Product Overview [Failsafe Series]

- ◎ Matched valves: 2-way,3-way ball valve and butterfly valve
- ◎ Rated voltage: AC/DC95V-265V,AC/DC24V
- ◎ KT32S: Reset when power off
- ◎ High performance brushless motor,overheat/overload protection
- ◎ It can be used up to 20,000 times^{*1}
- ◎ Explosion-proof level: Ex db II B T6 Gb;Ex tb IIIC T80°CDB
- ※ For AC series,it is forbidden to use two or more actuators parallelly



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Voltage	Torque	Power	Wiring	Feedback ^{*2}	Time	Speed regulation	Rotation angle	Enclosure	Manual override	Position indicator	Housing material	Output shaft
AC/DC24V	20Nm	36W	KT32	S Type	10S	None	$\frac{90^{\circ}/180^{\circ}}{\leq 330^{\circ}}$	IP68	Hexagon spanner	Mechanical indicator	Die casting aluminium	Female octagon
AC/DC 95-265V					15S							
DC12V					15S							

Notice ^{*1}.Test condition:Test under rated load, 25°C working temperature and 50% humidity,one test circle(twice the time of running cycle),which will be influenced by different load and working environment.

^{*2}. S type is passive contact feedback,P type is active feedback,while R type is potentiometer feedback,SR type needs to be customized.

Product Overview

- ⊙ Matched valves: 2-way,3-way ball valve and butterfly valve
- ⊙ Rated voltage: AC/DC95V-265V,AC/DC24V
- ⊙ Control feedback mode: BD3J,B3J,B33J,B43J(feedback synchronous with arrival)
- ⊙ Alarm output: A(Relay contact feedback)
- ⊙ Achievable mode: 2 way/3 way^{*1}
- ⊙ High performance brushless motor,overload or overheated protection of internal motor
- ⊙ It can be used up to 20,000 times^{*2}
- ⊙ Explosion-proof level: Ex db II B T6 Gb;Ex tb III C T80 C Db
- ⊙ Two or more actuators can be used parallelly



Product Features

- △ 1.3" OLED screen,it features no view restriction, high brightness,energy saving and environment protection,in real time to show valve opening angle and external control command.Enter sleeping state automatically after about 5 minutes,it could display location state and its control command during sleeping time.
- △ Original valve adjustment mode:cover-opening free and interactive
step1:Press the button to control valve to the position of "counterclockwise full open", then save it .
step2:Press the button to control valve to the position of "clockwise full close",then save it to finish the valve adjustment.
Thoroughly eliminate the complex and inconvenient factors caused by mechanical positioning.
- △ 16 bit high performance MCU,12 bit high precision AD conversion chip are applied,built-in unique algorithm,thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis,espacially suitable for 3-way valve adjustment.
- △ Non-contact positioning,control unit modular design and potting processing are applied to guarentee components work reliable and greatly improve product service life;Interface uses standard connectors,convenient for installment,adjustment and replacement.
- △ Menu can report failure in real time(including stuck situation or other fails caused by actuator does not put valve on/off position in place)and output failure warning signal.
- △ Menu operation can realize exchange of valve control command.
- △ Menu operation can switch freely between remote control and local setting,press the button to realize opening/closing.
- △ Menu operation can set valve off position deviate to "On" or "Off" direction,to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

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Voltage	Torque	Power	Wiring	Feedback ^{*3}	Fault signals ^{*4}	Time	Speed regulation ^{*5}	Rotation angle	Enclosure	Manual override ^{*6}	Position indicator	Housing material	Output shaft
AC/DC 24V	20Nm	15W	B3/ BD3 /B33/B44	J Type	A Type	10s	PUL/PWM	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC 95-265V													

Notice ^{*1}.The third position can be set by menu.

^{*2}.Test condition:Test under rated load, 25°C working temperature and 50% humidity,one test circle(twice the time of running cycle),which will be influenced by different load and working environment.

^{*3}.J type is relay feedback.

^{*4}.Fault signals are selectable function,output by relay,factory defaults settings do not take this function.

^{*5}.PWM mode belongs to continuous stepless speed regulation,operates steadily but has a slight impact on actuator torque output. Adjusting range is 30%-100%. PUL mode belongs to intermittent start-stop speed regulation , no loss of actuator output torque. Adjusting range is 5%-100%. Please refer to manual for more parameters.(Factory default maximum value is 100%).

^{*6}.Use hexagon spanner when power off,or use button when power on.

Product Overview

- ⊙ Matched valves: 2-way,3-way ball valve and butterfly valve
- ⊙ Rated voltage: AC/DC95V-265V,AC/DC24V
- ⊙ Control feedback mode: BD3J,B3J,B33J,B43J(feedback synchronous with arrival)
- ⊙ Alarm output: A(Relay contact feedback)
- ⊙ Achievable mode: 2 way/3 way^{*1}
- ⊙ High performance brushless motor,overload or overheated protection of internal motor
- ⊙ It can be used up to 20,000 times^{*2}
- ⊙ Explosion-proof level: Ex db II B T6 Gb;Ex tb III C T80 °C Db
- ⊙ Two or more actuators can be used parallelly



Product Features

- △ 1.3" OLED screen,it features no view restriction, high brightness,energy saving and environment protection,in real time to show valve opening angle and external control command.Enter sleeping state automatically after about 5 minutes,it could display location state and its control command during sleeping time.
- △ Original valve adjustment mode:cover-opening free and interactive
step1: Press the button to control valve to the position of "counterclockwise full open", then save it .
step2: Press the button to control valve to the position of "clockwise full close", then save it to finish the valve adjustment.
Thoroughly eliminate the complex and inconvenient factors caused by mechanical positioning.
- △ 16 bit high performance MCU,12 bit high precision AD conversion chip are applied,built-in unique algorithm,thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis,espacially suitable for 3-way valve adjustment.
- △ Non-contact positioning,control unit modular design and potting processing are applied to guarantee components work reliable and greatly improve product service life;Interface uses standard connectors,convenient for installment,adjustment and replacement.
- △ Menu can report failure in real time(including stuck situation or other fails caused by actuator does not put valve on/off position in place)and output failure warning signal.
- △ Menu operation can realize exchange of valve control command.
- △ Menu operation can switch freely between remote control and local setting,press the button to realize opening/closing .
- △ Menu operation can set valve off position deviate to "On" or "Off" direction,to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time .
- △ Menu operation can restore factory default setting.

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Voltage	Torque	Power	Wiring	Feedback ^{*3}	Fault signals ^{*4}	Time	Speed regulation ^{*5}	Rotation angle	Enclosure	Manual override ^{*6}	Position indicator	Housing material	Output shaft
DC24V	20Nm	85W	B3/ BD3 /B33/B44	J Type	A Type	1s	PUL/PWM	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC24V	15Nm	25W				6s							
AC/DC 95-265V													

Notice ^{*1}.The third position can be set by menu.

^{*2}.Test condition:Test under rated load, 25°C working temperature and 50% humidity,one test circle(twice the time of running cycle),which will be influenced by different load and working environment.

^{*3}. J type is relay feedback.

^{*4}.Fault signals are selectable function,output by relay,factory defaults settings do not take this function.

^{*5}.PWM mode belongs to continuous stepless speed regulation,operates steadily but has a slight impact on actuator torque output. Adjusting range is 30%-100%.
PUL mode belongs to intermittent start-stop speed regulation _____, no loss of actuator output torque. Adjusting range is 5%-100%.
Please refer to manual for more parameters.(Factory default maximum value is 100%).

^{*6}.Use hexagon spanner when power off,or use button when power on.

Product Overview

- ⊙ Matched valves: 2-way,3-way ball valve and butterfly valve
- ⊙ Rated voltage: AC/DC95V-265V,AC/DC24V
- ⊙ Control feedback mode:KT32J
- ⊙ Alarm output: A(Relay contact feedback)
- ⊙ Achievable mode: 2 way/3 way^{*1}
- ⊙ High performance brushless motor,overload or overheated protection of internal motor
- ⊙ It can be used up to 20,000 times^{*2}
- ⊙ Explosion-proof level: Ex db II B T6 Gb;Ex tb III C T80 C Db
- ⊙ Two or more actuators can be used parallelly



Product Features

- △ 1.3" OLED screen,it features no view restriction, high brightness,energy saving and environment protection,in real time to show valve opening angle and external control command.Enter sleeping state automatically after about 5 minutes,it could display location state and its control command during sleeping time.
- △ Original valve adjustment mode:cover-opening free and interactive
step1:Press the button to control valve to the position of "counterclockwise full open", then save it .
step2:Press the button to control valve to the position of "clockwise full close",then save it to finish the valve adjustment.
Thoroughly eliminate the complex and inconvenient factors caused by mechanical positioning.
- △ 16 bit high performance MCU,12 bit high precision AD conversion chip are applied,built-in unique algorithm,thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis,espacially suitable for 3-way valve adjustment.
- △ Non-contact positioning,control unit modular design and potting processing are applied to guarantee components work reliable and greatly improve product service life;Interface uses standard connectors,convenient for installment,adjustment and replacement.
- △ Menu can report failure in real time(including stuck situation or other fails caused by actuator does not put valve on/off position in place)and output failure warning signal.
- △ Menu operation can realize exchange of valve control command.
- △ Menu operation can switch freely between remote control and local setting,press the button to realize opening/closing.
- △ Menu operation can set valve off position deviate to "On" or "Off" direction,to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

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Voltage	Torque	Power	Wiring	Feedback ^{*3}	Fault signals ^{*4}	Time	Speed regulation ^{*5}	Rotation angle	Enclosure	Manual override ^{*6}	Position indicator	Housing material	Output shaft
AC/DC 24V	20Nm	36W	B3/ BD3 /B33/B44	J Type	A Type	10s	PUL/PWM	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC 95-265V													

Notice ^{*1}.The third position can be set by menu.

^{*2}.Test condition:Test under rated load, 25°C working temperature and 50% humidity,one test circle(twice the time of running cycle),which will be influenced by different load and working environment.

^{*3}.J type is relay feedback.

^{*4}.Fault signals are selectable function,output by relay,factory defaults settings do not take this function.

^{*5}.PWM mode belongs to continuous stepless speed regulation,operates steadily but has a slight impact on actuator torque output. Adjusting range is 30%-100%. PUL mode belongs to intermittent start-stop speed regulation , no loss of actuator output torque. Adjusting range is 5%-100%. Please refer to manual for more parameters.(Factory default maximum value is 100%).

^{*6}.Use hexagon spanner when power off,or use button when power on.

Product Overview

- ◎ Matched valves: 2-way,3-way ball valve and butterfly valve
- ◎ Rated voltage: AC/DC95V-265V,AC/DC24V
- ◎ Control signal: 4-20mA,0-20mA,0-5V,1-5V,0-10V,2-10V
- ◎ Position feedback: 4-20mA,0-20mA,0-5V,1-5V,0-10V,2-10V
- ◎ Position accuracy: $\pm 1\%$
- ◎ Alarm output: A(Relay contact feedback)
- ◎ High performance brushless motor,overload or overheated protection of internal motor
- ◎ It can be used up to 20,000 times^{*1}
- ◎ Explosion-proof level: Ex db II B T6 Gb;Ex tb IIIC T80°C Db



Product Features

- △ 1.3" OLED screen,it features no view restriction, high brightness,energy saving and environment protection,in real time to show valve opening angle and external control command.Enter sleeping state automatically after about 5 minutes,it could display location state and its control command during sleeping time.
- △ Original valve adjustment mode:cover-opening free and interactive
step1:Press the button to control valve to the position of "counterclockwise full open", then save it .
step2:Press the button to control valve to the position of "clockwise full close",then save it to finish the valve adjustment.
Thoroughly eliminate the complex and inconvenient factors caused by mechanical positioning.
- △ 16 bit high performance MCU,12 bit high precision AD conversion chip are applied,built-in unique algorithm,thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis,espacially suitable for 3-way valve adjustment.
- △ ※TCN 02EX total series and other DC24V series:built-in motor control module,variable frequency speed control of motor can realize accurate positioning.
- △ Non-contact positioning,control unit modular design and potting processing are applied to guarentee components work reliable and greatly improve product service life;Interface uses standard connectors,convenient for installment,adjustment and replacement.
- △ Menu can report failure in real time(including stuck situation or other fails caused by actuator does not put valve on/off position in place)and output failure warning signal.
- △ Menu operation can realize exchange of valve control command.
- △ Menu operation can switch freely between remote control and local setting,press the button to realize opening/closing .
- △ Menu operation can set valve off position deviate to "On" or "Off" direction,to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

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Voltage	Torque	Power	Time	Wiring	Feedback	Fault signals ^{*2}	Rotation angle	Enclosure	Manual override ^{*3}	Position indicator	Housing material	Output shaft
AC/DC24V	20Nm	15W	10s	4-20mA	4-20mA	A Type	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC 95-265V				0-20mA	0-20mA							
DC12V	15Nm		15s	0-5V 1-5V 0-10V 2-10V	0-5V 1-5V 0-10V 2-10V							

Notice ^{*1}.Test condition:Test under rated load, 25°C working temperature and 50% humidity,one test circle(twice the time of running cycle),which will be influenced by different load and working environment.

^{*2}.Fault signals are selectable function,output by relay,factory defaults settings do not take this function.

^{*3}.Use hexagon spanner when power off,or use button when power on.

Product Overview

- ◎ Matched valves: 2-way,3-way ball valve and butterfly valve
- ◎ Rated voltage: AC/DC95V-265V,AC/DC24V
- ◎ Control signal: 4-20mA,0-20mA,0-5V,1-5V,0-10V,2-10V
- ◎ Position feedback: 4-20mA,0-20mA,0-5V,1-5V,0-10V,2-10V
- ◎ Position accuracy: $\pm 1\%$
- ◎ Alarm output: A(Relay contact feedback)
- ◎ High performance brushless motor, overload or overheated protection of internal motor
- ◎ It can be used up to 20,000 times^{*1}
- ◎ Explosion-proof level: Ex db II B T6 Gb;Ex tb IIIC T80°C Db



Product Features

- △ 1.3" OLED screen, it features no view restriction, high brightness, energy saving and environment protection, in real time to show valve opening angle and external control command. Enter sleeping state automatically after about 5 minutes, it could display location state and its control command during sleeping time.
- △ Original valve adjustment mode: cover-opening free and interactive
 step1: Press the button to control valve to the position of "counterclockwise full open", then save it.
 step2: Press the button to control valve to the position of "clockwise full close", then save it to finish the valve adjustment.
 Thoroughly eliminate the complex and inconvenient factors caused by mechanical positioning.
- △ 16 bit high performance MCU, 12 bit high precision AD conversion chip are applied, built-in unique algorithm, thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis, especially suitable for 3-way valve adjustment.
- △ ※TCN 02EX total series and other DC24V series: built-in motor control module, variable frequency speed control of motor can realize accurate positioning.
- △ Non-contact positioning, control unit modular design and potting processing are applied to guarantee components work reliable and greatly improve product service life; Interface uses standard connectors, convenient for installment, adjustment and replacement.
- △ Menu can report failure in real time (including stuck situation or other fails caused by actuator does not put valve on/off position in place) and output failure warning signal.
- △ Menu operation can realize exchange of valve control command.
- △ Menu operation can switch freely between remote control and local setting, press the button to realize opening/closing.
- △ Menu operation can set valve off position deviate to "On" or "Off" direction, to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

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Voltage	Torque	Power	Time	Wiring	Feedback	Fault signals ^{*2}	Rotation angle	Enclosure	Manual override ^{*3}	Position indicator	Housing material	Output shaft
DC24V	20Nm	85W	1s	4-20mA 0-20mA 0-5V 1-5V 0-10V 2-10V	4-20mA 0-20mA 0-5V 1-5V 0-10V 2-10V	A Type	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC95-265V	15Nm	25W	6s									
AC/DC24V												

Notice ^{*1}. Test condition: Test under rated load, 25°C working temperature and 50% humidity, one test circle (twice the time of running cycle), which will be influenced by different load and working environment.

^{*2}. Fault signals are selectable function, output by relay, factory defaults settings do not take this function.

^{*3}. Use hexagon spanner when power off, or use button when power on.

Product Overview

- ◎ Matched valves: 2-way,3-way ball valve and butterfly valve
- ◎ Rated voltage: AC/DC95V-265V,AC/DC24V
- ◎ Control signal: 4-20mA,0-20mA,0-5V,1-5V,0-10V,2-10V
- ◎ Position feedback: 4-20mA,0-20mA,0-5V,1-5V,0-10V,2-10V
- ◎ Position accuracy: $\pm 1\%$
- ◎ Alarm output: A(Relay contact feedback)
- ◎ High performance brushless motor,overload or overheated protection of internal motor
- ◎ It can be used up to 20,000 times^{*1}
- ◎ Explosion-proof level: Ex db II B T6 Gb;Ex tb IIIC T80°CDB



Product Features

- △ 1.3" OLED screen,it features no view restriction, high brightness,energy saving and environment protection,in real time to show valve opening angle and external control command.Enter sleeping state automatically after about 5 minutes,it could display location state and its control command during sleeping time.
- △ Original valve adjustment mode:cover-opening free and interactive
step1:Press the button to control valve to the position of "counterclockwise full open", then save it .
step2:Press the button to control valve to the position of "clockwise full close",then save it to finish the valve adjustment.
Thoroughly eliminate the complex and inconvenient factors caused by mechanical positioning.
- △ 16 bit high performance MCU,12 bit high precision AD conversion chip are applied,built-in unique algorithm,thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis,espacially suitable for 3-way valve adjustment.
- △ ✖TCN 02EX total series and other DC24V series:built-in motor control module,variable frequency speed control of motor can realize accurate positioning.
- △ Non-contact positioning,control unit modular design and potting processing are applied to guarantee components work reliable and greatly improve product service life;Interface uses standard connectors,convenient for installment,adjustment and replacement.
- △ Menu can report failure in real time(including stuck situation or other fails caused by actuator does not put valve on/off position in place)and output failure warning signal.
- △ Menu operation can realize exchange of valve control command.
- △ Menu operation can switch freely between remote control and local setting,press the button to realize opening/closing.
- △ Menu operation can set valve off position deviate to "On" or "Off" direction,to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

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Voltage	Torque	Power	Time	Wiring	Feedback	Fault signals ^{*2}	Rotation angle	Enclosure	Manual override ^{*3}	Position indicator	Housing material	Output shaft
AC/DC24V	20Nm	36W	10s	4-20mA	4-20mA	A Type	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC 95-265V				0-20mA 0-5V 1-5V 0-10V 2-10V	0-20mA 0-5V 1-5V 0-10V 2-10V							

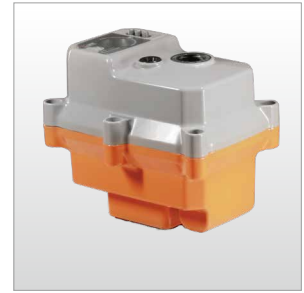
Notice ^{*1}.Test condition:Test under rated load, 25°C working temperature and 50% humidity,one test circle(twice the time of running cycle),which will be influenced by different load and working environment.

^{*2}.Fault signals are selectable function,output by relay,factory defaults settings do not take this function.

^{*3}.Use hexagon spanner when power off,or use button when power on.

Product Overview

- ⊙ Matched valves: 2-way, 3-way ball valve and butterfly valve
- ⊙ Rated voltage: AC/DC95V-265V, AC/DC24V
- ⊙ Control feedback mode: RS485(Modbus), CANBus 2.0B/Mbus (customized)
- ⊙ Achievable mode: 2 way/3 way *1
- ⊙ High performance brushless motor, overload or overheated protection of internal motor
- ⊙ It can be used up to 20,000 times *2
- ⊙ Explosion-proof level: Ex db II B T6 Gb; Ex tb IIIC T80°C Db
- ⊙ Two or more actuators can be used parallelly
- ※ RS485 could parallel maximum 32/64/256 actuators, while CANBus parallels 110 actuators



Product Features

- △ 1.3" OLED screen, it features no view restriction, high brightness, energy saving and environment protection, in real time to show [Baud rate](#), [ID address](#), valve opening angle and external control command. Enter sleeping state automatically after about 5 minutes, while it could display location state and its control command at sleeping time.
- △ Original valve adjustment mode: cover-opening free and interactive
 - step1: Press the button to control valve to the position of "[counterclockwise full open](#)", then save it.
 - step2: Press the button to control valve to the position of "[clockwise full close](#)", then save it to finish the valve adjustment.
 Thoroughly eliminate the complex and inconvenient factors caused by mechanical positioning.
- △ 16 bit high performance MCU, 12 bit high precision AD conversion are applied, built-in unique algorithm, thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis, especially suitable for 3-way valve adjustment.
- △ Non-contact positioning is applied, control unit modular design and potting processing to guarantee components work reliable. vastly improve product service life; Interface uses standard connectors, convenient for installment, adjustment and replacement.
- △ Menu can report failure in real time (including stuck situation or other reasons which lead actuator fail to put valve on/off position) and [output failure warning signal](#).
- △ Menu operation can change Bus ID address and Baud rate automatically.
- △ Menu operation can switch freely between remote control and local setting, press the button to realize opening/closing.
- △ Menu operation can set valve off position deviate to on or off direction, to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

Purchase Guide TCN-02BEX

Voltage	Torque	Power	Time	Communication	Rotation angle	Enclosure	Manual override *3	Position indicator	Housing material	Output shaft
AC/DC24V	20Nm	15W	10s	RS485/CANBUS2.0B Compatible Modbus	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC95-265V										

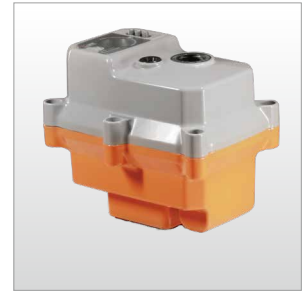
Notice *1. The third position can be set by menu.

*2. Test condition: Test under rated load, 25°C working temperature and 50% humidity, one test circle (twice the time of running cycle), which will be influenced by different load and working environment.

*3. Use hexagon spanner when power off, or use button when power on.

Product Overview

- ⊙ Matched valves: 2-way, 3-way ball valve and butterfly valve
- ⊙ Rated voltage: AC/DC95V-265V, AC/DC24V
- ⊙ Control feedback mode: RS485(Modbus), CANBus 2.0B/Mbus (customized)
- ⊙ Achievable mode: 2 way/3 way *1
- ⊙ High performance brushless motor, overload or overheated protection of internal motor
- ⊙ It can be used up to 20,000 times *2
- ⊙ Explosion-proof level: Ex db II B T6 Gb; Ex tb IIIC T80°C Db
- ⊙ Two or more actuators can be used parallelly
- ※ RS485 could parallel maximum 32/64/256 actuators, while CANBus parallels 110 actuators



Product Features

- △ 1.3" OLED screen, it features no view restriction, high brightness, energy saving and environment protection, in real time to show **Baud rate**, **ID address**, valve opening angle and external control command. Enter sleeping state automatically after about 5 minutes, while it could display location state and its control command at sleeping time.
- △ Original valve adjustment mode: cover-opening free and interactive `
 - step1: Press the button to control valve to the position of "**counterclockwise full open**", then save it.
 - step2: Press the button to control valve to the position of "**clockwise full close**", then save it to finish the valve adjustment.
- △ 16 bit high performance MCU, 12 bit high precision AD conversion are applied, built-in unique algorithm, thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis, especially suitable for 3-way valve adjustment.
- △ Non-contact positioning is applied, control unit modular design and potting processing to guarantee components work reliable. vastly improve product service life; Interface uses standard connectors, convenient for installment, adjustment and replacement.
- △ Menu can report failure in real time (including stuck situation or other reasons which lead actuator fail to put valve on/off position) and **output failure warning signal**.
- △ Menu operation can change Bus ID address and Baud rate automatically.
- △ Menu operation can switch freely between remote control and local setting, press the button to realize opening/closing.
- △ Menu operation can set valve off position deviate to on or off direction, to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

Purchase Guide TCN-02BEXH

Voltage	Torque	Power	Time	Communication	Rotation angle	Enclosure	Manual override ^{*3}	Position indicator	Housing material	Output shaft
DC24V	20Nm	85W	1s	RS485/CANBUS2.0B Compatible Modbus	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC24V	15Nm	25W	6s							
AC/DC95-265V										

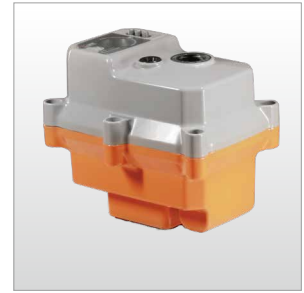
Notice *1. The third position can be set by menu.

*2. Test condition: Test under rated load, 25°C working temperature and 50% humidity, one test circle (twice the time of running cycle), which will be influenced by different load and working environment.

*3. Use hexagon spanner when power off, or use button when power on.

Product overview

- ⊙ Matched valves: 2-way, 3-way ball valve and butterfly valve
- ⊙ Rated voltage: AC/DC95V-265V, AC/DC24V
- ⊙ Control feedback mode: RS485(Modbus), CANBus 2.0B/Mbus (customized)
- ⊙ Achievable mode: 2 way/3 way *1
- ⊙ High performance brushless motor, overload or overheated protection of internal motor
- ⊙ It can be used up to 20,000 times *2
- ⊙ Explosion-proof level: Ex db II B T6 Gb; Ex tb IIIC T80°C Db
- ⊙ Two or more actuators can be used parallelly
- ※ RS485 could parallel maximum 32/64/256 actuators, while CANBus parallels 110 actuators



Product Features

- △ 1.3" OLED screen, it features no view restriction, high brightness, energy saving and environment protection, in real time to show Baud rate, ID address, valve opening angle and external control command. Enter sleeping state automatically after about 5 minutes, while it could display location state and its control command at sleeping time.
- △ Original valve adjustment mode: cover-opening free and interactive
 - step1: Press the button to control valve to the position of "counterclockwise full open", then save it.
 - step2: Press the button to control valve to the position of "clockwise full close", then save it to finish the valve adjustment.
- △ 16 bit high performance MCU, 12 bit high precision AD conversion are applied, built-in unique algorithm, thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis, especially suitable for 3-way valve adjustment.
- △ Non-contact positioning is applied, control unit modular design and potting processing to guarantee components work reliable. vastly improve product service life; Interface uses standard connectors, convenient for installment, adjustment and replacement.
- △ Menu can report failure in real time (including stuck situation or other reasons which lead actuator fail to put valve on/off position) and output failure warning signal.
- △ Menu operation can change Bus ID address and Baud rate automatically.
- △ Menu operation can switch freely between remote control and local setting, press the button to realize opening/closing.
- △ Menu operation can set valve off position deviate to on or off direction, to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

Purchase Guide TCN-02BEX-KT

Model	Torque	Voltage	Time	Communication	Rotation angle	Enclosure	Manual override *3	Position indicator	Housing material	Output shaft
AC/DC24V	20Nm	36W	10s	RS485/CANBUS2.0B Compatible Modbus	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC95-265V										

Notice *1. The third position can be set by menu.

*2. Test condition: Test under rated load, 25°C working temperature and 50% humidity, one test circle (twice the time of running cycle), which will be influenced by different load and working environment.

*3. Use hexagon spanner when power off, or use button when power on.

Product Overview

- ◎ Matched valves: 2-way,3-way ball valve and butterfly valve
- ◎ Rated voltage: AC/DC95V-265V,AC/DC24V
- ◎ Timer mode: pulse mode,time mode
- ◎ Loop mode: loop by days,loop by weeks
- ◎ Adopted high-performance brushless motor,overload protection of internal motor
- ◎ It can be used up to 20,000 times^{*1}
- ◎ Explosion-proof level: Ex db II B T6 Gb;Ex tb IIIC T80°CDB



Product Features

- △ 1.3" OLED screen,it features no view restriction, high brightness,energy saving and environment protection,in real time to show valve opening angle and external control command.Enter sleeping state automatically after about 5 minutes,while it could display location state and its control command at sleeping time.
- △ Original valve adjustment mode:cover-opening free and interactive
step1:Press the button to control valve to the position of "counterclockwise full open", then save it .
step2:Press the button to control valve to the position of "clockwise full close",then save it to finish the valve adjustment.
- △ 16 bit high performance MCU,12 bit high precision AD conversion are applied,built-in unique algorithm,thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis,espacially suitable for 3-way valve adjustment.
- △ Non-contact positioning is applied,control unit modular design and potting processing to guarentee components work reliable.vastly improve product service life;Interface uses standard connectors,convenient for installment,adjustment and replacement.
- △ Menu can report failure in real time(including stuck situation or other reasons which lead actuator fail to put valve on/off position)and [output failure warning signal](#).
- △ Menu operation can realize exchange of valve control command.
- △ Menu operation can switch freely between remote control and local setting,press the button to realize opening/closing.
- △ Menu operation can set valve off position deviate to on or off direction,to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

Purchase Guide TCN-02DEX

Model	Torque	Voltage	Time	Timer model	Rotation angle	Enclosure	Manual override ^{*2}	Position indicator	Housing material	Output shaft
AC/DC24V	20Nm	15W	10s	Pulse mode	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC95-265V				Time mode Loop by days Loop by weeks						

Notice ^{*1}.Test condition:Test under rated load, 25°C working temperature and 50% humidity,one test circle(twice the time of running cycle),which will be influenced by different load and working environment.

^{*2}.Use hexagon spanner when power off,or use button when power on.

Product Overview

- ◎ Matched valves: 2-way,3-way ball valve and butterfly valve
- ◎ Rated voltage: AC/DC95V-265V,AC/DC24V
- ◎ Timer mode: pulse mode,time mode
- ◎ Loop mode: loop by days,loop by weeks
- ◎ Adopted high-performance brushless motor,overload protection of internal motor
- ◎ It can be used up to 20,000 times^{*1}
- ◎ Explosion-proof level: Ex db II B T6 Gb;Ex tb IIIC T80°CDB



Product Features

- △ 1.3" OLED screen,it features no view restriction, high brightness,energy saving and environment protection,in real time to show, valve opening angle and external control command.Enter sleeping state automatically after about 5 minutes,while it could display location state and its control command at sleeping time.
- △ Original valve adjustment mode:cover-opening free and interactive
step1:Press the button to control valve to the position of "counterclockwise full open", then save it .
step2:Press the button to control valve to the position of "clockwise full close", then save it to finish the valve adjustment.
- △ 16 bit high performance MCU,12 bit high precision AD conversion are applied,built-in unique algorithm,thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis,espacially suitable for 3-way valve adjustment.
- △ Non-contact positioning is applied,control unit modular design and potting processing to guarantee components work reliable. vastly improve product service life;Interface uses standard connectors,convenient for installment,adjustment and replacement.
- △ Menu can report failure in real time(including stuck situation or other reasons which lead actuator fail to put valve on/off position)and output failure warning signal.
- △ Menu operation can realize exchange of valve control command.
- △ Menu operation can switch freely between remote control and local setting,press the button to realize opening/closing.
- △ Menu operation can set valve off position deviate to on or off direction,to bring convenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

Purchase Guide TCN-02DEXH

Voltage	Torque	Power	Time	Timer model	Rotation angle	Enclosure	Manual override ^{*2}	Position indicator	Housing material	Output shaft
DC24V	20Nm	85W	1s	Pluse mode Time mode	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC24V	15Nm	25W	6s	Loop by days						
AC95-265V				Loop by weeks						

Notice ^{*1}.Test condition:Test under rated load, 25°C working temperature and 50% humidity,one test circle(twice the time of running cycle),which will be influenced by different load and working environment.

^{*2}.Use hexagon spanner when power off,or use button when power on.

Product Overview

- ◎ Matched valves: 2-way,3-way ball valve and butterfly valve
- ◎ Rated voltage: AC/DC95V-265V,AC/DC24V
- ◎ Timer mode: pulse mode,time mode
- ◎ Loop mode: loop by days,loop by weeks
- ◎ Adopted high-performance brushless motor,overload protection of internal motor
- ◎ It can be used up to 20,000 times^{*1}
- ◎ Explosion-proof level: Ex db II B T6 Gb;Ex tb IIIC T80°CDB



Product Features

- △ 1.3" OLED screen,it features no view restriction, high brightness,energy saving and environment protection,in real time to show valve opening angle and external control command.Enter sleeping state automatically after about 5 minutes,while it could display location state and its control command at sleeping time.
- △ Original valve adjustment mode:cover-opening free and interactive
 - step1:Press the button to control valve to the position of "counterclockwise full open", then save it .
 - step2:Press the button to control valve to the position of "clockwise full close",then save it to finish the valve adjustment.
- △ 16 bit high performance MCU,12 bit high precision AD conversion are applied,built-in unique algorithm,thoroughly eliminate valve on/off inaccuracy caused by mechanical hysteresis,espacially suitable for 3-way valve adjustment.
- △ Non-contact positioning is applied,control unit modular design and potting processing to guarentee components work reliable. vastly improve product service life;Interface uses standard connectors,convenient for installment,adjustment and replacement.
- △ Menu can report failure in real time(including stuck situation or other reasons which lead actuator fail to put valve on/off position)and output failure warning signal.
- △ Menu operation can realize exchange of valve control command.
- △ Menu operation can switch freely between remote control and local setting,press the button to realize opening/closing.
- △ Menu operation can set valve off position deviate to on or off direction,to bring vonvenience to local valve adjustment compared with "Simple On/Off mechanical positioning".
- △ Menu operation can adjust valve running speed of the actuator in real time.
- △ Menu operation can restore factory default setting.

Purchase Guide TCN-02DEX-KT

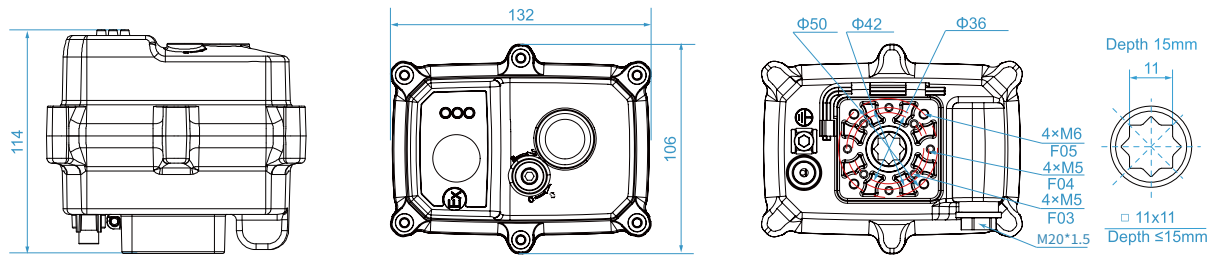
Voltage	Torque	Power	Time	Timer model	Rotation angle	Enclosure	Manual override ^{*2}	Position indicator	Housing material	Output shaft
AC/DC24V	20Nm	36W	10s	Pulse mode Time mode	90°/180° ≤330°	IP68	Hexagon spanner /button	Mechanical indicator or OLED indicator	Die casting aluminium	Female octagon
AC/DC95-265V				Loop by days Loop by weeks						

Notice ^{*1}.Test condition:Test under rated load, 25°C working temperature and 50% humidity,one test circle(twice the time of running cycle),which will be influenced by different load and working environment.

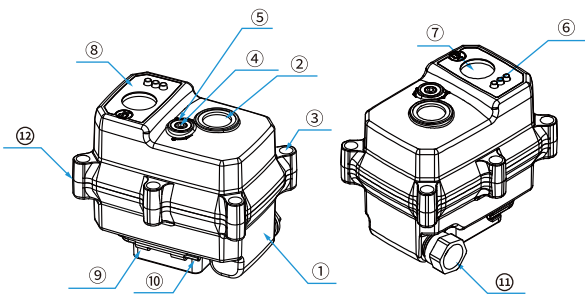
^{*2}.Use hexagon spanner when power off,or use button when power on.

Dimension 【TCN-02CEX_Die-casting Aluminium】

unit:mm

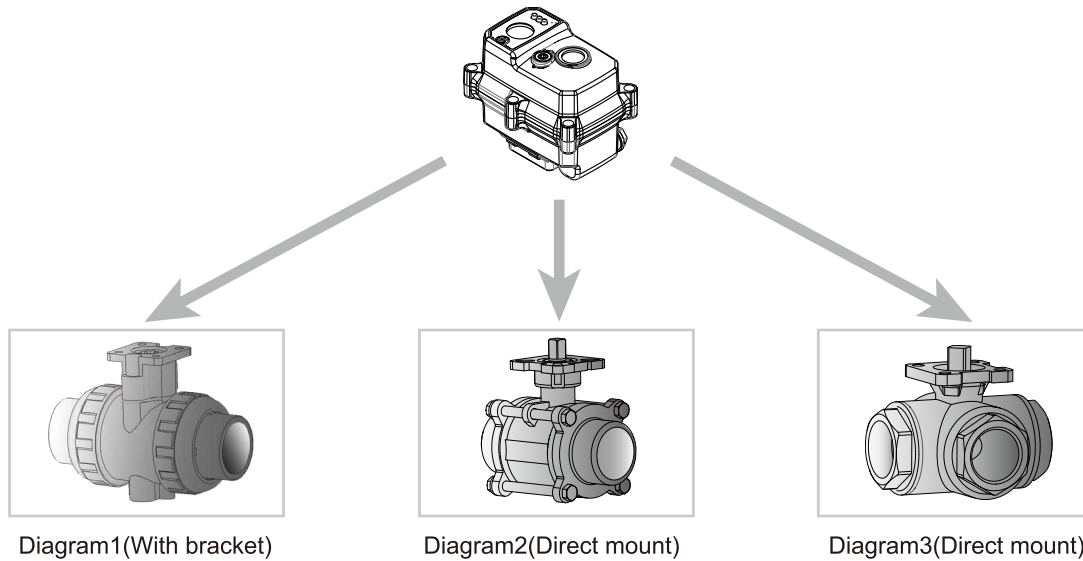


Main parts



	Parts	Material		Parts	Material
1	Actuator	Casting aluminum	6	Label	PVC
2	Indicator	Tempered glass	7	Wrench fixed	Heatproof_ABS
3	Screw X 4	304	8	Hexagon wrench	CR-V
4	Manual shaft	304	9	Waterproof cable connector	304
5	Oil seal	NBR	10	Lid seal	Silica gel

TCN-02EX Series Assembly Diagram



Assembly Diagram1 UPVC plastic ball valve with bracket

Assembly Diagram2 3-piece stainless steel ball valve

Assembly Diagram3 Stainless steel 3-way ball valve

NOTICE:

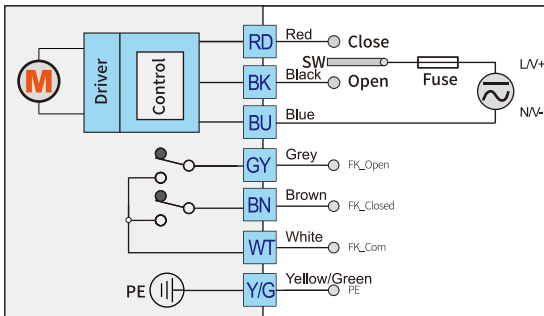
- ※1.When assembling with valve, it's recommend to use spring washer and flat washer to fix screw nut.
- ※2.It's forbidden to use anaerobic glue or UV glue, if needed, please use 704 glue and adhere quickly.
- ※3.Casing is avoided to contact with organic solvent, such as kerosene, butanone and etc, or the casing will be damaged.

Matched Valve's Technical Requirements

- 1. When installing ball valve, the torque value should be $\leq 15\text{Nm}$. If the ball valve is out of operation for a long time, the torque value of its first on or off will be the maximum torque value. Or you can choose ball valve with low torque.
- 2. When installing butterfly valve, the maximum torque should be $\leq 13\text{Nm}$. Because the torque value will increased by 10-20% after installing.
- 3. When installing direct mount type valve, the hole depth should be $\leq 15\text{mm}$. It requires cutting if the output shaft is longer than 15mm.
- 4. Pls pay attention to the following items if you install the bracket and coupling by yourself:
 - ※ The intensity of bracket should meet the using requirements: the bracket twisting range should be $\leq 0.2\text{mm}$ in the process of valve opening or closing.
 - ※ The parallelism of bracket should be $\leq 0.5\text{mm}$.
 - ※ When processing the shaft hole at both end of the coupling, ensure the accuracy and concentricity. The purpose is to ensure the mechanical hysteresis $\leq 10^\circ$, otherwise it will cause the actuator unable to work normally.
- 5. Screw should be installed with spring washer and flat washer, and we suggest you daub some sealing glue around the screw in case of screw loosening.
- 6. After installation, user should switch the valve on and off one time with hexagon spanner first. Adjust the valve after ensure it works well.

Simple on/off type [TCN-02NEX]

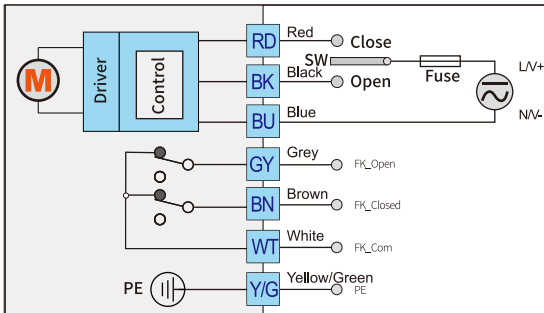
B3S



Control instructions:

- SW is connected with **RD**, the actuator will rotate clockwise ↻. When the valve is closed, **WT** is connect with **BN**, giving signal of closing.
- SW is connect with **BK**, the actuator will rotate anticlockwise ↻. When the valve is open, **WT** is connect with **GY**, giving signal of opening.
- ※ Notice 1: **WT** is non-connected with **GY** and **BN**, when the actuator is rotating.
- ※ Notice 2: The feedback signal is a little earlier than the actual position, so please do not cut power immediately, when you get the feedback signal.

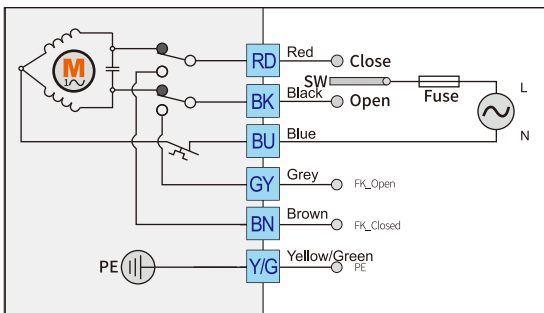
B3C



Control instructions:

- SW is connected with **RD**, the actuator will rotate clockwise ↻. When the valve is closed, **WT** is non-connect with **BN**, giving signal of closing.
- SW is connected with **BK**, the actuator will rotate anticlockwise ↻. When the valve is open, **WT** is non-connect with **GY**, giving signal of opening.
- ※ Notice 1: **WT** is connected with **GY** and **BN**, when the actuator is rotating.
- ※ Notice 2: The feedback signal is a little earlier than the actual position, so please do not cut power immediately, when you get the feedback signal.

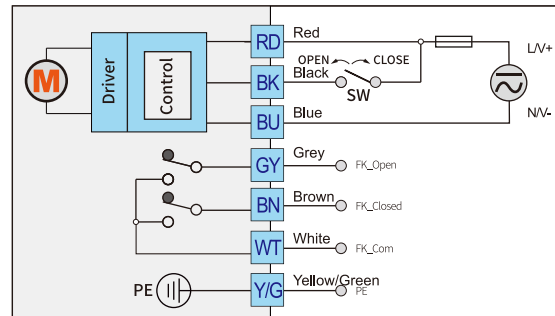
B3P



Control instructions:

- SW is connected with **RD**, the actuator will rotate clockwise ↻. When the valve is closed, **RD** is connect with **BN**, giving signal of closing.
- SW is connected with **BK**, the actuator will rotate anticlockwise ↻. When the valve is open, **BK** is connect with **GY**, giving signal of opening.
- ※ Notice 1: **RD** is not connected with **BN**, **BK** is not connected with **GY** when the actuator is rotating.
- ※ Notice 2: The feedback signal is synchronous with valve position.

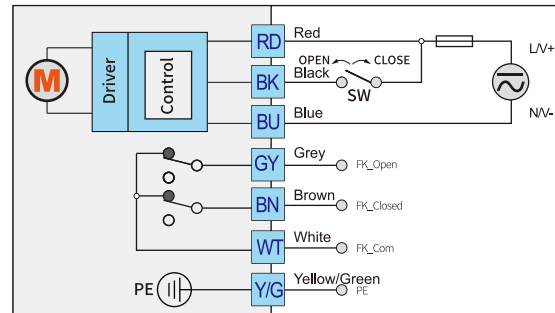
BD3S/KT32S



Control instructions:

- If SW is disconnected; the actuator will drive valve close clockwise ↻. When the valve is closed completely, **WT** is connected with **BN**, giving signal of closing.
- If SW is connected, the actuator will drive valve open anticlockwise ↻. When the valve is open completely, **WT** is connected with **GY**, giving signal of opening.
- ※ Notice 1: **WT** is non-connected with **GY** and **BN**, when the actuator is running.
- ※ Notice 2: The feedback signal is a little earlier than the actual position, so please do not cut power immediately, when you get the feedback signal.

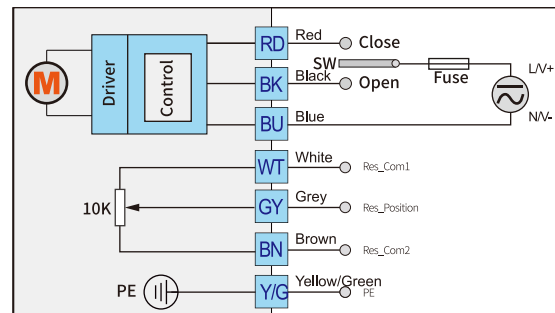
BD3C



Control instructions:

- If SW is disconnected; the actuator will drive valve close clockwise ↻. When the valve is closed completely, **WT** is non-connected with **BN**, giving signal of closing.
- If SW is connected, the actuator will drive valve open anticlockwise ↻. When the valve is open completely, **WT** is non-connected with **GY**, giving signal of opening.
- ※ Notice 1: **WT** is connected with **GY** and **BN**, when the actuator is running.
- ※ Notice 2: The feedback signal is a little earlier than the actual position, so please do not cut power immediately, when you get the feedback signal.

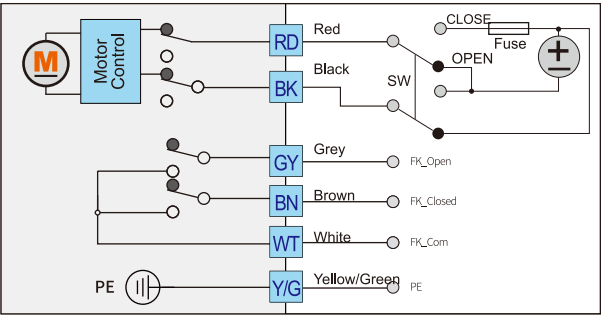
B3R



Control instructions:

- SW is connected with **RD**, the actuator will rotate clockwise ↻. The resistance value between **WT** and **GY** will decrease, the actuator will stop when the valve is closed.
- SW is connected with **BK**, the actuator will rotate anticlockwise ↻. The resistance value between **WT** and **GY** will increase, the actuator will stop when the valve is open.

B2S-DC24V/DC12V

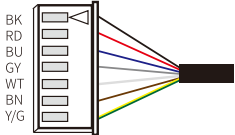


Control instructions:

- ☐ If SW is connected with CLOSE, the actuator will drive valve close clockwise. When the valve is closed completely, WT is connected with BN, giving signal of closing.
- ☐ If SW is connected with OPEN, the actuator will drive valve open anticlockwise. When the valve is open completely, WT is connected with GY, giving signal of opening.
- ※ Notice 1: WT is not connected with BN/GY, when the actuator is running.
- ※ Notice 2: The feedback signal is a little earlier than the actual position, so please do not cut power immediately, when you get the feedback signal.

Test terminal for the cable end_wiring instruction

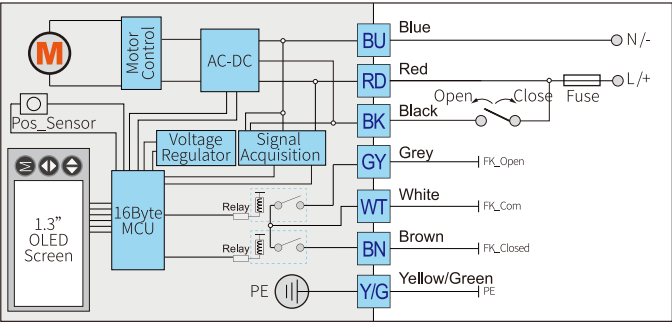
- 1.Fuse:please refer to manual for more parameters.
- 2.SW switching capability:please refer to manual for more parameters.
- 3.Feedback signal contact load capacity:0.1A/250VAC 0.5A/30VDC.
- 4.Please make sure actuator connect ground reliably
5. Some products adopt wiring box ,user could wiring according to the order of number.



(User could cut out the cable terminal as it is only used for factory test.)
Cable terminal for test(7pin)

Intelligent on/off type [TCN-02CEX]

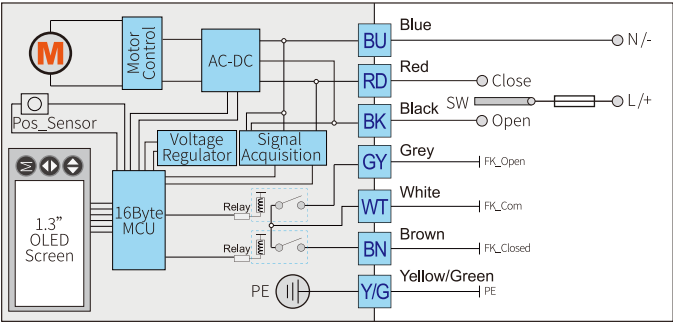
BD3J



Control instructions:[7-core]

- ☐ If SW is disconnected, the actuator will drive valve close clockwise. When the valve is closed completely, WT is connected with BN, send signal of full close.
- ☐ If SW is connected, the actuator will drive valve open anticlockwise. When the valve is open completely, WT is connected with GY, send signal of full open.
- ※ Note 1: WT is not connected with GY/BN, when the actuator is operating.
- ※ Note 2: After power cut, the feedback and fault signal will disappear, WT is not connected with GY and BN.

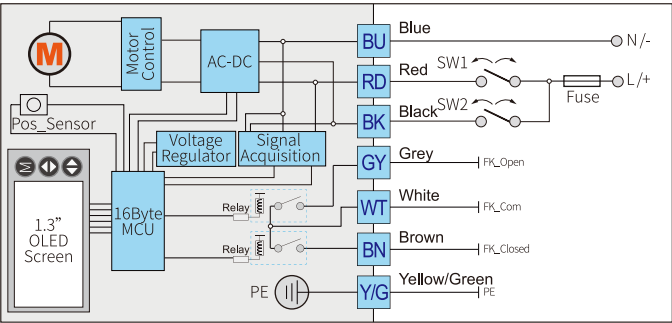
B3J



Control instructions:[7-core]

- ☐ SW is connected with RD, the actuator will rotate clockwise. When the valve is closed, WT is connect with BN, send signal of full close.
- ☐ SW is connected with BK, the actuator will rotate anticlockwise. When the valve is open, WT is connect with GY, send signal of full open.
- ※ Note 1: WT is not connected with GY and BN, when the actuator is operating.
- ※ Note 2: After power cut, the feedback and fault signal will disappear, WT is not connected with GY and BN.

B33J



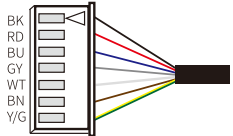
Control instructions:[7-core]

SW1	SW2	Flow direction	Feedback signal
connect	disconnect	0°	WT connect with BN
disconnect	connect	90°	WT connect with GY
connect	connect	user-defined	WT connect with GY/BN

- ※ Note 1: WT is not connected with GY and BN, when the actuator is operating.
- ※ Note 2: After power cut, the feedback and fault signal will disappear, WT is not connected with GY and BN.
- ※ Note 3: User-defined position can be set by menu.

Test terminal for the cable end_wiring instruction

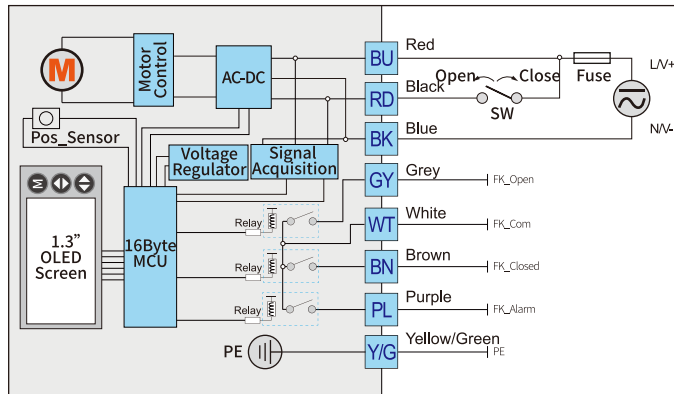
- 1.Fuse:please refer to manual for more parameters.
- 2.SW switching capability:please refer to manual for more parameters.
- 3.Feedback signal contact load capacity:0.1A/250VAC 0.5A/30VDC.
- 4.Please make sure actuator connect ground reliably
5. Some products adopt wiring box ,user could wiring according to the order of number.



(User could cut out the cable terminal as it is only used for factory test)

Cable terminal for test(7pin)

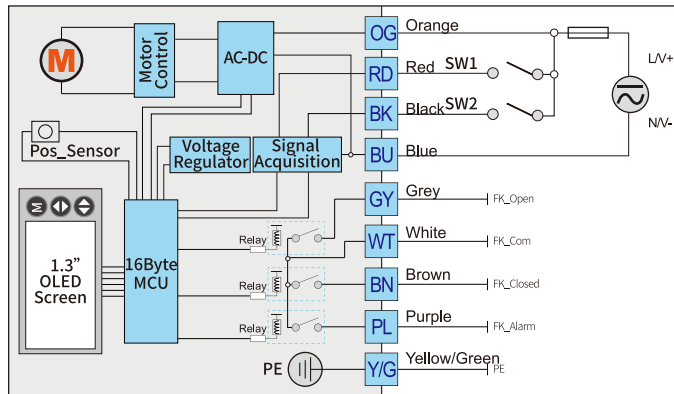
BD3JA [Alarm]



Control instructions: [9-core]

- If SW is disconnected, the actuator will drive valve close clockwise. When the valve is closed completely, **WT** is connected with **BN**, send signal of full close.
- If SW is connected, the actuator will drive valve open anticlockwise. When the valve is open completely, **WT** is connected with **GY**, send signal of full open.
- ※ Note 1: **WT** is not connected with **BN** **GY**, when the actuator is operating.
- ※ Note 2: When actuator is stuck or switch fails to arrive by other faults, **WT** connect with **PL**, send alarm signal.
- ※ Note 3: After power cut, the feedback and fault signal will disappear, **WT** is not connected with **GY** **BN** **PL**.

B43JA [Alarm]

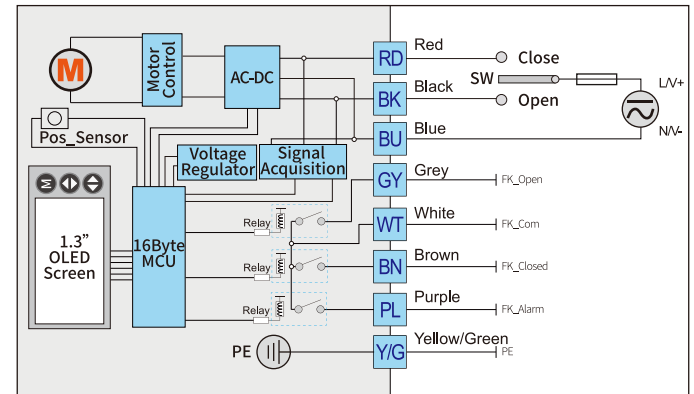


Control instructions: [9-core]

- ※ Note 1: **WT** is not connected with **GY** **BN** **PL**, when the actuator is running.
- ※ Note 2: When actuator was stuck or it has other faults, which lead valve unable to full-open or full-close, then **WT** connect with **PL**, send warning signal.
- ※ Note 3: After power cut, the feedback and fault signal will disappear, **WT** is not connected with **GY** **BN** **PL**.
- ※ Note 4: User-defined position can be set by menu.

SW1	SW2	Flow direction
connect ↗	disconnect ↖	0°
disconnect ↖	connect ↗	90°
connect ↗	connect ↗	user-defined
disconnect ↖	disconnect ↖	user-defined

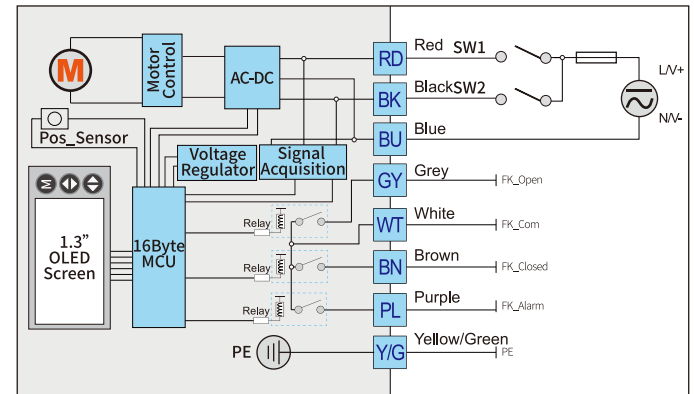
B33JA [Alarm]



Control instructions: [9-core]

- If SW is disconnected, the actuator will drive valve close clockwise. When the valve is closed completely, **WT** is connected with **BN**, send signal of full close.
- If SW is connected, the actuator will drive valve open anticlockwise. When the valve is open completely, **WT** is connected with **GY**, send signal of full open.
- ※ Note 1: **WT** is not connected with **GY** **BN**, when the actuator is operating.
- ※ Note 2: When actuator is stuck or switch fails to arrive by other faults, **WT** connect with **PL**, send alarm signal.
- ※ Note 3: After power cut, the feedback and fault signal will disappear, **WT** is not connected with **GY** **BN** **PL**.

B33JA [Alarm]



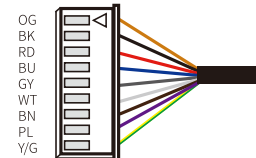
Control instructions: [9-core]

SW1	SW2	Flow direction	Feedback signal
connect ↗	disconnect ↖	0°	WT connect with BN
disconnect ↖	connect ↗	90°	WT connect with GY
connect ↗	connect ↗	user-defined	WT connect with GY BN

- ※ Note 1: **WT** is not connected with **BN** and **GY**, when the actuator is operating.
- ※ Note 2: After power cut, the feedback and fault signal will disappear, **WT** is not connected with **BN** and **GY**.
- ※ Note 3: When actuator was stuck or it has other faults, which lead valve unable to full-open or full-close, then **WT** connect with **PL**, send warning signal.
- ※ Note 4: User-defined positions can be set by menu.

Test terminal for the cable end wiring instruction

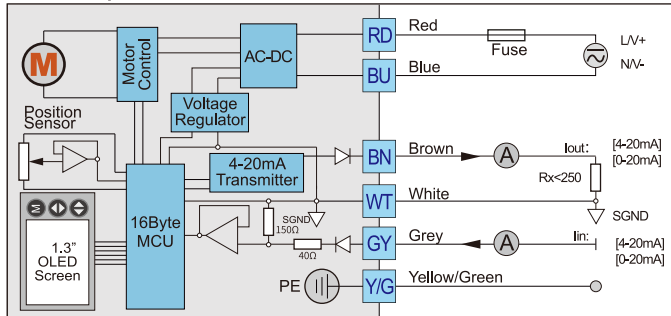
1. Fuse: please refer to manual for more parameters.
2. SW switching capability: please refer to manual for more parameters.
3. Feedback signal contact load capacity: 0.1A/250VAC 0.5A/30VDC.
4. Please make sure actuator connect ground reliably
5. Some products adopt wiring box, user could wiring according to the order of number.



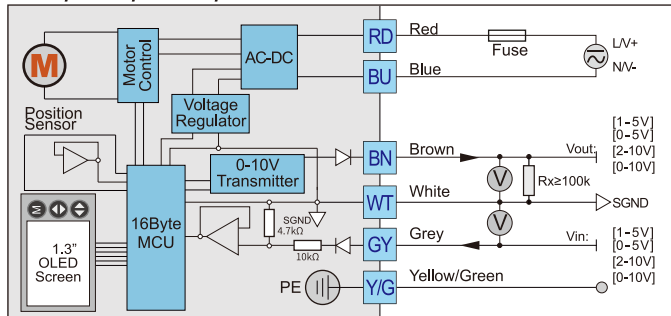
(User could cut out the cable terminal as it is only used for factory test)
Cable terminal for tes(9 pin)

Intelligent modulating type [TCN-02TEX]

4-20mA/0-20mA



0-5V/1-5V/0-10V/2-10V

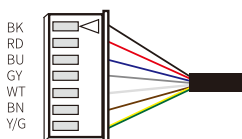


Control instructions -(No Alarm/ 7-core):

1. **RD BU** are used to connected with supply power. Please confirm the voltage before using.
* Otherwise, the wrong voltage will damage the control module.
2. **YG** is used to connected PE. Please ensure the actuator is connected with ground.
3. **GY BN WT** is the input and output end. These 3 lines are forbidden to short connect directly.
GY is 0-20mA, 4-20mA, 0-5V, 0-10V, 2-10V, the signal input impedance refers to the corresponding wiring diagram.
BN is 0-20mA, 4-20mA, 0-5V, 0-10V, 2-10V. User could set the output current/voltage range for the feedback output signal through menu.
5. Current output load RX:
 $V_{OUT} = I_{OUT} \cdot R_X$
 R_X is recommended to use resistor with low TCR.
 $V_{OUT} \leq 8V$, so $R_X \leq 400\Omega$ (recommended $V_{OUT} = 5V$, $R_X = 250\Omega / 0.25W$)
6. * User could set the control mode (0-20mA/4-20mA/0-10V/2-10V) through the parameter 'control mode' in menu.
7. For the actuator with Failsafe function, user could set the action of the actuator when the power fails through the user menu. The available options are ON, OFF, KEEP, B33. The default option is OFF.
8. The Loading capacity of output signal 0-10V/2-10V/0-5V/1-5V is $\geq 100K\Omega$. We suggest use the littler wire resistor as The length of wire and resistor will affect the accuracy.

Test terminal for the cable end_wiring instruction

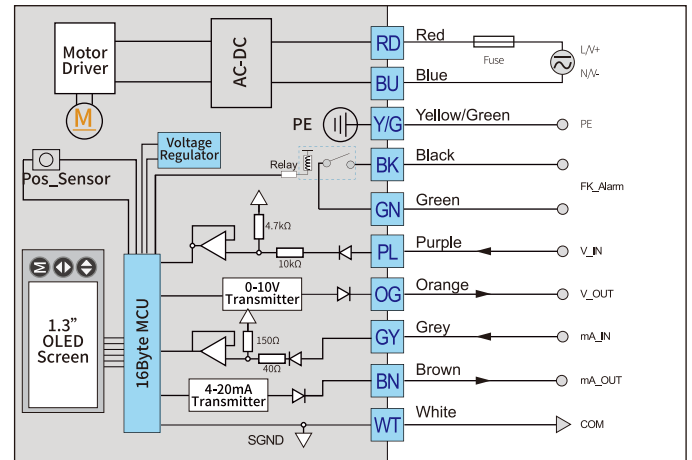
1. Fuse: Refer to the detail corresponding instnction.
2. Some products adopt fly cable, user could wiring according to cable colour.



(User could cut out the cable terminal as it is only used for factory test.)

Cable terminal for test (7pin)

4-20mA-A/0-20mA-A/0-5V-A/1-5V-A/0-10V-A/2-10V-A [Alarm Output]

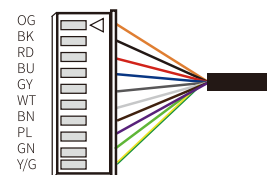


Alarm Output-Wiring instruction

1. **RD BU** are used to connected with supply power. Please confirm the voltage before using.
* Otherwise, the wrong voltage will damage the control module.
2. **YG** is used to connected PE. Please ensure the actuator is connected with ground.
3. **BK GN** will output alarm signal.
4. **PL OG GY BN WT** is the input and output end. These 5 lines are forbidden to short connect directly.
PL is 1-5V, 2-10V, 0-5V, 0-10V input signal. Impedence refers to the corresponding wiring diagram.
OG is 1-5V, 2-10V, 0-5V, 0-10V feedback output signal. User could set the output voltage range through menu.
GY is 0-20mA, 4-20mA, the signal input impedance refers to the corresponding wiring diagram.
BN is 0-20mA, 4-20mA. User could set the output current range for the feedback output signal through menu.
5. Current output load RX:
 $V_{OUT} = I_{OUT} \cdot R_X$
 R_X is recommended to use resistor with low TCR.
 $V_{OUT} \leq 8V$, so $R_X \leq 400\Omega$ (recommended $V_{OUT} = 5V$, $R_X = 250\Omega / 0.25W$)
6. * User could set the control mode (0-20mA/4-20mA/0-10V/2-10V) through the parameter 'control mode' in menu.
7. Once actuator is struck or other working failures, the screen will show alarm information although not alarm signal. Notice the contactor loading capacity is 0.1A/DC24V, 50mA/230V
8. The Loading capacity of output signal 0-10V/2-10V/0-5V/1-5V is $\geq 100K\Omega$. We suggest use the littler wire resistor as The length of wire and resistor will affect the accuracy.

Test terminal for the cable end_wiring instruction

1. Fuse: Refer to the detail corresponding instnction.
2. Some products adopt fly cable, user could wiring according to cable colour.

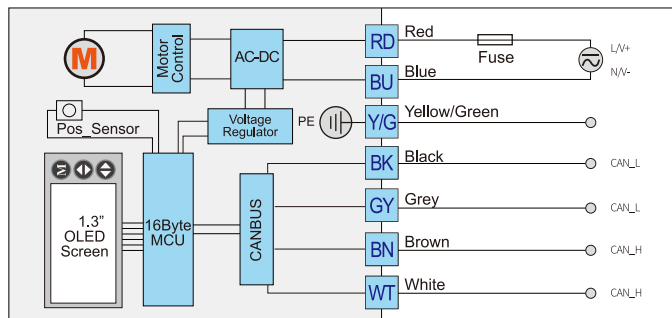


(User could cut out the cable terminal as it is only used for factory test.)

Cable terminal for tes (10pin)

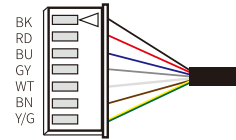
Intelligent bus type

CANBUS



Test terminal for the cable end_wiring instruction

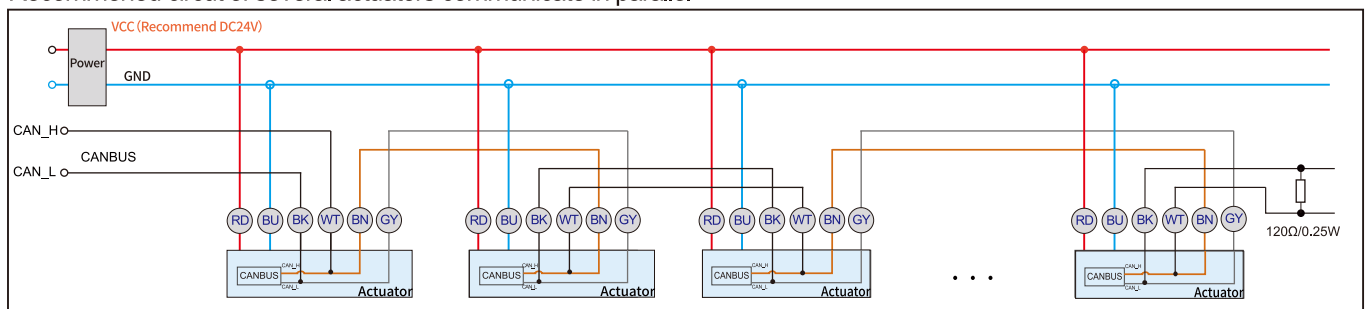
- 1.Fuse:please refer to manual for more parameters.
- 2.SW switching capability:please refer to manual for more parameters.
- 3.Feedback signal contact load capacity:0.1A/250VAC 0.5A/30VDC.
- 4.Please make sure actuator connect ground reliably
5. Some products adopt wiring box ,user could wiring according to the order of number.



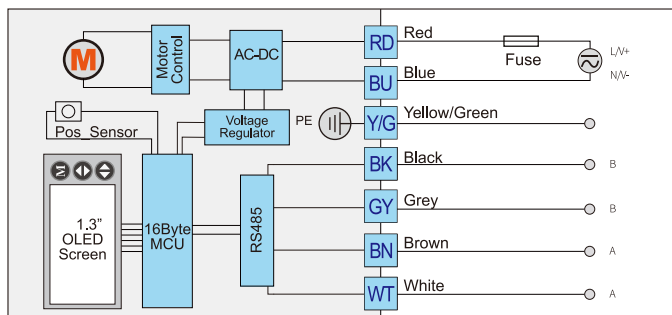
(User could cut out the cable terminal as it is only used for factory test.)

Cable terminal for test(7pin)

Recommended circuit of several actuators communicate in parallel

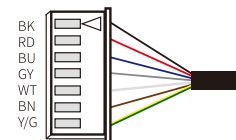


RS485



Test terminal for the cable end_wiring instruction

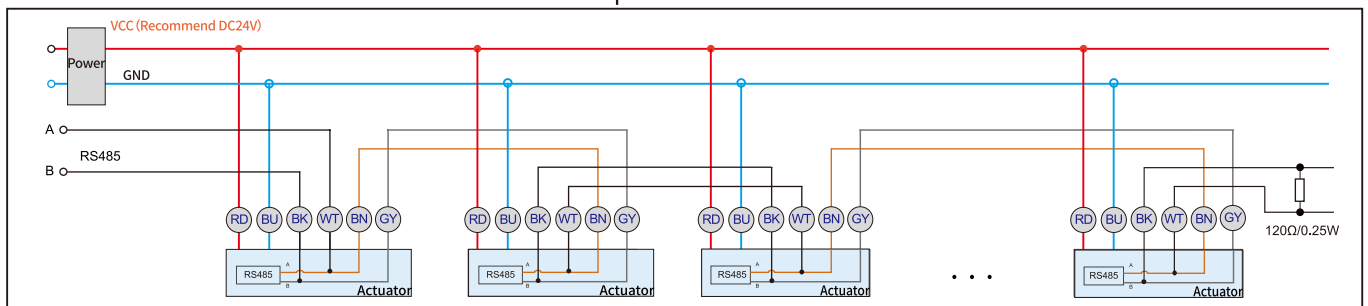
- 1.Fuse:please refer to manual for more parameters.
- 2.SW switching capability:please refer to manual for more parameters.
- 3.Feedback signal contact load capacity:0.1A/250VAC 0.5A/30VDC.
- 4.Please make sure actuator connect ground reliably
5. Some products adopt wiring box ,user could wiring according to the order of number.



(User could cut out the cable terminal as it is only used for factory test.)

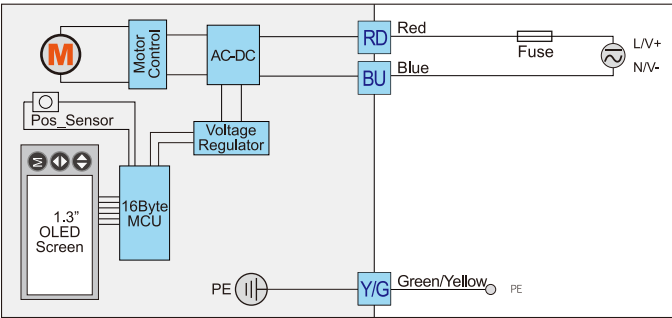
Cable terminal for test(7pin)

Recommended circuit of several actuators communicate in parallel

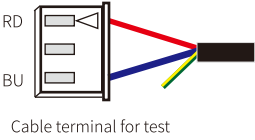


Intelligent timer type

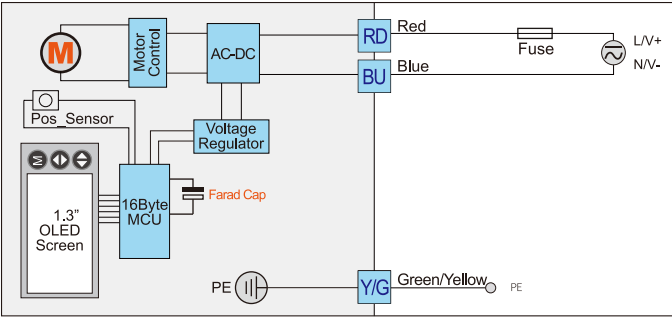
Timer



Test terminal for the cable end_wiring instruction
1.Fuse:please refer to manual for more parameters.



Timer-KT (Failsafe series)



Working Environment

- ☐ This product can be used indoor and outdoor.
- ☐ You need to install protective device for the actuator if it is exposed to the rain or sunshine.
- ☐ Please pay attention to the ambient temp.
- ☐ When installing, you need to consider the reserved space for wiring and repairing.
- ☐ When power on, ⚠ it is not allowed to dismantle actuator and valve.
- ☐ When power on, ⚠ it is not allowed to do wiring.
- ☐ ✖ Forbid dropped things hit the device and lead to improper operation.
- ☐ ✖ Forbid to step on it which will cause device malfunction or personal accident.
- ☐ ✖ It is forbidden to do wiring project in rainy day or when there is water splash.

Safety Precautions

- ☐ In order to use the device safely for a long time, please pre-read the manual carefully to ensure correct use.
- ☐ Notice item: Please understand the product specification and using method clearly to ensure personal safety or prevent device from damage
- ☐ In order to indicate damage and danger, here we classify them as “warning ⚠” and “notice ✖”.
- ☐ Both of contents are very important, which should be obeyed strictly.
- ☐ “Warning ⚠”: It will cause death or serious injury if not obeyed.
- ☐ “Notice ✖”: It will cause slight injury or device damage if not obeyed.
- ☐ Subject to technical changes.

TCN-02EX Series Explosion-proof Certificate



TCN-02EX Series Assembly Photos



Made in china Global service

Innovate
Realize customer greatest value **Technology**

Success comes from our persistent pursuit of perfect details
Excellence originates from our persistence of win-win philosophy