

# Portable Gas Conditioning Unit Series PSS<sup>®</sup>

## PSS-5, PSS-5/3

Instruction Manual

Version 1.00.06



**Dear customer,**

Thank you for buying our product. In this manual you will find all necessary information about this M&C product. The information in the manual is fast and easy to find, so you can start using your M&C product right after you have read the manual.

If you have any question regarding the product or the application, please don't hesitate to contact M&C or your M&C authorized distributor. You will find all the addresses in the appendix of this instruction manual.

For additional information about our products, please go to M&C's website [www.mc-techgroup.com](http://www.mc-techgroup.com). There you can find the data sheets and manuals of our products in German and English.

This Instruction Manual does not claim completeness and may be subject to technical modifications.

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Version: 1.00.06

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## 1 GENERAL INFORMATION

The product described in this operating manual has been examined before delivery and left our works in perfect condition related to safety regulations. In order to keep this condition and to guarantee a safe operation, it is important to heed the notes and prescriptions made in this operating manual. Furthermore, attention must be paid to appropriate transportation, correct storage, as well as professional installation and maintenance work. All necessary information a skilled staff will need for appropriate use of this product are given in this operating manual.

## 2 DECLARATION OF CONFORMITY



The product described in this operating manual complies with the following EU directives:

### EMC-Instruction

The requirements of the EU directive 2014/30/EU "Electromagnetic compatibility" are met.

### Low Voltage Directive

The requirement of the EU directive 2014/35/EU "Low Voltage Directive" are met.  
The compliance with this EU directive has been examined according to DIN EN 61010.

### RoHS Directive

The requirements of the RoHS2 ("Restriction of Hazardous Substances 2") directive 2011/65/EU and its annexes are met.

### Declaration of conformity

The EU Declaration of conformity can be downloaded from the **M&C** homepage or directly requested from **M&C**.

### 3 SAFETY INSTRUCTIONS

**Please take care of the following basic safety procedures when mounting, starting up or operating this equipment:**

Read this operating manual before starting up and use of the equipment. The information and warnings given in this operating manual must be heeded.

Any work on electrical equipment is only to be carried out by trained specialists as per the regulations currently in force.

Attention must be paid to the requirements of VDE 0100 (IEC 364) when setting high-power electrical units with nominal voltages of up to 1000 V, together with the associated standards and stipulations.

Check the details on the type plate to ensure that the equipment is connected to the correct mains voltage.

Protection against touching dangerously high electrical voltages:

Before opening the equipment, it must be switched off and hold no voltages. This also applies to any external control circuits that are connected.

The device is only to be used within the permitted range of temperatures and pressures.

Check that the location is weather-protected. It should not be subject to either direct rain or moisture.

The gas conditioning systems PSS-5 and PSS-5/3 must not be used in hazardous areas.

Installation, maintenance, monitoring and any repairs may only be done by authorized personnel with respect to the relevant stipulations.

### 4 WARRANTY

In case of a device failure, please contact immediately M&C or your M&C authorized distributor.

We have a warranty period of 12 months from the delivery date. The warranty covers only appropriately used products and does not cover the consumable parts. Please find the complete warranty conditions in our terms and conditions.

The warranty includes a free-of-charge repair in our production facility or the free replacement of the device. If you return a device to M&C, please be sure that it is properly packaged and shipped with protective packaging. The repaired or replaced device will be shipped free of delivery charges to the point of use.

## 5 USED TERMS AND SIGNAL INDICATIONS



**DANGER!**

This means that death, severe physical injuries and/or important material damages **will occur** in case the respective safety measures are not fulfilled.



**WARNING!**

This means that death, severe physical injuries and/or important material damages **may occur** in case the respective safety measures are not fulfilled.



**CAUTION!**

This means that minor physical injuries **may occur** in case the respective safety measures are not fulfilled.

**CAUTION!**

Without the warning triangle means that a material damage may **occur** in case the respective safety measures are not met.

**ATTENTION**

This means that an unintentional situation or an unintentional status **may occur** in case the respective note is not respected.



**NOTE!**

These are important information about the product or parts of the operating manual which require user's attention.

**QUALIFIED PERSONNEL**

These are persons with necessary qualification who are familiar with installation, use and maintenance of the product.



High voltages!

Protect yourself and others against damages which might be caused by high voltages.



Corrosive!

These substances destroy living tissue and equipment upon contact. Do not breathe vapors; avoid contact with skin and eyes.



Wear protective gloves!

Working with chemicals, sharp objects or extremely high temperatures requires wearing protective gloves.



Wear safety glasses!

Protect your eyes while working with chemicals or sharp objects. Wear safety glasses to avoid getting something in your eyes.



Wear protective clothes!

Working with chemicals, sharp objects or extremely high temperatures requires wearing protective clothes.

## 6 INTRODUCTION

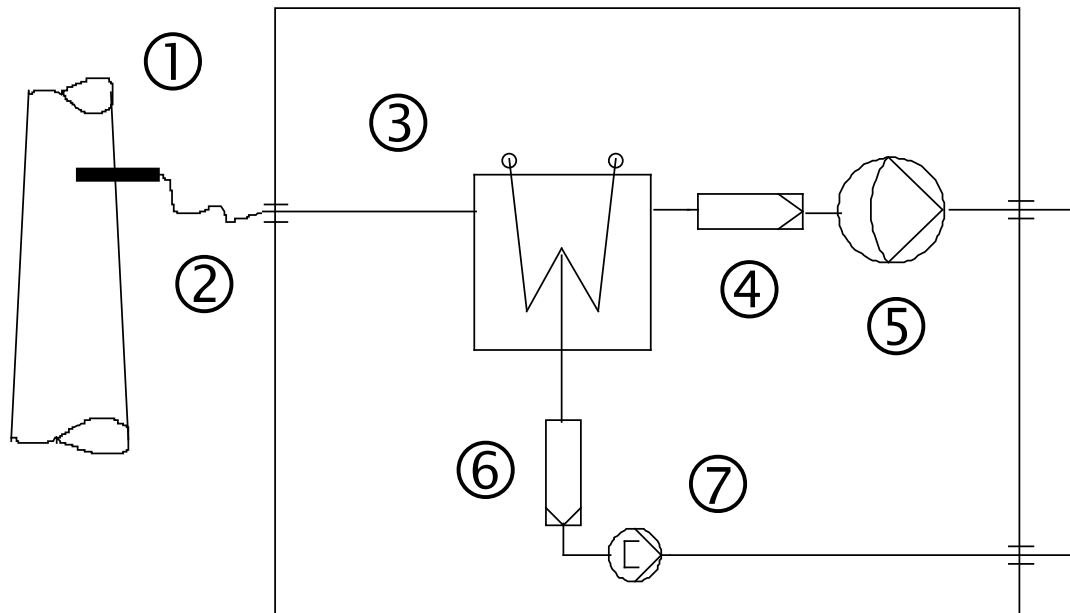
The portable gas conditioning systems **PSS-5** and **PSS-5/3** have been especially designed, so that precise gas analysis can be carried out in any place and at any time.

The entire gas conditioning system is housed in a compact and robust aluminium framed protective case which ensures that the components can be removed easily, and gas analysis carried out quickly, safely and with a minimum amount of maintenance.

## 7 APPLICATION

The gas conditioning system is ideally suited for both intermittent and continuous operation.

The components of the **PSS-5** and **PSS-5/3** systems are intended for "standard use." We also provide a wide range of additional equipment and other components if special measurements are required.



- ① Gas sample probe, stainless steel 316, Ø 4/6 mm, length 0.5 m
- ② Gas sample line, PVC hose, Ø 4/6 mm, length 3 m
- ③ Gas cooler **ECP1000** or **ECP3000**
- ④ Fine filter **FP-2T**, filter element fineness 2 µm
- ⑤ Sample gas diaphragm pump **N3KPE** or **N9KPE**
- ⑥ Pre-filter **PF 2**
- ⑦ Peristaltic pump **SR25.2-W** for continuous removal of condensate

**Figure 1** PSS-5 and PSS-5/3 gas flow diagram



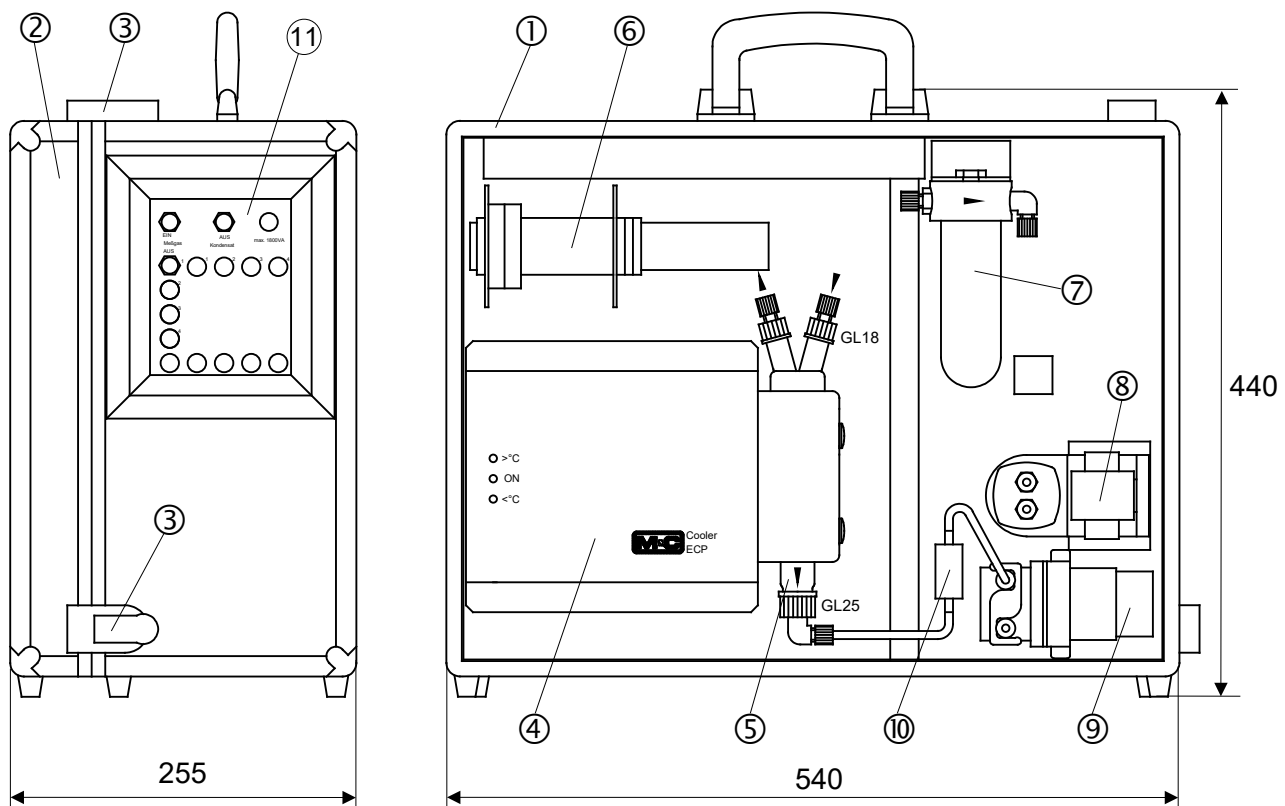
## 8 TECHNICAL DATA

Gas Conditioning Type	PSS-5	PSS-5/3
Gas outlet dew point	Range of adjustment: +2 to +15 °C [35.6 to 59 °F], factory setting: +5 °C [41 °F]	
Gas outlet dew point stability	At const. conditions: < ±0.1 °C [±0.18 °F]	
Gas inlet temperature	Max. 80 °C* [176 °F*], optional: max. 180 °C* [356 °F*] with stainless steel bulkhead union	
Gas inlet water vapor saturation	Max. +80 °C* [176 °F*]	
Gas flow rate	Max. 150 NI/h*	Max. 350 NI/h*
Ambient temperature	+5 to +40 °C* [41 to 104 °F*]	
Storage temperature	-25 °C to +65 °C [-4 to 149 °F]	
Pressure	0.7 to 1.4 bar abs.*	
Total cooling capacity	Max. 50 kJ/h	Max. 90 kJ/h
Number of gas inlets	1	
Number of gas outlets	1, optional: max. 4	
Medium connections	Tube connections DN 4/6	
Material of sample contacting parts	Stainless steel, glass, PPH, PVC, PVDF, PTFE, Novoprene® Optional: Viton® for gas sample line, Part No. 01G9025	
Ready for operation	Approx. 10 min.	
Mains power supply	230 V/50 Hz ±10 % or 115 V/60 Hz ±10 %	
Power consumption	Max. 240 VA Option temperature controller and heated sample line: 230 V max. 1620 VA 115 V max. 930 VA	
Fuse protection	4 AT, 5 x 20 mm With option temperature controller and heated sample line: 10 AT, 5 x 20 mm	
Electrical connection	Cold appliance plug with 2 m [6.6 ft] cable	
Case protection	IP20 (EN 60529)	
Case type	Portable aluminium framed protective case	
Case dimensions (H x W x D)	440 x 540 x 255 mm [approx. 17.3" x 21.3" x 10"]	
Weight without options	Approx. 17 kg [≈ 37.5 lbs]	Approx. 17.7 kg [≈ 39 lbs]
<b>Options</b>		
Temperature controller:	Range of control: 0 to 200 °C [32 to 392 °F] Input: PT100	
Flow meter (optionally):	7 to 70 NI/h air, 15 to 150NI/h air, 25 to 250 NI/h air, 50 to 500 NI/h air Quantity: max. 4	
Electrical equipment standard	EN 61010	

PPH=Polypropylene, PTFE=Polytetrafluoroethylene (Teflon®), PVC=Polyvinyl chloride, PVDF=Polyvinylidene fluoride  
Viton®, Teflon® are registered Trademarks of DuPont Performance elastomers

\* Maximum values in technical data must be rated in consideration of total cooling capacity at 25 °C [77 °F] ambient temperature and an outlet dew point of 5 °C [41 °F].

## 9 DESCRIPTION



**Figure 2 Design of the conditioning units PSS-5 and PSS-5/3**

All components of the gas conditioning system are built into a portable case ① and are freely accessible. The case door ② can be opened easily to the left by loosening the tension locks ③ mounted on the side and top of the case.

The installation of the gas cooler ④ and a corresponding diaphragm measuring gas pump ⑧ depends on the required maximum gas volume flow. The possible combinations are summarised in the following table:

PSS-5...	Type of cooler	Max. gas flow [NI/h]	Sample gas pump
PSS-5	ECP1000	150	N 3 KPE
PSS-5/3	ECP3000	350	N 9 KPE

The minimum amount of flow is determined by the sample gas pump (see chapter 8). If the required minimum total flow rate is not reached, excessive overpressure can lead to premature destruction of the pump diaphragm.

The gas cooler is equipped with a Duran glass heat exchanger ⑤ as standard. Heat exchangers in PVDF or stainless steel are optionally available.

The FP-2T fine filter (2 µm filter porosity) ⑦ installed upstream of the sample gas pump ⑧ provides the necessary solids separation.

The overtemperature alarm contact (+8 °C [46.4 °F]) of the cooler automatically regulates the switching on and off of the sample gas pump.

The resulting condensate is continuously discharged by a peristaltic pump type SR25.2-W ⑩.

A pre-filter type PF2 ⑩ is installed in the condensate line between the heat exchanger and the peristaltic pump. This protects the pump from particle contamination in the condensate.

The 4/6 mm tube connections for the condensate and sample gas lines ⑪ are located on the right side of the case (see Figure 2 and Figure 5).

A stainless steel sample tube (length 0.5 m, Ø 6 mm) and 3 m PVC sample tubing (4/6 mm) are included as standard.

The ventilation grids in the lid and in the left side wall of the case provide sufficient convective forced ventilation.

### Options:

The **PSS-5** and **PSS-5/3** sample gas conditioning unit can be equipped at the factory with a maximum of four sample gas outlets. Each sample gas outlet can be controlled according to the specified volume flow range (see table on page 9) by the optional installation of a flow meter type **FM40** with needle valve. Unused mounting holes for sample gas outputs or flow meters are closed by blind caps.

To protect the downstream analyzers against liquid ingress and to increase the operational reliability of the entire system, we recommend the installation of a liquid alarm sensor type **LA1S**. For this purpose, the **FP-2T** fine filter installed as standard is replaced at the factory by the **FP-2T-D** fine filter with built-in liquid alarm sensor. The **LA1.4** electronic controller is located on the terminal support rail ⑥ (Figure 2), in the upper part of the case. The LA electronics automatically shuts off the sample gas pump in the event of a liquid alarm. The alarm is indicated by a red LED. If there is no alarm, a green LED will be on.

The **PSS-5** and **PSS-5/3** sample gas conditioning units can optionally be equipped with a sample gas inlet (see Figure 3, Part No. 01G9060) for connecting a heated sample line. The existing anti-kink protection must only be used for heated sample lines of connection type "C" (Part No. 03B1012). Assembly instructions can be found in the appendix.

It is also possible to connect the heated sample line Part No. 01B4036 in connection with the gas sample probe **PSP 4000**.

The temperature controller (Part No. 01G9055) required to control the heated line is factory-installed on the terminal support rail ⑥ (Figure 2).

A 3-way ball valve (Part No. 01G9046) or a 5-way ball valve (Part No. 01G9045) can optionally be installed in the inlet of the gas conditioning unit for test gas feed or sample gas switching.

## 10 RECEIPT OF GOODS AND STORAGE

The gas conditioning and sampling systems **PSS-5** and **PSS-5/3** are completely pre-installed units.

- Immediately after arrival take the gas conditioning system and possible special accessories carefully out of the packaging material.
- Compare the goods with the items listed on the delivery note;
- Check the goods for any damage caused during delivery and, if necessary, notify your transport insurance company without delay of any damage discovered.



**NOTE!**

**The gas conditioning unit should be stored in a protected frost-free area!**

## 11 INSTALLATION INSTRUCTIONS



### NOTE!

The case should be placed on an even horizontal surface to ensure a secure and stable position.

The operating position is exclusively vertical. Only in this case is the proper condensate separation and discharge in the heat exchanger of the cooler guaranteed.

The gas conditioning case should be set up away from heat sources and freely ventilated so that no unwanted heat accumulation occurs.

For outdoor installation, adequate protection against direct sunlight and moisture must be provided. In winter, the installation site must be frost-free; observe the protection class of the case.

To ensure the operational safety of the portable gas conditioning unit and the downstream analyzers and to avoid false alarms, the sample gas conditioning unit must not be used outside the specified temperature range.

Downstream analyzers must always be operated at temperatures well above the specified gas output dew point of +5 °C. The temperature range of the downstream analyzers must not be exceeded. This avoids any condensation of the gas in the connecting lines to the analyzers.

Unheated gas sample lines must be installed with a gradient down to the cooler. Condensate pre-separation is then not necessary.

## 12 SUPPLY CONNECTIONS

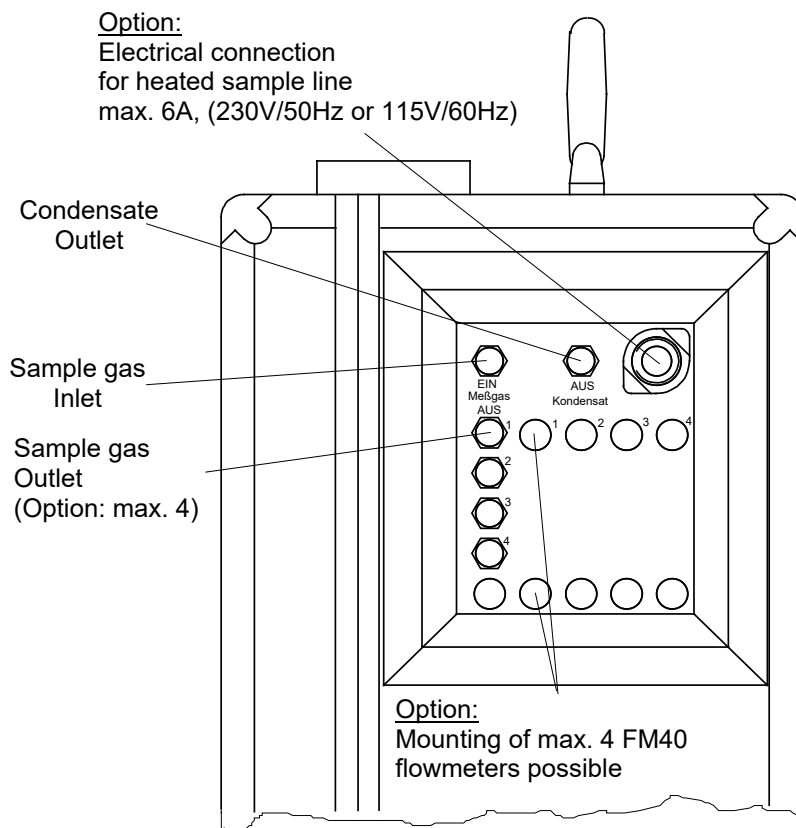
### 12.1 TUBE CONNECTIONS



**NOTE!**

**Do not swap tube connections; connections are marked accordingly.  
After connecting all lines, the tightness must be checked.**

Figure 3 shows the possible medium connections. These are located recessed in a special mounting frame on the right side of the sample gas conditioning case.



**Figure 3 Sample gas connection**

All tube connections are equipped with 4/6 mm sealing ring threaded hose couplings made of polypropylene (PP) for gas input temperatures of up to a maximum of 80 °C [176 °F] (see chapter 8). If heated sample lines are used, whereby the gas input temperatures are increased up to a maximum of 180 °C [356 °F], additional bulkhead unions made of stainless steel are recommended.

Dimension 4/6 mm connecting tubes are used as standard.

The sample gas tubes or condensation tubes, are to be assembled as follows:

- Remove the union nut from the sealing ring couplings by turning it anti-clockwise. The nut should be removed from the thread with great care so as to ensure that the loose sealing ring in the nut is not lost.
- Place the union nut over the connecting tube.
- Place the sealing ring over the connecting hose with the thicker bead towards the nut.
- Place the hose over the nipple on the thread.



**NOTE!**

**The tightness of the connections can only be guaranteed if the connecting tube has a straight rim (hose cutter).**

- The union nut is to be screwed tight by hand.

The tube will no longer be able to slip off and is now compression-proof.

The tubes are to be removed in the reverse order.



**WARNING!**

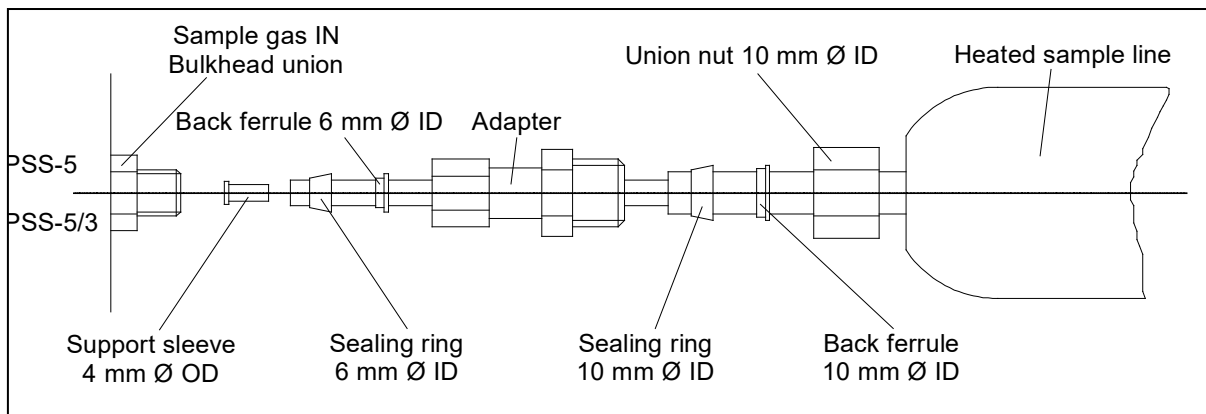
**Aggressive condensate is possible.**



**Wear protective glasses and proper protective clothing!**



### 12.1.1 CONNECTING THE HEATED SAMPLE LINE WITH SPECIAL ADAPTER (OPTION)



**Figure 4 Heated sample line connection with special adapter**

- Place the special adapter on the PTFE tube according to the drawing seen above;
- Place the support sleeve into the PTFE tube;
- Insert the Teflon tube as far as possible into the 'Sample gas IN' bulkhead fitting and hand-tighten the adapter;
- Tighten the adapter 1 1/4 turns with a wrench (SW 14), while holding the lock nut of the Schott screw connection with a wrench (SW 15);
- Insert the 10mm pipe of the heating cable into the adapter as far as possible and hand-tighten with the union nut;
- Tighten the union nut 1 1/4 turns with the wrench (SW 19), holding the adapter in place with the wrench;

The screw connection is now cut gas-tight and can be loosened as often as required.

## 12.2 ELECTRICAL CONNECTIONS



**WARNING!**

**False supply voltage can damage the equipment. When connecting the equipment, please ensure that the supply voltage is identical with the information provided on the model type plate!**



**NOTE!**

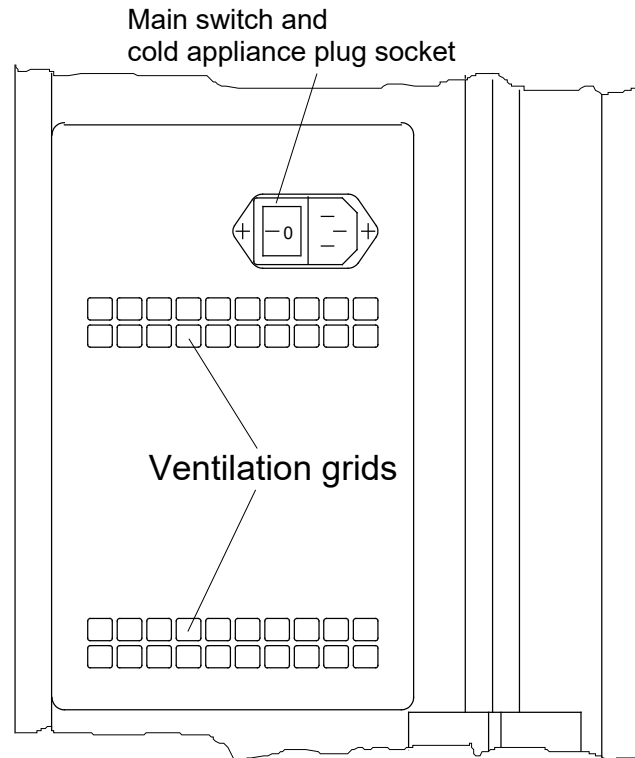
**For the erection of power installations with rated voltages up to 1000 V, the requirements of VDE 0100 and relevant standards and specifications must be observed!**

**The main circuit is equipped with a fuse corresponding to the nominal current (over current protection); for electrical details see technical data.**



The **PSS-5** and **PSS-5/3** gas conditioning systems are available with either 230V/50 Hz or with 115V/60 Hz (for circuit diagram see Appendix). A 4 A fuse is used on all models as fuse protection. The fuse is located on the clamp mounting rail (see Figure 2). When optionally using a temperature controller with heated line, the overload protection increases to 10 A.

The electrical connection is made via a cold appliance plug with 2 m cable on the left side of the case. The power socket is equipped with a two-pole main switch.



**Figure 5** Electrical connection and main switch

#### Option “heated sample line”:

For the electrical supply of a heated sample line with PT-100 sensor and/or the connection of other heated components, e.g. heated sample gas probe or heated filter, a connection socket as shown in Figure 3 is available. The maximum connected load is 6 A, 1380 W for the 230 V sample gas conditioning or 6 A, 690 W for the 115 V version.

The maximum length of the usable heated sampling line is calculated as follows:

$$L(m) = \frac{\text{Max. connected load [W]} - \text{Power consumption of heated components (e.g. sample probe) [W]}}{\text{Power consumption heated line per meter [W/m]}}$$

## 13 COMMISSIONING

Before commissioning, the plant-specific and process-specific safety measures must be observed.



**NOTE!**

**Before connecting the equipment to the supply voltage, the main switch must be in position "0".**

The following steps must be carried out before initial commissioning:

- Plug the power plug of the supplied power cable into the power socket;
- Connect the heated cable (optional);



**WARNING!**

**When operating the sample gas conditioning system with a heated sample gas line, the temperature must be checked at the temperature controller.**

- Connect the mains plug to the mains;
- Switch the main switch to position 'I'.
- Set the desired temperature on the temperature controller.

The digital display of the controller shows the actual value of the heated sample line after switching on the sample gas conditioning unit. The controller is set to 0 °C [32 °F] on delivery. Briefly press the P key to change the set point. SP appears in the display and then the display changes to the adjusted set point. Use the arrow keys to set the desired value. After 60 seconds, the display automatically changes to the actual value.

The sample gas cooler is ready for operation after approx. 10 minutes. The overtemperature alarm contact of the cooler switches on the sample gas pump automatically when the cooler reaches the temperature of +8°C [46.4 °F].



**NOTE!**

**The following minimum gas flow rates result from the requirement of the maximum pressure-side load of the sample gas pumps N3 KPE and N9 KPE of 1.4 bar abs:**

**N 3 KPE approx. 60l/h air,**

**N 9 KPE approx. 200l/h air.**

**If the required minimum total flow rate is not reached, excessive overpressure can lead to premature destruction of the pump diaphragm.**

**For long-term measurements with a high dust content in the sample gas, a suitable gas sampling probe must be provided to protect the sampling line from blockages.**

## 14 CLOSING DOWN



**NOTE!**

**The installation site of the gas conditioning unit must remain frost-free even when the unit is switched off.**

No special measures are to be taken in the event of short-term shutdowns of the gas conditioning system.

In the case of long-term shutdowns, for example after a completed series of measurements, it is recommended to purge the gas conditioning system with fresh air or inert gas. A flushing time of 3 to 5 minutes is sufficient under normal conditions. Condensate residues must also be removed from the system.



**WARNING!**

**Aggressive condensate is possible.**



**Wear protective glasses and proper protective clothing!**



## 15 MAINTENANCE

Before carrying out maintenance work, the plant-specific and process-specific safety measures must be observed!



**WARNING!**

**Dangerous voltage.**



**Before carrying out any work on the gas conditioning unit, move the main switch to position "0" and pull out the mains plug!**

The maintenance cycles depend on the process conditions and must therefore be determined for each specific application.

All parts to be serviced are easily accessible and installed in the sample gas conditioning case. These are (see Figure 2):

- The filter element of the preliminary filter **FP-2T** ⑦.



**NOTE!**

**In order to protect downstream analyzers, the wet filter element must always be replaced after a condensate ingress.**



- Peristaltic pump pre-filter **PF2** ⑩; The pre-filter must be replaced at regular intervals if the condensate is loaded with particles. The "disposable filter" is inserted into the pump tube on the suction side (see Figure 2) and can be easily replaced;
- Check the tubing of the **SR25.2-W** ⑩ condensate pump every six months and replace it if necessary (see operating instructions in the appendix);
- Check the diaphragm of the gas feed pump **N3 KPE** or **N9 KPE** ⑧ every six months and replace if necessary.

## 16 TROUBLE SHOOTING

The following table aims to point out possible operational problems and offer solutions to such problems (not applicable during the starting procedure).

Indication	Problem	Possible Cause	Check/Solution
Upper LED of the cooler lights up red	Interruption of gas flow;	No voltage;	Check supply voltage with model type plate; OK? Check if supply voltage plug is inserted correctly and if the main switch is turned in position "1" OK? Check fine fuse on connector block ⑥ (Figure 2); OK?
		Cooler does not function. Cooler alarm registers 'excess temperature'. Cooler turns gas measuring pump of automatically.	Ambient temperature too high. OK? Free convection in case impaired ⇒ case temperature too high; OK? Cooler error (check instruction manual ECP1000/3000). OK? Check voltage on clamps X1/11 and X1/8; OK?
Middle LED on cooler is green;	Cooler in operation but gas flow interrupted;	Membrane pump faulty;	Remove the hoses at head of pump and check; OK?
		Contamination of the membrane pump;	Clean pump if necessary; OK? Remove tube at gas inlet (see chapter 12.1); Gas flow? Clean contaminated lead or replace;
		Sample probe/hose clogged up or lead squashed;	No gas flow? Remove sample gas hose on analyser side and check via hose thread if sample gas flows;
		Sample gas hose to analyser clogged up or squashed;	No gas flow? Clean contaminated leads or replace; Gas flows?
Alarm LED on the LA electronics is red (see 4);		<u>Optional liquid alarm sensor:</u> Sensor turns measuring pump off automatically;	Momentary overloading of the cooler due to excessive amount of condensate; OK? Check hoses for condensate removal; OK? Check Pre-filter ⑩ and if necessary replace; OK? Check peristaltic pump tube (see manual SR25.2-W); OK? Check peristaltic pump (see manual SR25.2-W); OK?
		<u>Optional flowmeter(s):</u> Needle valve closed.	Check cooler according to instruction manual; Adjust needle valve(s) to the desired flow.



## 17 SPARE PARTS LIST

Wear, tear and replacement part requirements depend on specific operating conditions.

The recommended quantities are based on experience and are not binding.

For spare parts of components which are not presented in the following list please see the specific instruction manuals or leaflets added in the appendix.

<b>Portable Sampling System Versions PSS-5, PSS-5/3</b>					
<b>(C) consumable parts, (R) recommended spare parts, (S) spare parts</b>					
		C/R/S	recommended quantity PSS-5 and PSS-5/3 being in operation [years]		
			1	2	3
<b>Fine filter FP-2T: Ø (see Fig. 2)</b>					
90F0002	Filter element <b>F-2T</b> , PTFE, 2 µm	C	6	12	20
90F0040	Viton® O-ring, 26 for FP-	R	1	1	1
90F0056	PVDF filter element clamp <b>F-P</b>	S	-	-	1
90F0012	Filter body <b>F-120G</b> of glass	R	1	1	1
<b>Fine filter FP-2T with Option LA1S:</b>					
90F0015	Filter body <b>F-120G-D</b> of glass with GL25 condensate connection thread	R	1	1	1
90F0020	Union nut GL 25	R	1	1	1
90F0025	PTFE sealing ring GL 25 – 12 mm Ø	R	1	1	1
<b>Peristaltic pump SR25.2-W:</b>					
90P1007	SR25 pump hose with PVDF tube connectors DN 4/6 mm	C	1	2	4
<b>Diaphragm pump type N3 KPE/KP18; N5 KPE/KP18</b>					
90P2100	Square cap type D3, 1/8" i for N3/N5 KPE/KP18 Material: PVDF	S	-	-	1
90P2120	Diaphragm type S3, for N3/N5 KPE/KP18, Material: Viton®, PTFE coated	C	1	2	3
90P2111	Valve reed type V3 with O-ring type O3, for N3-N5, 1 pc, material: Viton® (2 pieces required)	C	2	4	6
90P2105	Intermediate plate type Z3, for N3/N5 PE/KP18 Material: PVDF	S	-	-	1
<b>Diaphragm pump type N9 KPE/KP18</b>					
90P2200	Square cap type D9, 1/8"i for N9 KPE/KP18, Material: PVDF	S	-	-	1
90P2220	Diaphragm type S9, for N9 KPE/KP18, Material: Viton®, PTFE coated	C	1	2	3
90P2211	Valve plate with seal for N9 KPE, 1 pc., material: Viton®. (2 pcs./pump)	C	2	4	6
90P2205	Intermediate plate type Z9, for N9 KPE/KP18, Material: PVDF	S	-	-	1

## Portable Sampling System Versions PSS-5, PSS-5/3

(C) consumable parts, (R) recommended spare parts, (S) spare parts

			recommended quantity PSS-5 and PSS-5/3 being in operation [years]		
		C/R/S	1	2	3
<b>Option flowmeter FM40:</b>					
90A0015	Flowmeter glass for FM40 range <b>7-70 l/h</b> air	S	-	1	1
94F0010	Flowmeter glass for FM40 range <b>15-150 l/h</b> air	S	-	1	1
94F0015	Flowmeter glass for FM40 range <b>25-250 l/h</b> air	S	-	1	1
94F0020	Flowmeter glass for FM40 range <b>50-500 l/h</b> air	S	-	1	1
90A0018	Viton® O-ring (9) for flowmeter glass FM40	R	2	4	6
<b>Diverse:</b>					
90G0006	Pre-filter <b>PF 2</b> ® for condensate pump SR25.2-W	C	5	10	15
90K6030	Fine fuse 4 A T, 5 x 20 mm for <b>PSS-5, PSS-5/3</b>	R	5	5	5
90G0020	Fine fuse 10 A T, 5 x 20 mm for <b>PSS-5, PSS-5/3</b> with option temp. controller and heated sample line	R	5	5	5
<b>Hose and hose fittings:</b>					
05V3230	Bulkhead union SV-PP DN 4/6 <b>PSS-5 standard PPH = Polypropylene</b>	R	2	2	2
05V3215	Bulkhead union SV-PVDF DN 4/6 <b>PSS-5 optional PVDF = Polyvinylidenfluoride</b>	R	2	2	2
05V6500	Sealing ring 4/6 PP <b>see above</b>	R	5	10	10
05V6600	Sealing ring 4/6 PVDF <b>see above</b>	R	5	10	10
05V6505	Union nut M10-4/6 PP <b>see above</b>	R	5	10	10
05V6605	Union nut M10-4/6 PVDF <b>see above</b>	R	5	10	10
01T4000	Hose PVC DN 4/6 (meters)	S	3	6	9
01T1000	Hose Viton® DN 4/6 (meters)	S	1	2	3
01T2000	Hose Novoprene® DN 3,2/6,4 (per meter)	S	1	2	3
02B1000	Hose PTFE DN 4/6 (per meter)	S	1	2	3
10T1000	Hose cutter	S	1	1	1



## 18 APPENDIX

- Circuit diagram **PSS-5** and **PSS-5/3**



More product documentation is available in our Internet catalogue:

[www.mc-techgroup.com](http://www.mc-techgroup.com)

- Instruction manual electric gas cooler **ECP 1000, ECP 3000**
- Data sheet: Universal-Filters **FP, FT, FS, FSS**  
Document: **7.1**
- Instruction manual diaphragm pump **Series N**
- Instruction manual peristaltic pump **SR25.2-W**
- Data sheet: Liquid alarm sensor **LA1S** and electronic controller type **LA1.4**  
Document: **8.1**
- Data sheet: Flow meter **FM40**  
Document: **9.2**
- Data sheet: Ball valves **L/PV-1**  
Document: **11.1**
- Data sheet: Temperature controller **701 (eTRON T100)**  
Document: **4.2**

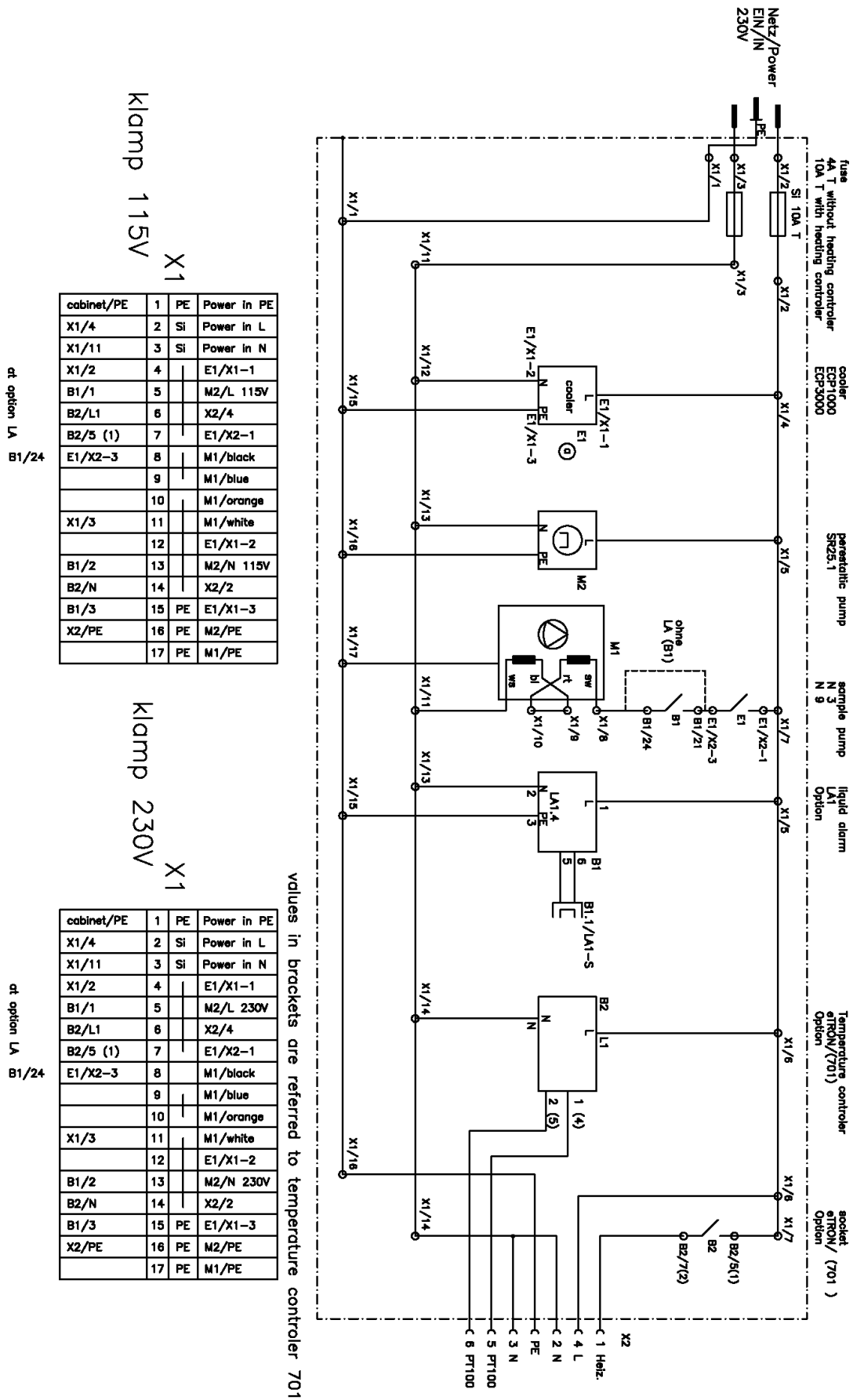


Figure 6 Circuit diagram PSS-5 and PSS-5/3, 115 V and 230 V