

## LINEAR ELECTRIC ACTUATORS WITH FAIL-SAFE FUNCTION ELR

### DESCRIPTION

The ELR series linear electric actuators are designed for operation of control valves in modulating and on/off services in process engineering and industrial applications. The self-locking stem nut is driven by an electric motor via a gearing.

Load-dependent switches and/or mechanical limit switches define the stops for the end positions.

In case of power failure, the electric linear actuator runs into the respective fail-safe position by spring force (thrust rod either extended or retracted).

In modulating duty, the end position seating is made via mechanical limit switches.

### MAIN FEATURES

Modular retrofittable design.

24 V AC, 115 V AC, 230 V AC, 400 V AC 50/60 Hz and 24 V DC supply voltages.

Electric manual operation with OPEN/CLOSE buttons.

IP 54 protection.

Valve protection against excessive force due to load-dependent seating.

Mounting to valves made via yoke or mounting flange DIN 3358, enabling easy connection to all types of valves. Standard version is suitable for ADCATrol valves.

Defined closing force in the end positions leading to tight valve shut-off.

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 to 10 V, 0(4) to 20 mA), or fieldbus systems. Limit switches are easily adjustable for stroke limitation or as signal for intermediate positions.



### OPTIONS AND

ACCESSORIES:    Electronic positioner.  
                       Additional limit switches.  
                       Potentiometers e.g. for 3-point-step control in closed loop.  
                       0(4) to 20 mA electronic position feedback units.  
                       Heating resistor.  
                       Special coatings and finishes for aggressive environments.

USE:                Actuation of ADCATrol control valves, or others on request.

AVAILABLE MODELS:    ELR2.1, ELR2.2 and ELR2.3.

### TECHNICAL DATA

MODEL	ELR 2.1	ELR 2.2	ELR 2.3
Positioning force – CLOSED (kN) a)	≥ 0,9	≥ 2,2	≥ 2,2
Positioning force – OPEN (kN) a)	≤ 5,3	≤ 4,0	≤ 4,0
Maximum stroke (mm)	35	35	46
Positioning speed modulating duty (mm/min / mm/s) b)	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 c)	Syn		
Motor protection d)	B		
Supply voltages e)	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 TÜV (German Technical control board) according to DIN 32730 (safety functions for water and steam in heating systems)		

- a) Force depends on valve stroke according to Chart 1.  
b) At 60 Hz, the positioning speeds and input power increase by 20%.  
c) Other supply voltages on request.  
d) Syn – synchronous motor; Asyn – asynchronous motor.  
e) B – stallproof motor; T – thermostat for temperature monitoring.

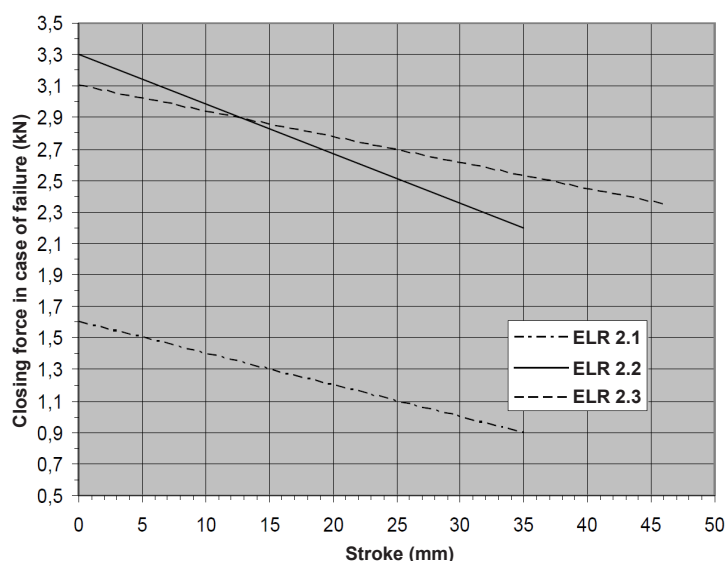
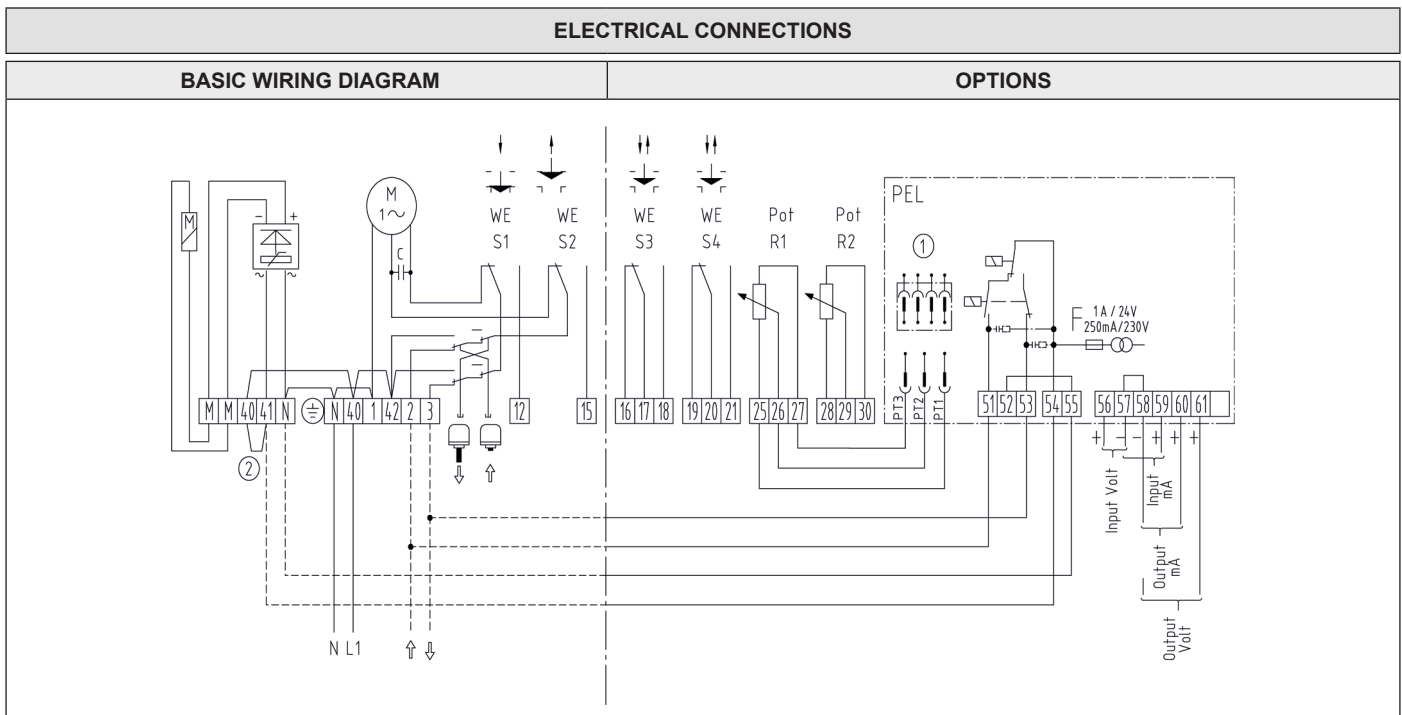
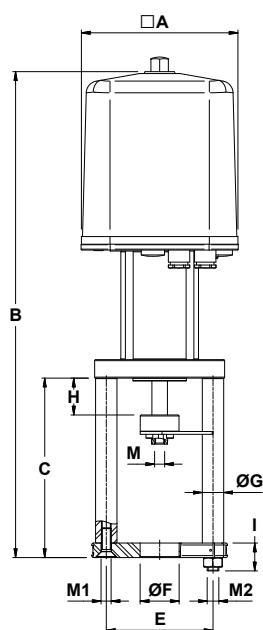


Chart 1 – Closing force according to valve stroke.

OPTIONS AND ACCESSORIES	
DESIGNATION	DESCRIPTION
<b>FG</b>	Switching and signaling unit (teletransmitter assembly). The FG unit is the base necessary for the assembly of all remaining options.
<b>WE</b>	Additional limit switches for signaling 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.
<b>WE-G</b>	Additional limit switches for signaling 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.
<b>POT</b>	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
<b>ESR100</b>	Electronic position feedback 2/3-wire unit. Remark: Includes POT 5000 Ohms. Inductive travel measuring, output 0(4) to 20 mA. Connection 24 V DC (not possible for EL12).
<b>PEL100</b>	Electronic positioner for actuator control. Remark: Includes FG teletransmitter assembly and POT 1000 Ohms. Input 0 to 10 V, 0(4) to 20 mA, output 0 to 10 V, 0(4) to 20 mA. Supply voltage 24, 115, 230 V 50/60 Hz.
<b>PEL200</b>	Intelligent electronic positioner for actuator control. Remark: Includes FG teletransmitter assembly and POT 1000 Ohms. Input 0 to 10 V, 0(4) to 20 mA, output 0 to 10 V, 0(4) to 20 mA. Supply voltage 24, 115, 230 V 50/60 Hz.
<b>STALA / FLA</b>	Yoke for adaptation to valves. Refer to dimension sheet.
<b>KUP-EL2</b>	Elastic thrust rod coupling effective on both sides.
<b>LA-TR</b>	Special finish coating for use in the tropics ("tropics coating").



WE – Limit switch  
 HZ – Heater with thermoswitch  
 POT – Potentiometer  
 ESR – Electronic position feedback  
 PEL – Electronic positioner



DIMENSIONS (mm)

MODEL	□A	B	C	E	Ø F	Ø G	H	I	M *	M1	M2	WEIGHT (kg)
ELR2.1	162	497 / 515 **	170	100 / 110	40 / 45	22	35	41	M10	M10	M16	8,7
ELR2.2	162	518 / 555 **	170	100 / 110	40 / 45	22	35	41	M10	M10	M16	9,3
ELR2.3	162	539 / 575 **	170	100 / 110	40 / 45	22	46	41	M10	M10	M16	10

\* Depending on valve stem thread. Can be coarse or fine thread.

\*\* With PEL electronic positioner

Remark: Stem coupling, yoke dimensions and design may vary depending on the ADCATrol control valve model. Refer to its corresponding information sheet or consult the manufacturer.

ORDERING CODES ELR								
<b>Group designation</b>	<b>E</b>	<b>2A</b>	<b>1</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>A1</b>	
EL series linear electric actuator	<b>E</b>							
<b>Actuator model</b>								
ELR2.1		<b>2A</b>						
ELR2.2		<b>2B</b>						
ELR2.3		<b>2C</b>						
<b>Supply voltage</b>								
230 V AC 50/60 Hz			<b>1</b>					
115 V AC 50/60 Hz			<b>2</b>					
24 V AC 50/60 Hz			<b>3</b>					
24 V DC			<b>4</b>					
400 V AC 3~ 50/60 Hz			<b>5</b>					
<b>Electronic positioner and teletransmitter assembly</b>								
Without FG teletransmitter assembly and electronic positioner				<b>X</b>				
FG teletransmitter assembly				<b>T</b>				
PEL100 electronic positioner				<b>P</b>				
PEL200 intelligent electronic positioner				<b>I</b>				
<b>Limit switches</b>								
Without additional limit switches					<b>X</b>			
One additional WE limit switch					<b>1</b>			
Two additional WE limit switches					<b>2</b>			
<b>Position feedback unit</b>								
Without position feedback unit						<b>X</b>		
ESR100 electronic position feedback unit						<b>F</b>		
<b>Yoke design and coupling</b>								
ADCATrol V16/2 and V25/2 series (DN 15 to DN 50 – 1/2" to 2")							<b>A1</b>	
ADCATrol V16/2 series (DN 65 to DN 100 – 3" to 4")							<b>B1</b>	
ADCATrol V25/2 series (DN 65 to DN 100 – 3" to 4")							<b>B2</b>	
ADCATrol V25/2 series (DN 125 to DN 150 – 5" to 6")							<b>C2</b>	
ADCATrol V25/2 series (DN 200 – 8")							<b>D2</b>	
Other ADCATrol valves <b>a)</b>							<b>XX</b>	
<b>Special versions / Extras</b>								
Full description or additional codes have to be added in case of a non-standard combination								<b>E</b>

**a)** Exact model and size must be specified – consult the manufacturer.

Remark: Options and accessories not mentioned in the ordering codes table must be requested separately, e.g.: E.2A1TXXA1 with special LA-TR finish coating.

How to size: For selection of suitable actuator to use with ADCATrol control valves, consult IS PV15.00 – Maximum permissible pressure drops for ADCATrol control valves – or consult the manufacturer.