

## Relay box for backing pumps



**PM 041 937-T**

**PM 041 938-T**

## Table of contents

<b>1</b>	<b>About this manual</b> .....	<b>3</b>
1.1	Validity.....	3
1.2	Conventions.....	3
<b>2</b>	<b>Safety</b> .....	<b>4</b>
2.1	Safety precautions.....	4
2.2	Proper use.....	4
2.3	Improper use.....	4
<b>3</b>	<b>Product description</b> .....	<b>5</b>
3.1	Relay box single-phase, PM 041 937 -T.....	5
3.2	Relay box single-phase, PM 041 938 -T.....	5
<b>4</b>	<b>Installation</b> .....	<b>6</b>
4.1	Internal connection.....	6
4.2	Connection diagram.....	7
4.3	Connection to the electronic drive unit.....	8
<b>5</b>	<b>Accessories</b> .....	<b>10</b>
<b>6</b>	<b>Technical data</b> .....	<b>10</b>
6.1	Dimension diagrams.....	10
	<b>Declaration of conformity</b> .....	<b>11</b>

# 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](http://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:

<b>DANGER</b>	
<b>Immediate danger</b>	Death or very severe injuries occur.
<b>NOTE</b>	
<b>Command or note</b>	Command to perform an action or information about properties, the disregarding of which may result in damage to the product.

### Piktograph definitions



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.

### Symbols used

-  Fore-vacuum flange
-  Vacuum flange
-  Exhaust flange
-  Electric connection

### Abbreviations used

**TC:**Electronic drive unit for turbopump  
**TM:**Electronic drive unit for HiMag  
**TCP:**External electronic drive unit

## 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.

- Observe all safety and accident prevention regulations.
- Regularly check the proper observance of all safety measures.
- Do not loosen any plug connection during operations.
- Keep leads and cables well away from hot surfaces (> 70 °C).
- The unit has been accredited with protection class IP 65. When installing into ambient conditions, which afford higher protection classes, the necessary measures must be taken.
- Always ensure a safe connection to the protective earthing conductor (PE, protection class I).
- 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 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.

- The relay box may only be used until the specified maximum contact load.
- The relay box may only be used to control vacuum backing pumps to Pfeiffer Vacuum turbopumps with related electronic drive units.
- Permissible electronic drive units for the connection of the relay boxes are:
  - integrated electronic drive unit TC 100 with TCS 010
  - integrated electronic drive unit TC 600
  - integrated electronic drive unit TC 750
  - integrated electronic drive unit TM 3000 with connection cable PM 061 144 -X
  - external electronic drive unit TCP 350 with connection cable PM 061 144 -X

### 2.3 Improper use

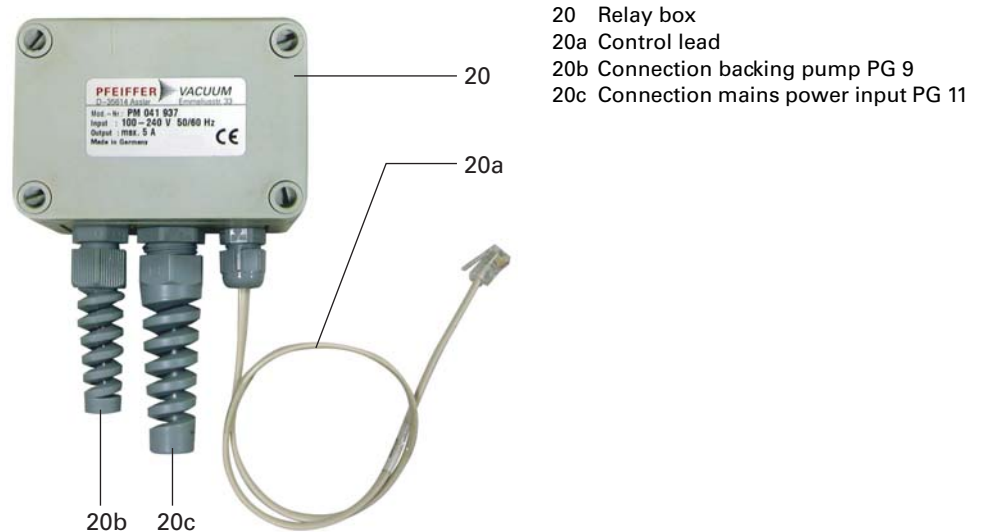
Improper use will cause all claims for liability and guarantees to be forfeited. Improper use is deemed to be all use for purposes deviating from those mentioned above, especially:

- The connection of a mains power voltage not corresponding to the rating plate
- Operation with contact loads higher than the information on the rating plate

### 3 Product description

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

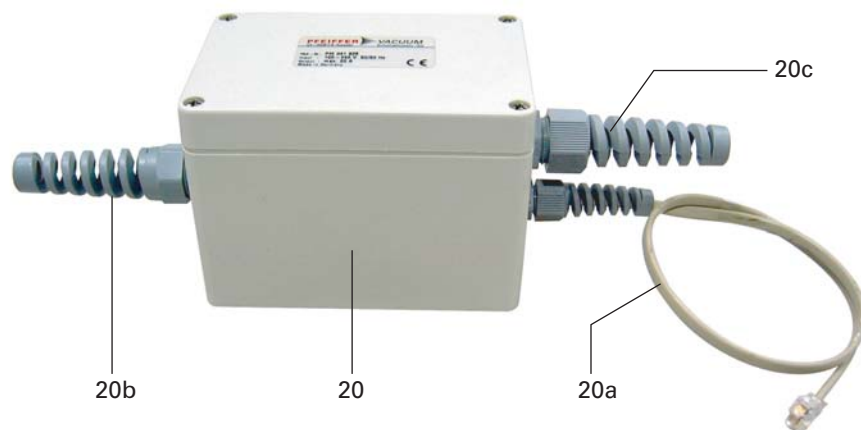
#### 3.1 Relay box single-phase, PM 041 937 -T



**Fig. 1: Relay box PM 041 937 -T**

The relay box PM 041 937 -T with semiconductor relay is provided especially for the intermittent operation on Pfeiffer Vacuum diaphragm vacuum pumps. The maximum relay contact load is 5 A.

#### 3.2 Relay box single-phase, PM 041 938 -T



**Fig. 2: Relay box PM 041 938 -T**

20 Relay box  
20a Control lead  
20b Connection backing pump PG 9  
20c Connection mains power input PG 11

The relay box PM 041 938 -T with mechanical relay is provided for the operation of larger Pfeiffer Vacuum backing pumps. The maximum relay contact load is 20 A.

## 4 Installation



### DANGER

#### Voltage-bearing elements

Danger to life from electric shock.

- The electrical connection can be carried out only by trained and authorised electricians.
- Ensure the system is adequately earthed.

### 4.1 Internal connection

- Unscrew and remove the cover of the relay box.
- Install the wiring of the mains power and the backing pump according to the following illustrations.
- Close the relay box

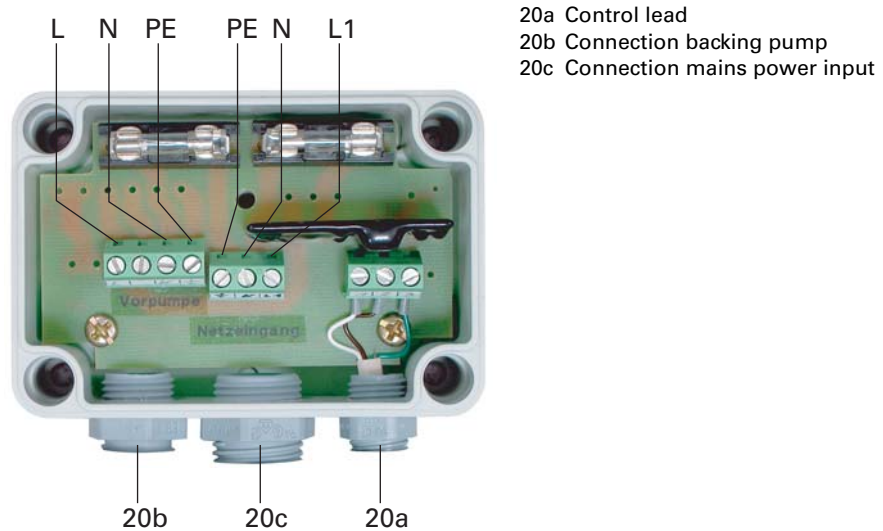


Fig. 3: Relay box PM 041 937 -T, internal view

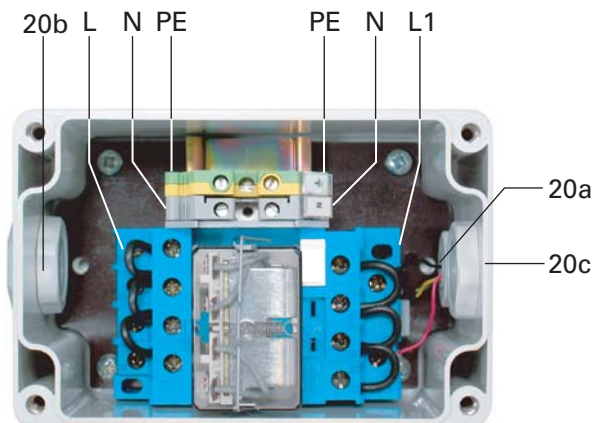


Fig. 4: Relay box PM 041 938 -T, internal view

## 4.2 Connection diagram

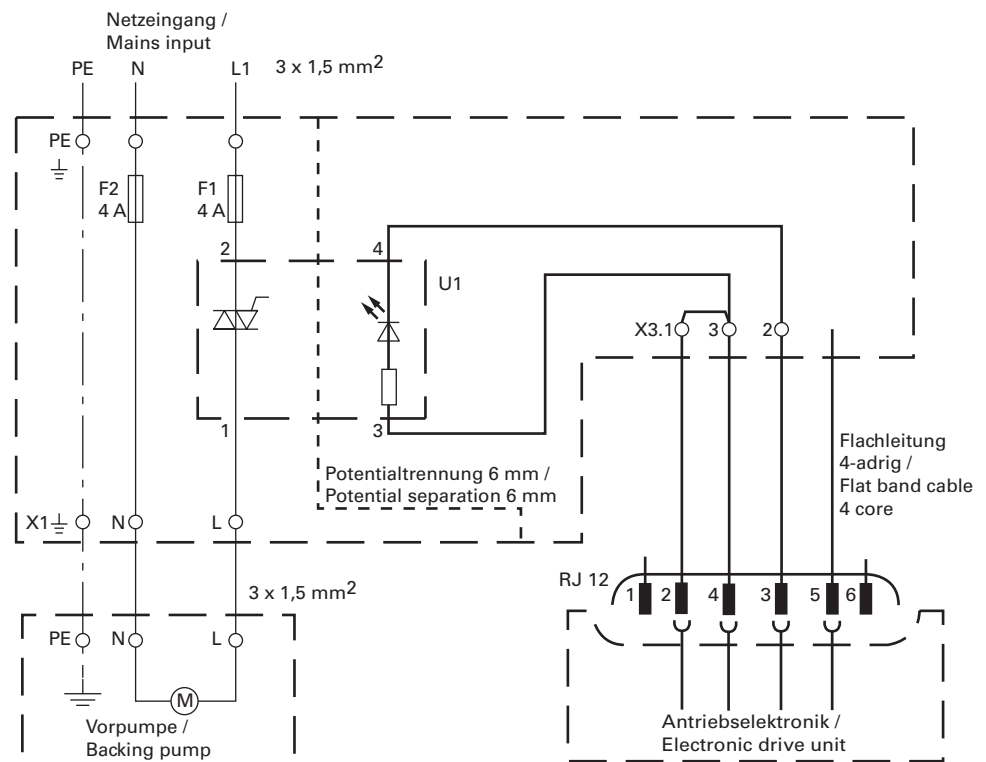


Fig. 5: connection diagram PM 041 937 -T

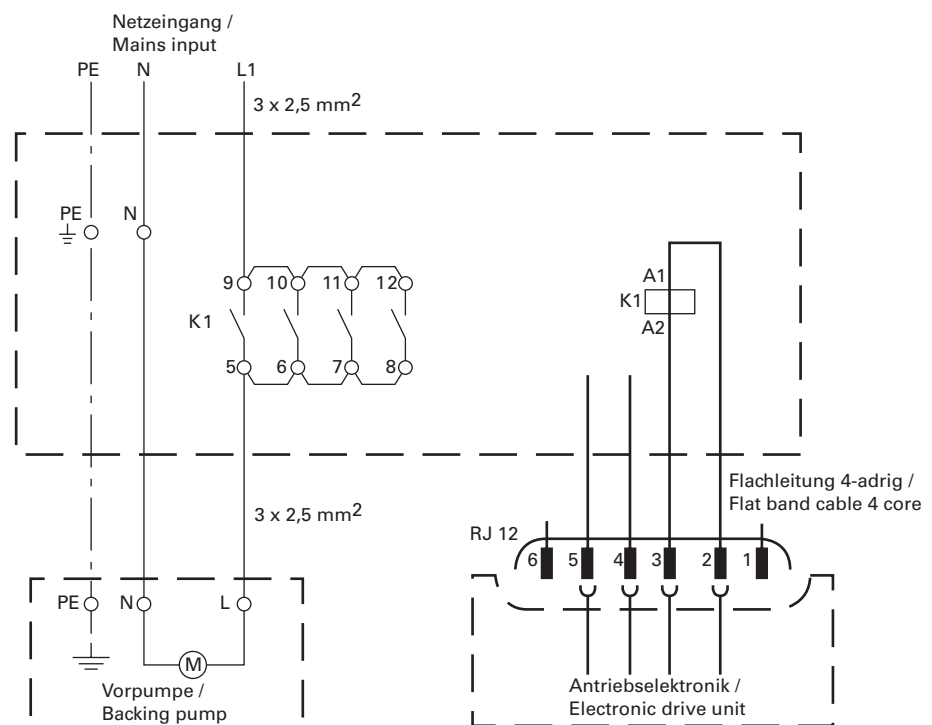
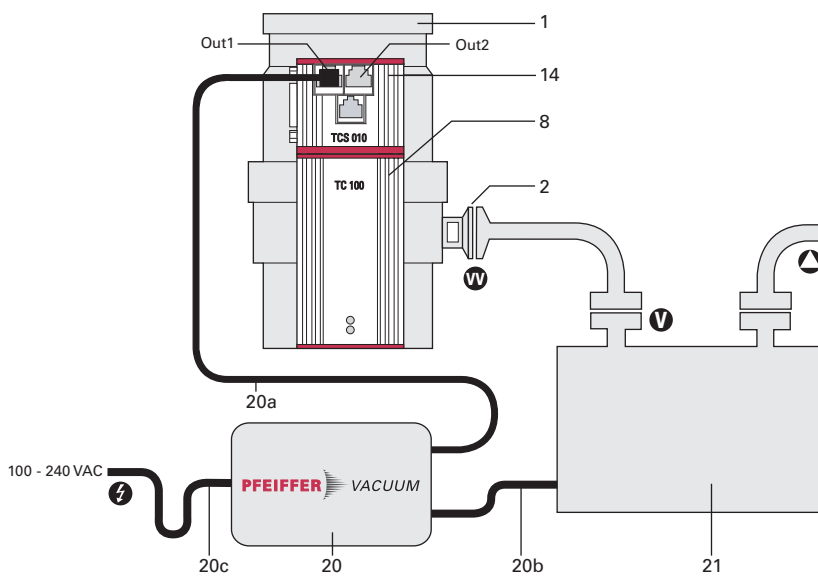


Fig. 6: Connection diagram PM 041 938 -T

### 4.3 Connection to the electronic drive unit

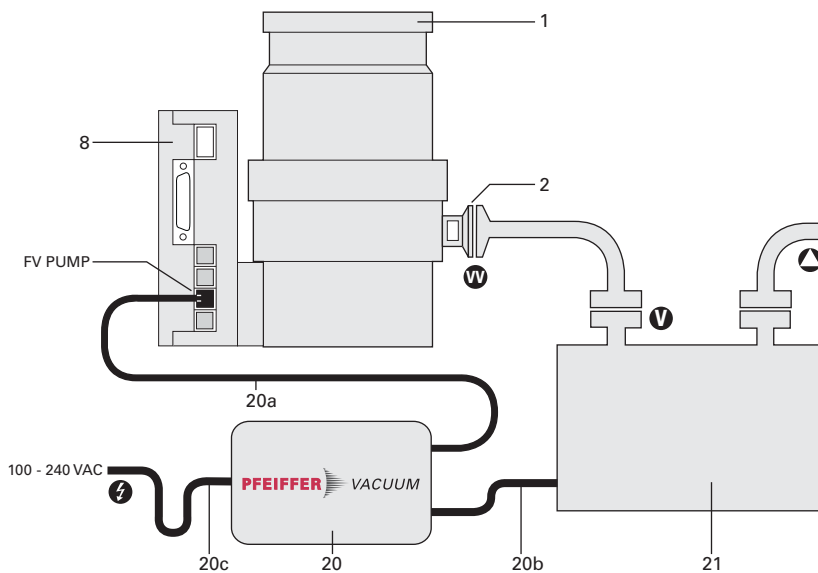
#### TC 100 with TCS 010



- 1 High vacuum flange
- 2 Fore-vacuum flange
- 8 Electronic drive unit
- 14 Connection box TCS 010
- 20 Relay box
- 20a Control lead
- 20b Connection backing pump
- 20c Connection mains power input
- 21 Vacuum backing pump

- Connect the plug RJ12 of the control lead into the socket "OUT1" or "OUT2" of the connection box TCS 010.
- Set up the outputs of the connection box according to the operating instructions PM 0547 BN "Pumping operations with DCU".
- Connect the mains power cable of the relay box to the mains voltage.

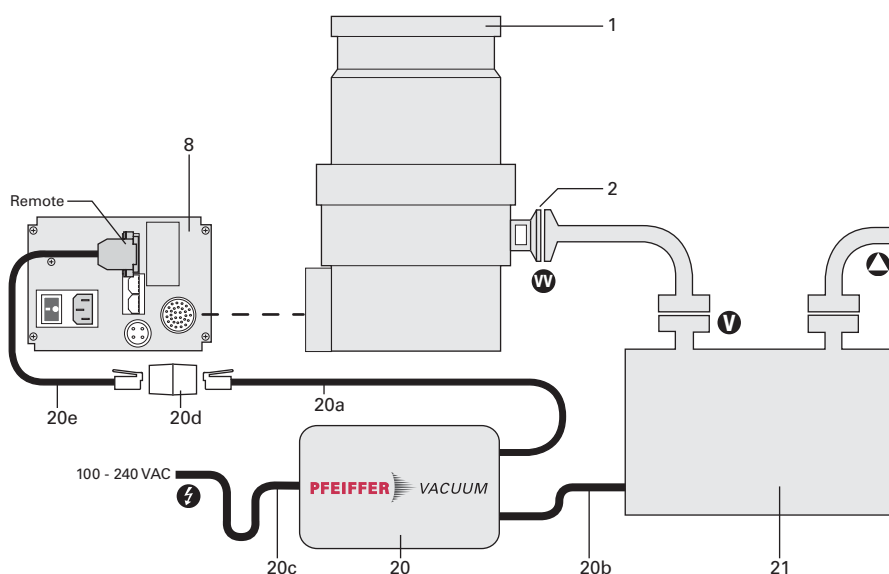
#### TC 600 / TC 750



- 1 High vacuum flange
- 2 Fore-vacuum flange
- 8 Electronic drive unit
- 20 Relay box
- 20a Control lead
- 20b Connection backing pump
- 20c Connection mains power input
- 21 Vacuum backing pump

- Connect the plug RJ12 of the control lead into the socket "FV PUMP" on the TC 600 or the TC 750 of the turbopump.
- Connect the mains power cable of the relay box to the mains voltage.

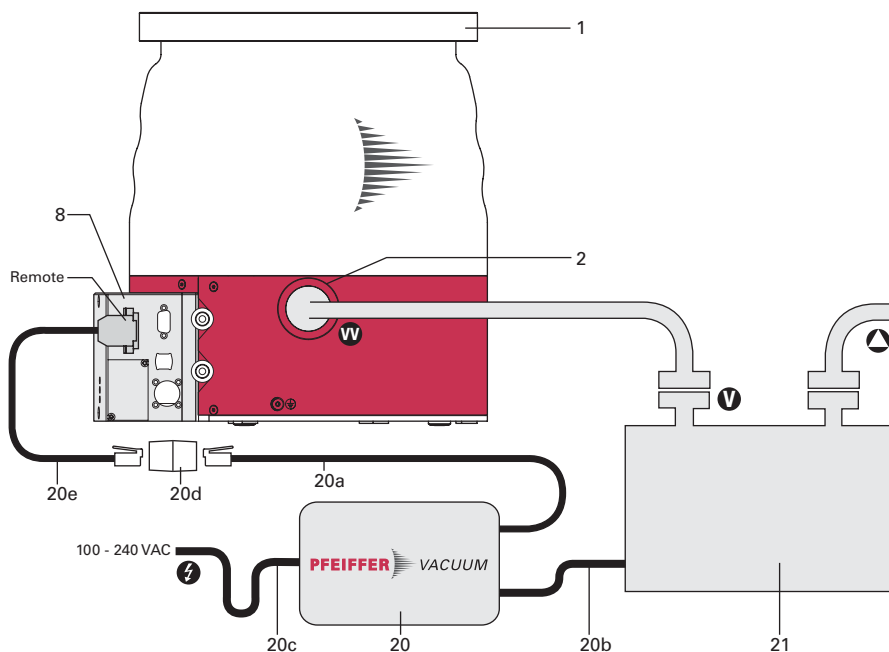
## TCP 350



- 1 High vacuum flange
- 2 Fore-vacuum flange
- 8 Electronic drive unit
- 20 Relay box
- 20a Control lead
- 20b Connection backing pump
- 20c Connection mains power input
- 20d Coupler RJ 12
- 20e Connection cable PM 061 144 -X
- 21 Vacuum backing pump

- Connect the control lead of the relay box via the coupler RJ12 to the connection cable PM 061 144 -X (accessories).
- Plug in the 26-pole D-Sub-plug of the connection cable into the socket "REMOTE" on the TCP 350.
- Connect TCP and turbopump according to operating instructions PT 0092 BN.
- Connect the mains power cable of the relay box to the mains voltage.

## TM 3000 for HiMag™



- 1 High vacuum flange
- 2 Fore-vacuum flange
- 8 Electronic drive unit and magnetic bearing controller
- 20 Relay box
- 20a Control lead
- 20b Connection backing pump
- 20c Connection mains power input
- 20d Coupler RJ 12
- 20e Connection cable PM 061 144 -X
- 21 Vacuum backing pump

- Connect the control lead of the relay box via the coupler RJ12 to the connection cable PM 061 144 -X (accessories).
- Plug in the 26-pole D-Sub-plug of the connection cable into the socket "REMOTE" on the TM 3000.
- Connect the mains power cable of the relay box to the mains voltage.

## 5 Accessories

Accessories	Order number
Connection cable TCP 350 / TM 3000 - backing pump relay box, length 2 m	PM 061 144-X

## 6 Technical data

Values	Relay box 5 A	Relay box 20 A
Mains connection: voltage (range)	100-240 V AC, $\pm 10\%$ , 50/60 Hz	100-240 V AC, $\pm 10\%$ , 50/60 Hz
Control voltage	24 V DC	24 V DC
Contact load	5 A	20 A

### 6.1 Dimension diagrams

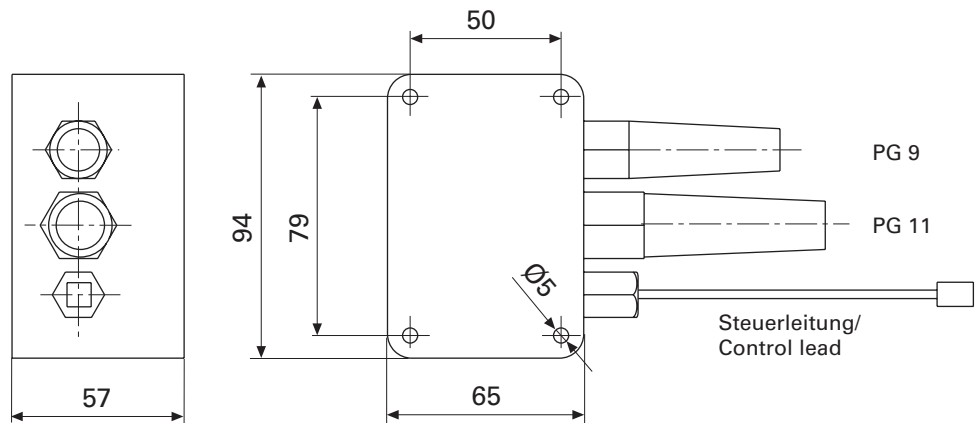


Fig. 7: Dimensions PM 041 937 -T

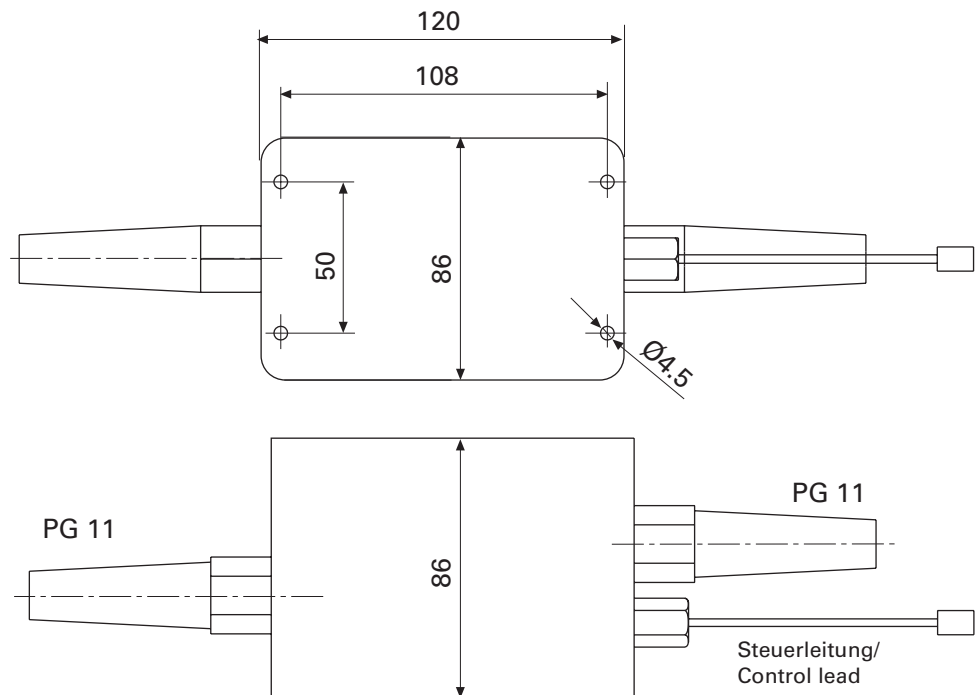


Fig. 8: Dimensions PM 041 938 -T



# Declaration of conformity

pursuant to the following EU directives:

- **Electromagnetic Compatibility 89/336/EEC**
- **Low Voltage 2006/95/EEC**

We hereby certify, that the product specified below is in accordance with the provision of EU Electromagnetic Compatibility Directive **89/336/EEC** and EU Low Voltage Directive **2006/95/EEC**.

**PM 041 937 -T**

**PM 041 938 -T**

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

EN 50081-1

EN 50082-2

EN 55011

EN 60742

EN 61010

IEC 801 1-4

VDE 0843-6

Signatures:

Pfeiffer Vacuum GmbH  
Berliner Straße 43  
35614 Asslar  
Germany

(M. Bender)  
Managing Director

(Dr. M. Wiemer)  
Managing Director

CE/2007

**Vacuum is nothing, but everything to us!**



**Turbopumps**



**Rotary vane pumps**



**Roots pumps**



**Dry compressing pumps**



**Leak detectors**



**Valves**



**Components and feedthroughs**



**Vacuum measurement**



**Gas analysis**



**System engineering**



**Service**

**PFEIFFER**  **VACUUM**

Pfeiffer Vacuum Technology AG · Headquarters/Germany

Tel. +49-(0) 64 41-8 02-0 · Fax +49-(0) 64 41-8 02-2 02 · [info@pfeiffer-vacuum.de](mailto:info@pfeiffer-vacuum.de) · [www.pfeiffer-vacuum.net](http://www.pfeiffer-vacuum.net)