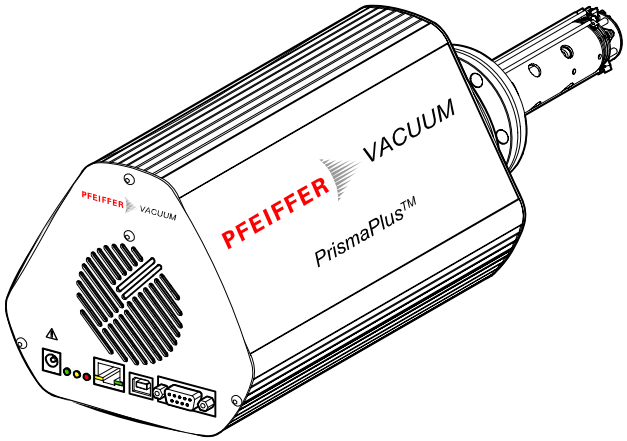
Operating Instructions
incl. Declaration of Conformity

PFEIFFER VACUUM

PrismaPlus™

Compact Mass Spectrometer System

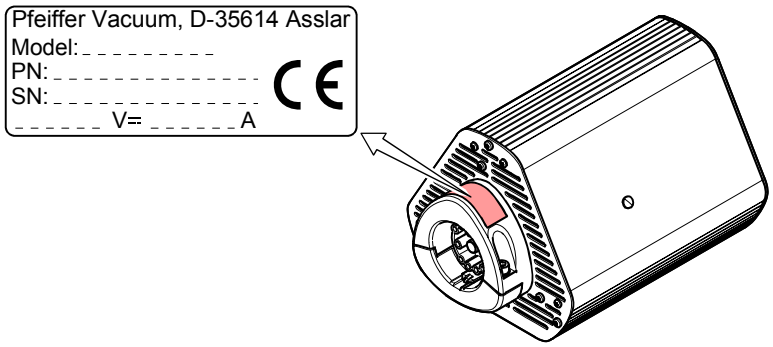
QMG 220



CE

Product Identification

In all communications with Pfeiffer Vacuum, please specify the information on the product nameplate. For convenient reference copy all system information into the spaces provided (→ 🗎 8).



Read through the operating instructions carefully before operating the QMG 220. Keep this document in the vicinity of the equipment, accessible by all users.
The chapter 'Safety' (→ 🗎 6) contains important information concerning the symbols used. It is essential to take note of this information in order to operate the QMG 220 safely.

Validity

This document applies to products with part numbers listed

Analyzers

(All Analyzers type QMA 200)

Part number	Detector		Filaments		Additional technical data				Remarks
	Faraday	C-SEM	Tungsten	Iridium, yttriated	Closed	Molybdenum wiring	300 °C	Extraction orifice ∅2 mm	
PT M25 250	●			●					
PT M25 251	●		●						
PT M25 252		●		●					
PT M25 253		●	●						
PT M25 254		●		●	●	●			
PT M25 255		●	●		●				
PT M25 256		●		●	●				
PT M25 257	●		●		●				
PT M25 261		●	●			●			
PT M25 270	●			●			●		
PT M25 271	●		●				●		
PT M25 272		●		●			●		
PT M25 273		●	●				●		
PT M25 274		●	●		●			●	
PT M25 275		●	●		●		●		
PT M25 276		●		●	●			●	
PT M25 277		●		●	●	●		●	
PT M25 278		●	●		●	●		●	
PT M25 282		●	●		●	●			
PT M25 283		●		●	●				
PT M25 285		●	●						Grid ion source
PT M25 286		●	●				●		Grid ion source
PT M25 291		●	●						Cross-Beam ion source
PT M25 292		●		●					adjustable
PT M25 293		●		●			●		Cross-Beam ion source
PT M25 294		●	●				●		Cross-Beam ion source
PT M25 295		●		●			●		adjustable
PT M25 296		●		●					Cross-Beam ion source, rotated 90°

IO 220

PT M28 699 I/O module IO 220 complete.

QME 220

Part number	Mass range	Analyzer connection	IO 220
PT M28 601	1 … 100	straight	without
PT M28 602	1 … 200	straight	without
PT M28 603	1 … 300	straight	without
PT M28 611	1 … 100	straight	with
PT M28 612	1 … 200	straight	with
PT M28 613	1 … 300	straight	with
PT M28 621	1 … 100	90°	without
PT M28 622	1 … 200	90°	without
PT M28 623	1 … 300	90°	without
PT M28 631	1 … 100	90°	with
PT M28 632	1 … 200	90°	with
PT M28 633	1 … 300	90°	with

SP 220

24 VDC power supply (type P66A-6PI)

The part number can be taken from the product nameplates.

Inteded Use

The PrismaPlus™ mass spectrometer is designed for partial pressure analysis at pressures <10^{-4} mbar. Typical applications are measurement, monitoring and process control functions in vacuum systems.

The QMG 220 is not intended to produce measurement results on which the safety of persons or large assets depend. For such applications the safety must be ensured by additional measures.

Trademarks

PrismaPlus™ Pfeiffer Vacuum GmbH

QUADERA® INFICON AG

Content

For cross-references within this document, the symbol (→ 🗎 XY) is used, for cross-references to further documents, the symbol (→ 🕮 [Z]).

1 Safety

1.1 Symbols Used

DANGER

Information on preventing any kind of physical injury.

WARNING

Information on preventing extensive equipment and environmental damage.

Caution

Information on correct handling or use. Disregard can lead to malfunctions or minor equipment damage.

Consultation of operating instructions required (symbol printed on equipment housing).

Notice

Optical inspection

< … > Labels on modules (front panel elements etc.)

QUADERA\ … Cross-references to information and procedures described in the QUADERA® software.

1.2 Personnel Qualifications

Skilled personnel

All work described in this document may only be carried out by persons who have suitable technical training and the necessary experience or who have been instructed by the end-user of the product.

1.3 General Safety Instructions

- Adhere to the applicable regulations and take the necessary precautions for the process media used.
- Adhere to the applicable regulations and take the necessary precautions for all work you are going to do and consider the safety instructions in this document.
- Before beginning to work, find out whether any vacuum components are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

Communicate the safety instructions to all other users.

1.4 Liability and Warranty

Pfeiffer Vacuum assumes no liability and the warranty becomes null and void if the end-user or third parties

- disregard the information in this document
- use the product in a non-conforming manner
- make any kind of interventions (modifications, alterations etc.) on the product
- use the product with accessories and options not listed in the corresponding product documentation.

The end-user assumes the responsibility in conjunction with the process media used.

1.5 Training

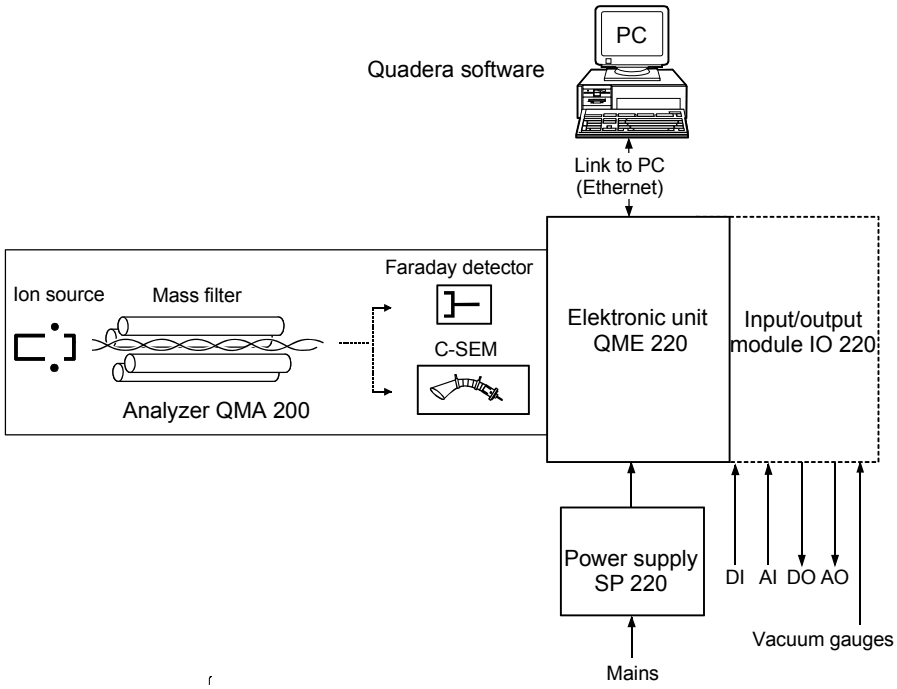
Training

Pfeiffer Vacuum offers application, operating and maintenance courses for the best use of this product. Please contact your local Pfeiffer Vacuum representative.

2 Technical Data

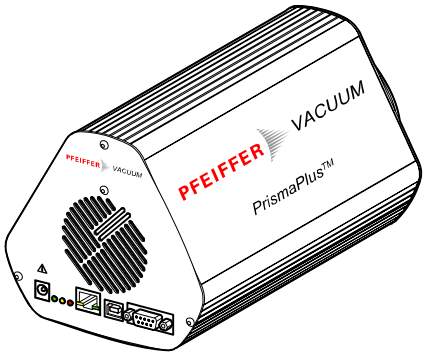
2.1 System Overview

The mass spectrometer system comprises of the following components:



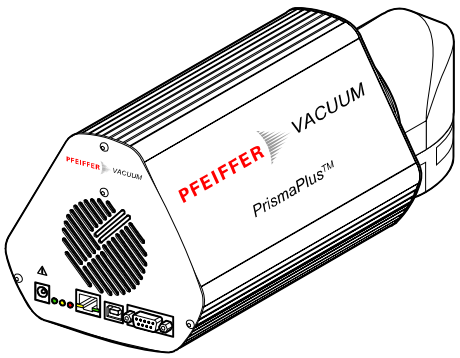
In all communications with Pfeiffer Vacuum please specify the information given on the nameplate. For convenient reference transfer this information of all assemblies into the nameplate replicas in this manual.

Electronic unit QME 220

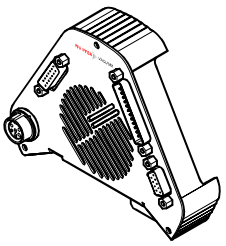


or

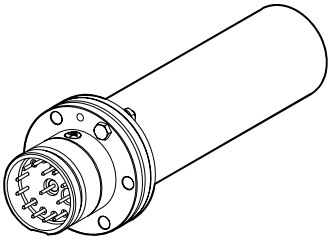
Electronic unit QME 220 with 90° connection



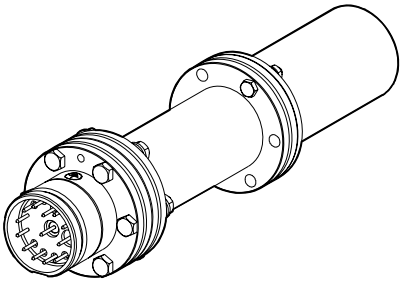
Input/output module IO 220 (option)



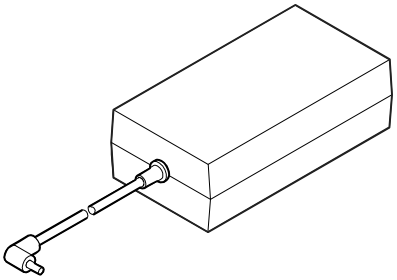
Analyzer QMA 200 F, Faraday detector



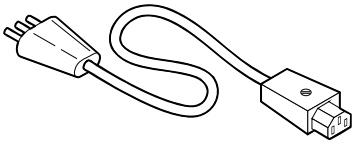
Analyzer QMA 200 M, secondary electron multiplier (C-SEM)



Power supply SP 220



Mains cable



Software QUADERA®

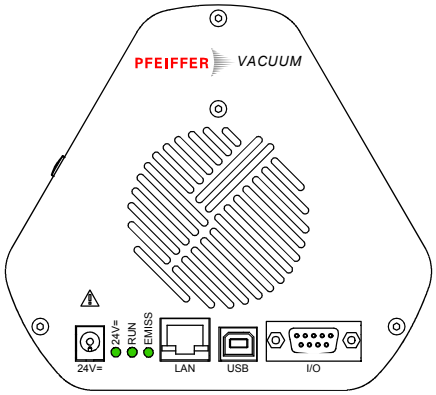
→ 🕮 [1].

Accessories

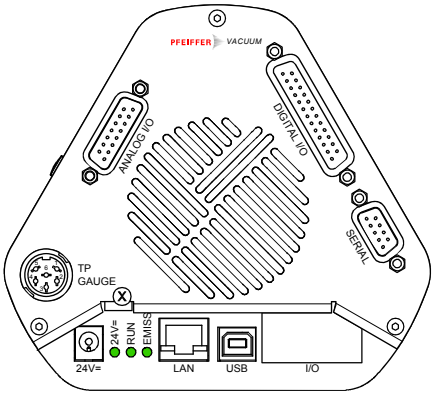
→ 🗎 48.

2.2 System Data

QME 220 front panel elements



Front panel QME 220 without IO 220



Front panel QME 220 with IO 220 installed

Front panel element	Description	→ 🗎
Connectors < 24 V= >	Connector for QME 220-power supply SP 220 (1) ⊗ = connector on the IO 220 for an additional power supply SP 220 (2) for vacuum gauges with a high power consumption	24 33
LED < 24 V= >	Indicator: 24 V o.k.	35
LED < RUN >	Indicator: QME 220 firmware running	35
LED < EMISS >	Indicator: Emission on	35
Connector < LAN >	Ethernet connection (PC)	25
Connector < USB >	USB connection (only for service purposes)	
Connector < I/O >	interconnection to IO 220 EXT_PROT input	26
Connector < TP GAUGE >	Vacuum gauge connector (analog)	32
Connector < ANALOG I/O >	Analog inputs / outputs	27
Connector < DIGITAL I/O >	Digital inputs / outputs	29
Connector < SERIAL >	Vacuum gauge connector (digital)	32

QMG 220 F, Faraday detector

General data

Detector type		Faraday
Unit resolution (valley, entire mass range) at 10 % peak height adjustable to	% u	<10 0.5 … 2.5
Max. operating pressure	mbar	1×10^{-4}
Reproducibility of the peak ratio (constant conditions during 8 h, N_2 and Ar from air)	%	±0.5
QMA 200 operating temperature	°C	0 … +150
Bakeout temperature (QME 220 removed)	°C	max. +200
Mounting orientation		any (→ 🗎 19)
Weight	kg	2.4 (2.7 with 90° connection)
Connection flange		DN 40 CF

HS ion source (High sensitivity-ion source)

Design principle, field of application: open design, radial symmetrical, suitable for residual gas analysis, 2 filaments (yttriated iridium or tungsten), degassing by electron bombardment (10 mA, 300 V)

Mass range	u	1 … 100	1 … 200	1 … 300
Minimum detectable partial pressure	mbar	$<1\times10^{-12}$	$<2\times10^{-12}$	$<4\times10^{-12}$
Sensitivity for argon	A/mbar	$>1\times10^{-3}$	$>6\times10^{-4}$	$>3\times10^{-4}$
Contribution to neighboring mass (40/41)	ppm	<10	<20	<50

Closed HS ion source

Design principle, field of application: closed design, suitable for quantitative gas analysis, effective suppression of residual gas components, 2 filaments (yttriated iridium or tungsten)

Mass range	u	1 … 100	1 … 200	1 … 300
Conductance	l/s	1	1	1
Minimum detectable partial pressure [1)]	ppm	10	20	50
Contribution to neighboring mass (40/41)	ppm	<10	<20	<50

Cross-Beam ion source

Design principle, field of application: open design, suitable for molecular beam experiments, 2 filaments (yttriated iridium or tungsten), degassing by electron bombardment (10 mA, 300 V)

Mass range	u	1 … 100	1 … 200	1 … 300
Minimum detectable partial pressure	mbar	3×10^{-11}	6×10^{-11}	1.2×10^{-10}
Sensitivity	A/mbar	4×10^{-5}	2×10^{-5}	1×10^{-5}
Contribution to neighboring mass (40/41)	ppm	<10	<20	<50

Grid ion source

Design principle, field of application: open design, suitable for residual gas analysis in the UHV range, 2 filaments (tungsten), degassing by electron bombardment (10 mA, 300 V)

Mass range	u	1 … 100	1 … 200	1 … 300
Minimum detectable partial pressure	mbar	5×10^{-12}	2×10^{-12}	1×10^{-12}
Sensitivity	A/mbar	2×10^{-4}	1×10^{-4}	5×10^{-5}
Contribution to neighboring mass (40/41)	ppm	<50	<100	<200

[1)] For non overlapping components with mass >4 u.

QMG 220 M (C-SEM detector)

General data

Detector type		C-SEM / Faraday
Unit resolution (valley, entire mass range) at 10 % peak height adjustable to	% u	<10 0.5 … 2.5
Max. operating pressure	mbar	1×10^{-4}
Reproducibility of the peak ratio (constant conditions during 8 h, N_2 and Ar from air)	%	±0.5
QMA 200 operating temperature	°C	0 … +150
Bakeout temperature (QME 220 removed)	°C	max. +200
Mounting orientation		any (→ 🗎 19)
Weight	kg	3.8 (4.1 with 90° connection)
Connection flange		DN 40 CF

HS ion source (High Sensitivity-ion source)

Design principle, field of application: open design, radial symmetrical, suitable for residual gas analysis, 2 filaments (yttriated iridium or tungsten), degassing by electron bombardment (10 mA, 300 V)

Mass range	u	1 … 100	1 … 200	1 … 300
Minimum detectable partial pressure	mbar	$<1\times10^{-14}$ / 5×10^{-12}	$<1\times10^{-14}$ / 1×10^{-11}	$<2\times10^{-14}$ / 2×10^{-11}
Sensitivity for argon	A/mbar	>200 / $>5\times10^{-4}$	>200 / $>3\times10^{-4}$	>100 / $>1.5\times10^{-4}$
Contribution to neighboring mass (40/41)	ppm	<10	<20	<50

Closed HS ion source

Design principle, field of application: closed design, suitable for quantitative gas analysis, effective suppression of residual gas components 2 filaments (yttriated iridium or tungsten)

Mass range	u	1 … 100	1 … 200	1 … 300
Conductance	l/s	1	1	1
Minimum detectable partial pressure [1)]	ppm	<1 / 20	<1 / 40	<1 / 100
Contribution to neighboring mass (40/41)	ppm	<10	<20	<50

Cross-Beam ion source

Design principle, field of application: open design, suitable for molecular beam experiments, 2 filaments (yttriated iridium or tungsten), degassing by electron bombardment (10 mA, 300 V)

Mass range	u	1 … 100	1 … 200	1 … 300
Minimum detectable partial pressure	mbar	3×10^{-13} / 5×10^{-11}	6×10^{-13} / 1×10^{-12}	1.2×10^{-12} / 2.5×10^{-12}
Sensitivity	A/mbar	100 / 2×10^{-5}	100 / 1×10^{-5}	50 / 7×10^{-6}
Contribution to neighboring mass (40/41)	ppm	<10	<20	<50

Grid ion source

Design principle, field of application: open design, suitable for residual gas analysis in the UHV range, 2 filaments (tungsten), degassing by electron bombardment (10 mA, 300 V)

Mass range	u	1 … 100	1 … 200	1 … 300
Minimum detectable partial pressure	mbar	1×10^{-13} / 1×10^{-11}	2×10^{-13} / 2×10^{-11}	4×10^{-13} / 4×10^{-11}
Sensitivity	A/mbar	200 / 1×10^{-4}	200 / 5×10^{-5}	100 / 3×10^{-5}
Contribution to neighboring mass (40/41)	ppm	<50	<100	<200

[1)] For non overlapping components with mass >4 u.

QME 220

Measuring system	
Measurement channels	128
Measurement modes	Scan analog, Scan Bargraph, MID
Measurement cycles	mono- / multichannel 1 … 9999 cycles or repeat
MID-dwell	2 ms … 60 s
Measurement speed	
scan analog + bargraph peak	20 ms/u … 60 s/u
scan bargraph stair	2 ms/u … 60 s/u
Elektrometer amplifier	1×10^{-5} … 1×10^{-12} A (f.s.), fix and autorange
Signal filter	FIR filter
Power supply	24 VDC / 2.0 A, SP 220
Interfaces	
Operation, control	Ethernet (→ 🗎 25, 35)
Extension	input/output module IO 220 (→ 🗎 20, 24)
EXTERNAL_PROTECTION	floating contact (→ 🗎 14, 26)
Inputs/outputs	
Analog	→ IO 220, 🗎 27
Digital	→ IO 220, 🗎 52
Weight	1.9 kg (2.2 kg with 90° connetion)

Power supply SP 220

Mains voltage	90 … 264 VAC
Mains frequency	47 … 63 Hz
Mains current consumption	1.5 A (100 VAC)
Output voltage	24 VDC, stabilized
Output current	≤2.75 ADC
Isolation	100 MOhm / 500 VDC
Safety standard	EN 60950
Weight	0.6 kg

Input/output module IO 220

Analog inputs, analog outputs

Analog inputs	
Connector (<ANALOG I/O>)	X7, 15 pin D-Sub connector (female)
Number of channels	5
Input configuration	differential
Input voltage range	nominal ±10 V, max. ±14 V ref. to GND
Input resistance	50 kOhm
Resolution	14 bit

Analog outputs	
Connector	X7, 15 pin D-Sub connector (female)
Number of channels	4
Output configuration	single ended
Output voltage range	0 … +10 V
Output current	≤100 µA
Output resistance	200 Ohm
GND reference	via 33 Ohm to GND ($I_{max.}$ 50 mA)
Resolution	12 bit

(Connection diagram → 🗎 28)

Digital inputs,
digital outputs,
EXTERNAL_PROTECTION

Digital inputs	
Connector (<DIGITAL I/O>)	X2, 25 pin D-Sub connector (male)
Number of channels	4 (+ EXT_PROT [1)])
Input voltage	<+5 V (low) nominal +24 V (high), max. +28 V
Input current	1.9 mA
Supply voltage for floating contact	+24V via 1.2 kOhm ($I_{max.}$ 10 mA)
GND reference for external supply	via 100 Ohm to GND ($I_{max.}$ 50 mA)
EXTERNAL_PROTECTION (EXT_PROT)	
Electrical data	same as digital inputs
Function	control function, depending on EXT_PROT mode selected [1)]

1) Function table EXT_PROT input (detailed information → 🕮 [1]:

QUADERA\Online Help\Cross-References from Manuals\#004).

EXT_PROT-Mode	Input EXT_PROT	Function
INTERN-OFF	not relevant	FIL and SEM can be switched on and off (manually, no external protection).
EXTERN-ON-OFF	+24 V	FIL and C-SEM on
	0 V (open)	FIL and C-SEM off
EXTERN-OFF	+24 V	FIL and SEM can be switched on and off (manually).
	0 V (open)	FIL and C-SEM off. To switch on again, the input EXT_PROT has to be connected to +24 V, after that FIL and C-SEM can be operated manually again.

Digital outputs	
Connector (<DIGITAL I/O>)	X2, 25 pin D-Sub connector (male)
Number of channels	16
Output configuration	open collector (sink), optically isolated
Output voltage	nominal +24 V, max. +28 V
Saturation voltage (low)	≤+0.9 V
Output current (sink)	All 16 channels used: ≤60 mA/channel 4 channels used: ≤250 mA/channel [2)]

2) Internally, the 16 channels are split in two groups:
Group A: odd channel numbers 1 … 15
Group B: even channel numbers 2 … 16
For thermal reasons, the channels used have to be assigned equally to both groups (example: 2 channels to group A and 2 channels to group B).

(Connection diagram → 🗎 29)

Digital interface

Digital interface for vacuum gauges	
Connector (<SERIAL>)	X1, 9 pin D-Sub connector (female)
Interface type	RS485
Use	utilization of vacuum gauges with digital interfaces (suitable gauges → 🗎 31).

Vacuum gauge interface (analog)

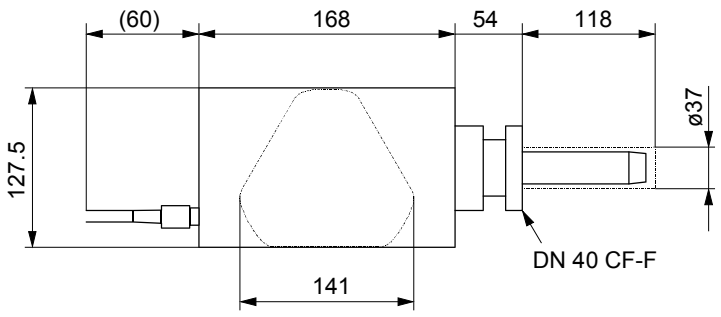
Analog vacuum gauge interface	
Connector (<TP GAUGE>)	X5, 6 pin Amphenol C91 socket
Interface type	analog
Use	utilization of vacuum gauges with analog interfaces (suitable gauges → 🗎 31).

Ambient conditions

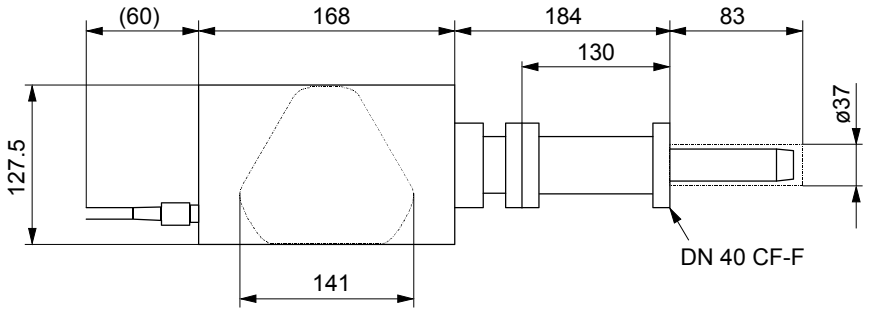
Operation	only inside rooms
Altitude	max. 2000 m NN
Protection category	IP 30
Pollution degree	2
Temperatures	
Storage/transport	–25 … +70 °C
Operation	0 … +40 °C
Relative humidity	max. 80% up to 31 °C, linearly decreasing to 50% at 40 °C

Dimensions [mm]

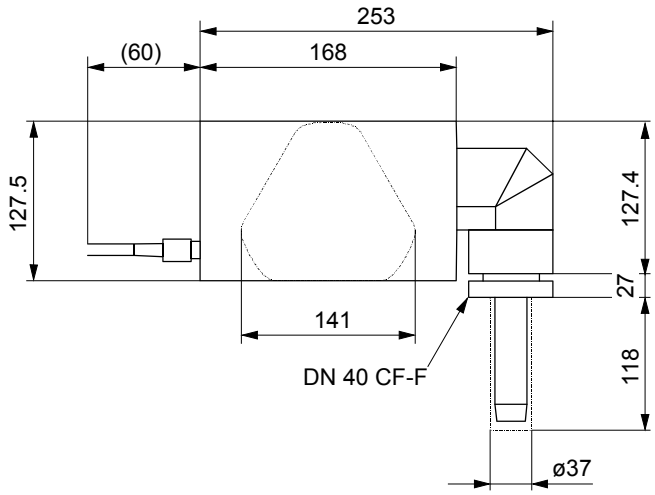
Electronic unit QME 220 + QMA 200 F analyzer with Faraday detector



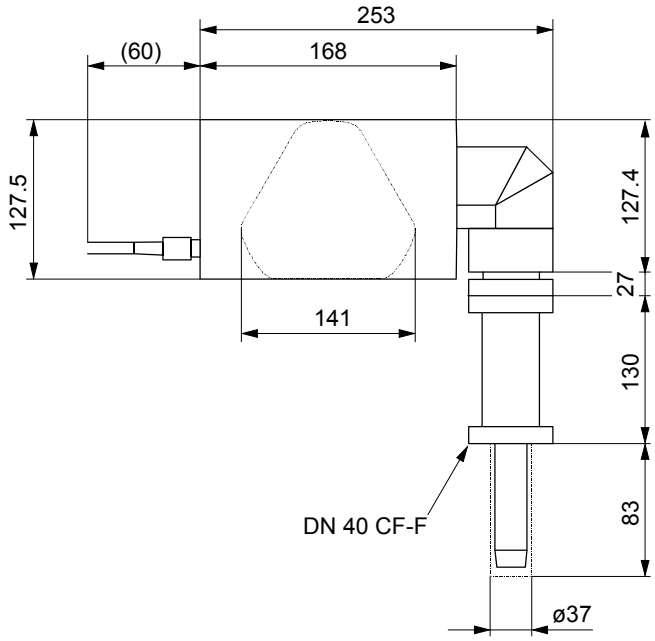
Electronic unit QME 220 + analyzer QMA 200 M with C-SEM + Faraday detector



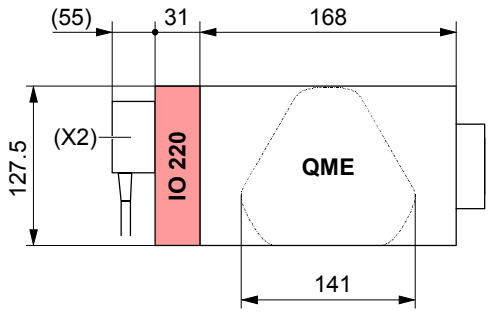
Electronic unit QME 220 90°+
analyzer QMA 200 A with
Faraday detector



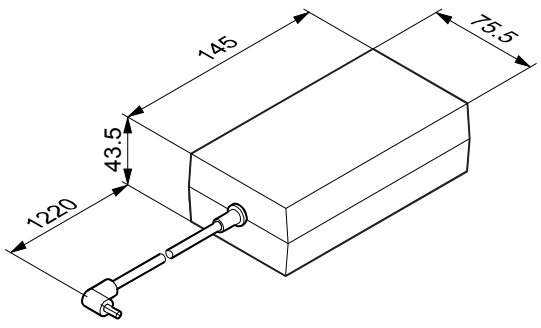
Electronic unit QME 220 90°+
analyzer QMA 200 M with
C-SEM detector



Electronic unit QME 220
+ input/output module IO 220



Power supply SP 220



3 Installation

3.1 Unpacking

Store the transport fastening devices and re-install them before transporting the product again.

DANGER

Putting a product which presents a visible damage into operation can be extremely hazardous. If the product presents a visible damage do not put it into operation and make sure it is not inadvertently put into operation.

3.2 Assembly

DANGER

Voltages up to 330 VDC appear on the QMA 200 during operation.

Other parts in the vacuum chamber (e.g. gauges) may possibly be exposed to this voltage under unfavorable conditions. If as a result such parts (including the lines and connected equipment!) become hazardous, they must be arranged or protected in such a way that no arcing and charge transfer can occur.
If the QMA 200 can be touched while the vacuum system is open, additional protection is needed, e.g.:

- mechanical protection against touching
- forced disconnection of the SP 220 power supply when the system is opened.

DANGER

No external hazardous voltages are allowed to be transferred to the electrodes of the QMA 200 (galvanical contact, arcing, ion or electron beams etc.). If such danger sources exist in the vacuum chamber, additional safety measures (e.g. better placement, shielding, grounding, etc.) must be taken that reliable preclude such influences. Also lower external voltages acting on the QMA 200 may damage the electronics and lead to unreliable measurement results. Suitable precautions are to be taken as mentioned above

WARNING

The QMA 200 must be correctly installed from a vacuum engineering point of view, i.e. the gases to be detected must have unhindered access to the analyzer. Vacuum coating of the analyzer must be prevented.

Make sure you adhere to the special requirements concerning cleanliness and damage prevention when working with vacuum components.

3.2.1 Space Requirements

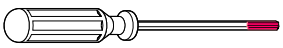
WARNING

The QMA 200 F may only be installed in flanges or tubes with an internal diameter ≥37 mm, otherwise short circuits to the wall can occur.
The diameter of the extension tube for the QMA 200 M must be at least 40.5 mm.

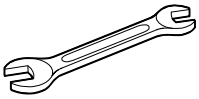
Note the required installation depth. Do not kink the cables
Dimensions of system components → 15).

3.2.2 Required Tools

Hexagon socket screw key, AF 4



Torx screw driver T10



Open-end wrench (2 pieces), AF 10

3.2.3 QMA 200 Installation

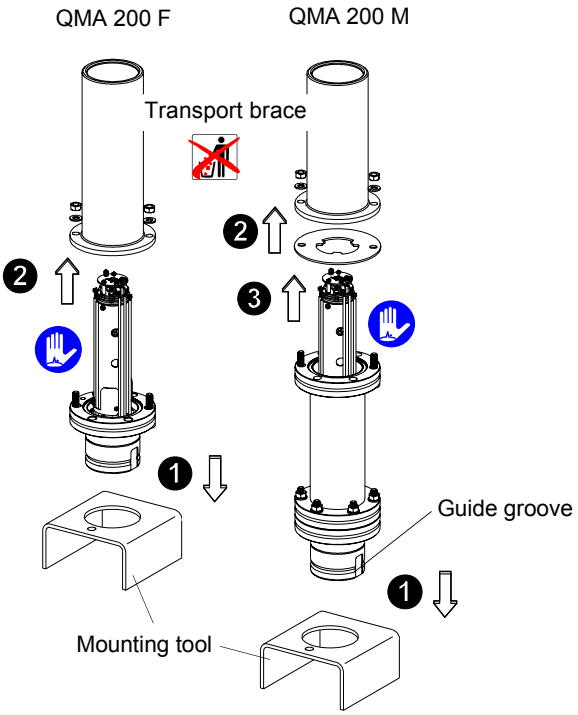
DANGER

The analyzer flange must be properly grounded.

- By connecting with all 6 screws to the properly grounded vacuum system.
- If the mounting flange is not grounded, the QMA 200 flange (grounding screw M4) must be connected to the protective ground by means of a separate ground conductor. Establish this connection with yellow/green insulated or bare stranded copper wire.
  - 2.5 mm² if mechanically protected
  - 4.0 mm² if unprotected

The QMA 200 should preferably be mounted horizontally (with the guiding groove downward). This results in optimum protection of the QME 220 against falling objects and affords easy installation and excellent access to the front panel.
On the QMG 220 with 90° connection this results in a vertically suspended arrangement of the QME 220.

Removing the transport brace and flanging the analyzer to the vacuum chamber

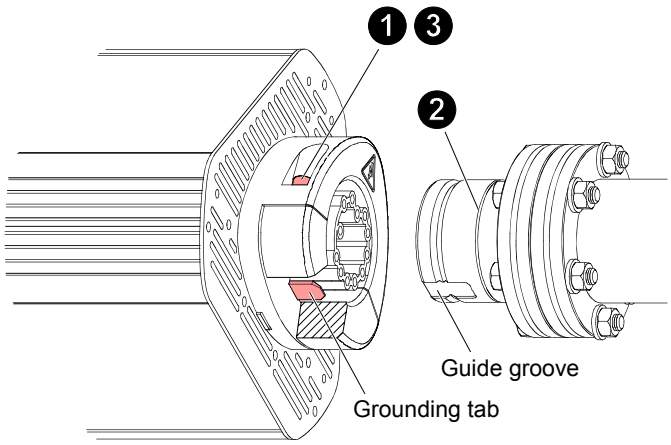


1. Set the QMA 200 into the supplied mounting tool.
2. Carefully remove the transport cover on the QMA 200 and save it for possible future use.
3. Carefully pull off the transport brace and save it for possible future use.
4. Flange the analyzer to the vacuum chamber.

3.2.4 QME 220 Installation

DANGER

The QME 220 may be mounted only to a correctly installed QMA 200 as the only ground connection is via the QMA 200 flange.
The 24 V supply line from the SP 220 must never be connected if QMA 200 is not screw fastened to the QME 220.



1. With a hexagon-socket-screw (AF 4) key loosen the two screws on the black plastic connection piece of the QME 220 so that the moving part has a play of 2 … 3 mm.
2. Carefully slide the QME 220 onto the mounted QMA 200 up to the notch mark. Make sure the positioning on the QME 220 through the grounding tab and the guide groove in the QMA 200 is correct.
   Do not apply excessive force.
3. Firmly tighten the two hexagon-socket-head screws. These screws secure the QME 220 mechanically and ensure electrical safety by providing ground contact.

3.2.5 Input/Output Module IO 220 Installation/Deinstallation

The optional I/O module IO 220 make the utilization of additional interfaces possible (→ chapter 'Technical Data').
The QME 220 can be ordered with the IO 220 already installed or it can be upgraded at a later time.

Required tools

- Screwdriver Torx T10

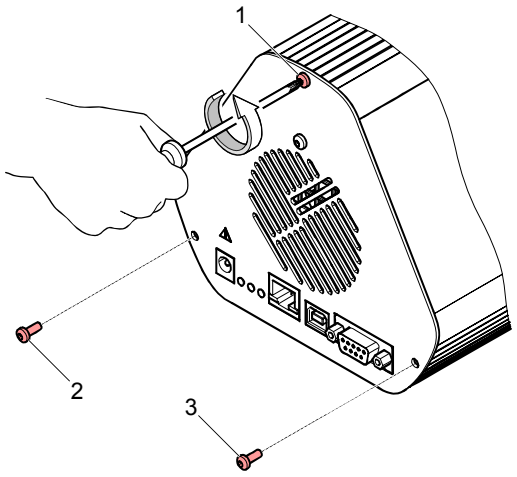
Required Material

I/O module IO 220 (→ 🖹 48)

Procedure, installation

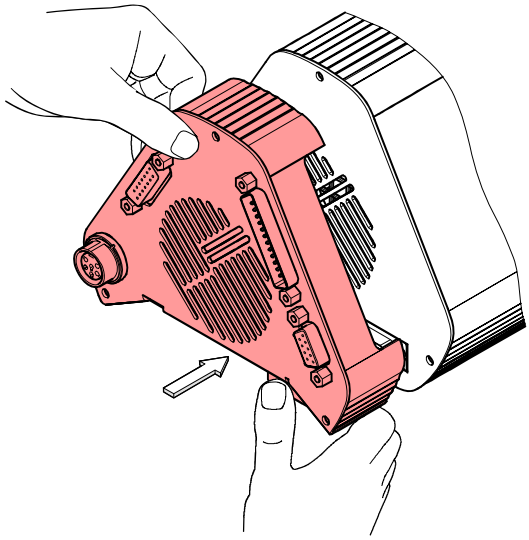
1. Disconnect the power supply from the mains and remove all electrical connections to the QME 220.
2. Remove the QME 220 from the analyzer by following the procedure described in chapter 3.2.4 in reverse order.
3. Place the QME 220 on a stable base in order to be able to work on the front panel.

4. Loosen and remove the screws marked 1 … 3.

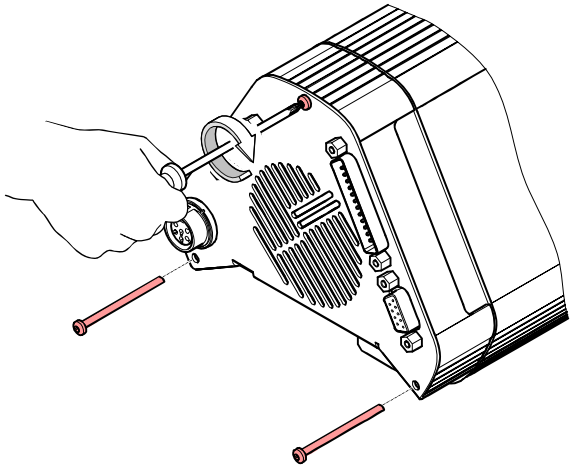


5. Remove the three transport nuts at the back of the IO 220.

6. Carefully place the IO 220 module onto the front panel of the QME 220. Use both hands and make sure the D-Sub connection between IO 220 and QME 220 is engaged correctly.



7. Fasten the three M3×40 mm torx screws delivered with the IO 220.

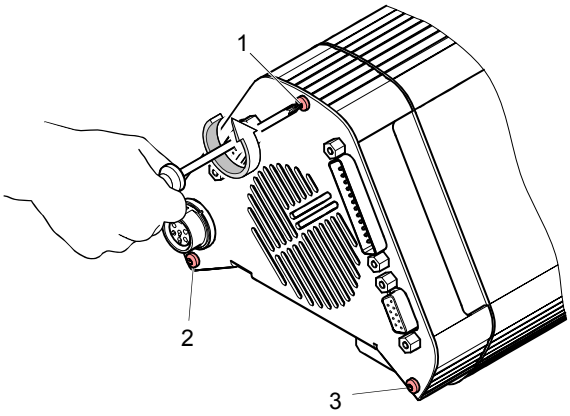


❽ Re-install the extended QME 220 following the procedure described above (→ 🗎 20) and continue with chapter 'Electrical Connections' (→ 🗎 24).

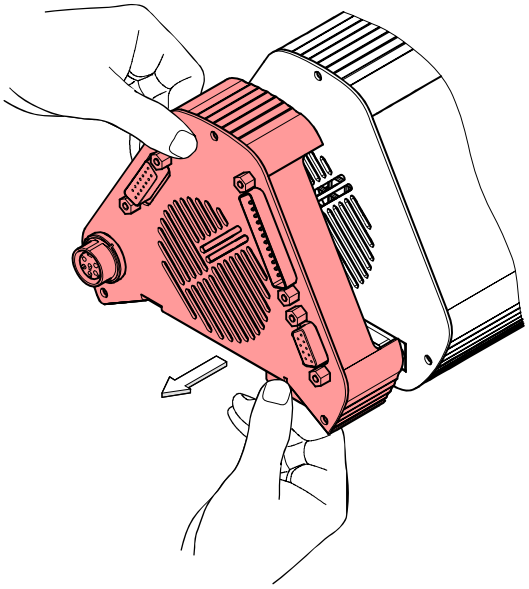
Procedure, deinstallation

Steps ❶ … ❸ are the same as in section 'Procedure, installation'.

❹ Loosen and remove screws 1 … 3 as shown.

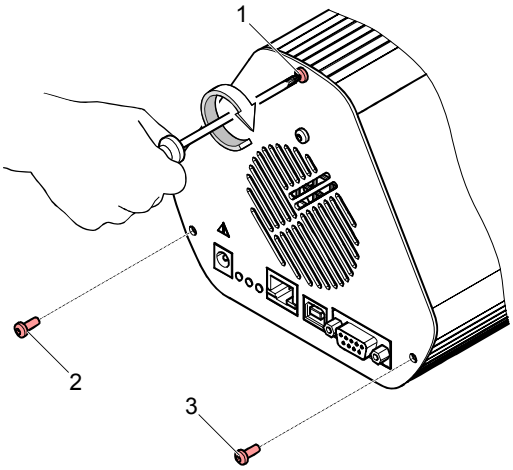


❺ Carefully pull off the IO 220 module from the QME 220 front panel using both hands.



❻ Secure the three screws in the IO 220 with the M3 transport nuts.

7 Insert and fasten the short torx screws 1 … 3.



8 Re-install the QME 220 following the procedure described above (→ 🗎 20) and continue with chapter 'Electrical Connections' (→ 🗎 24).

3.3 Electrical Connections

3.3.1 QME 220 Connection

WARNING

All electrical connections must have cable strain relief. Route the cables separately from EMI sources.

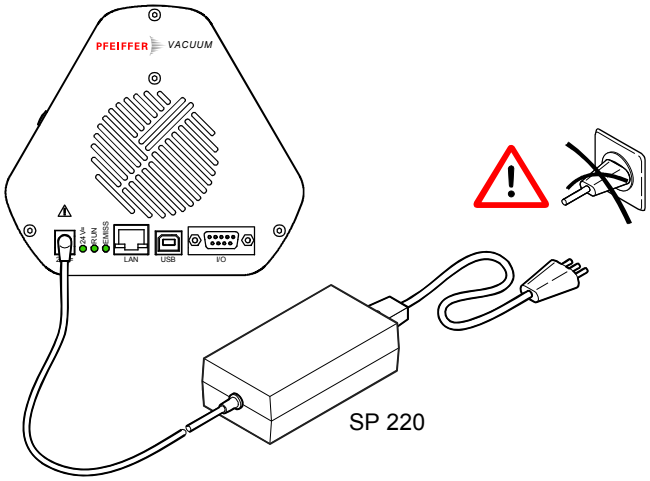
WARNING

For reasons of electromagnetic compatibility (EMI) (external interference) a single central grounding point is strongly recommended for all connected units (pumping station, SP 220, computer, recorders, etc.). A multiple AC power outlet or a common line voltage distributor with power switch fulfills this requirement in a simple manner.
Exception:
A remotely installed PC and/or an environment with strong electromagnetic interferences.

3.3.2 Power Supply SP 220 to QME 220 Connection

WARNING

Do not connect the mains cable of the SP 220 to the mains socket yet.



1. Set up the power supply in such a way that:
   - it cannot get wet e.g. by spilled water on the floor,
   - air circulation is not impeded and the ambient conditions are satisfied.

2. Insert the outlet connector of the SP 220 into the 24 VDC connector of the QME 220.

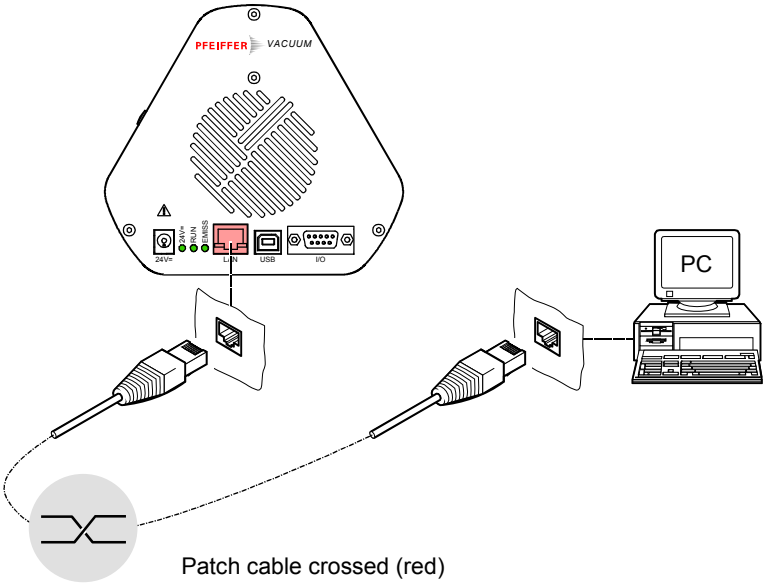
3.3.3 PC Connection

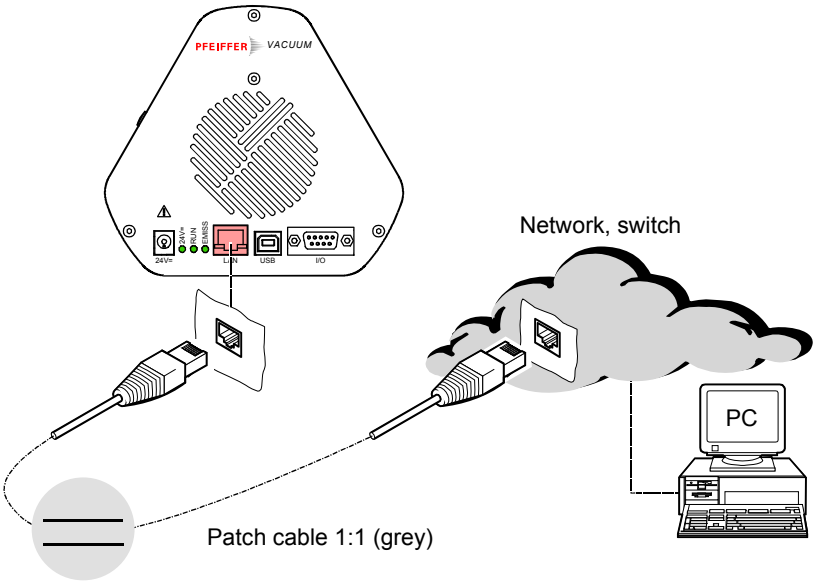
Since the QMG 220 does not have a local control panel, it is operated via a PC interface or as a device in a network.

There are various ways to interconnect a QME 220 and a PC:

Ethernet interface

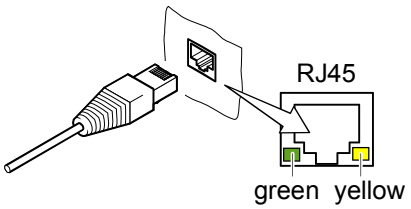
- For a direct link between a QME 220 and a PC the 8 core, crossed patch cable supplied with the QME 220 is used (red, length 3 m, RJ45 connectors on both sides).
- For an interconnection via switch or in a network situation, the straight (1:1) patch cable is used (gray, length 3 m, RJ45 connectors on both sides, also supplied with the QME 220).





LAN connection indicators

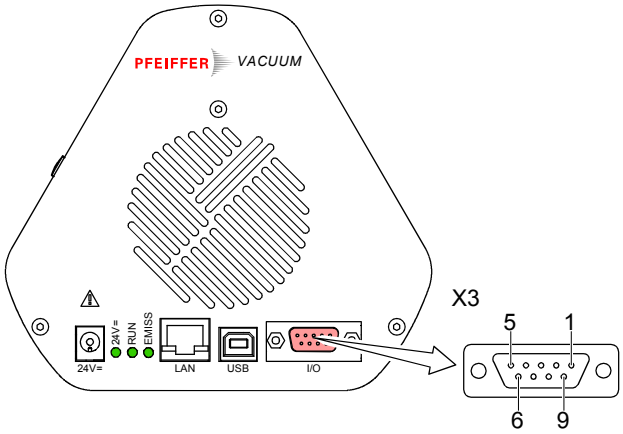
The interface status is indicated by two LEDs integrated in the RJ45 connector:



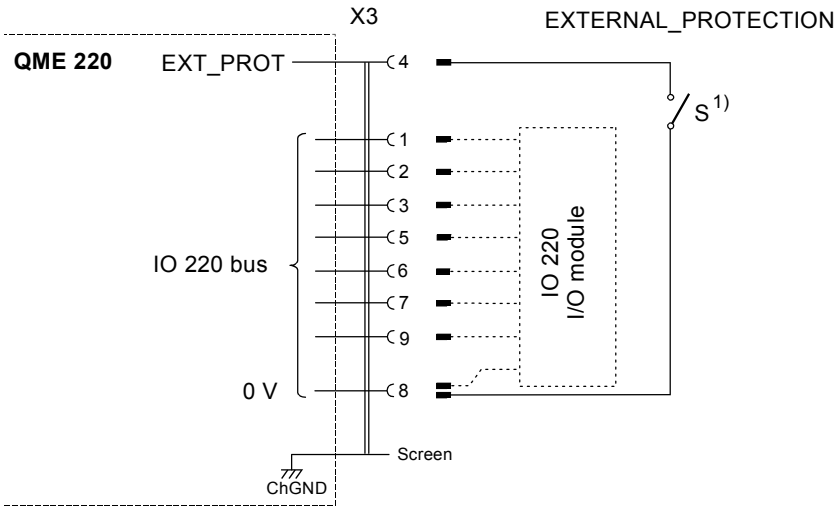
LED	Status	Meaning
green	lit	data transfer rate 100 Mbit/s
	dark	data transfer rate 10 Mbit/s
yellow	lit (flickering)	data transfer in progress
	dark	no data transfer (or no connection)

I/O interface

The <I/O> (X3) connector serves primarily as link to the IO 220. However, If the IO 220 is not installed, access to the control function EXTERNAL_PROTECTION (→ 🗎 14) is possible.



Connection diagram X3



Pin assignmentX3

Pin No.	Description	
1	IO 220 bus	2)
2	IO 220 bus	2)
3	IO 220 bus	2)
4	EXTERNAL_PROTECTION	
5	IO 220 bus	2)
6	IO 220 bus	2)
7	IO 220 bus	2)
8	0 V, GND reference	
9	IO 220 bus	2)

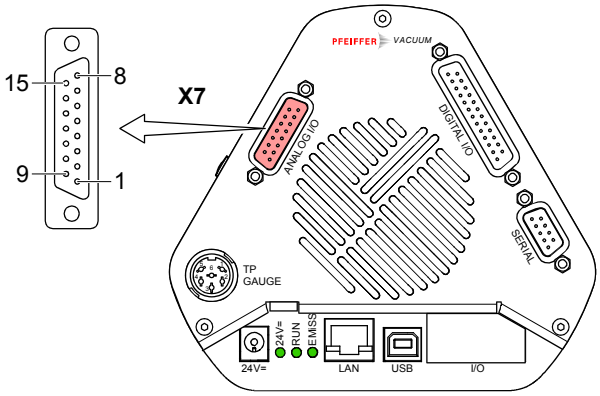
1) The EXTERNAL_PROTECTION input (→ 14) requires a floating contact 'S' between pin 4 and GND (pin 8).

2) The pins marked 'IO 220 bus' are exclusively used for the data exchange between QME 220 and IO 220 and may not be used for anything else.

The analog and digital inputs and outputs described below are only available with the optional IO 220 installed.

3.3.4 IO 220 Analog Input and Output Connections

The analog inputs and outputs are available on a 15 pin D-Sub connector (<ANALOG I/O>, X7).



An appropriate cable is made up as follows:

Cable type

The number of cores depends on the functions used.

WARNING

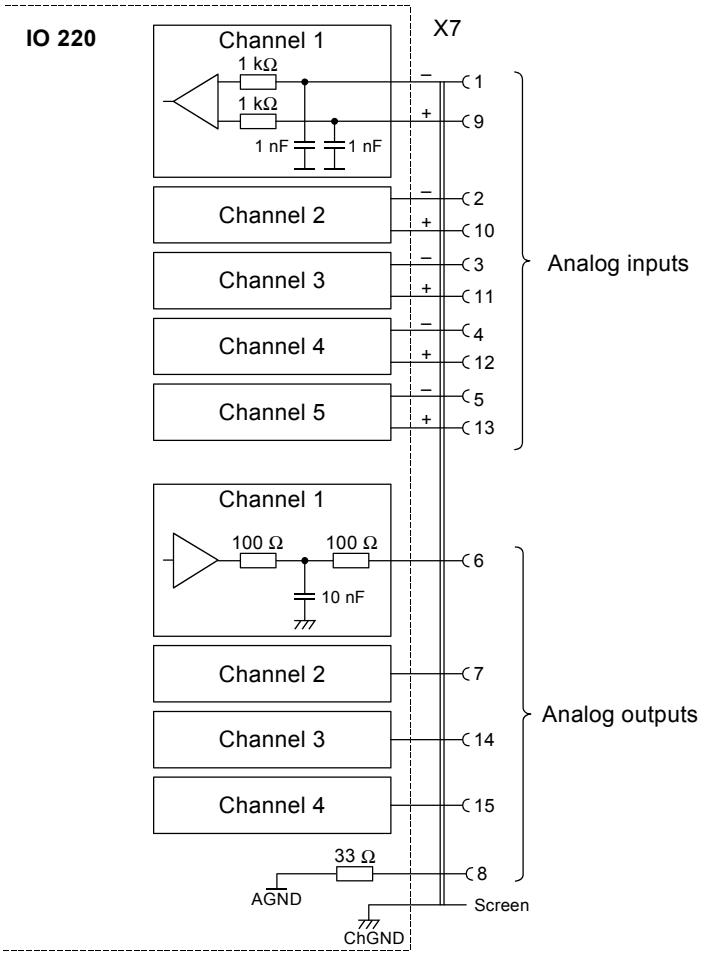
For reasons of electromagnetic compatibility (EMI) (external interference) a screened cable has to be used. The screen has to be connected to the connector case. The opposite end has to be left open or grounded in order to suppress ground loop currents.

It is strongly recommended to use twisted pairs for the (+) and (–) wiring of the analog inputs.

Procedure

1. Open the D-Sub connector.
2. Prepare the cable ends and solder/crimp the cable according to the diagram below.

Connection diagram X7



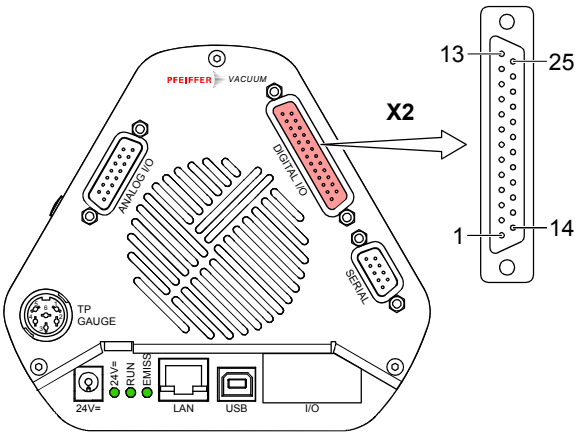
Pin assignment X7

Pin No.	Description
1	analog input, channel 1 (–)
2	analog input, channel 2 (–)
3	analog input, channel 3 (–)
4	analog input, channel 4 (–)
5	analog input, channel 5 (–)
6	analog output, channel 1
7	analog output, channel 2
8	GND reference of analog outputs
9	analog input, channel 1 (+)
10	analog input, channel 2 (+)
11	analog input, channel 3 (+)
12	analog input, channel 4 (+)
13	analog input, channel 5 (+)
14	analog output, channel 3
15	analog output, channel 4

3. Assemble connector.
4. Prepare and connect the opposite end of the cable.
5. Connect the cable to the IO 220 and fasten the connectors locking screws.

3.3.5 IO 220 Digital Input and Output Connections

The digital inputs and outputs are available on a 25 pin D-Sub connector (<DIGITAL I/O>, X2).



An appropriate cable is made up as follows:

Cable type

The number of cores depends on the functions used.

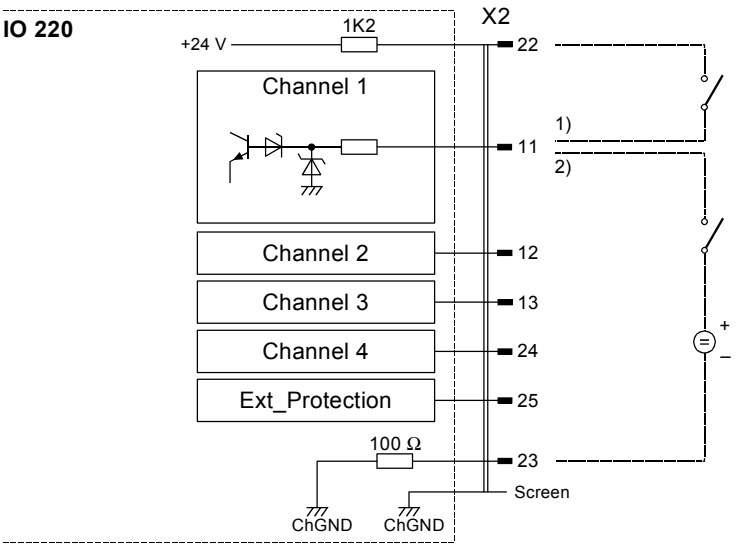
WARNING

For reasons of electromagnetic compatibility (EMI) (external interference) a screened cable has to be used. The screen has to be connected to the connector case. The opposite end has to be left open or grounded in order to suppress ground loop currents.

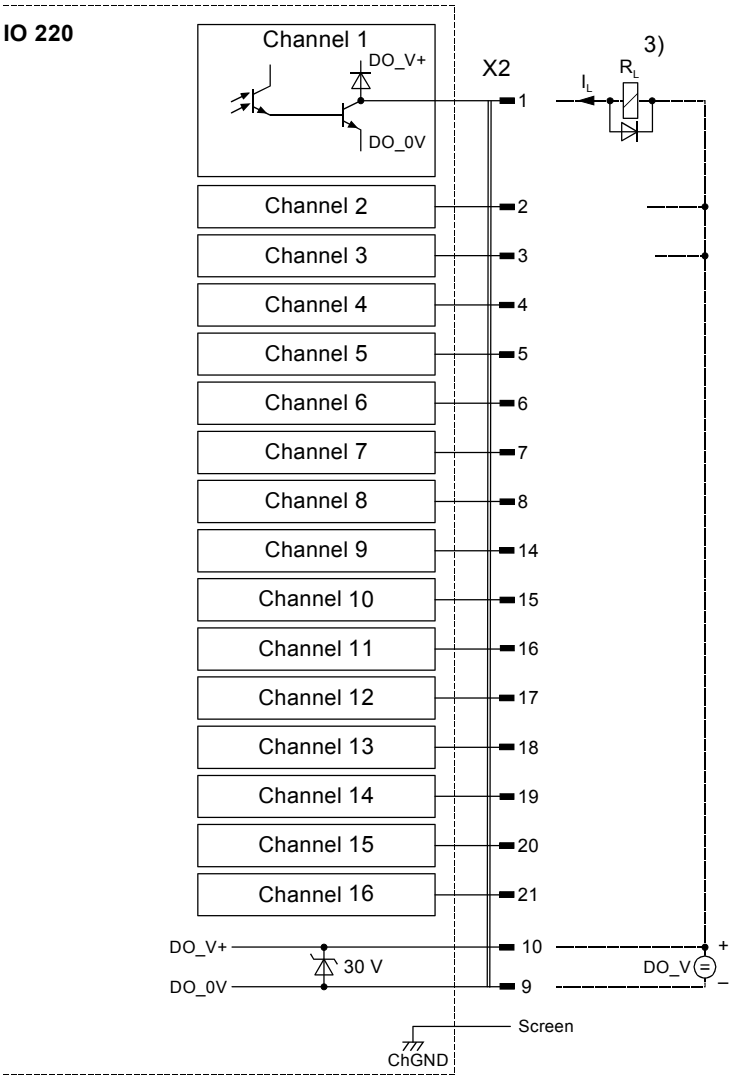
Procedure

1. Open the D-Sub connector.
2. Prepare the cable ends and solder/crimp the cable according to the diagram below.

Connection diagram digital inputs (X2)



Connection diagram
digital outputs (X2)



Pin assignment X2

Pin No.	Description
1	digital output, channel 1
2	digital output, channel 2
3	digital output, channel 3
4	digital output, channel 4
5	digital output, channel 5
6	digital output, channel 6
7	digital output, channel 7
8	digital output, channel 8
9	GND reference for digital outputs (DO_0V)
10	supply voltage for digital outputs (DO_V+, external)
11	digital input, channel 1
12	digital input, channel 2
13	digital input, channel 3
14	digital output, channel 9
15	digital output, channel 10
16	digital output, channel 11
17	digital output, channel 12
18	digital output, channel 13
19	digital output, channel 14
20	digital output, channel 15
21	digital output, channel 16
22	+24 V for digital inputs
23	GND reference (0 V) for digital inputs
24	digital input, channel 4
25	digital input, EXTERNAL_PROTECTION

[1] Input requires floating contact.

[2] Input control requires an external voltage (e.g. PLC output).

[3] The load R_L can either be a relay, a solenoid valve or an indicator lamp. The max. value of the current I_L depends on a number of factors and is described in the chapter 'Technical Data' (→ 14).

3. Assemble connector.
4. Prepare and connect the opposite end of the cable.
5. Connect the cable to the IO 220 and fasten the connectors locking screws.

3.3.6 Vacuum Gauge Connection

The following vacuum gauges can be connected to the system provided that the IO 220 is installed:

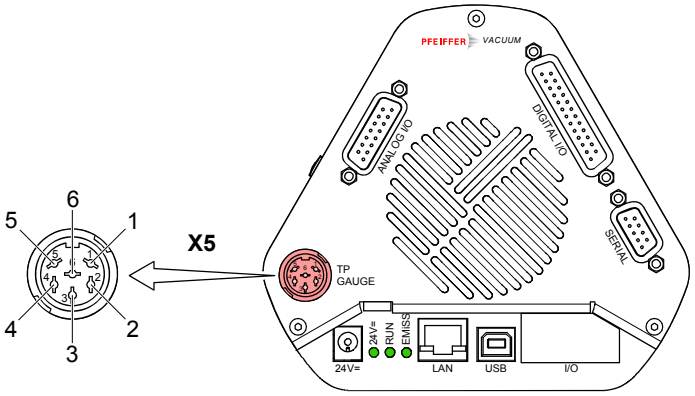
Gauge type	Interface	Connector	Degas	Power supply
PKR251/261	analog	X5, <TP GAUGE>, 6 pin	no	internal
PBR260	analog	X5, <TP GAUGE>, 6 pin	yes	SP 220 [1]
TPR280/281	analog	X5, <TP GAUGE>, 6 pin	no	internal
HPT100	RS485	X1, <SERIAL>, 9 pin	yes	SP 220 [1]
PPT100	RS485	X1, <SERIAL>, 9 pin	no	internal
RPT100	RS485	X1, <SERIAL>, 9 pin	no	internal

[1] Operation of these gauges requires an additional type SP 220 power supply (→ 33).

The type of gauge connected to the QME 220 is automatically identified by the QME 220 after the power on sequence. After a change of gauges the 24 VDC power supply of the QME 220 has to be disconnected from the mains. After 10 seconds it can be reconnected. This procedure forces the QME 220 (SP 220 (1)) to re-identify the actual gauge type connected (→ chapter 'Operation', 35).

Connection of analog gauges

TPR and PKR compact gauges can be connected to X5, <TP GAUGE>.

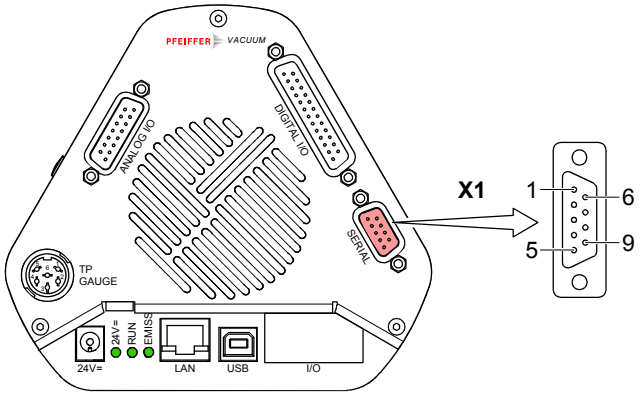


Cable type

Use cables and connectors listed in the gauges manual exclusively.

Connecting digital gauges

HPT-, PPT- and RPT gauges can be connected to X1, <SERIAL>.



Cable type

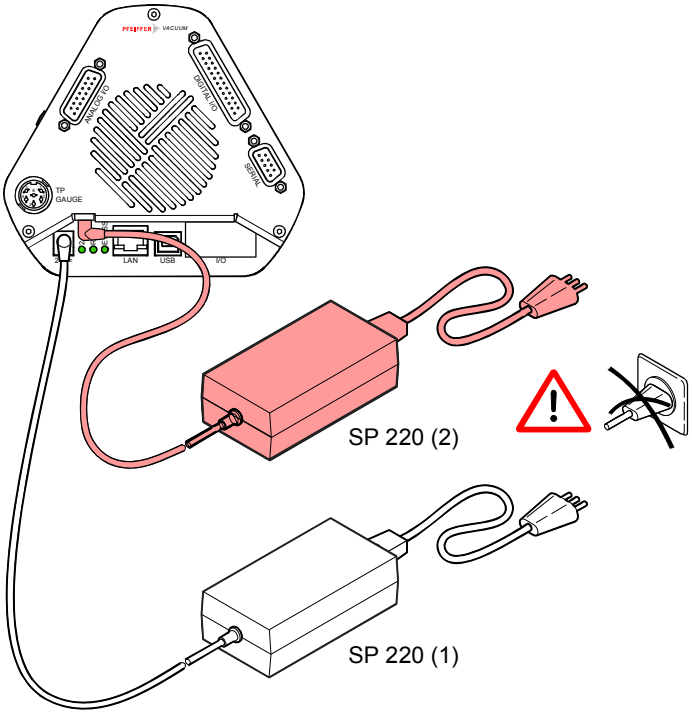
Use cables and connectors listed in the gauges manual exclusively.

3.3.7 Connection of the Additional Power Supply

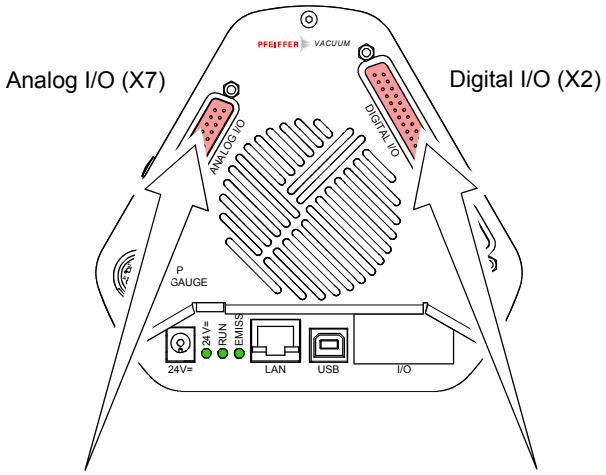
Some of gauges have higher supply power requirements (→ 🖹 31) which can not be satisfied by the primary QME 220 power supply (SP 220 (1)). In these cases a second SP 220 (SP 220 (2)) is required.

WARNING

Do not connect the mains cables of both SP 220 supplies to the mains socket yet.



3.3.8 Using the Analog and Digital Interfaces



Analog inputs	Analog outputs	Digital inputs	Digital outputs
• Reading of measurement values e.g. pressure, temperature, gas flow etc.	• Measurement values e.g. ion currents etc. • Calculated values e.g. concen-trations etc.	• Software control e.g. measuring sequences etc.	• Switching points • valve control (open/close)

(→ 🕮 [1], *QUADERA\Online Help\Cross-References from Manuals\#005*)

3.4 Software Installation

Description and installation of the QUADERA® software package → 🕮 [1].

4 Operation

4.1 Initial Start Up

DANGER

DANGER: cleaning agents

Cleaning agents can be detrimental to health and environment.

Adhere to the relevant regulations and take the necessary precautions when handling cleaning agents and disposing of them. Consider possible reactions with the product materials (→ 🗎 51).

DANGER

Verify the correct installation of all system components and compliance with technical data (→ 🗎 10) before equipment is switched on.

Note before start up

Before the system is started up, check the following:

- Mains cable of SP 220 not connected to the mains
- Correct installation of all system components and modules
- Correct condition of vacuum/process chamber
- Correct wiring of system components
- LAN link to PC (directly or via network) installed (→ 🗎 25)
- PC ready for operation according to software instructions (→ 🕮 [1]).

Consult operating instructions of all system components involved before you start up the system.

In complete (factory configured) systems, settings and parameters have been optimally aligned. Do not change them unfounded.

DANGER

DANGER: line voltage

Incorrectly grounded products can be extremely hazardous in the event of a fault.

The power connector may only be plugged into a socket with a protective ground. The protection must not be nullified by an extension cable without protective ground.

WARNING

Check the vacuum in the QMA 200 before you insert the power plug of the SP 200. Required vacuum conditions:

$<10^{-4}$ mbar with Faraday type

$<10^{-5}$ mbar with C-SEM type

If you use the compact gauge head connected to the QME 220 (IO 220), the power plug may be inserted without checking the vacuum conditions. But do not turn on the Emission and C-SEM voltage until the above limits have been attained. Activate EXT_PROT (→ 🗎14) monitoring.

Switching on

After the conclusion of the checks listed above, the system can be switched on.

WARNING

The QME 220 may only be turned on and off by inserting or detaching the power plug of the SP 220. The 24 VDC connector of the SP 220 must always remain connected to the QME 220.

If two SP 220 power supplies are used, a mains distributor is recommended.

Procedure

1. Insert the SP 220 power plugs.

   SP 220 (2) has to be switched on first (in case there is an IO 220 installed and gauges used that require the second SP 220).

   The <24 V=> lamp at the QME 220 turns on. The QMG 220 is ready for operation.

   After approx. 10 seconds the <RUN> lamp begins to flash at a rate of 2 Hz, indicating that the QME 220s internal firmware is running.

2. Switch on the PC and start the operation software QUADERA®. The flickering LED at the ethernet connector in the QME 220 (RJ45 connector) indicates data communication in progress.

   If this LED remains dark, a communication error between QMG 220 and the PC has to be suspected. In this case, check the cables and components along the communication path. Also check the PC for correct configuration and installation (application software, firewall status etc.).

3. Carry out the subsequent steps under QUADERA® (→ 🕮 [1]):

   System configuration:
   QUADERA\Online Help\Cross-References from Manuals\#001.

   Initial Start Up (Commissioning):
   QUADERA\Online Help\Cross-References from Manuals\#002.

   Operation (measuring mode):
   QUADERA\Online Help\Cross-References from Manuals\#003.

5 Maintenance

5.1 QMA 200 (Filament Replacement)

Skilled personnel

Filaments are supplied as preassembled units. They should only be changed by qualified personnel.

Preparation
(applies to all ion source types)

1. Detach all electrical connections to the QME 220.
2. Separate the QME 220 from the analyzer by performing the same steps described in chapter 3.2.4 but in reverse order.
3. Detach the analyzer from the vacuum chamber.
4. Place the analyzer into the supplied mounting tool.

5.1.1 HS Ion Source

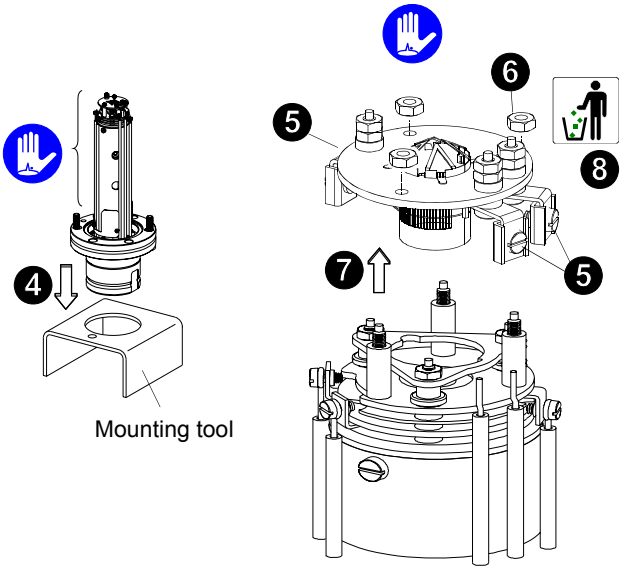
Required tools

- Open-end wrench AF 10
- flat-nosed pliers
- Screwdriver size 0
- Special socket wrench AF 3/3.2 (→ 🗎 48)

Required material

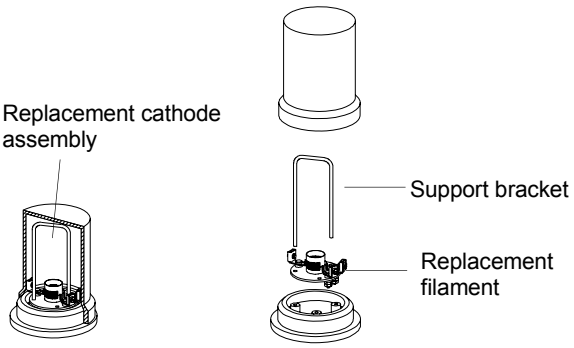
Replacement filament assembly (→ 🗎 49).

Procedure



5. Grip the U-sections with flat-nose pliers and loosen the 3 screws so that the U-sections are just being kept in position by the screws.
6. Take off the 3 nuts.
7. Carefully pull the filament assembly upward.
8. Dispose of the used filament assembly.

❾ Open the packing tube of the replacement filament assembly. Carefully lift off the support bracket while gripping the filament assembly at the base of the protective packing.



WARNING

Do not touch the filament, not even with gloved hands.

❿ Mount the replacement filament on the ion source. Slide the filament assembly toward the setscrews so that the plate of the filament assembly is parallel to the plate of the ion source.

Do not twist the filament assembly, otherwise the ionization chamber will be deformed.

⓫ Mount the 3 nuts on the setscrews and tighten them with the special socket wrench.

⓬ Grip the U-sections with flat-nose pliers, introduce the electrical connections of the filament laterally at the U-sections and tighten the screws.

⓭ Re-assemble the product (→ steps ❶ … ❹, 🗎 37, in reverse order).

5.1.2 Closed HS Ion Source

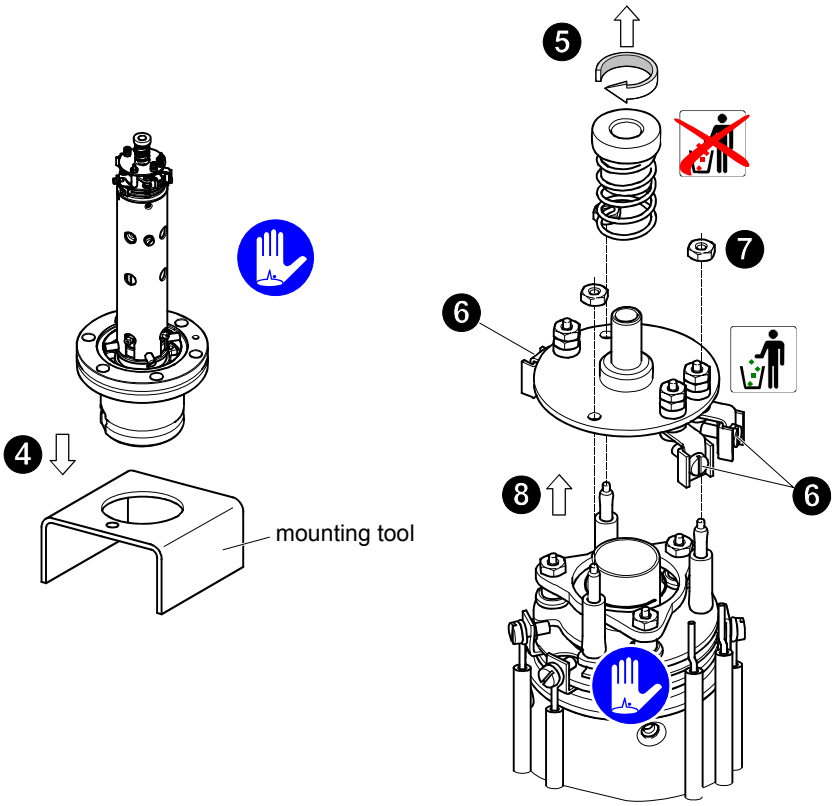
Required tools

- Open-end wrench AF 10
- flat-nosed pliers
- Screwdriver size 0
- Special socket wrench AF 3/3.2 (→ 🗎 48)

Required material

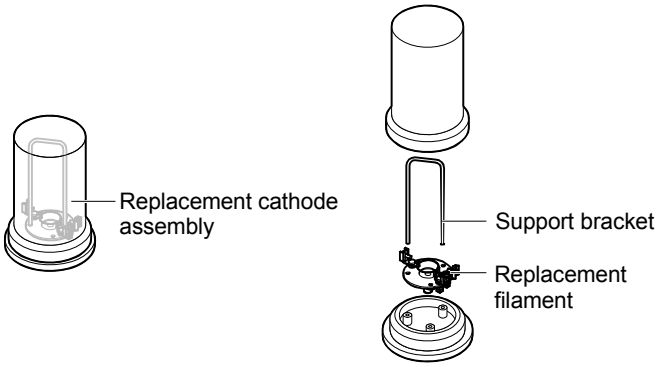
Replacement filament assembly (→ 🗎 49).

Procedure



5. Remove the ceramic tube (including the spring) from the ion source by twisting it clockwise and pulling it off at the same time.
6. Grip the U-sections with flat-nose pliers and loosen the 3 screws so that the U-sections are just being kept in position by the screws.
7. Take off the 3 nuts.
8. Carefully pull the filament assembly upward.
9. Dispose of the used filament assembly.

10 Open the packing tube of the replacement filament assembly. Carefully lift off the support bracket while gripping the filament assembly at the base of the protective packing.



WARNING

Do not touch the filament, not even with gloved hands.

11 Mount the replacement filament on the ion source. Slide the filament assembly toward the setscrews so that the plate of the filament assembly is parallel to the plate of the ion source.

Do not twist the filament assembly, otherwise the ionization chamber will be deformed.

12 Mount the 3 nuts on the setscrews and tighten them with the special socket wrench.

13 Grip the U-sections with flat-nose pliers, introduce the electrical connections of the filament laterally at the U-sections and tighten the screws.

14 Re-install the ceramic tube (including the spring) on the ion source by twisting it clockwise and pushing it down at the same time.

15 Re-assemble the product (→ steps ❶ … ❹, 🗎 37, in reverse order).

5.1.3 Cross-Beam Ion Source

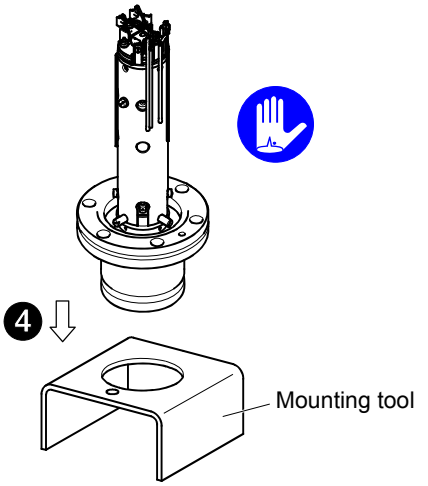
Required tools

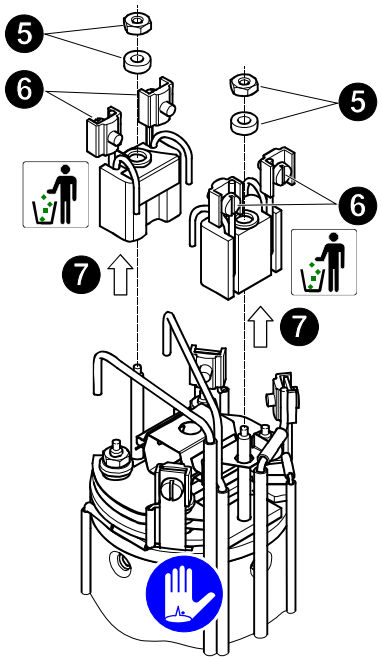
- Open-end wrench AF 10
- flat-nosed pliers
- Screwdriver size 0
- Special socket wrench AF 3/3.2 (→ 🗎 48)

Required material

Replacement filament assembly (→ 🗎 49).

Procedure





5 Loosen the screws of the filament contacts and remove the U-sections.

Grip the U-sections with flat-nose pliers while loosening the screws in order to counteract the torque applied with the screwdriver.

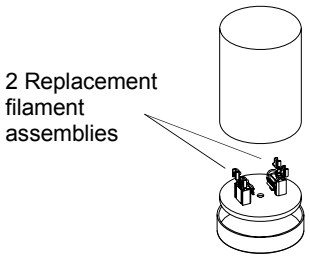
6 Loosen and remove the holder nut.

7 Carefully remove the old filament assembly together with the ceramic sleeve insulation.

Do not remove the rectangular washer.

8 Dispose of the used filament assembly.

❾ Open the packing tube take out the replacement filament assembly after removing the retaining nut.



WARNING

Do not touch the filament, not even with gloved hands.

❿ Carefully place the new filament assembly on the ion source.

⓫ Make sure the ceramic sleeve and the rectangular washer are seated correctly and fasten holder nut.

The wehnelt and filament should now be parallel to the formation chamber and at the correct height. If this is not the case, some part is not properly seated or not correctly dimensioned.

⓬ Place both U-sections with screws over the connector ends and the supply wires.

⓭ Grip the U-sections with flat-nose pliers while fastening the screws.

Transfer as little force as possible to the ends of the filament connector so that the ceramic parts are not damaged.

Check whether the filament is parallel to the formation chamber. If necessary, align it.

⓮ Re-assemble the product (→ steps ❶ … ❹, 🗎 37, in reverse order).

5.1.4 Grid Ion Source

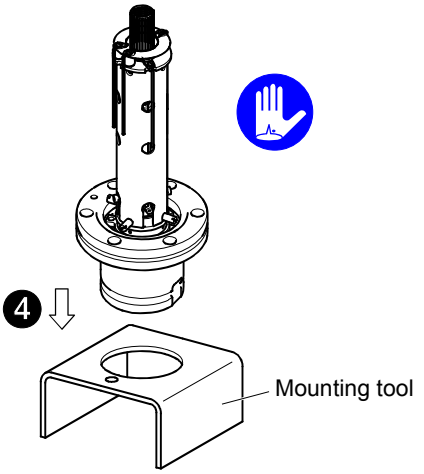
Required tools

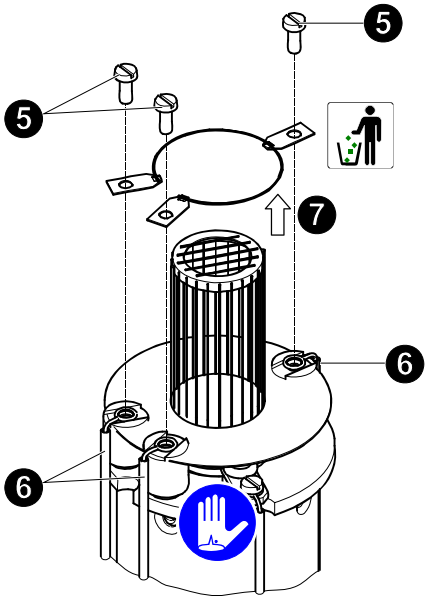
- Tweezers
- Screwdriver size 0

Required material

Replacement filament (→ 🖹 49).

Procedure



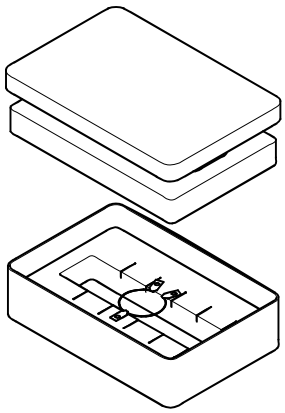


5 Loosen and remove the 3 screws holding the filament.

6 Bend the supply wires away slightly.

7 Remove and dispose of the used filament.

8 Open the box of the replacement filament. Carefully take out the new filament using the tweezers and holding it at its center connector tab.



WARNING

Do not touch the filament, not even with gloved hands.

9. Place the new filament on the filament holder.

The holes in the connector tabs must be precisely aligned above the tapholes.

Do not bend the filament.

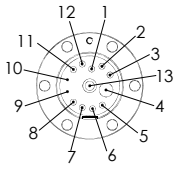
10. Push the supply wire loops over the tapholes, taking care not to shift the connector tabs of the filament.

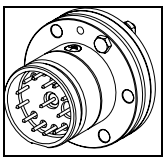
11. Set the 3 screws in place and tighten carefully.

12. Re-assemble the product (→ steps ❶ … ❹, 🗎 37, in reverse order).

Short circuits and ground faults in the analyzer

Short circuits and ground faults inside the analyzer can be detected and repaired using an ohmmeter or continuity checker. The following illustration and table show the pin assignment of the QMA 200 connector:





13 pin, male

Pin No.	Description
1	Reserve
2	Extr
3	Focus
4	HV –
5	Filament 1
6	Filament 2
7	Anode
8	RF –
9	GND
10	GND
11	RF +
12	Filament Common
13	EP

5.2 QME 220

5.2.1 Cleaning

WARNING

Do not forget this cleaning, even if the unit is installed in such a way that the contamination cannot be easily seen.

For cleaning the housing use only a piece of cloth lightly moistened with water, and possibly some dishwashing detergent. Do not use any aggressive or scouring cleaning agents.

No liquid must seep into the unit. Do not operate the unit until it is completely dry.

DANGER

Disconnect the 24 V power supply (SP 220) of the QME 220 from the AC power source before any moist cleaning.

Make sure the connectors do not get moist.

5.2.2 Replacing the Filter Mat

The filter mat at the air entrance has to be cleaned if a substantial layer of dust has accumulated. Use a vacuum cleaner to clean the filter mat.
In case of severe filter mat clogging it is recommended to replace it:

Required tools

- Screwdriver Torx T10

Required material

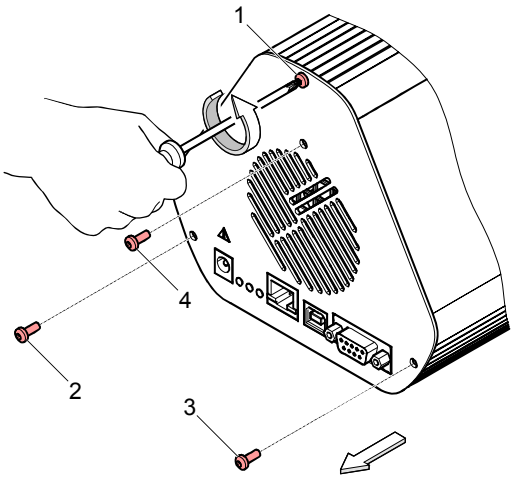
Replacement filter mat (→ 🗎 48).

Procedure

1. Detach power supplies SP 220 from mains. Detach all electrical connections to the QME 220.
2. Separate the QME 220 from the analyzer by performing the same steps described in chapter 3.2.4 but in reverse order.
3. Place the QME 220 on a stable base in order to be able to work on the front panel.

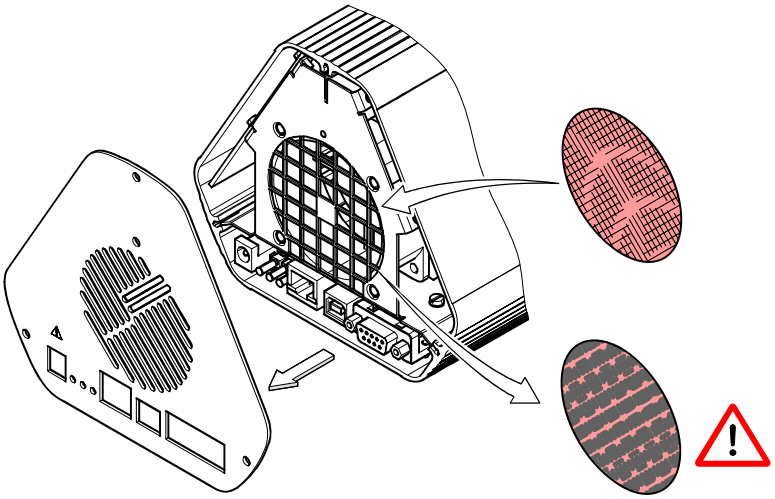
   If an IO 220 is installed, separate it from QME 220 as described on 🗎 20.

❹ Loosen the screws 1 … 4 and remove the front panel.



❺ Replace the filter mat.

Dispose of the old filter mat. If it is contaminated, adhere to the applicable regulations (→ 🖹 51).



❻ Re-assemble the product (→ steps ❶ … ❹ in reverse order).

5.2.3 Tuning the RF Generator

The RF circuit has to be tuned: when the unit is put into service for the first time, when the analyzer is changed (especially from Faraday to C-SEM), or when a corresponding error message is displayed on the screen.

Correct tuning assures optimum measurement accuracy across the entire mass range. An annual tuning check is, therefore, recommended.

Required tools

- Screwdriver size 1 … 2, preferably with an isolated tip.

Procedure

1. Remove the small cap at the side of the QME 220. This hole gives access to the tuning screw.
2. Select the appropriate function in QUADERA®:

   QUADERA\Online Help\Cross-References from Manuals\#007.
3. Follow the software instructions.
4. Turn the tuning screw 'TUNE-VOLTAGE' for voltage minimum.

Turn carefully, no force is required. Do not fully tighten the tuning screw and do not turn it out completely.

5.2.4 Optimizing the Ion Source Sensitivity

The ion source sensitivity should be optimized when the unit is put into service for the first time or after a filament change.

Procedure

1. Select the appropriate function in QUADERA®:

   QUADERA\Online Help\Cross-References from Manuals\#006.
2. Follow the software instructions.
3. Save settings and data.

5.2.5 Replacing the QME 220

If the QME 220 or the QMA 200 needs to be replaced, the procedure is the same as for the initial installation.

Procedure

1. QME 220 installation→ 🗎 20.
2. QME 220 connection → 🗎 24.
3. Tuning of the RF Generator → 🗎 47.
4. Optimizing the ion source sensitivity → 🗎 47

6 Accessories

	Ordering number
D-Sub connector 15 pin	BG 442 639 -T
Special socket wrench AF 3/3.2	BK 370 096
Screw kit (25 pieces)	PF 505 001 -T
Cu seal, DN 40 CF (10 pieces)	PF 501 404 -T
QMA 200 mounting tool	BG 444 456

7 Options

	Ordering number
I/O module IO 220 complete	PT M28 699

8 Spare Parts

When ordering spare parts, always indicate:

- all information on the product nameplate
- description and ordering number according to the spare parts list

QMA 200	Ordering no. ion source	Ordering no. filament	Mat.	Detec.	Additional technical data
PT M25 250	BN 846 137 -T	BN 846 138 -T	Ir	F	open IS
PT M25 251	BN 846 279 -T	BN 846 139 -T	W	F	open IS
PT M25 252	BN 846 137 -T	BN 846 138 -T	Ir	C	open IS
PT M25 253	BN 846 279 -T	BN 846 139 -T	W	C	open IS
PT M25 254	BN 846 137 -T	BN 846 138 -T	Ir	C	closed, Mo-V
PT M25 255	BN 846 280 -T	BN 846 281 -T	W	C	closed
PT M25 256	BN 846 450 -T	BN 846 395 -T	Ir	C	closed
PT M25 257	BN 846 280 -T	BN 846 281 -T	W	F	closed
PT M25 261	BN 846 279 -T	BN846139-T	W	C	Mo-V
PT M25 270	BN 846 137 -T	BN 846 138 -T	Ir	F	300 °C
PT M25 271	BN 846 279 -T	BN 846 139 -T	W	F	300 °C
PT M25 272	BN 846 137 -T	BN 846 138 -T	Ir	C	300 °C
PT M25 273	BN 846 279 -T	BN 846 139 -T	W	C	300 °C
PT M25 274	449-027	BN 846 281 -T	W	C	closed, spec.
PT M25 275	BN 846 280 -T	BN 846 281 -T	W	C	closed, 300 °C
PT M25 276	449-028	BN 846 395 -T	Ir	C	closed, spec.
PT M25 277	BN 846 280 -T	BN 846 281 -T	Ir	C	closed, spec., Mo-V
PT M25 278	BN 846 279 -T	BN 846 139 -T	W	C	closed, spec., Mo-V
PT M25 283	BN 846 450 -T	BN 846 395 -T	Ir	C	closed
PT M25 291	BG 444 000 -T	PT 160 000 -T	W	C	[0.13] CB-IS (IS w/o filament)
PT M25 292	450-400	BN 846 138 -T	Ir	C	adjustable
PT M25 293	BG 444 000 -T	BN 846 282 -T	Ir	C	[0.15] CB-IS, 300 °C (IS w/o filment)
PT M25 294	BG 444 000 -T	PT 160 000 -T	W	C	[0.13] CB-IS, 300 °C
PT M25 295	450-400	BN 846 138-T	Ir	C	adjustable, 300 °C
PT M25 296	BG 444 000-T	499-036	Ir	C	CB-IS, 90° rotated

Legend:

Detector:	F	=	Faraday
	C	=	C-SEM
Filaments:	W	=	Tungsten
	Ir	=	Iridium, yttriated
	[…]		Filament diameter in mm
Additional technical data:	IS	=	Ion Source
	Mo-V	=	Molybdenum wiring
	spec.	=	Extraction orifice diameter 2 mm
	CB-IS	=	Cross Beam Ion Source
	G-IS	=	Grid Ion Source

	Ordering number
C-SEM	BN 846 182 -T
24 VDC power supply, SP 220	PT 160 200
Filter mat (10 pieces)	BN 846 231 -T
Misc. small parts QMA 200	BN 846 279 -T

9 Storage

Caution

Caution: electronic component

Inappropriate storage (static electricity, humidity etc.) can damage electronic components.

Store product in antistatic bag or container. Observe the corresponding specifications in the Technical Data (→ 10).

10 Returning the Product

WARNING

WARNING: forwarding contaminated products

Contaminated products (e.g. radioactive, toxic, caustic or biological hazard) can be detrimental to health and environment.

Products returned to Pfeiffer Vacuum should preferably be free of harmful substances. Adhere to the forwarding regulations of all involved countries and forwarding companies and enclose a duly completed declaration of contamination (→ 53).

Products that are not clearly declared as "free of harmful substances" are decontaminated at the expense of the customer.

Products not accompanied by a duly completed declaration of contamination are returned to the sender at his own expense.

Re-install the transport safety devices before transporting the product (→ 19).

11 Disposal

DANGER

DANGER: contaminated parts

Contaminated parts can be detrimental to health and environment.

Before beginning to work, find out whether any parts are contaminated. Adhere to the relevant regulations and take the necessary precautions when handling contaminated parts.

WARNING

WARNING: substances detrimental to the environment

Products or parts thereof (mechanical and electric components, operating fluids etc.) can be detrimental to the environment.

Dispose of such substances in accordance with the relevant local regulations

Separating the components

After disassembling the product, separate its components according to the following criteria:

Contaminated components

Contaminated components (radioactive, toxic, caustic or biological hazard etc.) must be decontaminated in accordance with the relevant national regulations, separated according to their materials, and disposed of.

Other components

Such components must be separated according to their materials and recycled.

Appendix

Literature and Software

📖 [1] www.pfeiffer-vacuum.net
Software documentation
QUADERA®
Pfeiffer Vacuum GmbH, D–35614 Asslar, Deutschland

Declaration of Contamination

The service, repair, and/or disposal of vacuum equipment and components will only be carried out if a correctly completed declaration has been submitted. Non-completion will result in delay.

This declaration may only be completed (in block letters) and signed by authorized and qualified staff.

1 Description of product

Type _____

Part number _____

Serial number _____

2 Reason for return

_____

_____

_____

3 Operating fluid(s) used (Must be drained before shipping.)

_____

4 Used in copper process

no ❑ yes ❑ → Seal product in plastic bag and mark it with a corresponding label.

5 Process related contamination of product:

toxic	no ❑ 1)	yes ❑
caustic	no ❑ 1)	yes ❑
biological hazard	no ❑	yes ❑ 2)
explosive	no ❑	yes ❑ 2)
radioactive	no ❑	yes ❑ 2)
other harmful substances	no ❑ 1)	yes ❑

The product is free of any substances which are damaging to health. yes ❑

1) or not containing any amount of hazardous residues that exceed the permissible exposure limits

2) Products thus contaminated will not be accepted without written evidence of decontamination.

6 Harmful substances, gases and/or by-products

Please list all substances, gases, and by-products which the product may have come into contact with:

Trade/product name	Chemical name (or symbol)	Precautions associated with substance	Action if human contact

7 Legally binding declaration:

We hereby declare that the information on this form is complete and accurate and that we will assume any further costs that may arise. The contaminated product will be dispatched in accordance with the applicable regulations.

Organization/company _____

Address _____ Post code, place _____

Phone _____ Fax _____

Email _____

Name _____

Date and legally binding signature

_____

Company stamp

This form can be downloaded from our website.

Copies:
Original for addresee - 1 copy for accompanying documents - 1 copy for file of sender

Declaration of Conformity

CE

We, Pfeiffer Vacuum hereby declare that the equipment mentioned below complies with the provisions of the Directive relating to electrical equipment designed for use within certain voltage limits 73/23/EEC and the Directive relating to electromagnetic compatibility 89/336/EEC.

Product

PrismaPlus™

Compact Mass Spectrometer System

QMG 220

Standards

Harmonized and international/national standards and specifications:

- EN 61010-1: 2001 (Safety requirements for electrical equipment for measurement, control and laboratory use)
- EN 61326-1: 1997+ A1: 1998+ A2: 2001+A3: 2003 (Electrical equipment for measurement control and laboratory use – EMC requirements)

Signature

Pfeiffer Vacuum GmbH, Asslar

26 January 2007

Wolfgang Dondorf
Managing Director

Notes

Original: German BG 5214 BD (2007-03)
bg5214be

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