

Special Functions for Electric Actuators

01

Fine-tuning of Open & Close position

Intelligent irrigation system

1. Built-in time cycle function
2. Combination of timing function and humidity sensor realizes the intelligent control
3. Actuator equipped with temperature sensor to ensure the intelligent control over the fluid temperature



02

Fine-tuning of Open & Close position

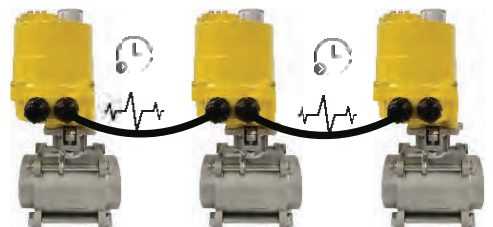
1. Fine-tune the close position after butterfly valve is worn, every fine-tuning can double the service life of butterfly valve. With this fine-tuning function, we can extend the butterfly valve service life up to 5-10 times.
2. Fine-tuning when ball valve is open to optimize the CV value.
3. The adjusting button locates outside the enclosure for convenient and safe operation.
4. 0.1° high adjusting accuracy results in better valve performance.



03

Linkage system

Cascade controlled actuators can cooperate by setting the signal sending time on the LED display.



Special Functions for Electric Actuators

04

Filling application & Water hammer preventing function

1. Advanced deceleration function improves the valve seat service life.
2. Advanced deceleration function prevents water hammer in the pipeline.
3. Advanced deceleration function improves the filling accuracy of the system



05

Boiler Feedwater Application

Control signal: 4–20mA
OR
Control signal: 0–135 Ω



Water Treatment **2S**

Fast Open Electric Actuator

Technical Parameter

Model	Rated Torque		Rated Current	Max Torque		Max Current	Speed	Duty Cycle
	N·m	in-lb	A	A	in-lb	A	S/stroke 90°	S4
ESQ112-E	7	62	3.5	13	115	4.2	2s	25%
ESQ212-E	23	204	7.3	66	584	15.8	2s	25%
ESQ312-E	50	443	10	110	974	15.7	3s	25%

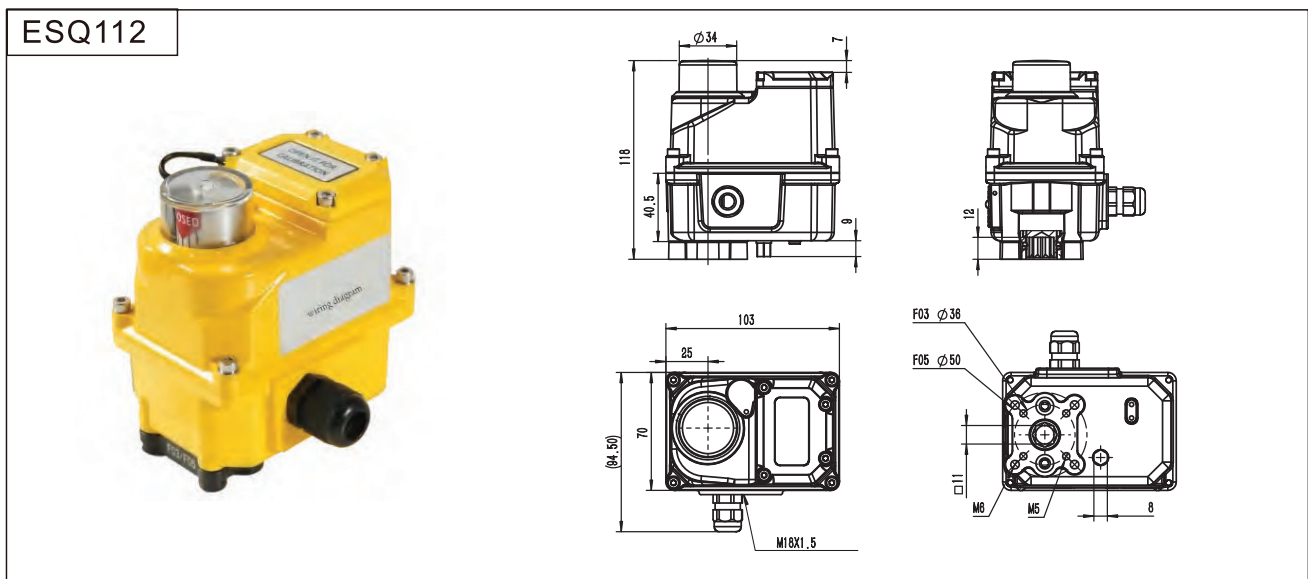
Note:

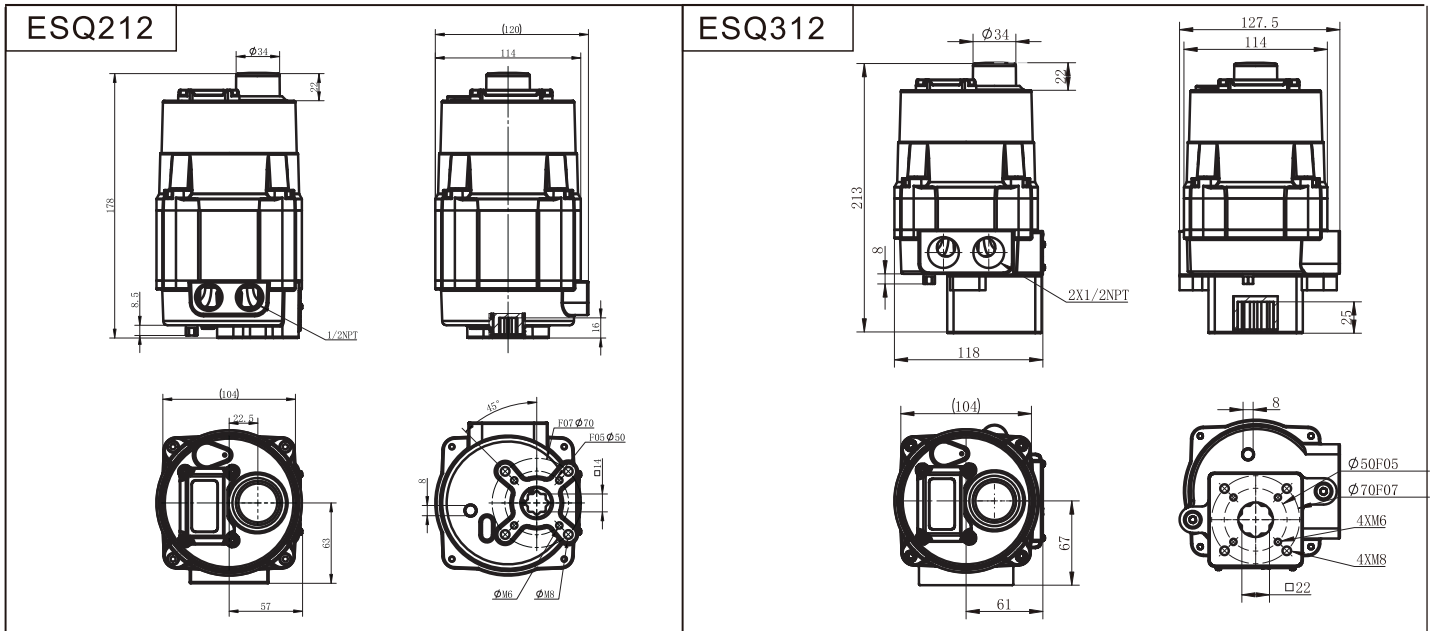
- 1.Data above is tested at our CSA certificated laboratory @ environment temperature $-40^{\circ}\text{C}\sim 55^{\circ}\text{C}$ ($-40^{\circ}\text{F}\sim 131^{\circ}\text{F}$).
- 2.Duty cycle is tested @environment temperature 55°C (131°F) with $0^{\circ}\sim 90^{\circ}$ 100% full loaded.

Features

- Manual operation when failure
- Electronic fine open and close adjustment
- Aluminum enclosure
- Standard configuration ISO 12944 C3-02 Powder coated
- Working temperature $-40^{\circ}\text{C}\sim 55^{\circ}\text{C}$ ($-40^{\circ}\text{F}\sim 131^{\circ}\text{F}$)
- 360° visual position indicator
- 3 output relays for open, closed and fault feedback(Optional)
- $0^{\circ}\sim 90^{\circ}\sim 180^{\circ}$, $0^{\circ}\sim 180^{\circ}$, $0^{\circ}\sim 270^{\circ}$ can be customized.

Outline Drawing



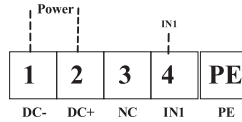


Wiring Diagram

W/O feedback signal(standard)

Applicable voltage:DC12V

ESQ Electronic ON-OFF Electric Actuator Schematic Wiring Diagram



Description:

- 1、 Power supply for terminal "1"&"2".
- 2、 Connect "4"to VDC+ to rotate CCW to open position,
Connect"4"to VDC- to rotate CW to close position,
Disconnect "4",connect"3"to VDC+ to mid-position.



Connect terminal 4 to 2

Electric actuator rotates counter-clockwisely
↓
valve open



Connect terminal 4 to 1

Electric actuator rotates clockwise
↓
valve close

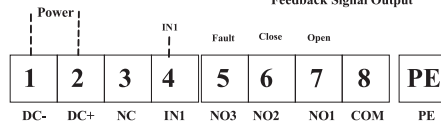
With feedback signal(Optional)

Applicable voltage:DC12V

Relay Output : 0.8A/110VAC
0.5A/250VAC
1A/30VDC

ESQ Electronic ON-OFF Wiring Diagram

Feedback Signal Output



Description :

- 1、 Power supply for terminal "1"&"2".
- 2、 Connect "4"to "2" to rotate CCW to open position,
Connect"4"to "1"to rotate CW to close position,
- 3、 When power off,the feedback signal lost and the relays disconnect.



Connect terminal 4 to 2

Electric actuator rotates counter-clockwisely
↓
valve open

connect terminal 7 to 8, full open signal sent



Connect terminal 4 to 1

Electric actuator rotates clockwise
↓
valve close

connect terminal 6 to 8,full close signal sent

02

EPB Series



Electronic on-off type



Smart on-off type



Modulating type

EPB Series electric actuator offers wide temperature range and can be used in low-temperature environment.

Torque: 88.5 in-lb ~ 26,552 in-lb (10N.m ~ 3000N.m)

Voltage: 24VDC/AC,110VAC,220VAC,380VAC,440VAC

Duty Cycle: Continuous running duty type (IEC 60034-1) S1 100%

Environment Temperature: -40°F ~149°F (-40°C~65°C)

Surface Temperature : ≤ 185°F (85°C)

Humidity: ≤95%(working @50°C(122°F))

IP Grade: IP67, Customized IP68

Corrosion-proof: Standard C3-02 (ISO 12944), optional for C3~C5,Service life 5-15 years at ocean area

Local operation panel is optional for open, close and valve position adjustment

Certified life: 30,000 cycles (1 cycle = 0°→90°→0°)

Operation panel(for modulating &Smart on-off type only):

multiple functions can be set through the panel such as calibrate open,close and middle position, Local mode, Stop

Analog signal (for modulating type only):

input 4-20mA, 1-5V, 2-10V, output 4-20mA, 1-5V, 2-10V

Starts(for modulating type only):

EPB100(315)and below sizes: 5million starts,2400 starts max/hour

EPB200(415)-EPB3000 sizes: 2million starts, 1800 starts max/hour

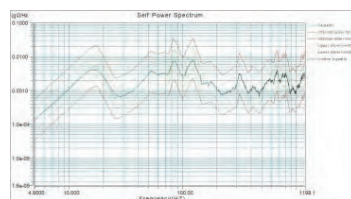
Optional special functions: Deceleration and etc.

Vibration-proof performance:

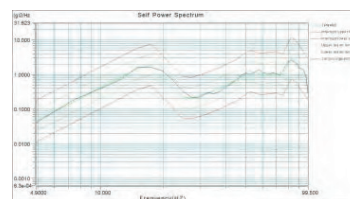
Train vibration, Frequency 5-1200Hz, Acceleration 1.5g, Time 4H;

Roads bumps, Frequency 5-100Hz, Acceleration 10g, Time 0.5H;

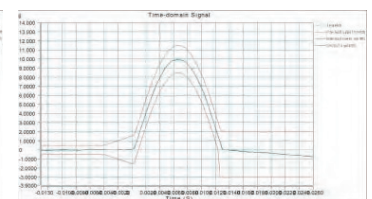
Earthquake, Acceleration 10g, 13ms duration, 125 shocks in both directions



High frequency random vibration



Low frequency random vibration



Earthquake Vibration



SIL2/3 NEMA 6P IP 68 RoHS



Product Data

Model	Torque		Operation time(S) / stroke 90°				
	N·m	in-lb	24VAC/24VDC	110VAC	220VAC	380VAC	440VAC
EPB20P1	10	89	9	6	/	/	
EPB20P2	14	124	11	8	/	/	
EPB20P3	20	177	15	11	/	/	
EPB50P1	40	354	11	8			
EPB50P2	60	531	14	12			
EPB100P1	80	708	20	16			
EPB100P2	100	885	27	18			
EPB32A	200	1770	22				
EPB33A	300	2655	28				
EPB34A	400	3540	40				
EPB200P1	150	1328	10				
EPB200P2	200	1770	10				
EPB200P3	250	2213	15				
EPB200P4	300	2655	15				
EPB200P5	400	3540	19				
EPB500P3	500	4425	24				
EPB500P4	650	5753	30				
EPB500P5	800	7080	36				
EPB500P6	1000	8850	38				
EPB500P7	1200	10620	45				
EPB2000P2	1600	14160	62				
EPB2000P3	2000	17700	77				
EPB3000P1	2500	22125	95				
EPB3000P2	3000	26550	114				
EPB115	9	80	5	/	/		
EPB215	23	204	5				
EPB315	50	443	5				
EPB415	80	708	5				
EPB425	120	1062	5				
EPB435	150	1328	5				
EPB445	200	1770	5				
EPB455	300	2655	5				
EPB465	400	3540	5				
EPB51A	500	4425	10				
EPB52A	650	5753	10				
EPB53A	800	7080	15				
EPB54A	1000	8850	15				

03

EPC Series



Smart on-off type



Modulating type

EPC Series electric actuator is equipped with fail safe function which realized by supercapacitor. It can be set to defined position in power failure by user to ensure safe operation during application and save energy.

Torque: 88.5 in-lb ~ 26,552 in-lb (10N.m ~ 3000N.m)

Voltage: 24VDC/AC,110VAC,220VAC,380VAC,440VAC

Duty Cycle: Continuous running duty type (IEC 60034-1) S1 100%

Environment Temperature: -40°F ~149°F (-40°C~65°C)

Surface Temperature : ≤ 185°F (85°C)

Humidity: ≤95%(working @50°C(122°F))

IP Grade: IP67, Customized Ip68

Corrosion-proof: Standard C3-02 (ISO 12944),

optional for C3~C5,Service life 5-15 years at ocean area

Local operation panel is optional for open, close and valve position adjustment

Certified life: 30,000 cycles (1 cycle = 0°→90°→0°)

Supercapacitor: Safe reset at Open, Close, Retain, User-defined position.Approved by CSA Group for 20,000 cycles (90° stroke) supercapacitor life test

Operation panel:

multiple functions can be set through the panel such as calibrate open position, close position and middle position, Local mode, Stop

Analog signal (for modulating type only):

input 4-20mA, 1-5V, 2-10V, output 4-20mA, 1-5V, 2-10V

Starts(for modulating type only):

EPC100(315)and below sizes: 5million starts,2400 starts max/hour

EPC200(415)-EPC3000 sizes: 2million starts, 1800 starts max/hour

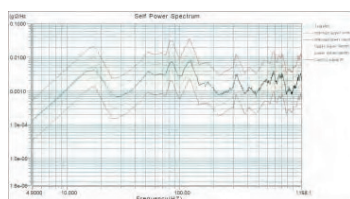
Optional special functions: Deceleration and etc.

Vibration-proof performance:

Train vibration, Frequency 5-1200Hz, Acceleration 1.5g, Time 4H;

Roads bumps, Frequency 5-100Hz, Acceleration 10g, Time 0.5H;

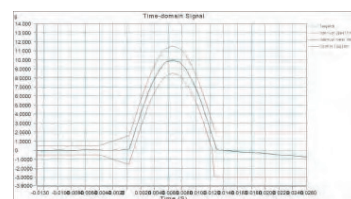
Earthquake, Acceleration 10g, 13ms duration, 125 shocks in both directions



High frequency random vibration



Low frequency random vibration



Earthquake Vibration



SIL2/3 NEMA 6P IP 68 RoHS



Product Data

Model	Torque		Operation time(S) / stroke 90°				
	N·m	in-lb	24VAC/24VDC	110VAC	220VAC	380VAC	440VAC
EPC20P1	10	89	9	6	/	/	
EPC20P2	14	124	11	8	/	/	
EPC20P3	20	177	15	11	/	/	
EPC50P1	35	310	11	8			
EPC50P2	50	443	14	12			
EPC100P1	80	709	20	16			
EPC100P2	100	886	27	18			
EPC32A	200	1772	22				
EPC33A	300	2658	28				
EPC34A	400	3544	40				
EPC200P1	150	1329	10				
EPC200P2	200	1772	10				
EPC200P3	250	2215	15				
EPC200P4	300	2658	15				
EPC200P5	400	3544	19				
EPC500P3	500	4430	24				
EPC500P4	650	5759	30				
EPC500P5	800	7088	36				
EPC500P6	1000	8860	38				
EPC500P7	1200	10632	45				
EPC2000P2	1600	14176	62				
EPC2000P3	2000	17720	77				
EPC3000P1	2500	22150	95				
EPC3000P2	3000	26580	114				
EPC115	9	80	5	/	/		
EPC215	23	204	5				
EPC315	50	443	5				
EPC415	80	709	5				
EPC425	120	1063	5				
EPC435	150	1329	5				
EPC445	200	1772	5				
EPC445	300	2658	5				
EPC455	400	3544	5				
EPC51A	500	4430	10				
EPC52A	650	5759	10				
EPC53A	800	7088	15				
EPC54A	1000	8860	15				

04

EBC Series

EBC Series electric actuator is characterized in high level corrosion-proof performance which equals to C5 grade coating according to ISO 12944. It can be used for marine or weak acid and weak base industrial environment.

Torque: 88.5 in-lb ~ 26,552 in-lb (10N.m ~ 3000N.m)

Voltage: 24VDC/AC,110VAC,220VAC,380VAC,440VAC

Duty Cycle: (IEC 60034-1) S4 50%

Environment Temperature: -40°F ~149°F (-40°C~65°C)

Surface Temperature : ≤ 185°F (85°C)

Humidity: ≤95%(working @50°C(122°F))

IP Grade: IP68

Corrosion-proof:

Standard C5 (ISO 12944),Service life 5-15 years at ocean area

Local operation panel is optional for open, close and valve position adjustment

Certified life: 30,000 cycles (1 cycle = 0°→90°→0°)

Supercapacitor: Safe reset at Open, Close, Retain, User-defined position.Approved by CSA Group for 20,000 cycles (90° stroke) supercapacitor life test.

Operation panel:multiple functions can be set through the panel such as calibrate open position, close position and middle position, Local mode, Stop

Analog signal (for modulating type only):

input 4-20mA, 1-5V, 2-10V, output 4-20mA, 1-5V, 2-10V

Starts(for modulating type only):

EBC100(315)and below sizes: 5 million starts, 2400 starts max/hour

EBC200(415)-EBC3000 sizes: 2 million starts, 1800 starts max/hour

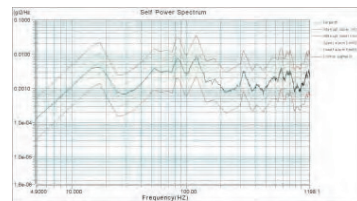
Optional special functions: Deceleration and etc.

Vibration-proof performance:

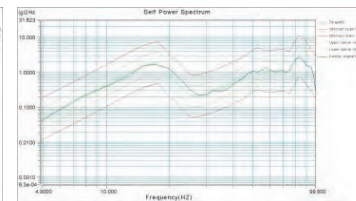
Train vibration, Frequency 5-1200Hz, Acceleration 1.5g, Time 4H;

Roads bumps, Frequency 5-100Hz, Acceleration 10g, Time 0.5H;

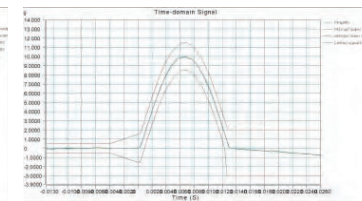
Earthquake, Acceleration 10g, 13ms duration, 125 shocks in both directions



High frequency random vibration



Low frequency random vibration



Earthquake Vibration



SIL2/3 NEMA 6P IP 68 RoHS



Product Data

Model	Torque		Operation time(S) / stroke 90°				
	N·m	in-lb	24VAC/24VDC	110VAC	220VAC	380VAC	440VAC
EBC50P1	40	354	11	8			
EBC50P2	60	531	14	12			
EBC100P1	80	708	20	16			
EBC100P2	100	885	27	18			
EBC200P1	150	1328	10				
EBC200P2	200	1770	10				
EBC200P3	250	2213	15				
EBC200P4	300	2655	15				
EBC200P5	400	3540	19				
EBC500P3	500	4425	24				
EBC500P4	650	5753	30				
EBC500P5	800	7080	36				
EBC500P6	1000	8850	38				
EBC500P7	1200	10620	45				
EBC2000P2	1600	14160	62				
EBC2000P3	2000	17700	77				
EBC3000P1	2500	22125	95				
EBC3000P2	3000	26550	114				
EBC215	23	204	5				
EBC315	50	443	5				
EBC415	80	708	5				
EBC425	120	1062	5				
EBC435	150	1328	5				
EBC445	200	1770	5				
EBC455	300	2655	5				
EBC465	400	3540	5				
EBC51A	500	4425	10				
EBC52A	650	5753	10				
EBC53A	800	7080	15				
EBC54A	1000	8850	15				

05

EXC Series



EXC Series is explosion-proof electric actuator equipped with fail safe function as well. It can be used safely in hazardous areas within the scope of certification. This series is energy saving and safe for production.

Torque: 88.5 in-lb ~ 26,552 in-lb (10N.m ~ 3000N.m)

Voltage: 24VDC/AC,110VAC,220VAC,380VAC,440VAC

Duty Cycle: (IEC 60034-1) S4 50%

Environment Temperature: -40°F ~149°F (-40°C~65°C)

Surface Temperature : ≤ 185°F (85°C)

Humidity: ≤95%(working @50°C(122°F))

IP Grade: IP68

Corrosion-proof:

Standard C5 (ISO 12944),Service life 5-15 years at ocean area

Local operation panel is optional for open, close and valve position adjustment

Certified life: 30,000 cycles (1 cycle = 0°→90°→0°)

Supercapacitor: Safe reset at Open, Close, Retain, User-defined position.Approved by CSA Group for 20,000 cycles (90° stroke) supercapacitor life test

Operation panel: multiple functions can be set through the panel such as calibrate open position, close position and middle position, Local mode, Stop

Analog signal (for modulating type only):

input 4-20mA, 1-5V, 2-10V, output 4-20mA, 1-5V, 2-10V

Starts(for modulating type only):

EXC100(315)and below sizes: 5million starts,2400 starts max/hour

EXC200(415)-EXC3000 sizes: 2million starts, 1800 starts max/hour

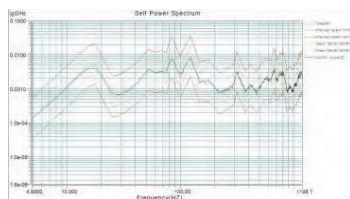
Optional special functions: Deceleration and etc.

Vibration-proof performance:

Train vibration, Frequency 5-1200Hz, Acceleration 1.5g, Time 4H;

Roads bumps, Frequency 5-100Hz, Acceleration 10g, Time 0.5H;

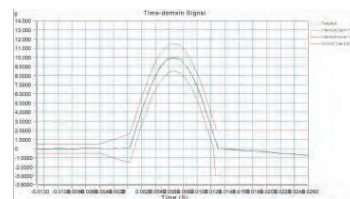
Earthquake, Acceleration 10g, 13ms duration, 125 shocks in both directions



High frequency random vibration



Low frequency random vibration



Earthquake Vibration



SP 273448
US

IO-Link



SIL2/3



IP 68



NEMA 6P



RoHS



Product Data

Model	Torque		Operation time(S) / stroke 90°				
	N·m	in-lb	24VAC/24VDC	110VAC	220VAC	380VAC	440VAC
EXC50P1	40	354	11	8			
EXC50P2	60	531	14	12			
EXC100P1	80	708	20	16			
EXC100P2	100	885	27	18			
EXC200P1	150	1328	10				
EXC200P2	200	1770	10				
EXC200P3	250	2213	15				
EXC200P4	300	2655	15				
EXC200P5	400	3540	19				
EXC500P3	500	4425	24				
EXC500P4	650	5753	30				
EXC500P5	800	7080	36				
EXC500P6	1000	8850	38				
EXC500P7	1200	10620	45				
EXC2000P2	1600	14160	62				
EXC2000P3	2000	17700	77				
EXC3000P1	2500	22125	95				
EXC3000P2	3000	26550	114				
EXC215	23	204	5				
EXC315	50	443	5				
EXC415	80	708	5				
EXC425	120	1062	5				
EXC435	150	1328	5				
EXC445	200	1770	5				
EXC455	300	2655	5				
EXC465	400	3540	5				
EXC51A	500	4425	10				
EXC52A	650	5753	10				
EXC53A	800	7080	15				
EXC54A	1000	8850	15				

**Hazardous area
protection
performance**



II 2G Ex db IIC T6 Gb
II 2D Ex tb IIIC T85°C Db

IECEX

Ex db IIC T6 Gb
Ex tb IIIC T85°C Db



Class I, Division 1, Groups C and D, T6
Class II, Division 1, Groups E, F and G, T85 °C
Class III
Class I, Zone, AEx db IIC T6Gb
Class II, Zone 21, AEx tb IIIC T85 °C Db
Ex db IIC Gb T6
Ex tb IIIC Db T85 °C

06

EPZ Series



EPZ Series is linear electric actuator that can be used with valves of linear stroke such as linear control valve.

Force: 3000-25000N

Stroke: 100mm max

Voltage: 24VDC/AC,110VAC,220VAC,380VAC,440VAC

Duty Cycle:

Continuous running duty type (IEC 60034-1) S1 100%

Environment Temperature: -40°F ~149°F (-40°C~65°C)

Surface Temperature : ≤ 185°F (85°C)

Humidity: ≤95%(working @50°C(122°F))

IP Grade: IP67, Customized IP68

Corrosion-proof: Standard C3-02 (ISO 12944), optional for C3~C5,Service life 5-15 years at ocean area

Local operation panel is optional for open, close and valve position adjustment

Certified life: 30,000 cycles

Operation panel(for modulating &Smart on-off type only):

multiple functions can be set through the panel such as calibrate open,close and middle position, Local mode, Stop

Analog signal (for modulating type only):

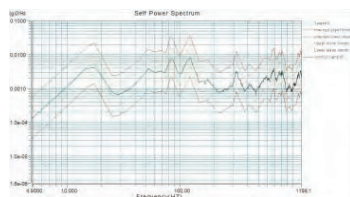
input 4-20mA, 1-5V, 2-10V, output 4-20mA, 1-5V, 2-10V

Vibration-proof performance:

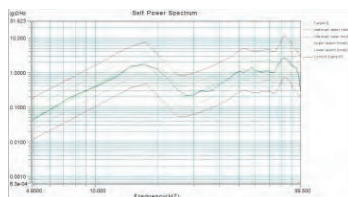
Train vibration, Frequency 5-1200Hz, Acceleration 1.5g, Time 4H;

Roads bumps, Frequency 5-100Hz, Acceleration 10g, Time 0.5H;

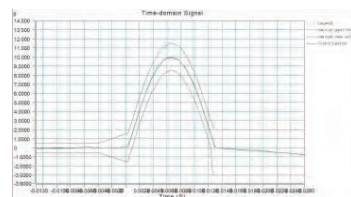
Earthquake, Acceleration 10g, 13ms duration, 125 shocks in both directions



High frequency random vibration



Low frequency random vibration



Earthquake Vibration



SIL2/3 NEMA 6P IP 68 RoHS



Product Data

Model	Force(N)	Speed(mm/S)	Travel(mm)
EPZ100P1	3000	1.00	100mm max
EPZ100P2	6000	0.56	100mm max
EPZ100P3	8000	0.46	100mm max
EPZ100P4	10000	0.30	100mm max
EPZ200P1	15000	0.82	100mm max
EPZ200P2	20000	0.62	100mm max
EPZ200P3	25000	0.50	100mm max

07

EXZ Series



EXZ Seires is explosion-proof linear electric actuator that can be used with valves of linear stroke such as linear control valve in approved hazardous area.

Force: 3000-25000N

Stroke: 100mm max

Voltage: 24VDC/AC,110VAC,220VAC,380VAC,440VAC

Duty Cycle:

Continuous running duty type (IEC 60034-1) S1 100%

Environment Temperature: -40°F ~149°F (-40°C~65°C)

Surface Temperature : ≤ 185°F (85°C)

Humidity: ≤95%(working @50°C(122°F))

IP Grade: IP67, Customized IP68

Corrosion-proof: Standard C3-02 (ISO 12944), optional for C3~C5,Service life 5-15 years at ocean area

Local operation panel is optional for open, close and valve position adjustment

Certified life: 30,000 cycles

Operation panel(for modulating &Smart on-off type only):

multiple functions can be set through the panel such as calibrate open,close and middle position, Local mode, Stop

Analog signal (for modulating type only):

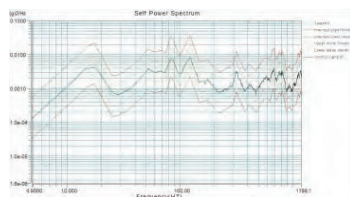
input 4-20mA, 1-5V, 2-10V, output 4-20mA, 1-5V, 2-10V

Vibration-proof performance:

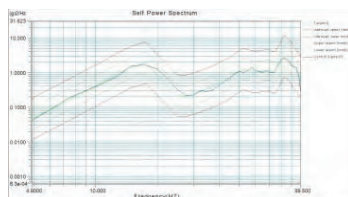
Train vibration, Frequency 5-1200Hz, Acceleration 1.5g, Time 4H;

Roads bumps, Frequency 5-100Hz, Acceleration 10g, Time 0.5H;

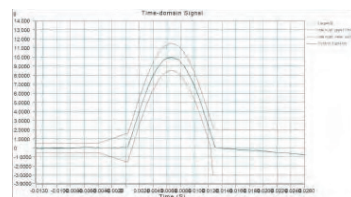
Earthquake, Acceleration 10g, 13ms duration, 125 shocks in both directions



High frequency random vibration



Low frequency random vibration



Earthquake Vibration



SP 273448
C US

SIL2/3

IP 68

NEMA 6P

RoHS

IO-Link



Product Data

Model	Force(N)	Speed(mm/S)	Travel(mm)
EXZ100P1	3000	1.00	100 max
EXZ100P2	6000	0.56	100 max
EXZ100P3	8000	0.46	100 max
EXZ100P4	10000	0.30	100 max
EXZ200P1	15000	0.82	100 max
EXZ200P2	20000	0.62	100 max
EXZ200P3	25000	0.50	100 max



IO-Link System

IO

IO-LINK demonstration system is composed of HMI display, PLC, IO-Link master station and electric actuator, Profinet protocol is used to read the parameter and operate the actuator.

