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## Instruction Manual PSE40xA

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## Purpose of Instruction Manual

This instruction manual describes the features of the PSE 40xA positioning systems and provides guidelines for their use.

Improper use of these instruments or failure to follow these instructions may cause injury or equipment damage. Every person who uses the devices must therefore read the manual and understand the possible risks. The instruction manual, and in particular the safety precautions contained therein, must be followed carefully.

**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 instruments.
- It must be provided to any individuals who assume responsibility for operating the instruments 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 device is state of the art. It complies with the legal requirements of EC directives. This is shown by the CE mark.



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The manufacturer owns the copyright to this instruction manual. It contains technical data, instructions and drawings detailing the devices' features and how to use them. It must not be copied either wholly or in part or made available to third parties.

# 1 Safety precautions

## 1.1 Appropriate use

The PSE 40xA is used for edge guide control in connection with a CCD fork light barrier.

**The PSE 40xA 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

Assembly and the electrical connections should only be handled by professionals. They should be given proper training and be authorised by the operator of the facility.

The instrument may only be operated by appropriately trained individuals who have been authorised 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.

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. The instrument must therefore be sent to a recycling plant when you no longer wish to use it. The environment codes of your particular country must be complied with.

## 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.



**CAUTION** 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 40xA positioning system is an intelligent and compact complete solution, featuring a motor, drive unit, absolute position measuring system and a control unit with analogue input.

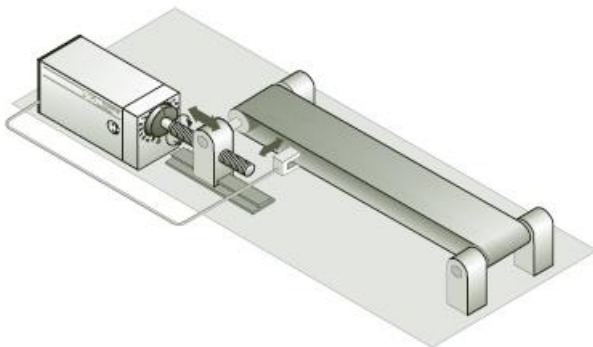
The PSE 40xA is used for edge guide control in connection with a CCD fork light barrier.

Analogue inputs (PLC compatible) are available for the commands “Centre position” and “Rotate left/right”.

A hollow shaft with adjustable collar makes assembly quite simple.

The PSE40xA drive system compares an analogue input signal 0...10 VDC (from the attached CCD fork light barrier) with the target value 5 VDC and rotates one way if the signal falls short of the target value, and rotates the other way if the target value is exceeded.

#### Application web edge guider:



### 2.2 Mounting

The PSE 40xA is mounted onto the machine by sliding the hollow shaft of the positioning gear onto the axis to be driven and then securing it with an adjustable collar. The adjustable collar should be pretensioned just to the point where it can no longer rotate freely.

Securing the pin under the hollow shaft into an appropriate bore will prevent further rotation.

(see drawing)

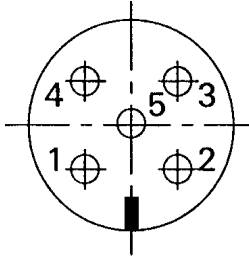


**Never apply force to the housing cover, e.g., for supporting weight.**

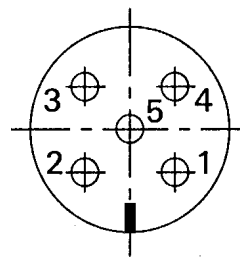
## 2.3 Pin assignment

A round, 5-pin plug for the supply voltage and a round, 5-pin socket for connecting a CCD fork light barrier are located on the housing cover of the PSE 40xA. Both plug-in connector types are from Binder's 763 series.

Supply voltage plug:  
(External top view)



Socket for CCD fork light barrier  
(External top view)



1 +24VDC	1 +24VDC (output)
2 Light barrier switch signal	2 Light barrier switch signal
3 Earth	3 Earth
4 "Delivery state" switch input	4 Actual value 0...10V
5 "Direction of rotation" configuration data input	5 Not used

## 2.4 Start-up

The PSE40xA rotates according to the input voltage when the actual value is input:

Actual value < 4.97V: Anticlockwise rotation as viewed facing the output shaft

Actual value > 5.03V: Clockwise rotation as viewed facing the output shaft

If the actual value is within the above mentioned limits, the drive is at a standstill.

The light barrier's switch signal (pin 2) is looped through to the socket from the plug, as is the +24VDC supply.

Up to a certain deviation (which can be selected via solder jumpers 0.2V, 0.3V, 0.4V or 0.6V), the maximum rotating speed is proportional to this deviation (proportional action).

If there is a step increase in the deviation from 5VDC, the rotational speed is ramped up. The rate of increase also depends on the actual value deviation.

The initial speed (i.e. RPM when the limits for the actual value are almost fallen short of or exceeded) is 15 or 30 RPM (this can be selected with solder jumpers).

The top speed is 80 r.p.m.

The drive moves from its centre position (delivery state) at a maximum of  $\pm 7.5$  revolutions.

Application of the "Delivery State" control signal results in the drive travelling back to its centre position, regardless of the actual value input.

## 2.5 Solder jumper coding



**Before opening the housing, be sure shut off the voltage!**

After loosening the four screws on the top of the housing and the two screws on the front opposite the plugs, you can remove the housing cover. The solder jumpers are now visible, as shown in the picture below.

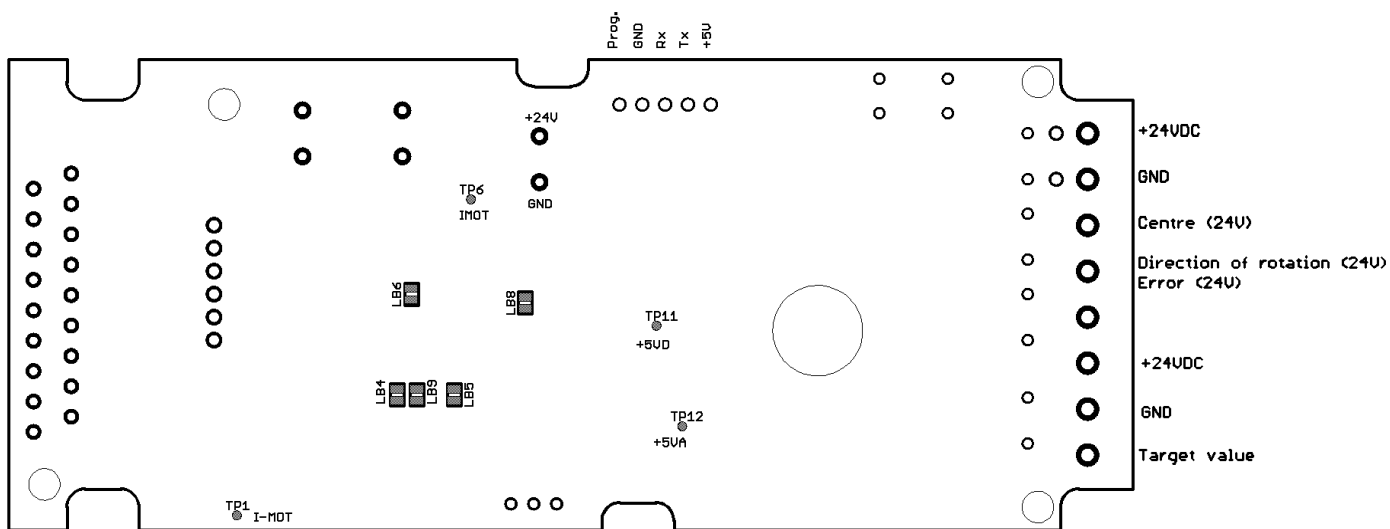
The following possible settings exist. The solder jumpers operate as follows:

Voltage limit for maximum speed	LB5	LB6
$\pm 0.2V$	open	open
$\pm 0.3V$	open	closed
$\pm 0.4V$	closed	open
$\pm 0.6V$	closed	closed

Initial speed	LB4
30 r.p.m.	open
15 r.p.m.	closed


Positioning range	LB9
$\pm 7.5$ revolutions	open
$\pm 5$ revolutions	closed

Before restarting, replace the housing and secure it. Make sure that no cables get jammed.





### 3 Technical data

<b>Ambient conditions</b>	
ambient temperature	0 °C to +45 °C
storage temperature	-10 °C to +70 °C
shock resistance in acc. with DIN IEC 68-2-27	50 g 11 ms
resistance to vibration as stipulated in DIN IEC 68-2-6	10 Hz to 55 Hz 1.5 mm 55 Hz to 1000 Hz 10 g 10 Hz to 2000 Hz 5 g
EMC standards	CE
conformity	 Declaration of conformity available upon request
protection class	IP 54
<b>Electrical data</b>	
nominal power output	10 W (100 % OT)
power consumption	max. 35 W
supply voltage	24 VDC ± 25 %
nominal current	1.5 A
no-load current	1.0 A
<b>Mechanical data</b>	
positioning range	±40 revolutions
nominal torque	1 Nm (model: 401A) 1.8 Nm (model: 402A) 5 Nm (model: 405A)
self-holding torque (w/ current 100% OT)	1 Nm (model: 401A) 1.8 Nm (model: 402A) 5 Nm (model: 405A)
self-holding torque (no current)	10 Ncm (model: 401A) 18 Ncm (model: 402A) 50 Ncm (model: 405A)
nominal rated speed:	80 rpm (model: 401A) 45 rpm (model: 402A) 17 rpm (model: 405A)
gear backlash	max. 0.5°
output shaft	14 h 7 hollow shaft with adjustable collar
maximum radial force	150 N
maximum axial force	80 N
dimensions (l x w x h)	135 x 56 x 86 mm
weight	1,300 g

