



# ..Plus – extra information EL-P



The „EL-P“ data sheet contains additional information for ..Plus actuators, for the optimization and simplification in regard to planning, installation and initial startup. It provides influences of external factors in reference to the safe initiation of the actuators, as well as technical references and problem solutions (error indication). With the error indication, functions can be examined and different error/problems can be adjusted locally.

- ▶ Power supply design
- ▶ Design of line cross section 24...48 VAC/DC
- ▶ Error indication – problem treatment/solution

## Power input depending of supply voltage

### Power supply design

The design of the on-site supply, depends on the selected motor running time and selected supply voltage. Accompanying values are „about values“, since there can be construction unit dispersions within electronics. The power consumption in the blocking position is run time independently with max. 20 W, typically 8 W. The power consumption for the heater is approx. 16 W. The heading is running only if the motor is in idle position! The initial starting supply voltage required by the actuators power supply unit is around 2,0 A for about 1 sec. (Please consider this while conceping the cross section of the supply line)

- Electrical connection with junction box only. After this close all openings and screws thighten.
- Do not open the junction box when circuits alive!
- The cable of the actuator must be installed in a fixed position and protected against mechanical and thermal damage.
- The cross section of the wiring please choose according the length of the wiring and the necessary power consumption of the actuator. Too small cross sections are very often the reason for malfunctions.
- Power connection must be made with switched off circuits, always.
- Note supply voltage! Wrong connection or over voltage are no warranty!
- Inrush current is approx. 2 A up to 1 sec. Please note during dimensioning.

Load		Rated current in acc. with motor running time					
		300 N			500 N		
Voltage	Current	0,5 s/mm	1 s/mm	2 s/mm	0,5 s/mm	1 s/mm	2 s/mm
24 V	I <sub>Nenn</sub> [A]	0,5	0,4	0,3	0,7	0,4	0,3
120 V	I <sub>Nenn</sub> [A]	0,2	0,1	0,1	0,2	0,1	0,1
240 V	I <sub>Nenn</sub> [A]	0,1	0,1	0,1	0,1	0,1	0,1

Load		Rated current in acc. with motor running time					
		1.000 N			1.500 N		
Voltage	Current	0,5 s/mm	1 s/mm	2 s/mm	0,5 s/mm	1 s/mm	2 s/mm
24 V	I <sub>Nenn</sub> [A]	1,2	0,8	0,5	1,8	1,0	0,7
120 V	I <sub>Nenn</sub> [A]	0,5	0,3	0,2	0,6	0,4	0,3
240 V	I <sub>Nenn</sub> [A]	0,3	0,2	0,1	0,4	0,2	0,2

Load		Rated current in acc. with motor running time					
		3.000 N					
Voltage	Current	0,5 s/mm	1 s/mm	2 s/mm			
24 V	I <sub>Nenn</sub> [A]	1,5	0,8	0,5			
120 V	I <sub>Nenn</sub> [A]	0,4	0,2	0,1			
240 V	I <sub>Nenn</sub> [A]	0,2	0,1	0,1			

## Dimensioning of the line cross section with 24...48 VAC/DC supply voltages

### Dimensioning/Design of the supply line

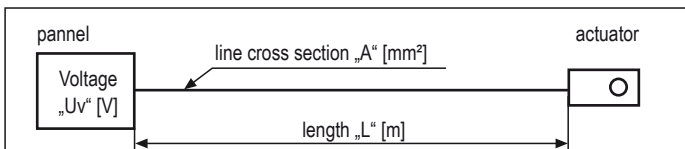
On long distances between voltage supply and drive, voltage drops occur due to line resistances. As a consequence with 24 VAC/DC the actuator receives a too low tension and does not start. In order to prevent this, the cross section of the inlet line is to be designed/dimensioned accordingly. The accompanying formula allows the calculation of the necessary line cross section, perhaps provides the maximally permitted conduit length utilizing the existing line cross section. Alternatively the secondary voltage can be increased by selecting a transformer. For calculation purposes, following characteristics are essential:

Uv = supply voltage in [V]

A = line cross section in [mm<sup>2</sup>]

L = conduit length in [m]

Factor 0.0714 = drive-specific factor [Vmm<sup>2</sup>/m] ( based on the electrical conductivity of electrolytic copper with a coefficient of 56m/Wmm<sup>2</sup>)



Formula for max. cable length „L“ at cable cross section „A“

$$L = A \times (Uv - 18V) : 0,0714$$

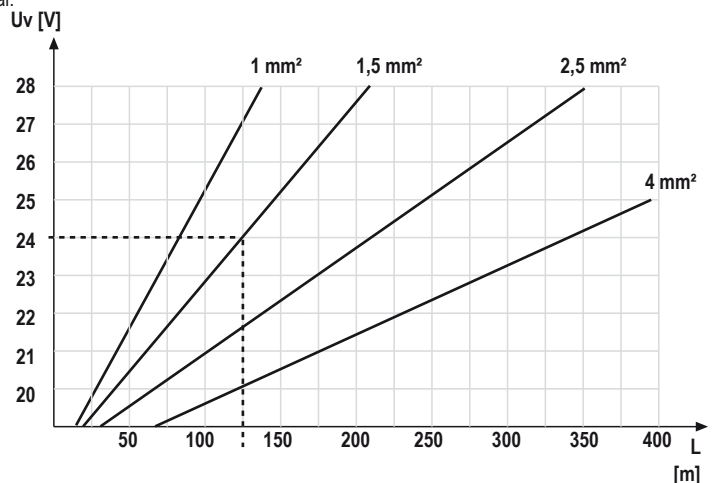
Example: A = 1,5 mm<sup>2</sup>, Uv = 24 V  
Length of cable L = 126 m

Formula of needed cable cross section „A“ at a cable length of „L“

$$A = 0,0714 \times L : (Uv - 18V)$$

Example: L = 250 m, Uv = 30 V  
Cross section of A = 1,5 mm<sup>2</sup>

Example:  
24 V power supply with wire diameter 1,5 mm<sup>2</sup> = 126 m





**Technical requirements for controller**

The controller must ensure that the following conditions are fulfilled:  
To ensure a high accuracy and long life, the actuators are equipped with "protective mechanisms". They protect all electric motors against early wear. For 2 and 3-point actuators, a minimum control time of 0,1 seconds must be attained. If your controller pulses in short steps (<0.1 sec), the actuator will not respond. The time between the impulses must be min 0.5 sec.

Note at small control deviations is the actuator permanently active what can arise overtemperature and the actuator goes in stop position. This self protection is a sign that the control loop is incorrect.

**Maintenance**

In acc. with operation actuators are maintenance free. Nevertheless maintenance must comply with regional standards, rules and regulations. The actuator can be open for adjustments only. After settings all covers must be closed. Damaged junction box, cable glands or gasgats must be changed to original parts or send for repair to Schischek GmbH.

**Service and Commissioning**

- Ensure that the supply voltage is in accordance with the specifications  
- Before switch on power check the wiring  
- Connect protection earth and potential equalisation.  
- The actuator must not display any type of mechanical damage  
- Rod goes in with contact 3 to 2  
- Rod goes out with contact 4 to 2  
- Check manual override

**Check options:**  
- Check internal aux. switches regarding endposition  
- Check feedback potentiometer  
- Adjust external switches note

**Further checks**  
- Check valve and actuator linkage to confirm correct connection  
- Check the terminal box for damage

With manual override you move the rod very carefully in the end positions. Actuator and adaption can be damaged  
Before switching off, consider the effects on the system and on other devices.  
Disconnect the mains before starting mechanical dismantling. The junction box must be free of voltage. Loosen the linkage and remove the actuator.

**Error indication**

Error/Symptom	Reason	Solution
01 Actuator does not work LED does not lights	<ul style="list-style-type: none"> <li>No power supply attached</li> <li>The actuator is operated beyond prevention ambient temperature specifications and the internal temperature sensor did irreversibly shut down operations</li> </ul>	<ul style="list-style-type: none"> <li>Attache power supply and turn on</li> <li>Because of inadmissible operation the actuator drove out of safety relevant reasons into an irreversible condition and must be exchanged. Accompanying new installation the ambient temperature has to be reduced accordingly</li> </ul>
02 Actuator does not work LED lights red	<ul style="list-style-type: none"> <li>The actuator is operated by a too high ambient temperature and the internal temperature sensor responded</li> </ul>	<ul style="list-style-type: none"> <li>Shut off actuator and let temperature decrease, reduce ambient temperature by suitable measures e.g. ventilation or other mounting position of the actuator</li> </ul>
03 Actuator does not work LED lights green	<ul style="list-style-type: none"> <li>3-Pos control signal is wired on both entrances</li> <li>Required force is greater than actuators force</li> <li>Control signals are not attached or attached on a wrong conductor</li> <li>Actuator is incorrect mounted and is blocked by an external stop unit</li> </ul>	<ul style="list-style-type: none"> <li>Readjust/correct circuit</li> <li>Adjust a higher force at the actuator if possible otherwise exchange for a type with higher force.</li> <li>Examine rule and adjusting signal in accordance with attached diagram</li> <li>Dismount actuator and testdrive without load for operability. Install actuator accordingly that the power transmissions runs without external blockade or torsion</li> </ul>
	<ul style="list-style-type: none"> <li>Actuator is clogged with impulses &lt; 0,1 sec. and therefore ingored the signals</li> </ul>	<ul style="list-style-type: none"> <li>Switch off supply voltage for at least 2 sec. thereby a reset is conducted Readjust controller in order to extend control pulses</li> </ul>
	<ul style="list-style-type: none"> <li>Interchanged supply lines</li> </ul>	<ul style="list-style-type: none"> <li>Wire 1 must be (-, N) and wire 2 (+, L)</li> </ul>
04 Acuator does not work LED is red blinking	<ul style="list-style-type: none"> <li>The actuator has been mounted by temperatures of less than -20°C and did not reach is operating temperatur of at least -20°C.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that a constant voltage supply on conductor 1-2 is existing.</li> <li>Wait until the required operating temperature is achieved by the actuators internal heating system. The actuator will start operating independently</li> </ul>
05 LED flashes irregularly and actuator does not work	<ul style="list-style-type: none"> <li>Actuator does not receive sufficient supply voltage</li> <li>Cable to long, voltage drop in the supply line to large</li> </ul>	<ul style="list-style-type: none"> <li>Increase line cross section or increase tension at the transformer/power suply unit</li> <li>Increase line cross section or increase tension</li> </ul>
06 LED flashes red and endposition is not reached	<ul style="list-style-type: none"> <li>Actuator is in blocking position 1 x blinking block position rod goes in 2 x blinking block position rod goes out</li> </ul>	<ul style="list-style-type: none"> <li>External load is higher than actuator max force Check mechanic of easy going and twisting check probably without adaption</li> </ul>