

Instruction manual

PSD4xx positioning system



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

The instruction manual is part of the product. Please read this manual carefully, follow our instructions, and pay special attention to the safety information provided. This instruction manual should be available at all times. Please contact the manufacturer if you do not understand any part of the instructions.

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

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1 Safety precautions

1.1 Purpose of this user information

This instruction manual describes the features of the PSD4xx positioning system and provides guidelines for its use. The operating instructions are part of the product and must be kept for the entire service life of the appliance.

Every person who is tasked with carrying out work on or with the appliance must have read and understood the operating instructions before starting work on the appliance. This also applies if the person concerned has already worked with such an appliance or a similar appliance or has been trained by the manufacturer.

These appliances can pose a risk to persons and property due to improper use and incorrect operation. For this reason, every person entrusted with handling the appliances must be trained and aware of the dangers. The operating instruction and in particular the safety instruction contained therein must be carefully observed.

Always contact the manufacturer if you do not understand any parts of these instructions. Handle these operating instructions with care:

- It must be kept within easy reach for the entire service life of the appliances.
- It must be passed on to subsequent personnel.
- Any supplements issued by the manufacturer must be included.

The manufacturer reserves the right to further develop this device type without documenting this in each individual case. Your manufacturer will be happy to provide you with information on the current status of these operating instructions.

Some sections of this manual refer to external device-specific documents.

Requirement: An Internet connection is required.

The following additional documents are part of this instruction manual:

- Assembly instructions (general)
- Description of electrical connections and connectors (specific)
- Description of bus connections (specific)

Click the following link to find more technical information (such as data sheets, bus descriptions and manuals, function blocks or STP-files):

www.halstrup-walcher.de/technicaldocu

1.2 Qualified personnel

These operating instructions are intended for qualified electricians and fitters who are authorized to install, electrically connect, commission and label devices and systems in accordance with safety standards, as well as for the operator and manufacturer of the system on which the drives are installed.




The personnel must be provided with all applicable accident prevention and safety regulations that arise during commissioning or installation of the system.

It must be ensured that the personnel are familiar with all applicable accident prevention and safety regulations.

1.3 Explanation of symbols

The device has been designed and tested to ensure its safety. However, it may still be dangerous if used inappropriately. Precautions must be taken to prevent the device being used incorrectly by mistake.

The following warnings are used in this instruction manual:

 DANGER!	DANGER! Indicates a situation of imminent danger, which will lead to a fatality or serious injuries if not prevented.
 WARNING!	WARNING! Indicates a potentially dangerous situation, which may lead to a fatality or serious injuries if not prevented.
 CAUTION!	CAUTION! Indicates a potentially dangerous situation, which may lead to minor/slight injuries if not prevented.
NOTICE	NOTICE Indicates a potentially harmful situation, which may lead to material damage if not prevented.

1.4 Appropriate use

Positioning systems are especially suitable for automatically setting tools, stops or spindles for wood-processing equipment, packing lines, printing equipment, filling units and other types of special machines.

PSD4xx positioning systems are not stand-alone devices and may only be used if coupled to another machine.



WARNING!

Personal injury and property damage due to incorrect use of the products!

Always observe the operating requirements – particularly the permissible supply voltage – indicated on the type label and in the “Technical data” section of this manual.

The positioning systems are designed for use in an industrial environment and may only be used as intended. If they are not used as intended, situations may arise that result in damage to property and personal injury.

NOTICE

The device is used as intended if all instructions and information in these operating instructions are observed.

- Only operate the device in perfect technical condition
- When attaching to a machine, observe the current safety regulations.
- Do not operate the product in all installed state unless all necessary protective measures have been taken.
- Observe the relevant regulations for the prevention of accidents (e.g. accident prevention regulations).
- In order to avoid the risk of accidents due to contact with moving parts, appropriate separating or non-separating guards must be provided.
- Use appropriate protective equipment (e.g. safety helmet, safety goggles, safety shoes, protective gloves).
- Use appropriate assembly and transport equipment.
- Store and transport the product in its original packaging, reuse protective caps for plugs if necessary.
- Adequate ventilation must be provided at the point of use to avoid excessive heating.
- During project planning, ensure that the device is always operated within its specifications. See 5. Technical data and the corresponding bus description table of min-, max- and default values).
- In special areas of application such as the chemical, pharmaceutical or food sector, the positioning system in stainless steel design is possible.

1.5 Inappropriate use

The use of the positioning devices outside of the operating conditions and technical data and specifications described in the documentation is considered “improper”.

The drives are designed for intended operation under normal ambient conditions (according to EN / IEC / UL 61010-1), with the exception of an extended temperature range.

- Operation inside buildings
- Operation at altitudes up to 2000m above sea level
- Ambient temperatures deviating from standard: 0°C to 40°C
- Maximum relative humidity 80% at temperatures up to 31°C, decreasing linearly to 50% relative humidity at 40°C
- Fluctuations in the supply voltage up to $\pm 10\%$ of the nominal voltage at 50% relative humidity at 40°C
- The IP-protection rating is a manufacturer specification.

Any use of the device that goes beyond the intended use and/or is used differently can lead to dangerous situations:

- Underwater usage of the PSW is not allowed
- The positioning system cannot be used for certain applications, such as the transport of people and animals or as a press-bending device for cold processing of metal.
- If the operating requirements stated in chapter 5 Technical data and in the corresponding bus description (table of min-, max- and default values) are exceeded, personal injury or material damage may occur.
- The positioning system cannot be used in hazardous areas.
- Under no circumstances may the housing cover be used for power transmission purposes, e.g. for supporting, climbing or similar.

1.6 Limitation of liability

The device may only be operated in accordance with these operating instructions.

All information and instructions in these operating instructions have been compiled taking into account the applicable standards and regulations, the state of the art and our many years of experience and knowledge.

The manufacturer accepts no liability arising from improper or unintended use. Warranty claims also expire in this case:

- non-observance of the operating instructions
- improper use
- improper installation
- improper use
- Use by untrained personnel
- Modifications to the device
- Technical modifications
- Unauthorized modifications

The user is responsible for carrying out commissioning in accordance with the safety regulations of the applicable standards and all other relevant national or local regulations regarding conductor dimensioning and protection, grounding, circuit breakers, overcurrent protection, etc. The person who carried out the assembly or installation is liable for any damage caused during assembly or connection.

1.7 Assembly, electrical connections and start-up

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 device 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.

The device must be installed by trained technical personnel.

1.8 Troubleshooting, maintenance, repairs

The individual responsible for the electrical connections must be notified immediately if the device is damaged or if errors occur.

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

This device requires no maintenance.

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

1.9 Storage and transportation

The PSD4xx positioning system should always be stored and transported to the place of installation in its original packaging.

Information about storage and transportation can be found in the technical data sheet:








www.halstrup-walcher.de/en/products/drive-technology/direct-drives

Please search for "PSD", select your type, click on "Data sheets" and download the file.

1.10 Disposal

The electronic components of the device contain environmentally hazardous materials and materials that can be reused. The device must therefore be sent to a recycling plant when you no longer wish to use it. Compliance with the environmental codes of your country is essential.

1.11 Product labeling

Warning symbol	Meaning
	Reference to further documentation Read the operating instructions and safety instructions before transportation, installation or commissioning
	Warning of hot surface The appliance can become very hot during operation. Temperatures of over 70°C can occur. In the event of a fault, internal components may be overloaded. Use personal protective equipment or wait long enough for the appliance to cool down.
	Warning of dangerous electrical voltage Before working on the product, check that all power connections are de-energized!
	Disposal of batteries, electrical and electronic equipment <ul style="list-style-type: none"> In accordance with international regulations, batteries, rechargeable batteries and electrical and electronic equipment must not be disposed of with household waste. The owner is legally obliged to dispose of these devices properly at the end of their service life. WEEE: This symbol on the product, its packaging or in this document indicates that a product is subject to these regulations.
	CE marking CE stands for "Conformité Européenne". The CE marking expresses the conformity of a product with the relevant EC directives.
	UKCA marking UKCA stands for "UK Conformity Assessed". The UKCA marking expresses the conformity of a product with all applicable legal requirements of the United Kingdom.
	GROUNDING Chassis grounding (description in chapter 3.7.6 Electrical grounding (Chassis))

2 Description of the device and its functions

2.1 PSD4xx positioning system with bus interface



The PSD4xx positioning system is an integrated drive for the accurate adjustment of auxiliary and positioning axes. The drive enables the operator to perform reproducible and simultaneous adjustments at all the required positions. The PSD4xx positioning system converts a digital positioning signal into a rotational angle.

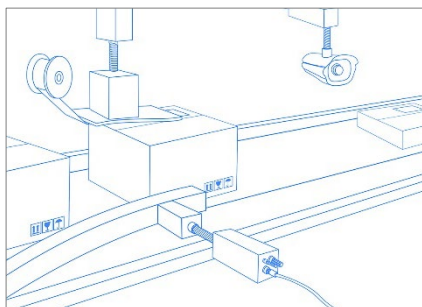
The integrated absolute measuring system eliminates the need for time-consuming reference runs. A bus system connection simplifies the wiring. A hollow shaft with an adjustable collar makes assembly quite simple.

The drive is especially suitable for automatically setting tools, stops or spindles for wood-processing equipment, packing lines, printing equipment, filling units and other types of special machines. The devices require no maintenance.

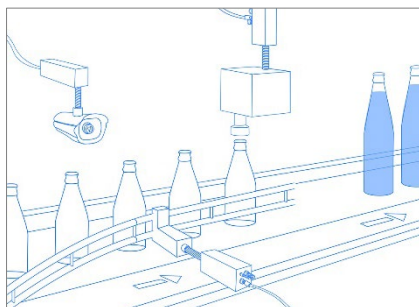
2.2 Examples of applications

- Wood-processing machines
- Packaging machines
- Food processing and beverages industry
- etc.

Format changeover in packaging machines



Format changeover in bottling plants

































2.3 Overview of features

- Stepper motor
- Power amplifier and control electronics with galvanic separation (power and bus)
- Absolute measuring system (battery-free)
- Several bus interface options (see order key, chapter 2.4)
- 2 Protection class options (see order key chapter 2.4)
- Solid circular shaft (flattened), 5 mm or 8 mm
- Optional: Hollow shaft, 8 mm or 14 mm (with gear reducer)
- Optional: Gearbox kit for increased torque requirements with 8 mm or 14 mm hollow shaft
- Selectable connector orientation (horizontal or vertical with regard to the output shaft)
- Positioning runs:
 - o Positioning run with loop
 - o Positioning run without loop
 - o Manual run

2.4 Models and order key

The PSD4xx positioning systems can be adapted to specific requirements. The possible models can be configured using the order key:

Order code	A	B	C	D	E	F	G	H
PSD								
	A Type	B Torque/ Output shaft	C Rotation shaft/ Housing	D Bus communication ¹⁾	E Electrical connections	F Protection class	G Software modules	H Certificates
	 40: horizontal	1.5V 1.8H 1-14H with gearbox: 3.8H 3-14H	S: direct or 0° 1: 90° 2: 180° 3: 270°	CA: CANopen IO: IO-Link PN: PROFINET EC: EtherCAT EI: EtherNet/ IP	0: standard ²⁾	50: IP 50 65: IP 65 ³⁾	1: standard M: with modulo function ⁴⁾ S: with changeover of parameter set ⁴⁾ P: with target speed in process data ⁴⁾ Z: with modulo function and changeover of pa- rameter set and target speed in process data ⁴⁾	0: CE / UKCA N: NRTL + CE / UKCA
	 41: vertical							
	 42: horizontal	2.8V 2.8H 2-14H with gearbox: 4-14H 6-14H 8-14H						
	 43: vertical							
	 48: horizontal	0.5V 0.8H 0-14H with gearbox: 1-8H 1-14H						
	 49: vertical							

B				C			
Key		Torque	Output shaft	Rotation shaft/Housing			
B1-B2		B1	B2	S	1	2	3
direct	1.5V	1: 0.8 Nm	5V: 5 mm solid shaft		-	-	-
	1.8H 1-14H	1: 0.8 Nm	8H: 8 mm hollow shaft 14H: 14 mm hollow shaft				
with gearbox	3.8H 3-14H	3: 3 Nm	8H: 8 mm hollow shaft 14H: 14 mm hollow shaft				
direct	2.8V	2: 2 Nm	8V: 8 mm solid shaft		-	-	-
	2.8H 2-14H	2: 2 Nm	8H: 8 mm hollow shaft 14H: 14 mm hollow shaft				
with gearbox	4-14H 6-14H 8-14H	4: 4 Nm 6: 6 Nm 8: 8 Nm	14H: 14 mm hollow shaft				
direct	0.5V	0: 0.25 Nm	5V: 5 mm solid shaft		-	-	-
	0.8H 0-14H	0: 0.25 Nm	8H: 8 mm hollow shaft 14H: 14 mm hollow shaft				
with gearbox	1-8H 1-14H	1: 1 Nm	8H: 8 mm hollow shaft 14H: 14 mm hollow shaft				

¹⁾ Others on request

²⁾ Standard equipment: 3 plugs / sockets
with IO-Link: 1 plug

³⁾ IP 65 installed (motor shaft IP 50)

⁴⁾ Only for IO-Link devices

2.5 Construction of devices with hollow shafts/gear reducers

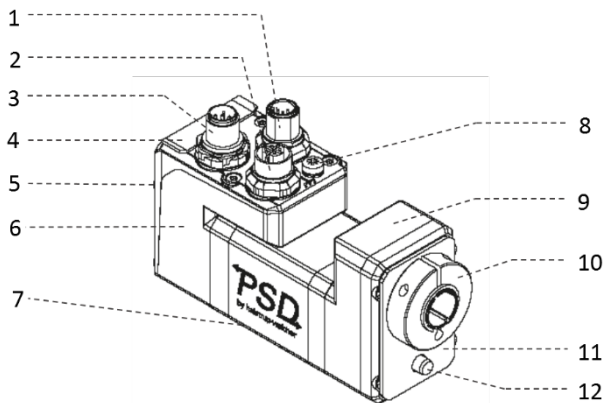


Illustration exemplary, here: PSD403-14H

- 1 M12 male connector for power supply (A-coded)
(for devices with IO-Link also for communication)
- 2 M12 connector for bus
CA: M12 female connector (B-coded)
EC/PN/EI: M12 female connector (D-coded)
not for IO (1 cable for power supply and communication signal)
- 3 M12 connector for bus
CA: M12 male connector (B-coded)
EC/PN/EI: M12 female connector (D-coded)
not for IO (1 cable for power supply and communication signal)
- 4 Sealing plug with
 - device controls (not for devices with IO Link)
 - status elements (see chapter 2.8)
- 5 Connection diagram: on the adjoining side of the connectors
(not for devices with IO-Link)
- 6 Housing section with power and control electronics
- 7 Type label (see chapter 2.7)
- 8 Grounding screw

9 Gearbox with hollow shaft:



Illustration exemplary (Models: see order code in chapter 2.4)

Attachment housing with hollow shaft:



Illustration exemplary (Models: see order code in chapter 2.4)

- 10** Hollow shaft, 8 mm or 14 mm,
with allen screw (M4 x 16 DIN 912) for spindle mounting
- 11** Damping plate (1.5 mm): to offset lash in the spindle
- 12** Torque support: Mechanical fixation to prevent the drive from twisting

2.6 Construction of devices with solid circular shafts

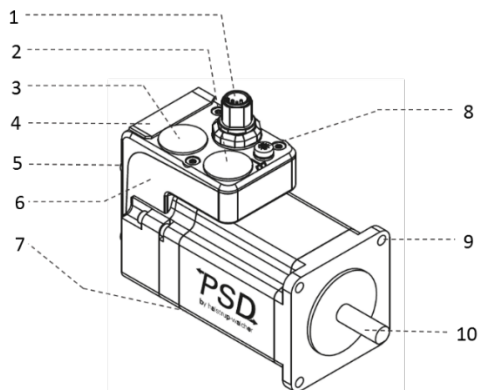
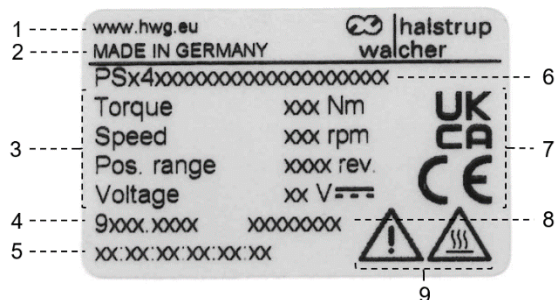


Illustration exemplary, here: PSD422-8V

- | | |
|-----------|---|
| 1 | M12 male connector (A-coded) (for device with IO Link for bus and power supply) |
| 2 | M12 connector for bus
CA: M12 female connector (B-coded)
EC/PN/EI: M12 female connector (D-coded)
not for IO (1 cable for power supply and communication signal) |
| 3 | M12 connector for bus
CA: M12 male connector (B-coded)
EC/PN/EI: M12 female connector (D-coded)
not for IO (1 cable for power supply and communication signal) |
| 4 | Sealing plug with <ul style="list-style-type: none"> - device controls (not for devices with IO Link) - status elements (see chapter 2.8) |
| 5 | Connection diagram: on the adjoining side of the connectors
(not for devices with IO-Link) |
| 6 | Housing section with power and control electronics |
| 7 | Type label (see chapter 2.7) |
| 8 | Grounding screw |
| 9 | Flange holes M3 (PSD40x/41x/48x/49x) or \varnothing 4.5 (PSD42x/43x) |
| 10 | Solid circular shaft (flattened), 5 mm or 8 mm |

2.7 Type label



1 Manufacturer and website

2 Country of manufacture

3 Technical data

4 Article number (specific)

5 MAC-address (only for devices with IE buses)

6 Order key

7 CE and UKCA conformity symbols

8 Serial number

9 Warning symbols:



observe installation and operating instructions

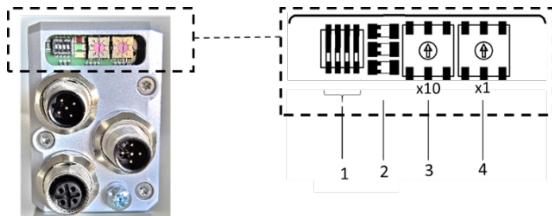


let the positioning system cool down sufficiently before touching

2.8 Device controls and status elements

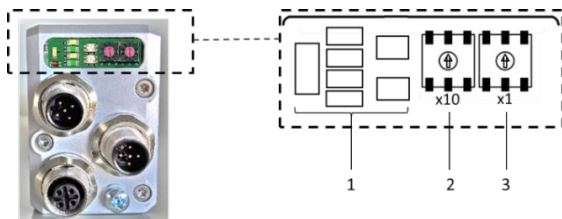
There is a rectangular sealing plug on the side where the connector is located – the precise location depends on the selected orientation of the connectors. The device controls and status elements are located under the sealing plug.

2.8.1 Device controls and status elements CANopen / IO-Link



- 1 DIP-switches (left to right switches 1..4) (not present with IO Link)
- 2 Status LEDs (red and green LED = bus status; yellow LED = motor status)
- 3 Address switches x10 (not present with IO Link)
- 4 Address switches x1 (not present with IO Link)

2.8.2 Device controls and status elements IE (Industrial Ethernet)



- 1 Status LEDs (bus status and motor status)
- 2 Address switches x10
- 3 Address switches x1

Click the following link to find more technical information about the control and status elements in the bus description: www.halstrup-walcher.de/technicaldocu

Please search for “PSD”, select your type, click on “Instruction manuals” and download the files appropriate to your bus communication interface.

3 Installing the device



WARNING!

Risk of injury if used inappropriately.
The drive must be installed by trained technical personnel.



WARNING!



Risk of burns due to hot drive. The drive can become very hot during operation.
Allow the drive to cool before touching it.



WARNING!

Risk of crushing due to rotary movement.
Do not reach into the working area of the drive when it is still turning.
The user/operator must ensure appropriate protective measures are taken.



WARNING!

Incorrect assembly can lead to the destruction of the drive.



WARNING!

Check that the supply lines are not pinched or crushed. They must not touch the housing of the drive or should be designed for the corresponding heat.
Lay the supply lines according to the general and specific local assembly regulations.
If the supply lines have not been delivered together with the drive, please select suitable cables for the application.
Do not operate the positioning system if the supply lines are noticeably damaged.



WARNING!

Risk of injury. High contact voltages can occur in the case of malfunctions.
This can be prevented by grounding.

**CAUTION!**

The drive must be protected against excessive heating.
The user/operator must ensure appropriate protective measures are taken.
Ensure sufficient ventilation in the mounting location.

**CAUTION!**

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

**CAUTION!**

Submerged operation of the PSDs is not permitted.

NOTICE

When the drive is running at certain speeds, depending on the application, resonances may occur which reduce its service life and increase noise. This can be avoided by changing the target rpm.

3.1 Installing drive with a hollow shaft

How to mount the drive with hollow shaft on a shaft

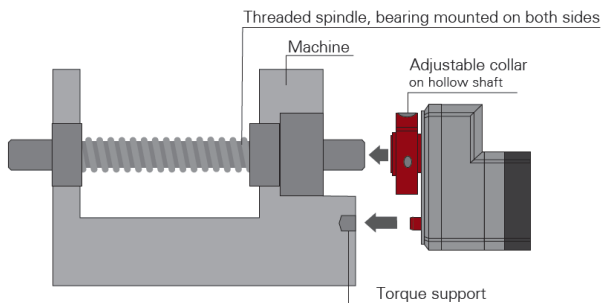
Requirements

Recommended shaft diameter	8 h9 or 14 h9
Depth of the hollow shaft bore	20 mm
Tightening torque of the adjustable collar screw with a 3 mm allen screw	4 Nm
Minimum depth of pin insertion into the hollow shaft bore	> 16 mm
Hole/long hole for torque support	6.05 .. 6.10 mm
Damping plate	Must be resting evenly or be pressed together at up to half thickness



CAUTION!

Depending on the operating situation, the use of significantly shorter pins (< 16 mm) may result in damage to the drive.

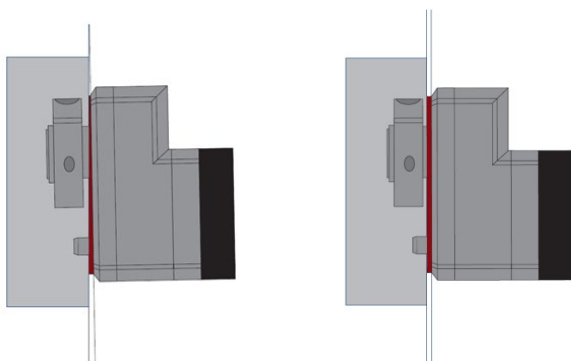


The depth of the hollow shaft bore is 20 mm. For optimum operation, the length of the pin of the shaft to be driven should correspond to this depth of the bore. Depending on the operating situation, the use of significantly shorter pins (< 16 mm) may result in damage to the PSD4xx.

When installing the PSD4xx, the device should only be pushed on until the damping plate on the base of the device is resting evenly on the machine, or being pressed together to approx. the half thickness. Under no circumstances must the PSD4xx be bolted on "hard" without an air gap between it and the machine.

NOTICE

When installing the device, ensure that the damping plate is parallel to the base of the device, see diagram:



INCORRECT ☹️

CORRECT 😊

NOTICE

The backlash that occurs when the direction of rotation changes has a direct influence on the positioning accuracy of the device. If the backlash is very high (several mm), the impact load may damage the drive.

NOTICE

When it has been mounted, there must be space around the drive on all sides. This is important because the drive can move axially and/or radially during positioning if the hollow shaft and solid shaft are not 100 % aligned. This "wobble" does not indicate a defect in the drive, nor does it impair the drive's function as long as it can move freely.

3.2 Installing drive with a solid circular shaft

The drive with a solid circular shaft is installed on the axle to be driven using a coupling and an intermediate flange.

Install the drive according to the coupling manufacturer's specifications.

Requirements

Recommended internal diameter of hollow shaft of the coupling

5 H9 (PSD4xx-5V) or 8 H9 (PSD4xx-8V)

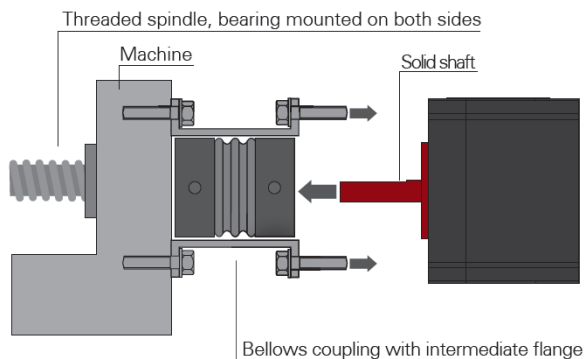
Stepper motor flange screws (not included, please select appropriate length)

Thread: M3 (PSD 40x/41x/48x/49x),
Borehole: Ø4,5 mm (PSD 42x/43x),
please use M4 screws and nuts, if applicable

NOTICE

When the drive is running at certain speeds, depending on the application, resonances may occur which reduce its service life and increase noise. This can be avoided by changing the target rpm.

Example:



3.3 Electrical connections and pin assignment

Technical data for the electrical connections and pin assignment can be found in the pin assignment description on the website: www.halstrup-walcher.de/technicaldocu

Please search for "PSD", select your type, click on "Instruction manuals" and download the files appropriate to your bus communication interface, file name: Connector and pin assignments.

NOTICE

The following notes on the power supply should be observed.

Minimum cross-sections are required for connection to the power supply. For power cables mounted on the device, use only the cross-sections listed below. In order to minimize voltage drop on longer cables, we always recommend using the largest available cross-section.

Cable cross-section
0,75 mm ²

If there are concerns about mechanical strength or where cables may be exposed to mechanical damage/stress, they must be protected accordingly. This can be ensured, for example, by a cable duct or a suitable armoured pipe.

If the power supply cables are laid in the immediate vicinity of the drives or other heat sources, make sure that the cables have a temperature resistance of at least 90°C.

With suitable design measures, e.g. sufficient ventilation or cooling, lower temperatures are also permissible. This must be checked and determined by the customer.

Make sure that the flammability class of the cable for the USA is equivalent to UL 2556 VW-1, e.g. according to IEC 60332-1-2 or IEC 60332-2-2 depending on the cross-section. For Canada, the flammability class FT1 is required, FT4 exceeds this and is therefore also permissible. Cables for the North American market often meet both requirements.

However, the flammability class requirements only apply if you do not limit to Class 2 (e.g. certified power supply) or to <150 W according to UL 61010-1

→ 3.6. Powering the device by means of a suitable fuse.

When installing in North America, please observe the specifications in the National Electrical Code NFPA 70 and the Electrical Standard for Industrial Machinery NFPA 79 (USA) or the Canadian Electrical Code and C22.2 (Canada) in the respective valid version.

3.4 Grounding the housing



CAUTION!

Risk of burns due to hot drive.
The drive can become very hot during operation.
Allow the drive to cool before touching it.



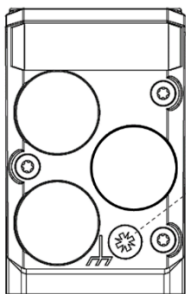
CAUTION!

Risk of injury. High contact voltages can occur in the case of malfunctions.
This can be prevented by grounding.

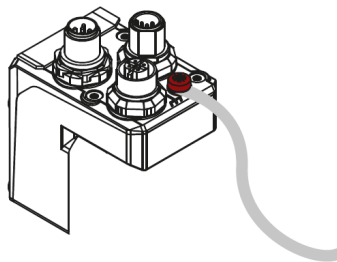
Next to the connectors, there is an M4 screw for mounting the grounding cable.

NOTICE

The drive should be connected to the machine base using the shortest possible cable. The minimum wire cross-section of the grounding cable is 1.5 mm².



Grounding
screw



3.5 Dismantling



CAUTION!

Risk of burns due to hot drive.
The drive can become very hot during operation.
Allow the drive to cool before touching it.

To dismantle, undo the clamp (the adjustable collar in models with a hollow shaft) and pull the PSD4xx off the shaft.

NOTICE

Ensure the drive is pulled off the shaft in the axial direction. Excessive bending can damage the output shaft.

NOTICE

When removing models with a solid circular shaft from a coupling, please follow the coupling manufacturer's instructions.

3.6 Powering the device

For the motor supply connection (SELV/PELV), it is required to provide adequate power limitation in compliance to e.g. IEC 61010-1, Limited Energy Circuit (LEC) or IEC 60950-1, Limited Power Supply (LPS).

To ensure this, the following fuse protection is recommended:

- For motor power use a single fuse with max. 4.0 A for each drive.
- For control power you can use a fuse with max. 2.0 A, so it is possible to power up to 10 units parallel with one fuse.
- The supply lines to the PSD4xx must be routed separately from other lines with dangerous voltage.

3.7 Duty cycle and mode of operation

The drives are designed for intermittent operation S3. When operating the drives under nominal power, the following duty cycle (DC) must be observed:

Device type	PSD40x/41x	PSD42x/43x	PSD48x/49x
Duty cycle [%]	up to 50 % DC S3	up to 30 % DC S3	up to 50 % DC S3

The mentioned duty cycles are guiding values. A higher duty cycle can be achieved by adjusting the parameters (speed, current).

Depending on the application, continuous operation S1 is possible with some variants. Please contact us if you have any questions.

3.8 Run drive in reverse

Depending on the model, the drive may be run in reverse up to a certain speed.



CAUTION!

Running a PSD4xx in reverse for more than 1-2 seconds at more than the permissible speed will damage the internal protection diode and the PSD4xx will be defective.

Please refer to the following table to find the maximum permissible speed:

Device type	PSD 401/411 - 5V/8H/ 14H	PSD 403/413 - 8H/14H	PSD 422/432 - 8V/8H/ 14H	PSD 424/434 - 14H	PSD 426/436 - 14H
Maximum permissible speed [rpm]	200	48	200	95	60

Device type	PSD 428/438 - 14H	PSD 480/490 - 5V/8H/ 14H	PSD 481/491 - 8H/14H
Maximum permissible speed [rpm]	45	200	48

3.9 Information on IP rating

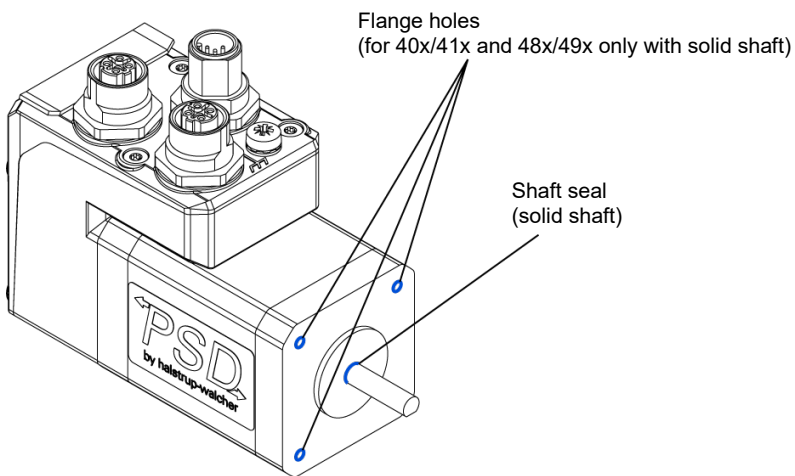
It should be noted that different IP rating may occur within a device.
The degree of protection for the selected design can be found in the following section.

Degree of protection class for IP50

housing	IP50
shaft seal (solid shaft and hollow shaft)	IP50
flange holes (for 40x/41x and 48x/49x)	IP50

Degree of protection class for IP65

housing	IP65
shaft seal (hollow shaft)	IP65
shaft seal (solid shaft)	IP50
flange holes (for 40x/41x and 48x/49x only with solid shaft)	IP50



4 Communication interface

Technical data for the communication interface can be found in the bus description on the website: www.halstrup-walcher.de/technicaldocu

Please search for "PSD", select your type, click on "Instruction manuals" and download the files appropriate to your bus communication interface.

5 Technical data

Technical data and drawings can be found in the current data sheet on the website: www.halstrup-walcher.de/en/products/drive-technology/direct-drives

Please search for "PSD", select your type, click on "Data sheets" and download the file.

Please contact us if you require any further information.

6 Included in shipment

The shipment includes the following:

- Assembly instruction
- PSD4xx positioning system

7 Notes

