

**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 constantly 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 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), or fieldbus systems.
- 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, ...).



(View IP65)

**TECHNICAL DATA**

Type	ELR 2.1	ELR 2.2	ELR 2.3
Positioning force (CLOSED) kN	≥ 0,9	≥ 2,2	≥ 2,2
Opening force (OPEN) kN	≤ 5,3	≤ 4,0	≤ 4,0
Max. stroke mm	35 mm	35 mm	46 mm
Positioning speed modulating duty <sup>1)</sup> mm/min ( mm/s )	17,5 (0,29)	17,5 (0,29)	17,5 (0,29)
Positioning speed in case of power failure Fail-safe function mm/s	~4,1	~4,1	~4,1
Power consumption (230 V) motor VA	8,5	8,5	8,5
Power consumption (230 V) magnet VA	15	15	15
Type of motor <sup>3)</sup>		syn	
Motor protection <sup>4)</sup>	B	B	B
Supply voltages <sup>2)</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 M16x1.5 and 2 dummy plug M20x1.5		
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	as desired, however downward position not possible		
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 TUV [German Technical control board] according to DIN 32730 (safety functions against excessive temperature in heating facilities)		
Weight kg	8,7	9,3	10

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

3) syn synchronous motor  
asyn asynchronous motor  
4) B stallproof motor  
T thermoswitch for temperature monitoring

## ACCESSORIES AND OPTIONS

### Accessories for actuators

	Yoke for adaptation to valves refer to dimension sheet.	STALA/ FLA
	Version IP 65 (with round cover)	A-IP65
	Elastic thrust rod coupling effective on both sides (use for thrust seating in both directions, e.g. three-way valve)	KUP-EL2
	Special finish coating for use in the tropics "tropics coating" (version IP 65 required).	LA-TR
	Version with bellows at thrust rod	A-FAB

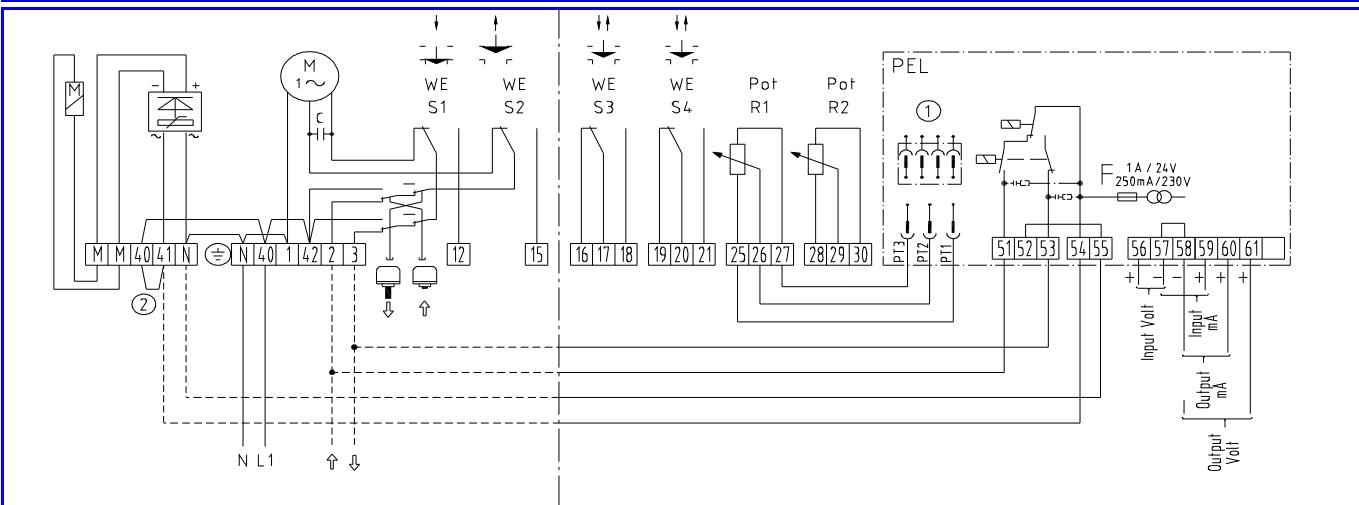
### Options for actuators

	Additional limit switches for signalling end positions or intermediate positions, freely adjustable, max. 250 V AC, rating for resistive load max. 10 A, for inductive load max. 5 A, max. 2 switches	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	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 output 0 (4)...20 mA Connection 24 V DC	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 thermoswitch

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 thecnical data														
1) Dimensions with PEL (positioning electronics)															
Yoke without bottom flange															

### Actuator selection for two way valves type EV16G

Actuator Type	Stroke [mm]	Differential pressure (bar)										
		DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150
ELR2.1	20	22,8	22,8	12,2	6,5	3,7	1,7	-	-	-	-	-
ELR2.2	20	-	-	41	24,2	15,2	8,7	-	-	-	-	-
ELR2.2	30							3,6	2,2	1	-	-
ELR2.3	20	-	-	47	28	17,7	10,3				-	-
ELR2.3	30							4,7	3	1,4	-	-
ELR2.3	40										0,58	0,27

Remarks: V-rings stem packing.

### Actuator selection for two way valves type EV25G, EV40S

Actuator Type	Stroke [mm]	Differential pressure (bar)										
		DN15	DN20	DN25	DN32	DN40	DN50	DN65	DN80	DN100	DN125	DN150
ELR2.1	20	22,8	22,8	12,2	6,5	4,1	1,7	-	-	-	-	-
ELR2.2	20	-	-	41	24,2	16,6	8,7	-	-	-	-	-
ELR2.2	30							3,9	2,6	1	-	-
ELR2.3	20	-	-	47	28	19,3	10,3				-	-
ELR2.3	30							5,1	3,5	1,6	-	-
ELR2.3	40										0,59	0,27

Remarks: V-rings stem packing.

**ORDERING CODES EL - ELR**

<b>ACTUATOR CODES (Electric)</b>		E.					
<b>Group Designation</b>							
EL Series electric linear actuator		E.					
<b>Valve Model</b>							
V16G, V16I		16					
V25G, V25S, V25I		25					
V40S, V40I, WV40I		40					
V253G		23					
<b>Valve Size</b>							
DN15 to DN50			D.				
DN65 to DN100			J.				
DN125 to DN200			M.				
<b>Actuator Type</b>							
EL12		12					
EL20		20					
EL45		40					
EL45.1		41					
EL45.2		42					
EL80		60					
EL80.1		61					
EL80.2		62					
EL120		70					
EL120.1		71					
EL120.2		72					
EL250		80					
EL250.1		81					
EL250.2		82					
ELR2.1		2A					
ELR2.2		2B					
ELR2.3		2C					
<b>Actuator Voltage</b>							
230 VAC		1					
115 VAC		2					
24 VAC		3					
24 VDC		4					
400 V3~		5					
<b>Control Signal</b>							
Actuator without positioner (standard)		(2)					
4 - 20 mA with positioner PEL (not for DC)		3					
0 - 10 V with positioner PEL (not for DC)		4					
Positioner PEL (DC)		5					

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

Example:

V16G valve model EQP soft plug, PTFE/GR stem sealing DN50 complete with 230V electric actuator EL20 with positioner for 4-20mA signal.

Code: EV.16G11L50.2013

**REMARKS:**

(2)- Omitted if the standard actuator is selected.

ADCATROL control valves are identified by a serial number on a nameplate, located on the actuator yoke. Always order spares by using that serial number. If the valve has non-standard extras the serial number has also an E (extras).