
Instruction Manual

LPE 72 Linear Positioning System



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Purpose of instruction manual

This instruction manual describes the features of the LPE 72 linear positioning system and provides guidelines for its use.

Improper use of this instrument or failure to follow these instructions may cause injury or equipment damage. All individuals responsible for operating this instrument must therefore be properly trained and aware of the hazards, and must carefully follow these operating instructions and the safety precautions detailed within. **Contact the manufacturer if you do not understand any part of this instruction manual.**

Handle this manual with care:

- It must be readily available throughout the lifecycle of the instrument.
- It must be provided to any individuals who assume responsibility for operating the instrument at a later date.
- It must include any supplementary materials provided by the manufacturer.

The manufacturer reserves the right to continue developing this instrument model without documenting such development in each individual case. The manufacturer will be happy to determine whether this manual is up-to-date.

Conformity

This instrument corresponds to the state of the art and meets all legal requirements set forth in EC directives as evidenced by the CE label.



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The manufacturer owns the copyright to this instruction manual. This manual contains data, instructions and drawings pertaining to the features and usage of this instrument; copying this manual in part or in full or distributing it to third parties is prohibited.

1 Safety precautions

1.1 Appropriate use

The LPE 72 linear positioning system is especially suitable for use in medical technology, packaging machines and textile machines, and for regulating diesel engines and adjusting the stroke of metering pumps.

The LPE 72 is not a stand-alone instrument and may only be used if coupled to another machine.

Always observe the operating requirements—particularly the permissible supply voltage—indicated on the rating plate and in the "Technical data" section of this manual.

The instrument may only be handled as indicated in this manual. Modifications to the instrument are prohibited. The manufacturer is not liable for damages caused by improper use or failure to follow these instructions. Violations of this type render all warranty claims null and void.

1.2 Shipping, assembly, electrical connections and startup

Only technical personnel who are appropriately trained and authorized by the operator of the facility may assemble the instrument and set up its electrical connections.

The instrument may only be operated by appropriately trained individuals who have been authorized by the operator of the facility.

Specific safety precautions are given in individual sections of this manual.

1.3 Troubleshooting, maintenance, repairs, disposal

The individual responsible for the electrical connections must be notified immediately if the instrument is damaged or if errors occur that cannot be corrected as indicated in section 3.

This individual must take the instrument out of service until the error has been corrected and ensure that it cannot be used unintentionally.

This instrument requires no maintenance.

Only the manufacturer may perform repairs that require the housing to be opened.

The electronic components of the instrument contain environmentally hazardous materials and materials that can be reused. For this reason the instrument must be recycled in accordance with the environmental guidelines of the jurisdiction in question once it has been taken permanently out of service.

1.4 Symbols

The symbols given below are used throughout this manual to indicate instances when improper operation could result in the following hazards:



WARNING! This warns you of a potential hazard that could lead to bodily injury up to and including death if the corresponding instructions are not followed.



WARNING: This warns you of a potential hazard that could lead to significant property damage if corresponding instructions are not followed.



INFORMATION

This indicates that the corresponding information is important for operating the instrument properly

2 Instrument description

2.1 Features

The LPE 72 linear positioning system is a complete unit consisting of a screwed spindle drive and closed loop for positioning linear machine components. The instrument, which can be connected directly to the PLC, has a default analog target value and high setting speed. The system is especially suitable for use in medical technology, packaging machines and textile machines, and for regulating diesel engines and adjusting the stroke of metering pumps. A target analog signal of 2 ... 10 V (4 ... 20 mA also possible) translates to a stroke length of 0 ... 70 mm (or 0 ... 120 mm as the case may be). At a target value of 2 V (4 mA), the distance between the connecting rod and the housing is 10 mm, which increases to 80 and 130 mm at target values of 10 V and 20 mA, respectively.

The LPE 72 has several different safety features, which are continuously monitored by the microprocessor.

2.1.1 Monitoring target values

Target values of 1.95 V to 10.05 V will be applied for nominal target values of 2 to 10 V. The instrument will not move at values between 1.75 and 1.95 V and between 10.05 and 10.25 V. Values in these ranges, however, will not trigger an error message.

A target value < 1.75 V, a cable break, or a target value > 10.25 V will stop the LPE 72 immediately and generate an error message. This message will no longer be displayed once the target value is again within the allowable range.

2.1.2 Monitoring the supply voltage

Software monitoring:

Nominal supply voltage is 24 VDC with a tolerance of +30% and -25%. If the supply voltage falls below 16V or exceeds 31.2 V, the instrument ceases operation and displays an error message. The error message will no longer be displayed once the supply voltage is again within the allowable range.

Hardware monitoring:

A surge suppression diode protects the LPE 72 from voltages of greater than approx. 33 V. This causes the current to increase extremely rapidly, however, which can trip the internal fuse. When this happens, the instrument must be sent to the manufacturer for repair.

2.1.3 Monitoring actual values via the potentiometer

The internal actual-value potentiometer will be checked for short circuits and open circuits. In the event that one of these errors should occur, the drive will stop and the instrument will display an error message. When this happens, the instrument must be sent to the manufacturer for repair.

2.1.4 Checking for physical obstructions

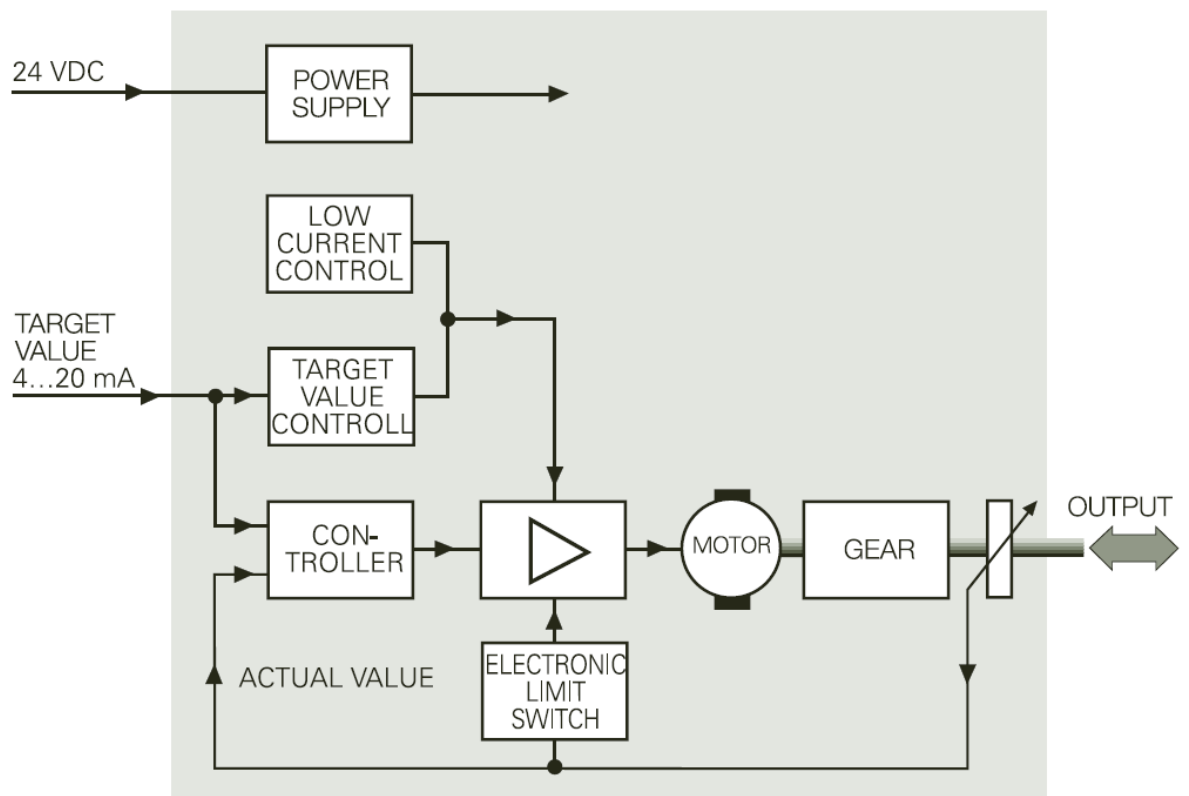
If a target value is applied and the drive encounters a physical obstacle before reaching its target position, the drive will cease operation, move a minimal distance in the reverse direction and the instrument will display an error message.

To delete this message, the target value must be set back to at least the point where the drive stopped. The error message is then deleted and the drive is again operable.

Example:

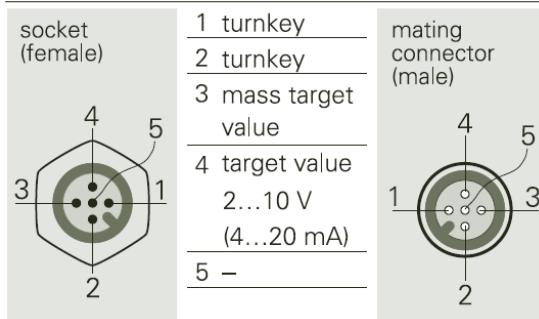
Target value at 2 V → Target value set to 7.5 V → Drive begins operation and encounters a physical obstacle at 5 V → Error message; drive stops → Target value must be set back to at least 5 V → Error message and drive operation reset → Unit is again operable

Functional block diagram

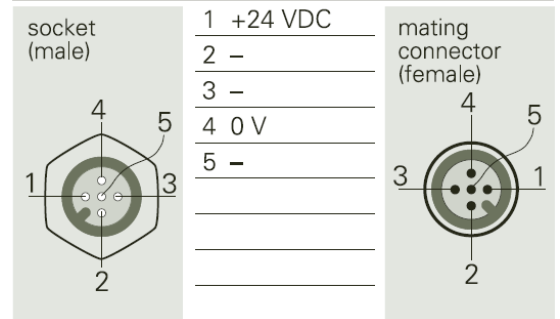


2.2 Connections

target value / error message



power supply



Supply voltage: 5-pin flanged Binder socket, model 763, no. 09-3441-xx-05

Pin 1 → 24VDC

Pin 4 → ground (galvanically connected to an internal target value ground)

Target value and error messaging: 5-pin flanged Binder socket, model 763, no. 09-3442-xx-05

Pin 1 → floating NO contact for error message display

Pin 2 → floating NO contact for error message display


Pin 3 → target value ground (galvanically connected to an internal power supply ground)

Pin 4 → target value 2...10 V / (4...20 mA)

3 Troubleshooting

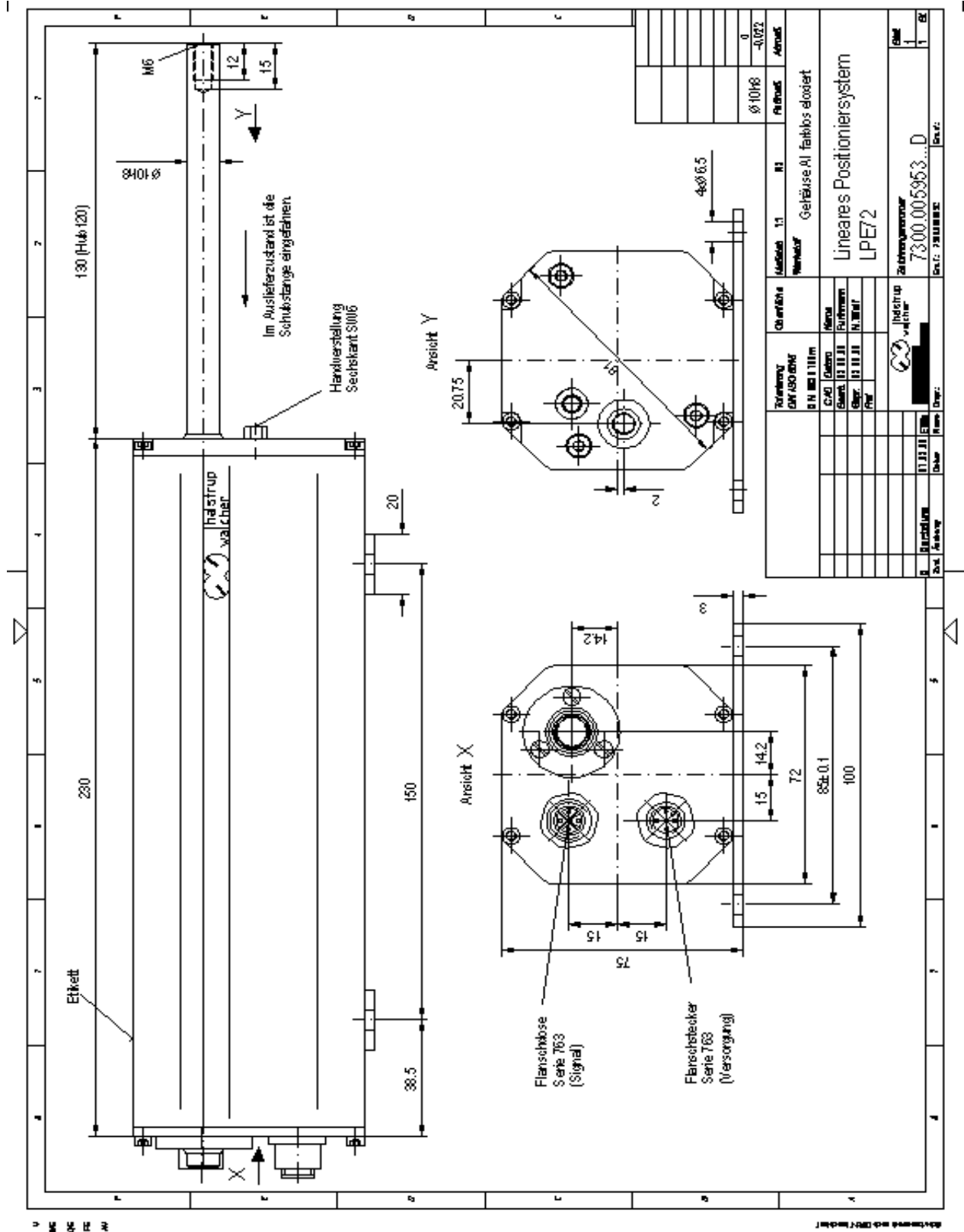
Problem	Cause	Corrective Action
LPE 72 will not switch on	+24 VDC unavailable overvoltage of > 33 VDC applied	→ apply correct supply voltage; make sure polarity is correct → send instrument to manufacturer
LPE 72 does not move; error message appears	physically stuck at block position voltage < 16 VDC or > 31.8 VDC target value lies beyond the range of 2 ... 10 VDC cable break in target value circuit defective actual value potentiometer	→ manually loosen the hexagonal shaft with a 6 mm wrench → provide correct supply voltage → provide correct target value → repair target value circuit → send instrument to manufacturer
LPE 72 moves but does not reach target position	load too high; registered as physical obstruction	→ reset target value; reduce load and/or make sure drive moves freely

4 Technical data

Ambient conditions	
operating temperature	0 °C to +50 °C
storage temperature	-10 °C to +70 °C
relative humidity	0...80 %
resistance to vibration as stipulated in DIN IEC 68-2-6	30 Hz 4 g 90 min
EMC standards	CE, German Lloyd
conformity	 declaration of conformity available upon request
protection class	IP64
Electrical data	
nominal power output:	6.7 W (50 % OT)
supply voltage	24 VDC +20 % / -15 %
nominal current	2.5 A
no-load current	0.5 A
default analog target value	2...10 VDC (RL > 2 kΩ) 4...20 mA (RL < 500 Ω)
positioning resolution	0.2 % of nominal upstroke
positioning accuracy	0.4% of nominal upstroke
Physical data	
nominal positioning power	100 N
self-holding power	100 N
output shaft	10 H 8 solid circular shaft M6
maximum axial thrust	300 N
maximum radial force	50 N
nominal setting speed	250, 500, 1000, 4000 mm/min
dimensions (w x h x d)	230 x 75 x 100 mm
weight	1,800 g

5 Dimension drawing

Version with 120 mm stroke



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