

## LINEAR ELECTRIC ACTUATORS WITH FAIL-SAFE FUNCTION Type ELR2.1, ELR2.2, ELR2.3

### DESCRIPTION

Electric linear actuators ELR series for modulating and open-close duty of control and process technology to operate control valves.

The self-locking stem/stem nut is driven by an electric motor via a gearing. Load and limit switches define the stops for the end positions.

In case of power failure, the electric linear actuator runs spring driven into the respective fail-safe position (thrust rod either extended or retracted). In modulating duty, the end position seating is made via limit switches.

### MAIN FEATURES

- Electric manual operation with OPEN/CLOSE buttons.
- Mounting to valve made via yoke or mounting flange DIN 3358. The design enables easy connection to all types of valves. Standard version is suitable for Adcatrol valves.
- Generating a defined closing force in the end position leads to constant tight shut-off of the valve.
- The actuators are in enclosure protection IP 54 and are designed for rugged industrial use.
- Stall proof synchronous motors (or brake motors for higher positioning forces) ensure the highest positioning accuracy.
- Mechanical stroke indication via anti-rotation bar.
- Exact, backlash-free measurement of actual valve stroke by direct coupling to the valve stem.
- Universally usable actuators due to control via 3-point-step controllers, analogue input signals (0...10 V, 0 (4)...20 mA).
- Easy supplement to actuator with optional devices due to modular design.
- Limit switches, easily adjustable, for stroke limitation or as signal for intermediate positions.
- Integrated, adjustable stroke setting to nominal stroke over the complete stroke range (without exchanging pinions, ...).



IP54



IP65

TECHNICAL DATA			
TYPE	ELR 2.1	ELR 2.2	ELR 2.3
Positioning force – CLOSED (kN)	≥ 0,9	≥ 2,2	≥ 2,2
Positioning force – OPEN (kN)	≤ 5,3	≤ 4,0	≤ 4,0
Max. stroke (mm)	35	35	46
Positioning speed modulating duty <sup>a)</sup> (mm/min – mm/s)	17,5 – 0,29		
Positioning speed in case of power failure Fail-safe function (mm/s)	~4,1		
Power consumption (230 V) motor (W)	8,5		
Power consumption (230 V) magnet (W)	15		
Type of motor <sup>c)</sup>	syn		
Motor protection <sup>d)</sup>	B		
Supply voltages <sup>b)</sup>	24 V / 115 V / 230 V 50/60 Hz		
Closing direction (Fail-safe function)	Extending thrust rod or retracting thrust rod		
Cable entry	2 x M16 x 1,5 and 2 dummy plugs M20 x 1,5		
Type of duty acc. to IEC 34-1	S1 – 100% c.d.f., S4 – 30% c.d.f. 1200 c/h		
Electrical connection	Inside terminal board, terminal configuration according to electrical connection wiring diagram		
Switch off in end position	2 limit switches, max. 250 V AC, rating for resistive load, max. 10 A, for inductive load, max. 10 A		
Mounting position	Any, except downward		
Ambient temperature	-20 °C to 50 °C		
Lubricant for gearing	Renolit AL-WIK 260 X		
Position indicator	by anti-rotation bar		
Manual adjustment	electrical adjustment via push buttons (only possible when voltage is present)		
Enclosure protection acc. to EN 60529	IP 54		
Connection type	EN ISO 5210 F05 (also refer to options)		
Test / approvals	actuator has been tested by the TÜV (German Technical control board) according to DIN 32730 (safety functions against temperature in heating facilities)		
Weight (kg)	8,7	9,3	10

a) at 60 Hz, the positioning speeds and input power increase by 20%  
b) other supply voltages on request

c) syn synchronous motor  
asyn asynchronous motor  
d) B stallproof motor  
T thermoswitch for temperature monitoring

## ACCESSORIES AND OPTIONS

### Accessories

Yoke for adaptation to valves. Refer to dimension sheet.	STALA / FLA
Elastic thrust rod coupling effective on both sides	KUP-EL2
Special finnish coating for use in the tropics ("tropics coating").	LA-TR
Version IP65: with bellows at thrust rod and metal cover with seal (for EL12)	A-IP65
Version with bellows at thrust rod (for EL20, 45, 80 and 120).	A-FAB

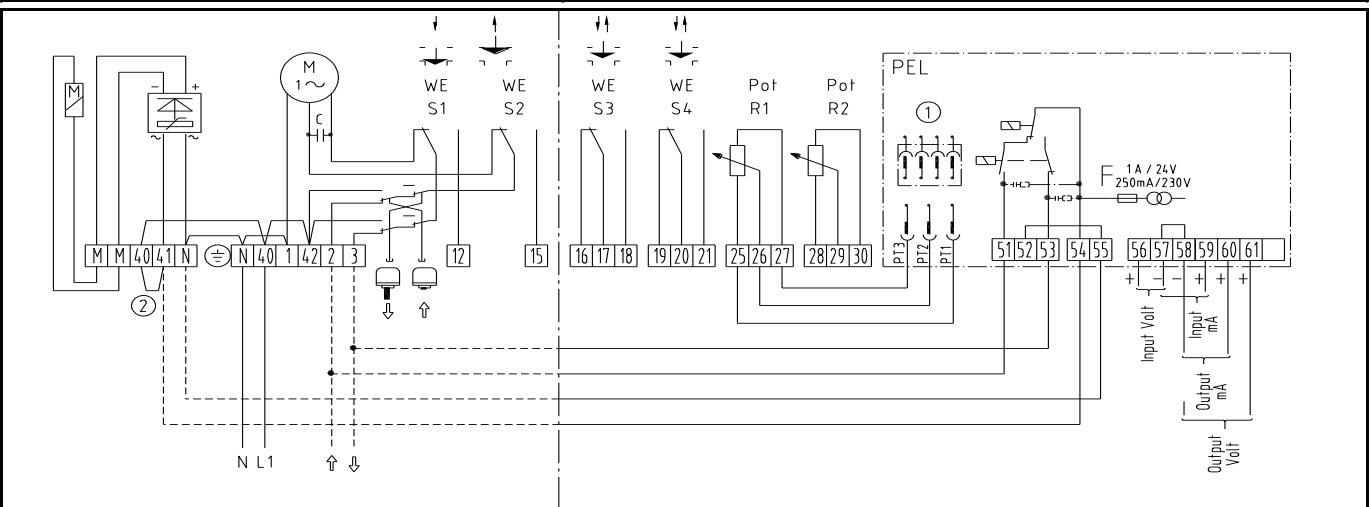
### Options

Additional limit switches for signalling end positions or intermediate positions, freely adjustable, max. 250 V AC, rating for resistive load max. 5 A, for inductive load max. 3 A, max. 2 switches for EL20 and EL45, max. 4 switches for EL80 and EL120.	WE
Additional limit switches for signalling end positions or intermediate positions, freely adjustable, with gold-plated contacts for low voltage, max. 30 V AC, rating for resistive load max. 0.1 A, max. 2 switches for EL20 and EL45, max. 4 switches for EL80 and EL120.	WE-G
Potentiometer 100/130/200/500/1000/5000 Ohms or 10 kOhms Linearity error $\leq$ 0.5 %, max. 1.5 W, contact current 30 mA max. 2 pieces	POT
Electronic position feedback 2-/3-/4-wire system Inductive travel measuring, output 0 (4)...20 mA Connection 24 V DC (not possible for EL12)	ESR
Positioning electronics for actuator control Input 0...10 V, 0 (4)...20 mA, output 0...10 V, 0 (4)...20 mA Supply voltage 24, 115, 230 V 50/60 Hz	PEL

## ELECTRICAL CONNECTION

### Basic wiring diagram

### Options



- WE Limit switch
- HZ Heater with thermostwitch
- POT Potentiometer
- ESR Electronic position feedback
- PEL Positioning electronics

ACTUATOR DIMENSIONS								
Actuator ELR2.x according to EN ISO 5210 F05	Actuator ELR2.x with yoke	Dimensions						
		Type	ELR2.1	ELR2.2	ELR2.3			
		a	315	333	354			
		a 1)	352	370	390			
		S	110					
		H	refer to technical data					
		1) Dimensions with PEL (positioning electronics)						
<table border="1"> <thead> <tr> <th colspan="2">Yoke without bottom flange</th> </tr> </thead> <tbody> <tr> <td colspan="2"> </td> </tr> </tbody> </table>					Yoke without bottom flange			
Yoke without bottom flange								

**ACTUATOR SELECTION FOR TWO WAY VALVES TYPE EV16G**

ACTUATOR TYPE	STROKE (mm)	DIFFERENTIAL PRESSURES (bar)											
		DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200
EL2.1	20	22,8	22,8	12,2	6,5	3,7	1,7	-	-	-	-	-	-
EL2.2	20	-	-	41	24,2	15,2	8,7	-	-	-	-	-	-
EL2.2	30	-	-	-	-	-	-	3,6	2,2	1	-	-	-
EL2.3	20	-	-	47	28	17,7	10,3	-	-	-	-	-	-
EL2.3	30	-	-	-	-	-	-	4,7	3	1,4	-	-	-
EL2.3	40	-	-	-	-	-	-	-	-	-	0,58	0,27	-

Remarks: V-rings stem packing.

**ACTUATOR SELECTION FOR TWO WAY VALVES TYPES EV25G AND EV40S**

ACTUATOR TYPE	STROKE (mm)	DIFFERENTIAL PRESSURES (bar)											
		DN 15	DN 20	DN 25	DN 32	DN 40	DN 50	DN 65	DN 80	DN 100	DN 125	DN 150	DN 200
EL2.1	20	22,8	22,8	12,2	6,5	4,1	1,7	-	-	-	-	-	-
EL2.2	20	-	-	41	24,2	16,6	8,7	-	-	-	-	-	-
EL2.2	30	-	-	-	-	-	-	3,9	2,6	1	-	-	-
EL2.3	20	-	-	47	28	19,3	10,3	-	-	-	-	-	-
EL2.3	30	-	-	-	-	-	-	5,1	3,5	1,6	-	-	-
EL2.3	40	-	-	-	-	-	-	-	-	-	0,59	0,27	-

Remarks: V-rings stem packing.

ORDERING CODES EL – ELR	
<b>ACTUATOR CODES</b>	<b>E.</b>
<b>Group designation</b>	
EL series electric linear actuator	<b>E.</b>
<b>Valve model</b>	
V25G, V25S, V25I	<b>25</b>
V40S, V40I, WV40I	<b>40</b>
V253G	<b>23</b>
<b>Valve size (1)</b>	
DN 15 to DN 50	<b>D.</b>
DN 65 to DN 100	<b>J.</b>
DN 125 to DN 200	<b>M.</b>
<b>Actuator type</b>	
EL12	<b>12</b>
EL20	<b>20</b>
EL45	<b>40</b>
EL45.1	<b>41</b>
EL45.2	<b>42</b>
EL80	<b>60</b>
EL80.1	<b>61</b>
EL80.2	<b>62</b>
EL120	<b>70</b>
EL120.1	<b>71</b>
EL120.2	<b>72</b>
EL250	<b>80</b>
EL250.1	<b>81</b>
EL250.2	<b>82</b>
ELR2.1	<b>2A</b>
ELR2.2	<b>2B</b>
ELR2.3	<b>2C</b>
<b>Actuator voltage</b>	
230 VAC	<b>1</b>
115 VAC	<b>2</b>
24 VAC	<b>3</b>
24 VDC	<b>4</b>
400 V3~	<b>5</b>
<b>Control signal</b>	
Actuator without positioner (standard)	<b>(2)</b>
4 – 20 mA with positioner PEL (not for DC)	<b>3</b>
0 – 10 V with positioner PEL (not for DC)	<b>4</b>
Positioner PEL (DC)	<b>5</b>

→ To be introduced on ".X.", if supplied in combination with the valve.

Example:

V25G valve model, EQP soft plug, PTFE/GR stem sealing, DN 50, complete with 230V electric actuator EL20 with positioner for 4 – 20 mA signal:

Code: EV.25G11L50.2013

REMARKS:

- (1) – Omitted if the valve's size is already indicated in the code (to avoid redundancy).
- (2) – Omitted if the standard valve is selected.