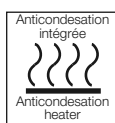




Electric actuator ER+



CSA C22.2 No. 139-13
UL 429:2013



AXMART®



ARA®

PNEUMATIK

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valpes

A WATTS Brand

Description

90° IP66 electric actuator, PA6 housing UL 94 VO with secured manual override for torques of 10-20-35-60-100Nm and in accordance with CE-ROHS-REACH standards.



ER+

Version	Page / External ref.
standard 90°	3
Long operating time 90°	3
Version with FAILSAFE security unit	5
Version with positioning solution	8
3-position version	11
« Powered by AXMART® », control and programming with Bluetooth® connection	DSBA3302
Pulse control (500ms) ¹⁾	—
Applications with vibrations ¹⁾	—

¹⁾ On request.

Technical datas

Visual position indicator	Modular (handle for ER 10 & 20)
Control	On-Off or 3-modulating points
Voltages	15V to 30V AC (50/60Hz) & 12V to 48V DC or 100V to 240V AC (50/60Hz) & 100V to 350V DC
Duty cycle	Service S4 - 50% (IEC34 standard)
Torque limiter	Software
Serial connection	RS485
Number of starts / hour ²⁾	150
Feedback relay	Failure (torque, temperature ...)
Anti-condensation heater	Self-regulated
Drive nut	Star
Removable adaptation plates (ISO5211)	F03/F05 & F04 (ER 10 & 20 & 35) F05/F07 (ER 35 & 60 & 100)
Number of limit switches	4 adjustable switches (5A max.)
Secured manual override	Decutching system and external shaft
Mechanical travel stops	90°
Electric connection	1 Connector 3P+T DIN43650 + 1 ISO M20 (3-position actuators : 2 ISO M20)
Temperature	-10°C to +55°C (FAILSAFE actuator : -10°C to +40°C)
Enclosure	IP66
Weight	1Kg to 2,3Kg
Warranty ³⁾	3-year warranty or 50 000 actuations

²⁾ Recommended use, see instructions notice.

³⁾ Tested on testing bench in the worst conditions (maximal torque and duty rating).

Options

Card with two extra limit switches (EFC.2)
100 / 1000 / 5000 / 10000 Ohms feedback potentiometer (EPR.B) 4)
0-10V, 0-20mA or 4-20mA transmitter (EPT.C) 5)
1 or 2 connector M12 3P+T (ECM.1 or ECM.2)
Connector 3P+T DIN43650 for feedback information (ECD.1A)
Connector 3P+T DIN43650 / NPT for power supply (ECD.NPT)
Connector 3P+T DIN43650 for feedback information (ECD.1A..NPT)
1 or 2 ISO M20 to 1/2" NPT adapters (NPT.1 or NPT.2)
Handle for manual override (EPR)
Version for applications with vibrations (standard and POSI ER PLUS)

⁴⁾ Specify the model.

⁵⁾ Only for a travel time higher or equal to 10s



Please consider 1.5 safety factor (and 2.0 safety factor for POSI version) when sizing the actuator

Standard range

Code	Star drive nut Connection ¹⁾	Torque	Voltage supplies	Power	Operating time	
					Without load	With load
ER10.X0A.G00 ²⁾	14 / F03-F04-F05	10Nm	100V to 240V 50/60Hz (100V to 350V DC)	15W	9s	11s
ER10.X0B.G00 ²⁾	14 / F03-F04-F05	10Nm	15V to 30V 50/60Hz (12V to 48V DC)	15W	9s	11s
ER20.X0A.G00 ²⁾	14 / F03-F04-F05	20Nm	100V to 240V 50/60Hz (100V to 350V DC)	15W	9s	12s
ER20.X0B.G00 ²⁾	14 / F03-F04-F05	20Nm	15V to 30V 50/60Hz (12V to 48V DC)	15W	9s	12s
ER35.X0A.G00 ²⁾	14 / F03-F04-F05	35Nm	100V to 240V 50/60Hz (100V to 350V DC)	15W	19s	26s
ER35.X0B.G00 ²⁾	14 / F03-F04-F05	35Nm	15V to 30V 50/60Hz (12V to 48V DC)	15W	19s	24s
ER35.90A.G00	22 / F05-F07	35Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	6s	7s
ER35.90B.G00	22 / F05-F07	35Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	6s	7s
ER60.90A.G00	22 / F05-F07	60Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	10s	12s
ER60.90B.G00	22 / F05-F07	60Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	10s	12s
ER100.90A.G00	22 / F05-F07	100Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	20s	23s
ER100.90B.G00	22 / F05-F07	100Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	19s	22s

Long operating time range

Code	Star drive nut Connection ¹⁾	Torque	Voltage supplies	Power	Operating time	
					Without load	With load
ER35.93A.G00	22/F05-F07	35Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	34s	40s
ER35.93B.G00	22/F05-F07	35Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	34s	41s
ER60.93A.G00	22/F05-F07	60Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	67s	79s
ER60.93B.G00	22/F05-F07	60Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	68s	79s
ER100.93A.G00	22/F05-F07	100Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	110s	119s
ER100.93B.G00	22/F05-F07	100Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	110s	119s

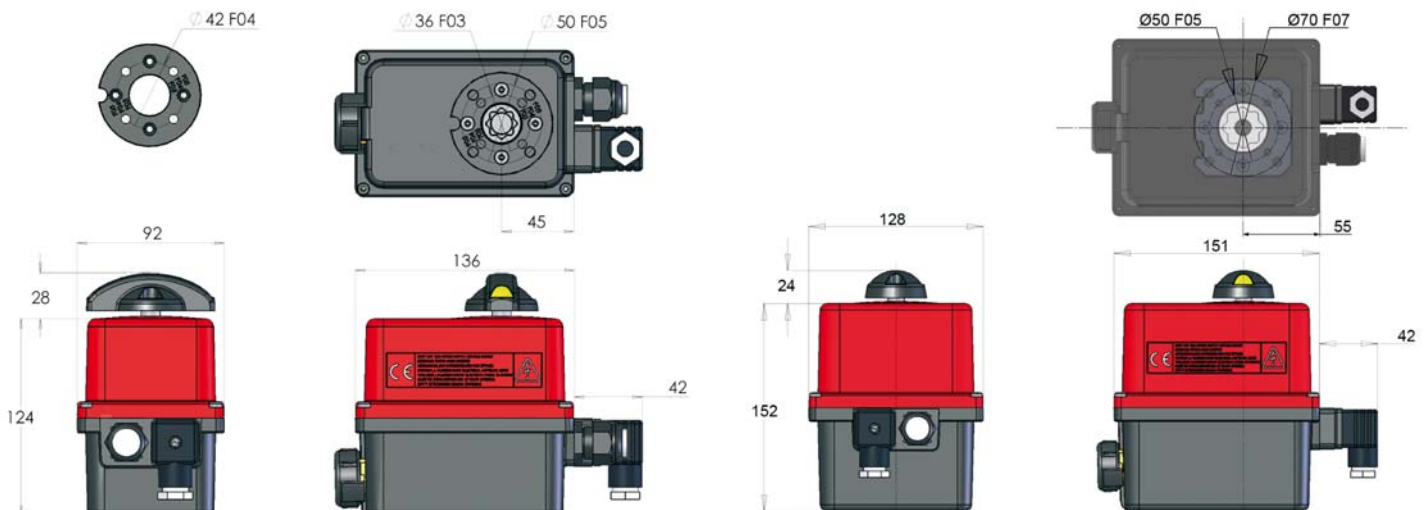
¹⁾ Reducing sleeves star 14 to square 9-11 or star 22 to square 17.

²⁾ X=removable plate F03/F05 or F04, can be ordered mounted.

Dimensions

Type : ER10 & 20 & 35 (ER35 without handle)

Type : ER35 & 60 & 100



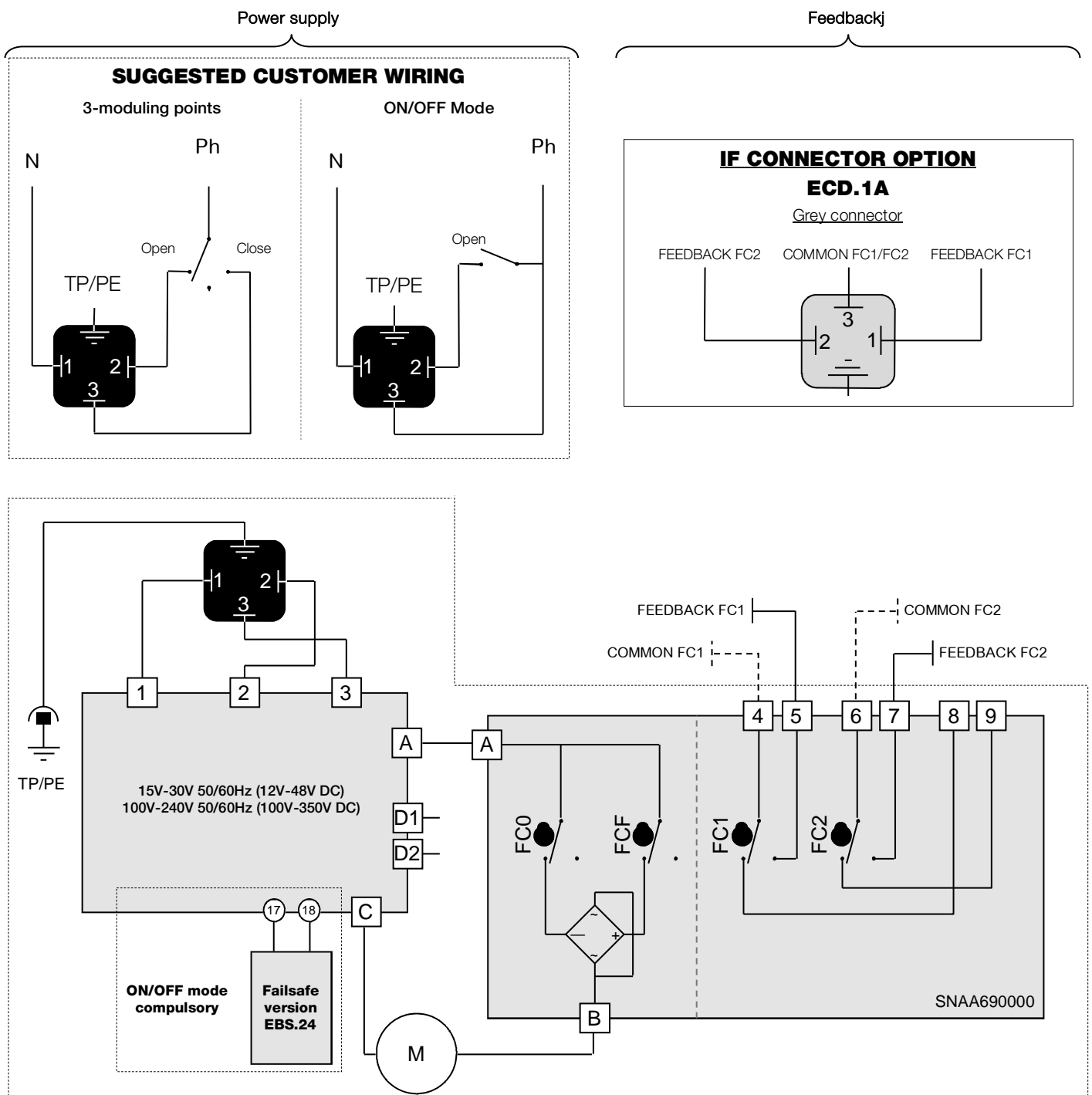
Please consider 1.5 safety factor (and 2.0 safety factor for POSI version) when sizing the actuator

Electric wiring

Rep.	Designation	Rep.	Designation
FC0	Open limit switch	FC1	Auxiliary limit switch 1
FCF	Close limit switch	FC2	Auxiliary limit switch 2
D1/D2	Failure report Terminal strip (24V DC / 3A max)		



The terminal temperature can reach 90°C



FAILSAFE actuator

Description

Failsafe option integrate battery pack monitored by electronic board in the actuator. Its function is to relay in case of power supply failure on terminal PIN 1, 2 and 3 of the actuator. The fail safe option could be set on different position like normally open (NO) or normally close (NC) depends on customer application.

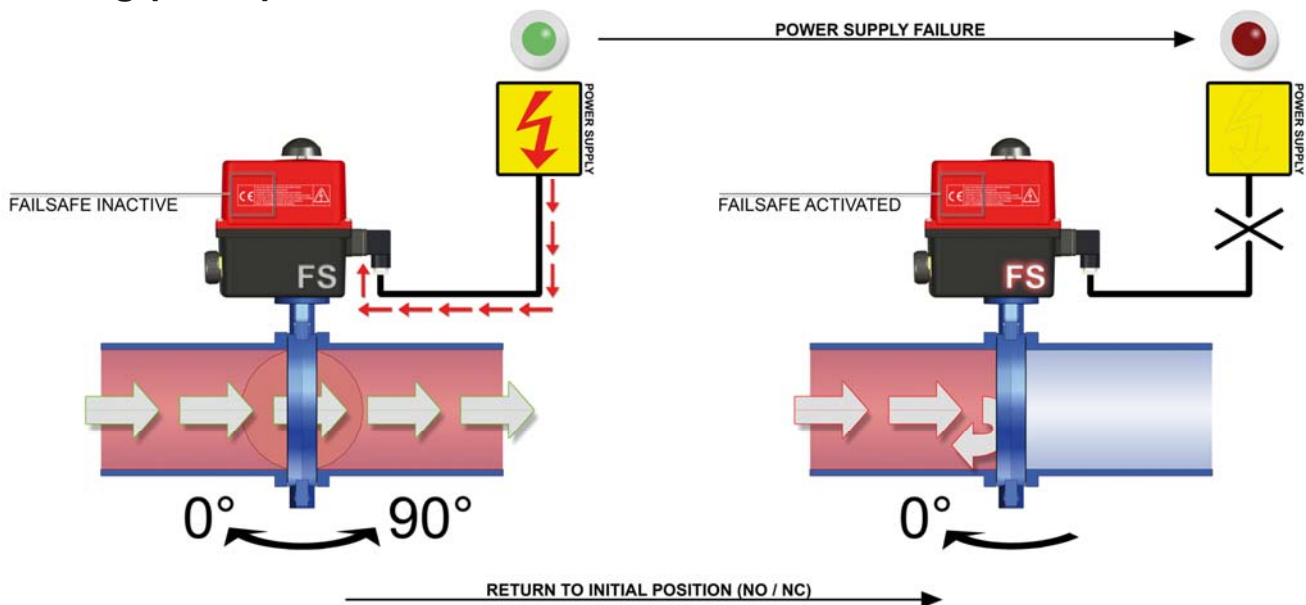
The electronic board monitors the battery pack and check the status of battery (cycle load and failure). If a battery failure is detected, a contact on PIN 66 and 66 switch off. If customer use this contact he could be aware that there is a failure on battery in the actuator without remove cover and plan the replacement.

Failsafe option required ON/OFF mode.

Advantages

- All in one: no additional wiring required
- Cost effective
- Battery gauge active 24H/24H
- Power shut off after 2 mn to avoid battery discharging
- Quick and easy replacement of the battery
- 2 initial position settings: “normally open” or “normally closed”
- Battery failure feedback relai

Working principle



Please consider 1.5 safety factor (and 2.0 safety factor for POSI version) when sizing the actuator

FAILSAFE standard range

Code	Star drive nut Connection ¹⁾	Torque	Voltage supplies	Power	Operating time	
					Without load	With load
ER10.X0A.GS2 ²⁾	14 / F03-F04-F05	10Nm	100V to 240V 50/60Hz (100V to 350V DC)	15W	9s	11s
ER10.X0B.GS2 ²⁾	14 / F03-F04-F05	10Nm	15V to 30V 50/60Hz (12V to 48V DC)	15W	9s	11s
ER20.X0A.GS2 ²⁾	14 / F03-F04-F05	20Nm	100V to 240V 50/60Hz (100V to 350V DC)	15W	9s	12s
ER20.X0B.GS2 ²⁾	14 / F03-F04-F05	20Nm	15V to 30V 50/60Hz (12V to 48V DC)	15W	9s	12s
ER35.X0A.GS2 ²⁾	14 / F03-F04-F05	35Nm	100V to 240V 50/60Hz (100V to 350V DC)	15W	19s	26s
ER35.X0B.GS2 ²⁾	14 / F03-F04-F05	35Nm	15V to 30V 50/60Hz (12V to 48V DC)	15W	19s	24s
ER35.90A.GS2	22 / F05-F07	35Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	6s	7s
ER35.90B.GS2	22 / F05-F07	35Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	6s	7s
ER60.90A.GS2	22 / F05-F07	60Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	10s	12s
ER60.90B.GS2	22 / F05-F07	60Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	10s	12s
ER100.90A.GS2	22 / F05-F07	100Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	20s	23s
ER100.90B.GS2	22 / F05-F07	100Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	19s	22s

FAILSAFE long operating range

Code	Star drive nut Connection ¹⁾	Torque	Voltage supplies	Power	Operating time	
					Without load	With load
ER35.93A.GS2	22/F05-F07	35Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	34s	40s
ER35.93B.GS2	22/F05-F07	35Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	34s	41s
ER60.93A.GS2	22/F05-F07	60Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	67s	79s
ER60.93B.GS2	22/F05-F07	60Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	68s	79s
ER100.93A.GS2	22/F05-F07	100Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	110s	119s
ER100.93B.GS2	22/F05-F07	100Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	110s	119s

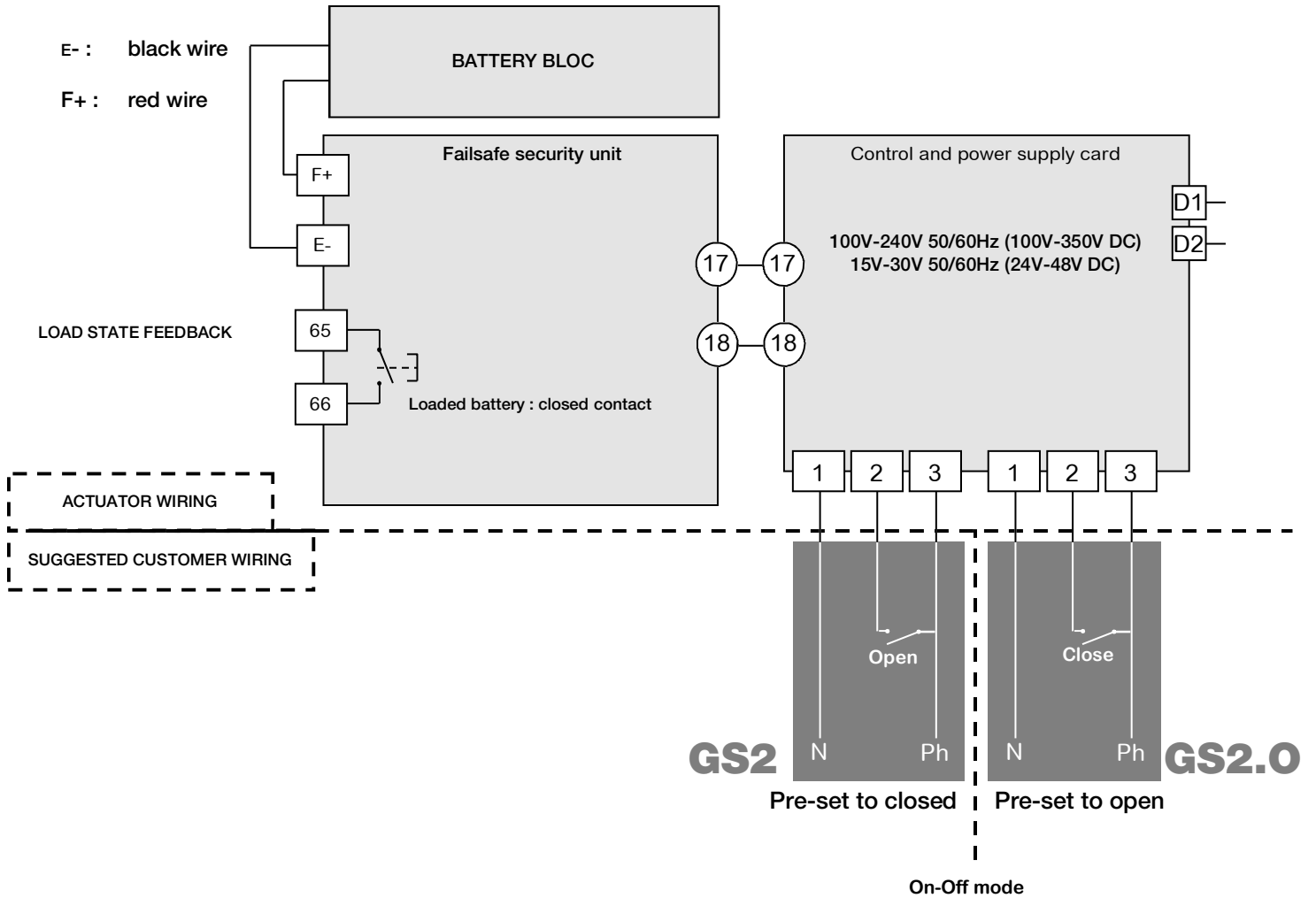
¹⁾ Reducing sleeves star 14 to square 9-11 or star 22 to square 17.

²⁾ X=removable plate F03/F05 or F04, can be ordered mounted.



Please consider 1.5 safety factor (and 2.0 safety factor for POSI version) when sizing the actuator

FAILSAFE actuators • Electric wiring



- The terminal temperature can reach 90°C
- The two functioning modes « pre-set to closed » and « pre-set to open » are two different products (pre-set in factory) and can't be interchangeable.

POSI actuators

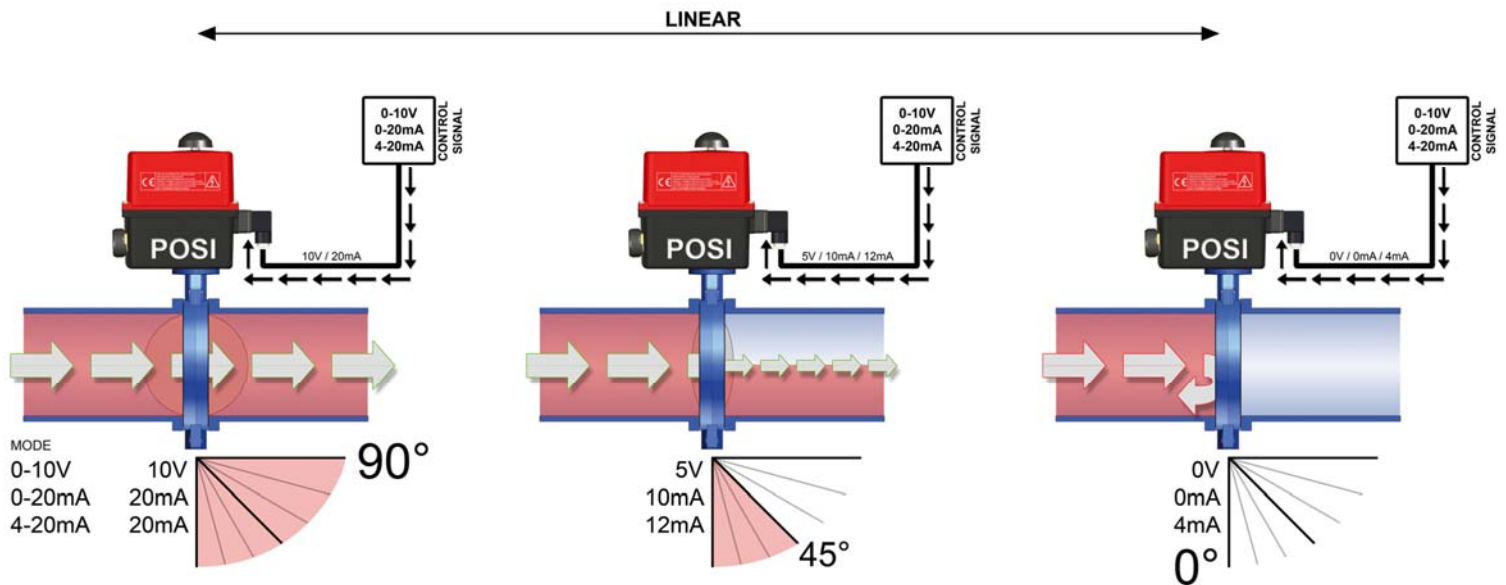
Description

Actuator ER series with advanced and friendly positioning solution, allowing the control of a valve with a signal: 0-10V, 4-20mA or 0-20mA. For applications like dosing, modulating, flow control, filling up (increases the accuracy in the last stage), mixing...

Advantages

- All in one: no additional wiring required
- Cost effective
- Microprocessor base
- Secured process (memorization loops)
- Self configurable (0-20mA/4-20mA/0-10V)
- Reversible (exemple : 20-4mA)
- Training mode
- Anti condensation heater
- Electronic torque limiter
- Failure feedback relay
- Rotation up to 180° or 270° (on request)
- Preset from factory

Working principle



Please consider 1.5 safety factor (and 2.0 safety factor for POSI version) when sizing the actuator

POSI actuators

Various control types (control signal on terminals N°15 and N°16)

On request, our cards can be set in factory. The consign and the feedback signal can have different forms (current or voltage). Without any information from the customer, the cards are set for current 4-20mA (control + feedback signal).

Control in 0-10V modes:

In case of outside event, absence of control signal (accidental wires cut for example) but in presence of power, the actuator will travel to defined position (open or closed valve).

In standard our actuators will close themselves in absence of control signal but there are other possibilities on request.

Control in 4-20mA mode:

In case of outside event, absence of control signal (accidental wires cut for example) but in presence of power, the actuator will stay in its position.

In the both cases, when the control signal is restored, the actuator reach automatically the position corresponding to control signal value.

POSI range

Code	Star drive nut Connection ¹⁾	Torque	Voltage supplies	Power	Operating time	
					Without load	With load
ER20.X3A.GP6 ²⁾	14 / F03-F04-F05	20Nm	100V to 240V 50/60Hz (100V to 350V DC)	15W	16s	25s
ER20.X3B.GP6 ²⁾	14 / F03-F04-F05	20Nm	15V to 30V 50/60Hz (12V to 48V DC)	15W	16s	25s
ER35.93A.GP6	22 / F05-F07	35Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	34s	40s
ER35.93B.GP6	22 / F05-F07	35Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	34s	41s
ER60.93A.GP6	22 / F05-F07	60Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	67s	79s
ER60.93B.GP6	22 / F05-F07	60Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	68s	79s
ER100.93A.GP6	22 / F05-F07	100Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	110s	119s
ER100.93B.GP6	22 / F05-F07	100Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	110s	119s

¹⁾ Reducing sleeves star 14 to square 9-11 or star 22 to square 17.

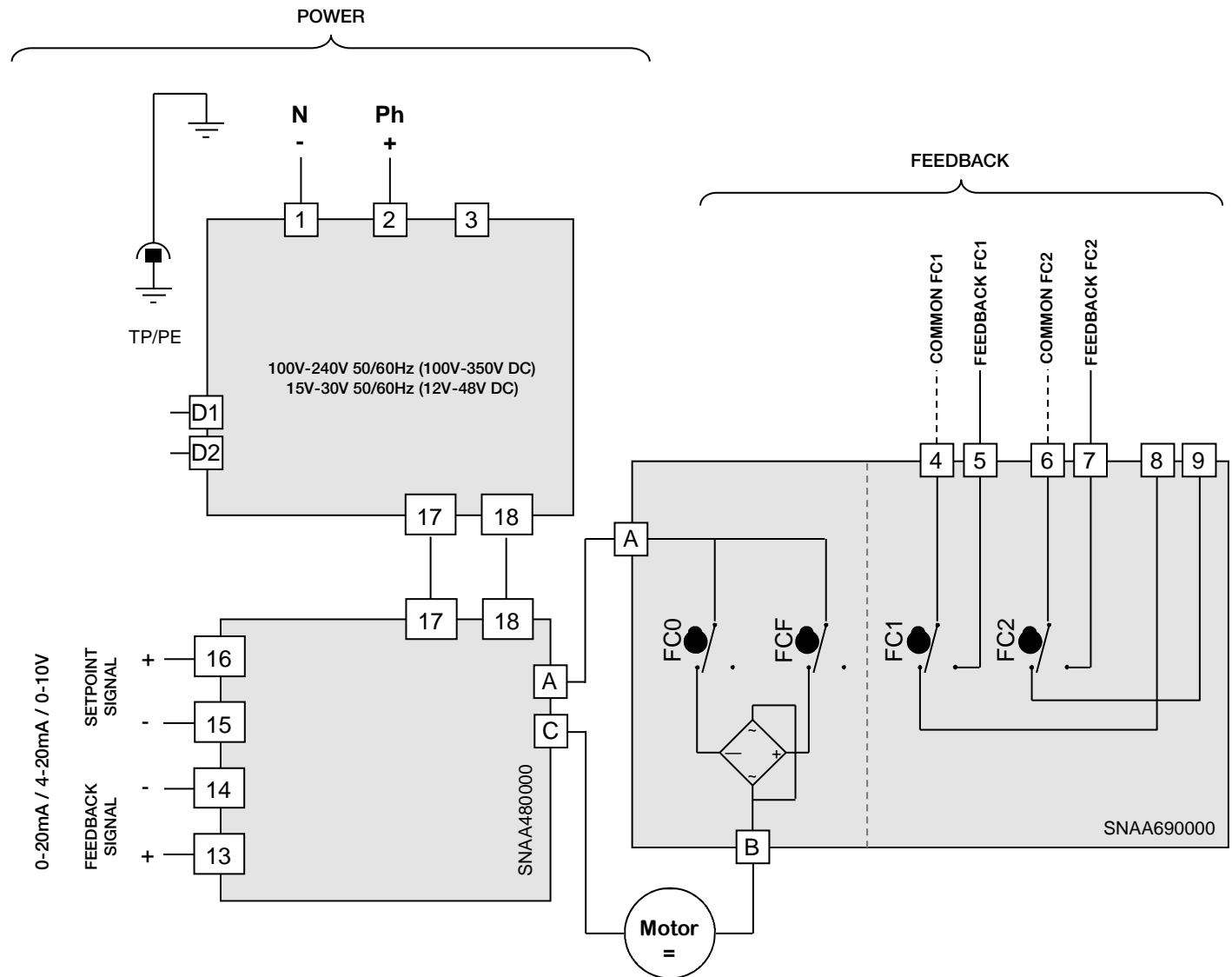
²⁾ X=removable plate F03/F05 or F04, can be ordered mounted.



Please consider 1.5 safety factor (and 2.0 safety factor for POSI version) when sizing the actuator

POSI actuators • Electric wiring

Rep.	Designation	Rep.	Designation
FC0	Open limit switch	FC1	Auxiliary limit switch 1
FCF	Close limit switch	FC2	Auxiliary limit switch 2
D1/D2	Failure report Terminal strip (24V DC / 3A max)		



- The card resolution is 1°
- 10 KOhm input impedance if control with voltage (0-10V) / 100 Ohm input impedance if control with current (0-20mA ou 4-20mA)



- The terminal temperature can reach 90°C
- The used wires must be rigid (feedback voltages : 4 to 250V AC/DC)
- For a use with a long wiring, the induction current generated by the wires mustn't be higher than 1mA
- The control voltage must be .S.E.L.V. (Safety Extra Low Voltage)
- No common earth/ground connexion between the control (input and output signal) and the power supply. (Type 0-20 or 4-20mA : 5V DC max.)

3-position actuators

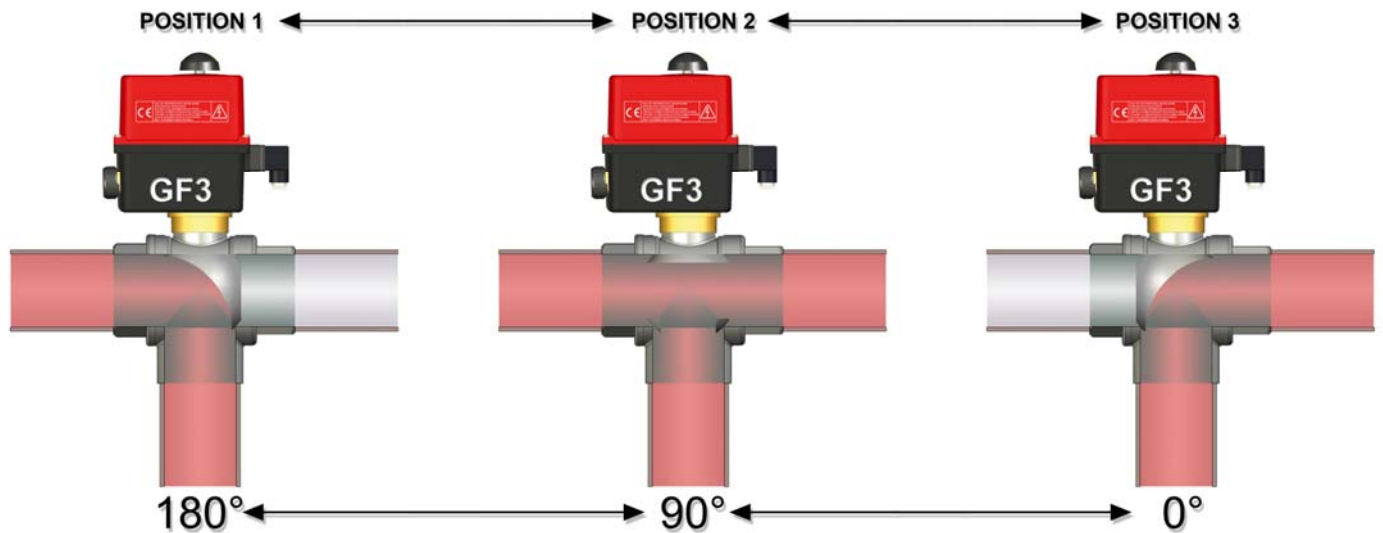
Description

Actuator ER series with 3rd position card, allowing an intermediate position of the actuator between 0° and 90° (or 0° and 180°, or 0° and 270°). Can be used to stop the actuator at 90° in case of a 180° 3-way valve. Or for any other application which requires a partial opening before full closing

Advantages

- All in one: no additional wiring required
- Cost effective
- Quick and easy setup
- 7 limit switches
- Anti condensation heater
- Electronic torque limiter
- Failure report
- Rotation up to 180° (or 270° on request)
- Preset from factory

Working principle



Please consider 1.5 safety factor (and 2.0 safety factor for POSI version) when sizing the actuator

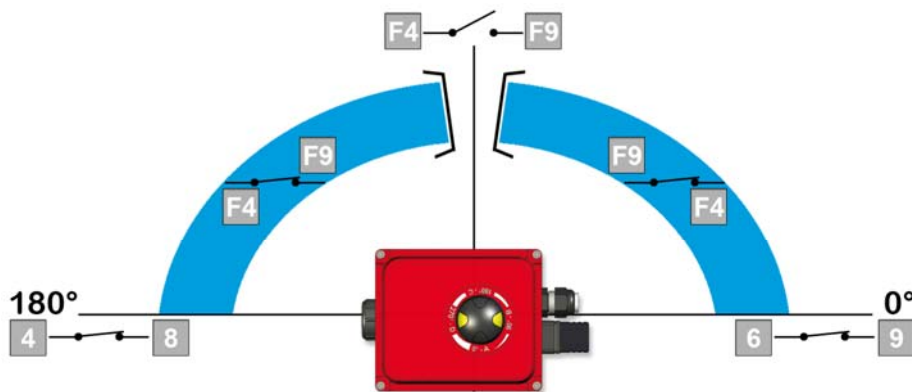
3-position actuators

GF3 option allow actuator to be drive and stop in 3 positions.

These 3 positions could be between 0° to 180°. In standard actuators are setting in our workshop at 0° 90° 180° that's fit with standard 3 ways ball valve. Others positions still available but customer have to price on the order which position is request.

These 3 positions are driven by 4 switches (FCO,FCF,FCIO and FCIF) and 3 switches for feed back signal

Switches FC1,FC2 are NO contact (close the circuit in extreme position) and FC3 is a NC contact (open the circuit in intermediate position).



3-position standard range

Code	Star drive nut Connection ¹⁾	Torque	Voltage supplies	Power	90° operating time	
					Without load	With load
ER10.X0A.GF3 ²⁾	14 / F03-F04-F05	10Nm	100V to 240V 50/60Hz (100V to 350V DC)	15W	9s	11s
ER10.X0B.GF3 ²⁾	14 / F03-F04-F05	10Nm	15V to 30V 50/60Hz (12V to 48V DC)	15W	9s	11s
ER20.X0A.GF3 ²⁾	14 / F03-F04-F05	20Nm	100V to 240V 50/60Hz (100V to 350V DC)	15W	9s	12s
ER20.X0B.GF3 ²⁾	14 / F03-F04-F05	20Nm	15V to 30V 50/60Hz (12V to 48V DC)	15W	9s	12s
ER35.X0A.GF3 ²⁾	14 / F03-F04-F05	35Nm	100V to 240V 50/60Hz (100V to 350V DC)	15W	19s	26s
ER35.X0B.GF3 ²⁾	14 / F03-F04-F05	35Nm	15V to 30V 50/60Hz (12V to 48V DC)	15W	19s	24s
ER35.90A.GF3	22 / F05-F07	35Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	6s	7s
ER35.90B.GF3	22 / F05-F07	35Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	6s	7s
ER60.90A.GF3	22 / F05-F07	60Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	10s	12s
ER60.90B.GF3	22 / F05-F07	60Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	10s	12s
ER100.90A.GF3	22 / F05-F07	100Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	20s	23s
ER100.90B.GF3	22 / F05-F07	100Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	19s	22s

¹⁾ Reducing sleeves star 14 to square 9-11 or star 22 to square 17.

²⁾ X=removable plate F03/F05 or F04, can be ordered mounted.

3-position long operating time range

Code	Star drive nut Connection ¹⁾	Torque	Voltage supplies	Power	90° operating time	
					Without load	With load
ER35.93A.GF3	22/F05-F07	35Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	34s	40s
ER35.93B.GF3	22/F05-F07	35Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	34s	41s
ER60.93A.GF3	22/F05-F07	60Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	67s	79s
ER60.93B.GF3	22/F05-F07	60Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	68s	79s
ER100.93A.GF3	22/F05-F07	100Nm	100V to 240V 50/60Hz (100V to 350V DC)	45W	110s	119s
ER100.93B.GF3	22/F05-F07	100Nm	15V to 30V 50/60Hz (12V to 48V DC)	45W	110s	119s

¹⁾ Reducing sleeves
²⁾ X=removable



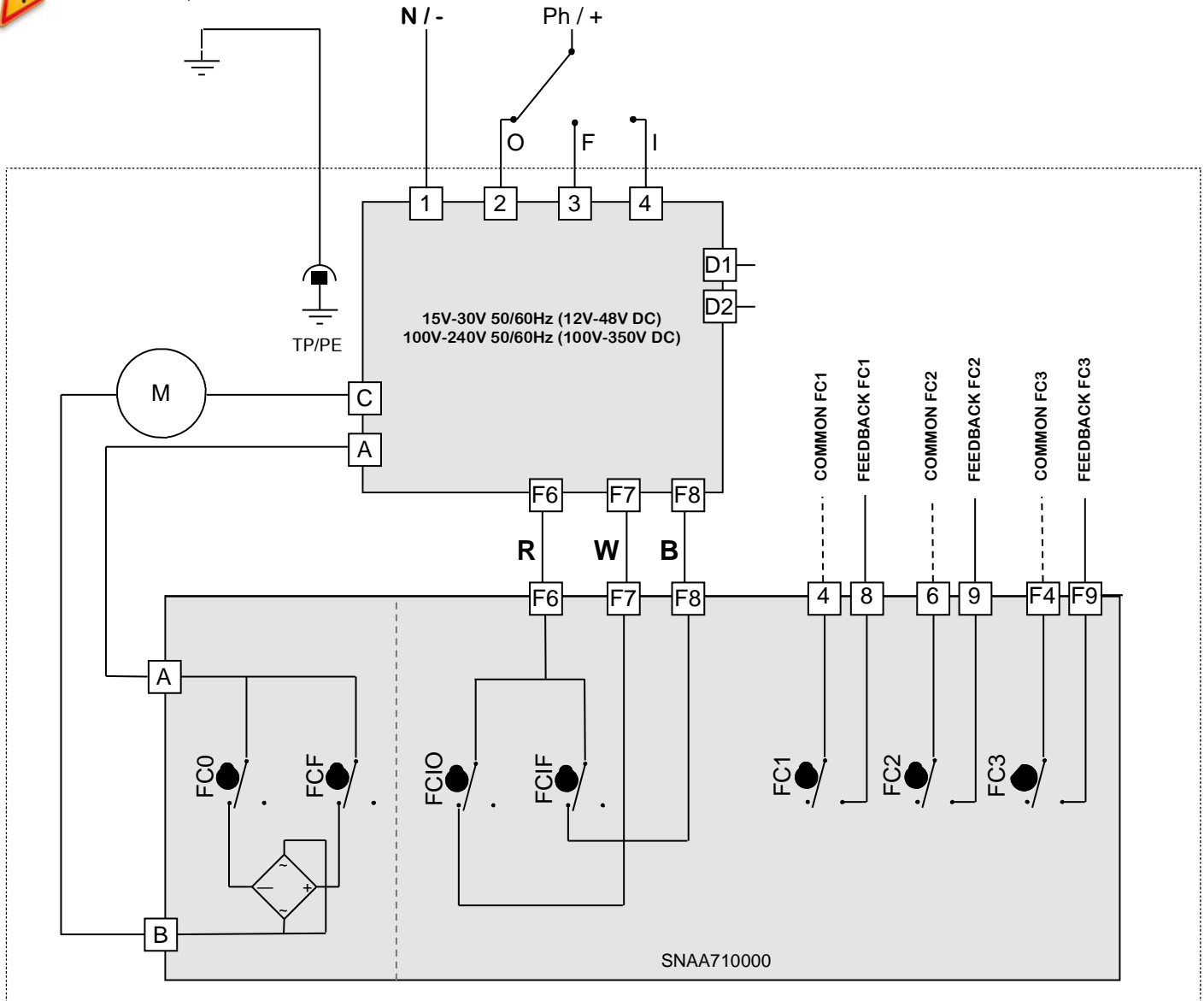
Please consider 1.5 safety factor (and 2.0 safety factor for POSI version) when sizing the actuator

3-position actuators • Electric wiring

Rep.	Designation	Rep.	Designation
FC0	Open limit switch	FC1	Auxiliary limit switch 1
FCF	Close limit switch	FC2	Auxiliary limit switch 2
FCIO	Intermediate open limit switch	FC3	Auxiliary limit switch 3
FCIF	Intermediate close limit switch	R	Red
W	White	B	Black
D1/D2	Failure report Terminal strip (24V DC / 3A max)		



The terminal temperature can reach 90°C



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