

TPS 110 - 400 / TPS 111 - 401

Mains pack

Operating Instructions

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1 About this manual

1.1 Validity

This operating manual is for customers of Pfeiffer Vacuum. It describes the functioning of the designated product and provides the most important information for safe use of the unit. The description follows applicable EU guidelines. All information provided in this operating manual refer to the current state of the product's development. The documentation remains valid as long as the customer does not make any changes to the product.

Up-to-date operating instructions can also be downloaded from www.pfeiffer-vacuum.net.

1.2 Conventions

Safety instructions

The safety instructions in Pfeiffer Vacuum operating manuals are the result of risk evaluations and hazard analyses and are oriented on international certification standards as specified by UL, CSA, ANSI Z-535, SEMI S1, ISO 3864 and DIN 4844. In this document, the following hazard levels and information are considered:

| WARNING | |
|------------------------|--|
| Possible danger | Injuries or severe property damages can occur. |
| CAUTION | |
| Possible danger | Injuries or property damages can occur. |
| NOTE | |
| Command or note | Command to perform an action or information about properties, the disregarding of which may result in damage to the product. |

Pictograph definitions



Prohibition of an action or activity in connection with a source of danger, the disregarding of which may result in serious accidents.



Warning of a displayed source of danger in connection with operation of the unit or equipment.



Command to perform an action or task associated with a source of danger, the disregarding of which may result in serious accidents.

Instructions in the text

→ Work instruction: here you have to do something.

Abbreviations used

TC:Electronic drive unit for turbopump
TPS:Mains pack

2 Safety

2.1 Safety precautions



NOTE

Duty to inform

Each person involved in the installation or operation of the unit must read and observe the safety-related parts of these operating instructions.

→ The operator is obligated to make operating personnel aware of dangers originating from the unit or the entire system.



WARNING

Danger - Electrical installation

Safe operation after installation is the responsibility of the operator.

- Do not independently modify or change the pump and electrical equipment.
- Make sure that the system is integrated in an emergency off safety circuit.
- Consult Pfeiffer Vacuum for special requirements.



WARNING

Danger of electric shock

In case of defect, the parts connected to the power supply are under voltage.

→ Always keep the mains connection freely accessible so you can disconnect it at any time.

- Observe the safety and accident prevention regulations.
- Check regularly that all safety precautions are being complied with.
- Do not loosen any plug connection during operations.
- Keep leads and cables well away from hot surfaces (> 70 °C).
- Always ensure a safe connection to the protective earthing conductor (PE, protection class I).
- The unit has been accredited with protection class IP 20. When installing into ambient conditions, which afford other protection classes, the necessary measures must be taken.
- Before carrying out any work disconnect the unit and all associated installations safely from the mains.

2.2 Proper use



NOTE

CE conformity

The manufacturer's declaration of conformity becomes invalid if the operator modifies the original product or installs additional components.

→ Following installation into a plant and before commissioning, the operator must check the entire system for compliance with the valid EU directives and reassess it accordingly.



WARNING

Observe the device properties!

Due to their design and their protection class IP 20, the devices are designated to the installation into closed systems.

→ Take appropriate measures (e.g. covers) to ensure that no external moisture can attain to electric devices and equipment.

→ Take appropriate measures to ensure that hot surfaces (>70 °C) can not be touched.

→ External separators shall be provided in case of not approachable installed devices.

- Pfeiffer Vacuum mains packs only serve to the external voltage supply of Pfeiffer Vacuum turbopumps with integrated electronic drive unit.
- Only operate Pfeiffer Vacuum mains packs in the available specification.

2.3 Improper use

Improper use will cause all claims for liability and warranties to be forfeited. Improper use is deemed to be all use for purposes deviating from those mentioned above, especially:

- Connection to pumps or units which are not suitable for this purpose according to their operating instructions.
- Connection to units which have exposed voltage-carrying parts.

3 Product description

3.1 Product identification

Product features

| Type TPS | 110 | 111 | 180 | 181 | 310 | 311 | 400 | 401 |
|-----------------------|-----------------|-----------------|--------|-----|--------|-----|--------|-----|
| Type of attachment | W ¹⁾ | E ²⁾ | W | E | W | E | W | E |
| electronic drive unit | TC 110 | | TC 110 | | TC 400 | | TC 400 | |
| Output power | 110 W | | 180 W | | 300 W | | 400 W | |

¹⁾ W = Wall or standard rail mounting

²⁾ E = 19" partial plug-in unit 3HE with front panel

To correctly identify the product when communicating with Pfeiffer Vacuum, always have the information from the rating plate available.



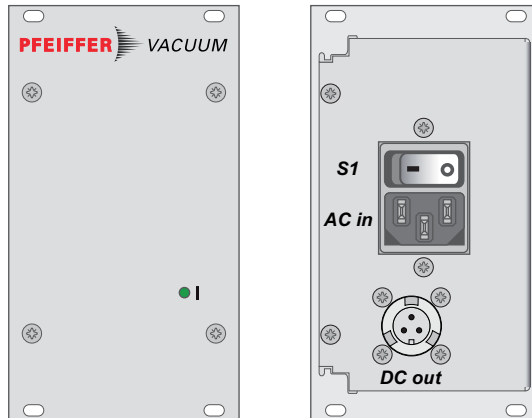
Fig. 1: Example for a rating plate

Scope of delivery

- Mains pack TPS
- Installation fittings
- Operating instructions

3.2 Function

TPS mains packs provide Pfeiffer Vacuum turbo pumps featuring TC electronic drive unit with voltage. The output voltage "DC out" is securely separated from the power input voltage "AC in".



S1 Switch ON/OFF
 AC in Mains connection
 DC out Connection TM 700

Fig. 2: Front and rear view of a TPS mains pack

4 Installation

4.1 Range of application

Pfeiffer Vacuum mains packs TPS must be installed and operated in the following ambient conditions.

| | |
|------------------------------|---|
| Permissible protection class | IP 20 |
| Temperature | +5 °C to +50 °C |
| Relative air humidity | max. 80%, at T ≤ 31°C, max. 50% at T ≤ 40°C |
| Air pressure: | 77 kPa - 106 kPa |

4.2 Assembly

The specific type designation of the mains pack provides information on the installation type (see p. 6, chap. 3.1). Installation fittings included.



CAUTION

Ensure free convection

Incorrect installation can cause damage by over-heating or create a fire hazard.

→ Maintain a minimum distance of 50 mm from cooling vents to adjacent components or boundaries.



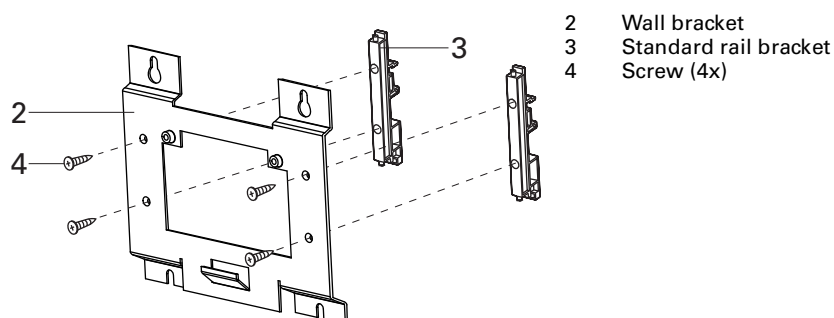
WARNING

Risk of short circuit

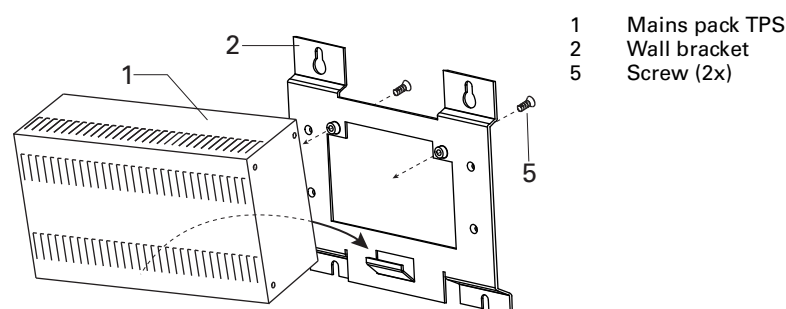
The use of screws that are longer than those stated below can cause a short circuit and is not permitted.

→ To ensure the safe installation of Pfeiffer Vacuum products, use only the installation materials supplied.

Standard rail installation



→ Fasten standard rail bracket onto the wall bracket using the screws supplied.



→ Insert the mains pack in the lower clip of the wall bracket (with standard rail brackets) and fix it using the screws supplied.

→ Attach the mains pack to the standard rail.

- Wall installation**
- Insert the mains pack in the lower clip of the wall bracket (without standard rail brackets) and fix it using the screws supplied.
 - Attach the mains pack to the wall.
- Install in a rack as a 19" module**
- Push mains pack into a rack and fasten.
 - To ensure adequate convection, observe the perpendicular mounting.

4.3 Connecting to the mains power supply



WARNING

Danger - Electrical installation

Safe operation after installation is the responsibility of the operator.

- Do not independently modify or change the pump and electrical equipment.
 - Make sure that the system is integrated in an emergency off safety circuit.
 - Consult Pfeiffer Vacuum for special requirements.
- Order the mains cable separately (see "accessories").
 - Switch off switch *S1* on the mains pack (position "0").
 - Plug mains cable into the mains connection "AC in".
 - Connect the mains cable to the mains.
 - Always ensure a safe connection to the protective earthing conductor (PE, protection class I).

5 Operation

5.1 Switching on

- Establish connection between the mains pack and electronic drive unit in accordance with the operating manual for the turbo pump.
- Switch on power supply using switch *S1* on the mains pack.
 - The green LED on the front panel displays the device function.

5.2 Switching off

- Switch off switch *S1* on the mains pack (position "0").

6 Service

Pfeiffer Vacuum offers first-class service!

- Fast replacement with exchange products in mint condition
- Advice on the most cost-efficient and quickest solution

Detailed information, addresses and forms at: www.pfeiffer-vacuum.net (Service).

Service orders

All service orders are carried out exclusively according to our repair conditions for vacuum units and components.

7 Accessories

| Designation | |
|--|---------------|
| 230 V AC mains cable with Euro-style safety plug, IEC power socket (straight), 3 m | P 4564 309 ZA |
| 115 V AC mains cable with UL plug, IEC power socket (straight), 3 m | P 4564 309 ZE |
| 208 V AC mains cable with UL plug, 3 m | P 4564 309 ZF |

8 Technical data

| Parameter | TPS 110, TPS 111 | TPS 180, TPS 181 |
|--------------------------------------|--------------------------|--------------------------|
| Ambient temperature | 5-50 °C | 5-50 °C |
| Protection category | IP 20 | IP 20 |
| Mains requirement: frequency (range) | 50/60 Hz | 50/60 Hz |
| Mains requirement: power consumption | 130 VA | 210 VA |
| Mains requirement: voltage (range) | 115-230 (-20/+15 %) V AC | 115-230 (-20/+15 %) V AC |
| Output voltage | 24 (± 2 %) V DC | 24 (± 2 %) V DC |
| Output current | 4.6 A | 7.5 A |
| Weight | 0.7 kg | 1.0 kg |

| Parameter | TPS 310, TPS 311 | TPS 400, TPS 401 |
|--------------------------------------|--------------------------|--------------------------|
| Ambient temperature | 5-50 °C | 5-50 °C |
| Protection category | IP 20 | IP 20 |
| Mains requirement: frequency (range) | 50/60 Hz | 50/60 Hz |
| Mains requirement: power consumption | 340 VA | 450 VA |
| Mains requirement: voltage (range) | 115-230 (-20/+15 %) V AC | 115-230 (-20/+15 %) V AC |
| Output voltage | 24 (± 2 %) V DC | 48 (± 2 %) V DC |
| Output current | 12.5 A | 8.4 A |
| Weight | 1.1 kg | 1.75 kg |

8.1 Dimensions

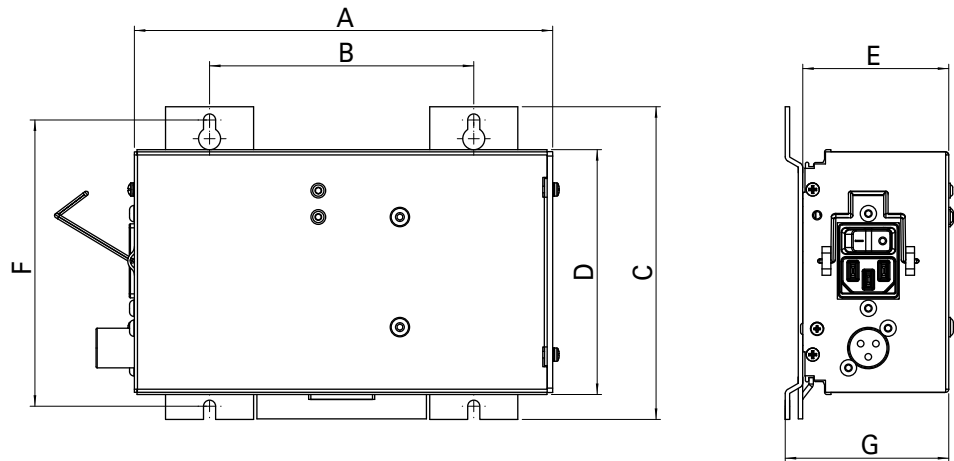


Fig. 3: Power supply for wall or standard-rail mounting

| Dimensions | TPS 110 | TPS 180 | TPS 310 | TPS 400 |
|------------|----------|----------|----------|----------|
| A | 169 mm | 190 mm | 190 mm | 190 mm |
| B | 120 mm | 120 mm | 120 mm | 120 mm |
| C | 142 mm | 142 mm | 142 mm | 142 mm |
| D | 111.2 mm | 111.2 mm | 111.2 mm | 111.2 mm |
| E | 48.7 mm | 58.4 mm | 67.3 mm | 104.6 mm |
| F | 130 mm | 130 mm | 130 mm | 130 mm |
| G | 56.6 mm | 66.5 mm | 75.3 mm | 112.5 mm |

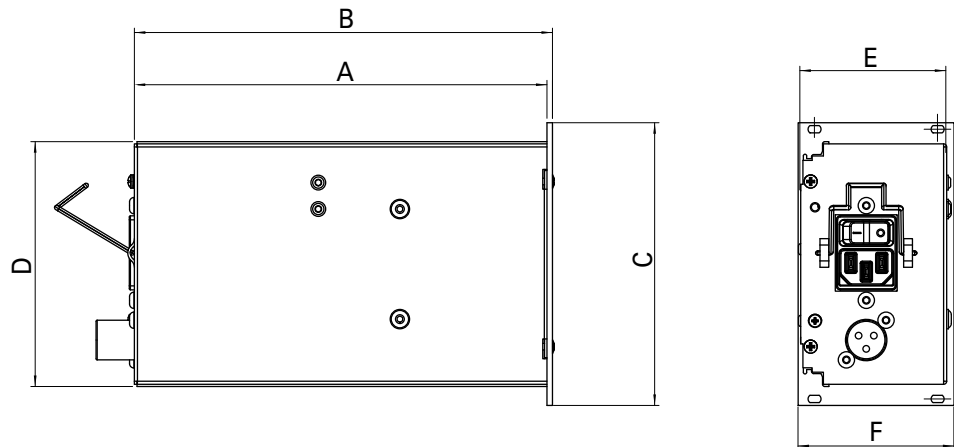


Fig. 4: Power supply in the form of a 3 RU 19" rack module with front panel

| Dimensions | TPS 111 | TPS 181 | TPS 311 | TPS 401 |
|------------|----------|----------|----------|----------|
| A | 161.5 mm | 187.5 mm | 187.5 mm | 187.5 mm |
| B | 164 mm | 190 mm | 190 mm | 190 mm |
| C | 128.4 mm | 128.4 mm | 128.4 mm | 128.4 mm |
| D | 111.2 mm | 111.2 mm | 111.2 mm | 111.2 mm |
| E | 48.7 mm | 58.4 mm | 67.3 mm | 104.6 mm |
| F | 50.5 mm | 60.7 mm | 70.8 mm | 106.4 mm |



Declaration of conformity

according to the EC directive:

- **Electromagnetic Compatibility 2004/108/EC**
- **Low Voltage 2006/95/EEC**

We hereby certify, that the product specified below is in accordance with the provision of EU Electromagnetic Compatibility Directive **2004/108/EEC** and EU Low Voltage Directive **2006/95/EEC**.

TPS

Guidelines, harmonised standards and national standards and specifications which have been applied:

DIN EN 61000-3-2 : 2008
DIN EN 61000-3-3 : 2006
DIN EN 61010-1 : 2002
DIN EN 61326-1 : 2006
DIN EN 62061 : 2005

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