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Instruction Manual PSE 100 Positioning System

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Purpose of instruction manual

This instruction manual describes the features of the PSE 100 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.

CE

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1 Safety precautions

1.1 Appropriate use

The PSE 100 positioning system is a complete system consisting of an actuator and a closed loop for positioning rotating machine components with torques of up to 10 Nm. The system is especially suited for control and positioning tasks in mechanical and apparatus engineering and for rotating machinery, rotary actuators, flap adjustment units and valve actuators.

The PSE 100 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 start-up

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 PSE 100 positioning system controls positioning sequences, e.g., by adjusting the angle of rotation or linear position of a spindle or valve by a predefined value and within a specific amount of time.
The motor switches off when the final position is reached.
If an external control unit is connected, the actual position is read out as an analogue output signal (e.g., 4-20 mA); an analogue input signal (e.g., 0-10 V) is required for the target value.

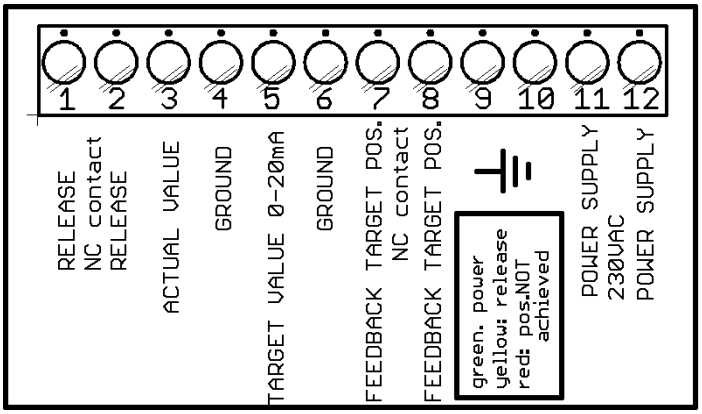
2.2 Installation

Three bores (for M8 bolts) are located on the output-shaft side of the PSE 100 positioning system; these bores should be used for mounting the instrument onto the machine in question. The connection of the output shaft must be friction locked. The positioning of the actuator and device to be controlled should be the same (e.g., all the way to the left) prior to installation.

Never apply force to the plastic housing, e.g., for supporting weight.

2.3 Electrical connections

WARNING:
Danger! High voltage!
Electrical connections should only be set up by qualified personnel.
Disconnect power from all feed cables before connecting the instrument.



The supply voltage should be connected to terminals 11…12 as indicated in the connection diagram on the housing cover.
Terminals 1 and 2 must be connected to each other (release status) via a floating contact such as a relay in order for the actuator to carry out a positioning run.

Terminals 5 (+) and 6 (-) are reserved for the target value. It is important here to make sure that the signal lies within the permissible range, i.e., that the voltages fall between -0.5V and +15V.

Terminals 3 (+) and 4 (-) are for the actual value, i.e., the voltage (or current) present here indicates the current position of the drive.

The actuator provides a feedback signal at terminals 7 and 8, thereby indicating whether the target position has been achieved. If this is the case, then both of these pins are linked together internally via a floating NO contact (relay).

2.4 Display elements

The instrument is equipped with three LEDs, which indicate the current operational status of the drive:

green → supply voltage is present

yellow → release status (i.e., terminals 1 and 2 are connected)

red → target position has NOT been reached

2.5 Fuse

A Wickmann TR5, 200 mAT fuse is located next to terminals 11 and 12.

3 Troubleshooting

Error description	Potential cause	Corrective action
drive does not move green LED not illuminated	supply voltage is not connected	connect the correct supply voltage to terminals 11 and 12
	defective fuse	replace fuse
	incorrect supply voltage	connect the correct supply voltage (see rating plate).
drive does not move green LED illuminated yellow LED not illuminated	release status unavailable	set release status connect terminals 1 and 2 with each other
drive does not continue to target position even though release status has been set	target value outside of permissible range e.g., <4 mA or > 20 mA	set permissible target value e.g., 4 mA < TARGET < 20 mA

The actuator should be sent to the manufacturer in the event of any errors not mentioned here.

4 Technical data

Physical data	
output torque	2.5 Nm, 5 Nm, 10 Nm
motor speed	2 min^{-1}, 1 min^{-1}, 0.5 min^{-1}, 0.25 min^{-1}
output shaft	12 H 8 circular shaft
maximum axial thrust	20 N
maximum radial force	30 N
positioning range	max. 20 revolutions
dimensions (w x h x d)	80 x 120 x 100 mm
Electrical data	
power output	0.5 W (100 % OT)
supply voltage	24 VAC +6 % / -15 % 50 Hz 115 VAC +6 % / -15 % 50 Hz 230 VAC +6 % / -15 % 50 Hz
nominal current	0.2 A
no-load current	0.2 A
positioning resolution	0.5 % of positioning range
positioning accuracy	2 % of positioning range
output signal	0 to 10 V or 4 to 20 mA
analogue target value	0..10 V or 0/4…20 mA
Relay Specifications: Switching voltage Switching current Carry current Contact rating	 200 V (DC or Peak AC) 0.5 A (DC or Peak AC) 1.5 A (DC or Peak AC) 10 W
Ambient conditions	
resistance to vibration as stipulated in DIN IEC 68-2-6	10…55 Hz 1.5 mm / 55…1000 Hz 10 g / 10…2000 Hz 5 g
shock resistance as stipulated in DIN IEC 68-2-6	50 g 11 ms
EMC standards	CE
conformity	CE declaration of conformity available upon request
ambient temperature	0° C to +50 °C
storage temperature	-10° C to +70 °C
relative humidity	0…80 %
protection class	IP55
weight	approx. 900 g

5 Dimension drawing