seitron
Innovation Technology

USE AND MAINTENANCE

AACE01

External Cooler

INDEX

1.0 IMPORTANT INFORMATION

1.1 Information about this manual

- This manual describes the operation, the features and maintenance of the external Cooler AACE01.
- Read this maintenance and operation manual before using the device.
  The operator must be familiar with the manual and follow its instructions carefully.
- This user and maintenance manual is subject to change as a result of technical improvements - the manufacturer assumes no responsibility for any errors in content or printing.

1.2 Safety warnings

WARNING - INJURIES HAZARD

To avoid the risk of fire or electric shock, connect the power cable to an electrical outlet with grounding and with the appropriate specifications, located near the appliance and easily accessible.

WARNING - INJURIES HAZARD

To avoid the risk of fire or electric shock, use only the power cables supplied with the product or replacement components authorized by the manufacturer.

WARNING

Do not install the device outdoors. The device is designed for indoor use.

2.0 SAFETY

2.1 Safety check

- Use the product as described in the chapter “Permitted use of the product”.
- When using the device, comply with the applicable safety regulations.
- Do not use the device if damaged on the case, power supply or cables.
- Do not perform measurements on non-insulated voltage components/conductors.
- Keep the device away from solvents.
- For the maintenance of the device strictly follow the provisions described in this manual in the "Maintenance" section.
- All interventions not specified in this manual can only be performed by Seitron service centers.
- If this latest point is not complied with, Seitron declines all responsibility for the normal operation of the device and the validity of the relevant approvals.

2.2 Permitted use of the product

This chapter describes the areas of application for which the AACE01 is intended to be used.
AACE01 is a portable device which is not suitable for unsupervised continuous operation.
This device is compatible with the portable Seitron analyzer for emission analysis.

2.3 Unauthorised use of the product

The use of the AACE01 external cooler in areas of application other than those mentioned in Chapter 2.1 "Permitted use of the product" is considered to be at the operator’s risk and the manufacturer assumes no responsibility for the loss, damage or costs that could result.
It is mandatory to read and pay attention to the instructions in this Owner’s Manual.

The AACE01 device must not employed:
- in ATEX classified areas.

3.0 PRODUCT DESCRIPTION

3.1 Operation

The Peltier cell condensation group (Cooler) has the function of cooling the gas sample very quickly to a temperature of 5 ° C. The gas condenses the water vapor contained in it and can reach the sensors without significant changes in its composition.
This system is particularly useful when water-soluble components are to be analyzed (e.g. SO_2, NO_2, NH_3, H_2S, etc.).
Under extreme ambient temperature conditions (+45°C) it is possible that the cooler internal temperature is not maintained at +5°C but it can tend to shift up to +10°C.
This internal temperature is however sufficient to obtain the drying of the gas; in these conditions it is possible to lose 10% of the drying efficiency.
For automatic emptying of condensation water, a peristaltic pump is used which is controlled directly by the microprocessor at alternating on/off intervals to preserve the durability of the neoprene tube, an essential part of the pump itself.
The duration of the switch on interval is 30 seconds, while the duration of the shutdown interval is 600 seconds and cannot be changed by the operator.
The tube has an average duration of about 500 hours of continuous operation. To ensure the smooth operation of the entire system, the rotor of the peristaltic pump (containing the neoprene tube) must be replaced at least every two years.

3.2 Preliminary operations

Remove the product from the packaging used for shipment and proceed to a first inspection of the device.
Verify the correspondence of the content with what ordered. If you notice tampering or damaging signs, immediately report the fact to the SEITRON Service Center or its agent, keeping the original packaging.
On the product label there is the serial number of the external cooler.
It is recommended to provide this number for any request for technical assistance, spare parts or technical information.
Seitron maintains updated at its headquarters an archive with the log of the data of each device.

3.3 Warranty

In the view of a constant development of their products, the manufacturer reserves the right for changing technical data and features without prior notice.
The consumer is guaranteed against any lack of conformity according to the European Directive 1999/44/EC as well as to the manufacturer's document about the warranty policy.
The full text of warranty is available on request from the seller.

4.0 TECHNICAL FEATURES

4.1 technical features

Power supply:	110-240 Vac or 12-16Vdc 5A
Power absorption:	< 50 W
Drying gas method:	water is condensed by rapidly cooling down the gas using a cyclonic system (vortex)
Method of condensate separation:	Peltier unit
Set point temperature:	+5°C
Temperatura di Isteresi:	±2°C
autom. condensate drain :	peristaltic pump 38ml/min
Duration of peristaltic pump cycle:	30s on - 600s off
Cooling down time:	~ 15 .. 20 minutes
Working temperature:	-5°C to +45°C
Working flow:	up to 2,5 l/min
Volume exchange per hour:	120ml/h
Maximum temp. deviation from set point:	+5°C from set point

4.2 Green LED behavior

Slow blinking	System cool down phase
Still lit	System OK; the Cooler has reached the operating temperature of +5 °C
Fast blinking	Error in temperature measurement

4.3 Electrical connections

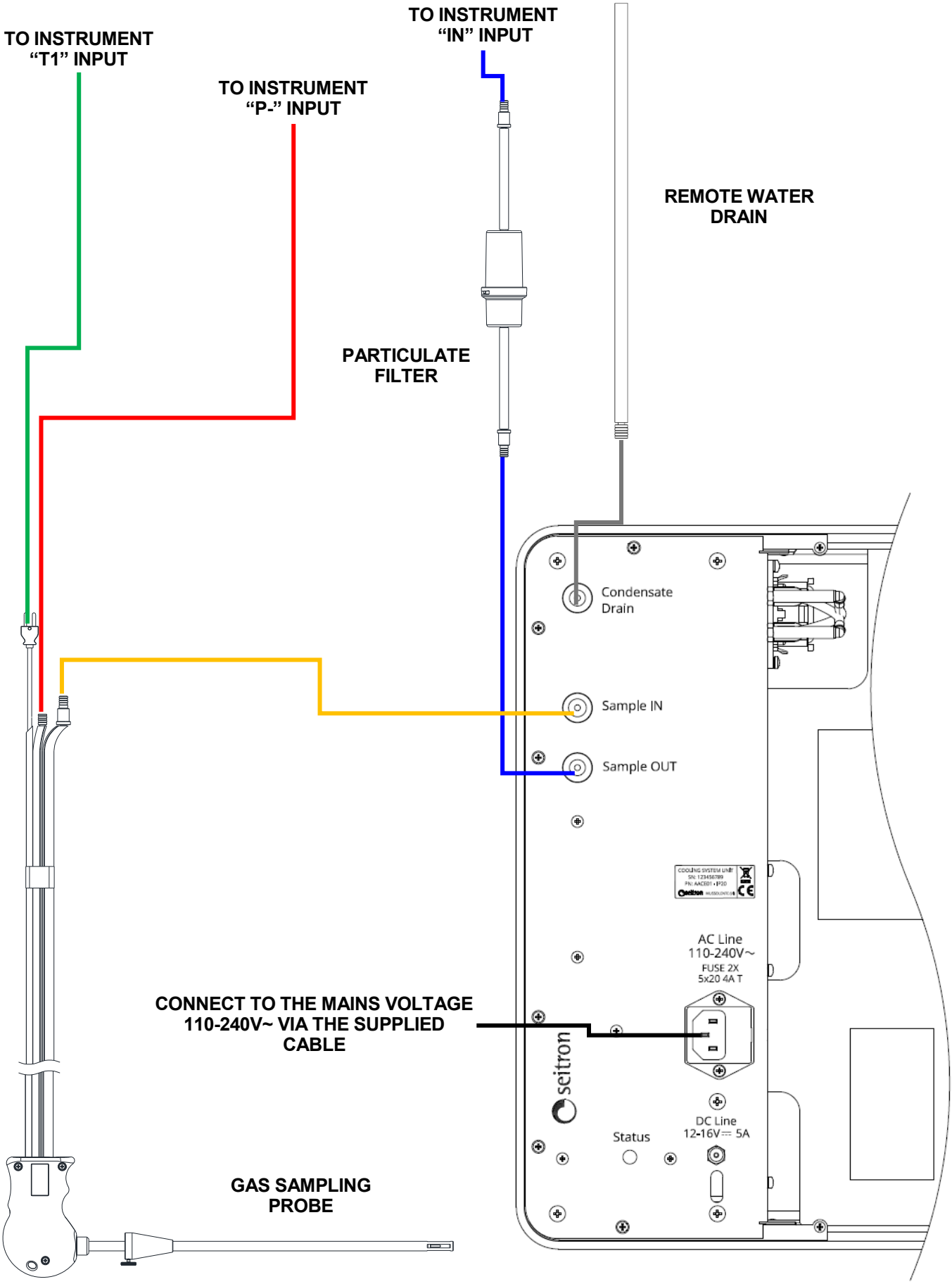
- Power plug at 110-240Vac through IEC 320 with fuse-holder socket containing 2 protection fuses size 5x20mm 4A retarded.
- Power plug at 12-16Vdc through DC connector 5,5 x 2,1, that allows to power the device in low voltage, also through a “car battery starter” at 12Vdc.

4.4 Pneumatic connections

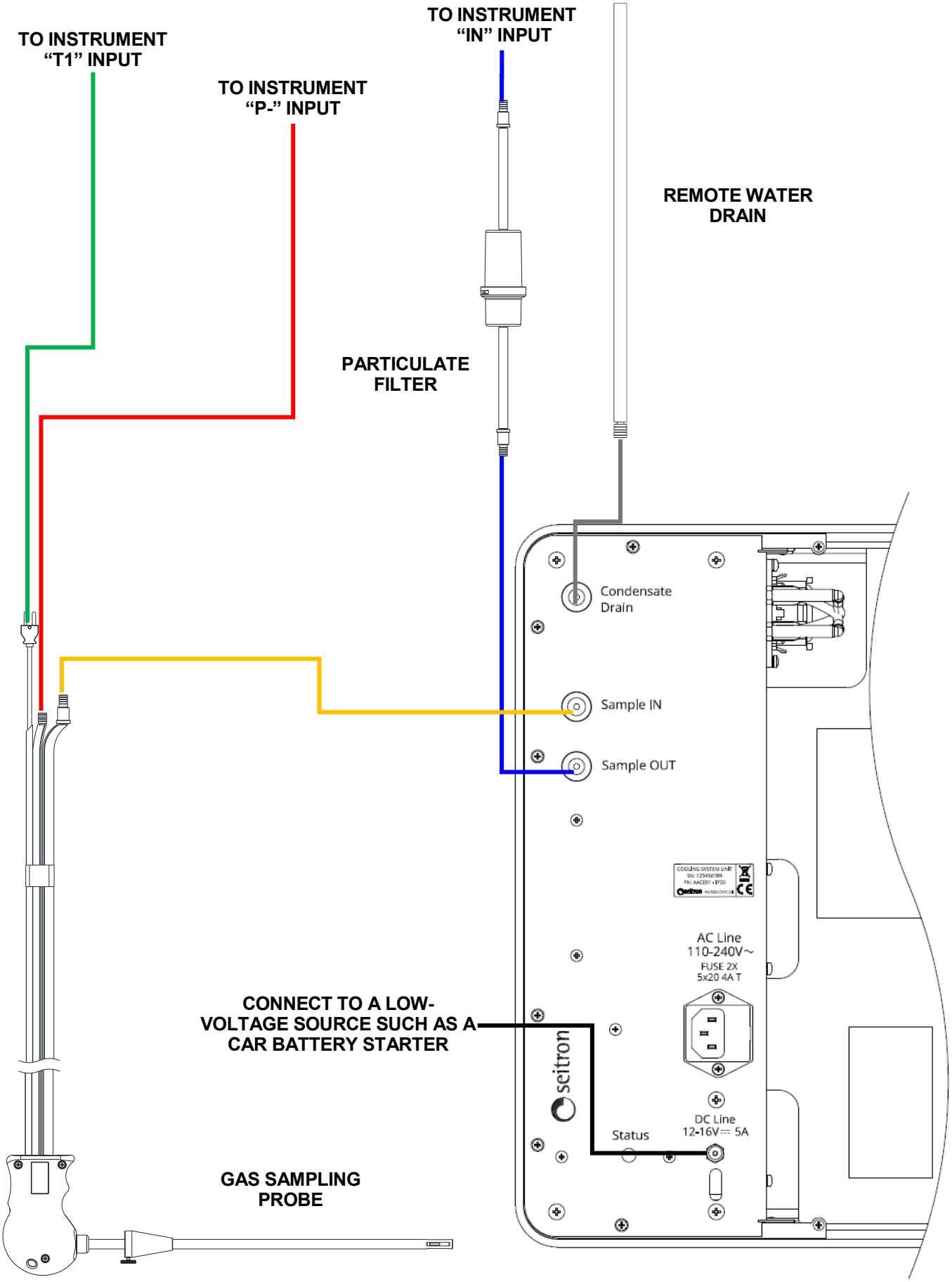
- Non-condensed gas inlet connector input
- Condensed gas output connector
- Water drain outlet connector

5.0 CONNECTION DIAGRAMS

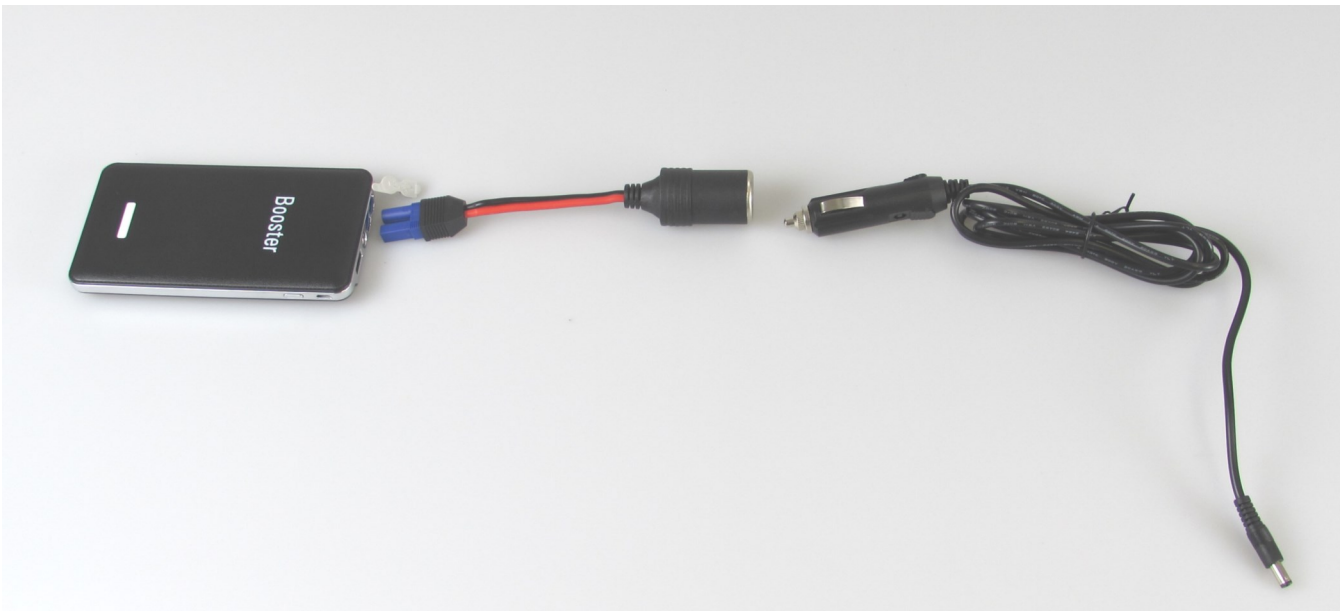
5.1 CONNECTION DIAGRAM USING THE EXTERNAL COOLER POWERED AT 110-240Vac

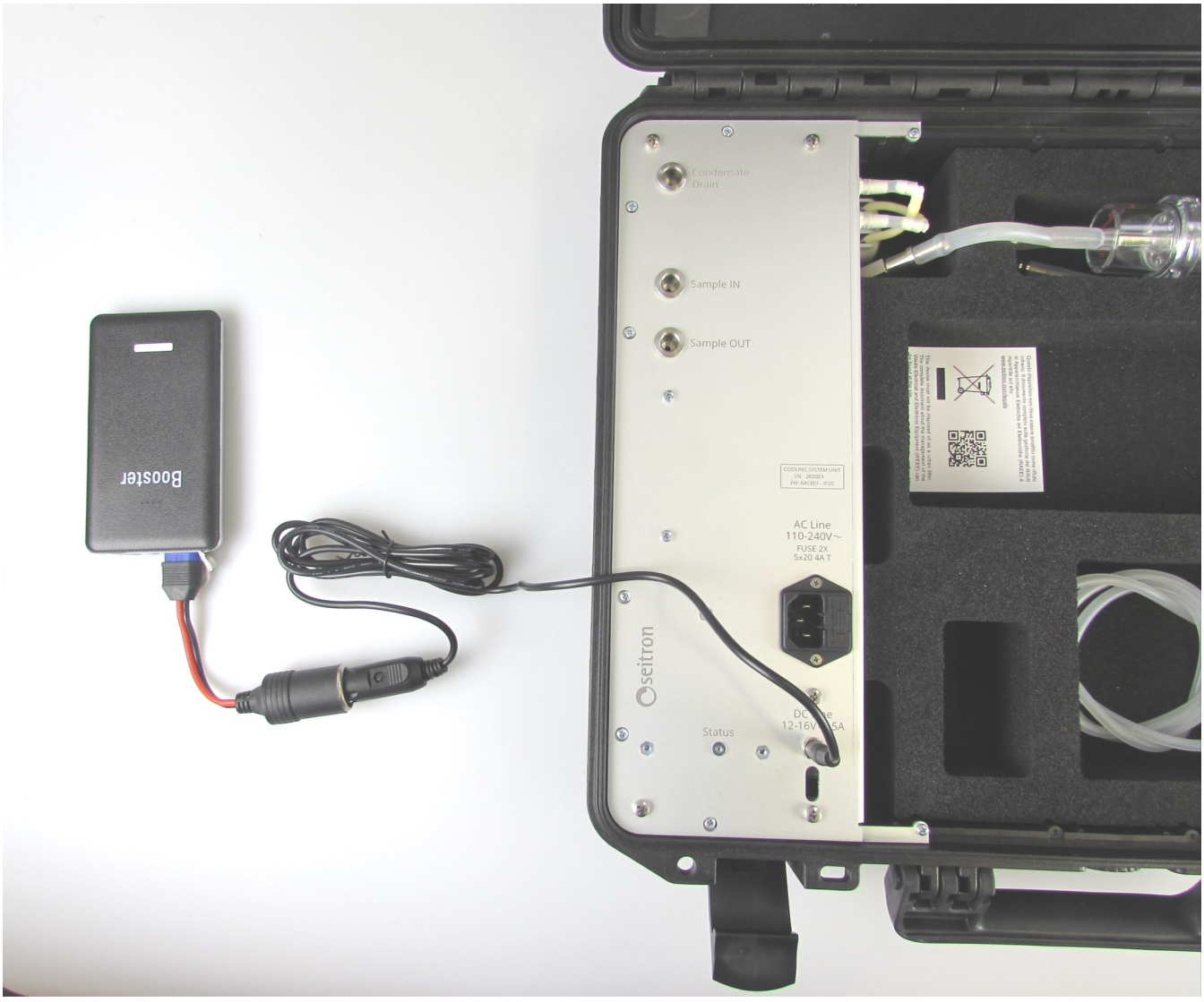


5.2 CONNECTION DIAGRAM USING THE EXTERNAL COOLER POWERED WITH LOW VOLTAGE 12-16Vdc

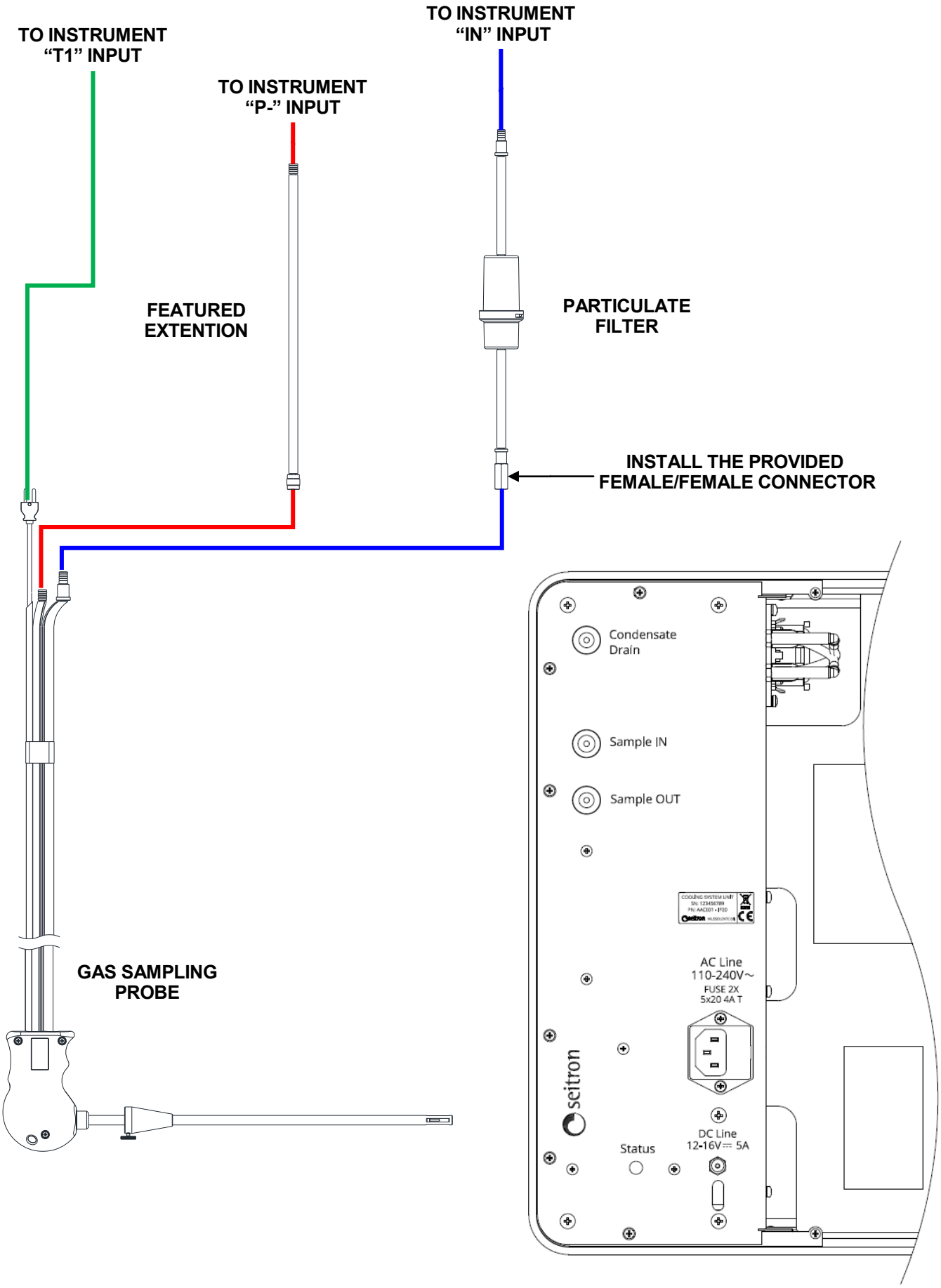


5.2.1 EXAMPLE OF CONNECTION TO A CAR BATTERY STARTER





5.3 CONNECTION DIAGRAM EXCLUDING THE EXTERNAL COOLER



6.0 OPERATION

In order to operate the entire system, proceed as follows:

1. Carry out the connections, as shown in chapter 5.0 CONNECTION DIAGRAMS.
2. Switch on the instrument.
3. In case the chosen diagram foresees the use of the external cooler:
   - Power the cooler with the supplied cable.

     Wait for the green LED on the front to stop flashing.
     Once the green LED is still lit it means that the Cooler reached the operative temperature of 5°C, effectively drying the gas.
     The condensate water produced is collected inside a tank that is emptied with using a peristaltic pump.
     After the gas has been dried, it passes through a particulate filter which eliminates the dust particles which are present inside the dry gas; the particulate filter is interchangeable and must be replaced when it changes its color from white (clean) to black (dirty).

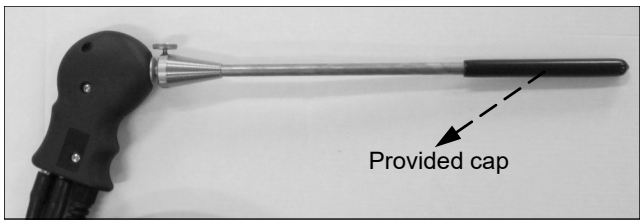
7.0 MAINTENANCE

7.1 TIGHTNESS TEST OF THE ENTIRE COOLER SYSTEM

In order to verify the tightness of the whole Cooler system (Cooler=>Smoke sampling probe=>condensation trap), aiming to exclude pressure leaks because of some damaged or broken parts, do as follows:

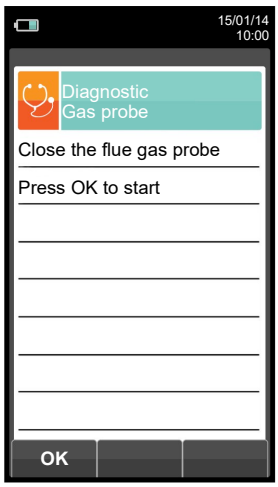
1. Run all connections mentioned in the chapters "**5.1 and 5.2 CONNECTION DIAGRAM USING THE EXTERNAL COOLER "**.

2. Fully insert the black cap into the tip of the supplied smoke sampling probe, as shown below.



3. Power on the external Cooler.

4. Power on the analyzer and access the menu "Configuration → Diagnostic → Smoke probe".



5. Start with the smoke probe tightness test, which in this case is considered as the tightness test for the whole Cooler system.
   For more details see the complete instruction manual of the combustion analyzer.

6. **At the end of the leakage test, the analyzer shall display the test result:**
   Tight: The whole system is tight.
   Error: Check the pneumatic connections, the peristaltic pump tube, the tightness O-ring on the junctions, the O-ring on the filter holder and in general all the connections that are between the rubber on the tip of the probe and the input of the analyzer.

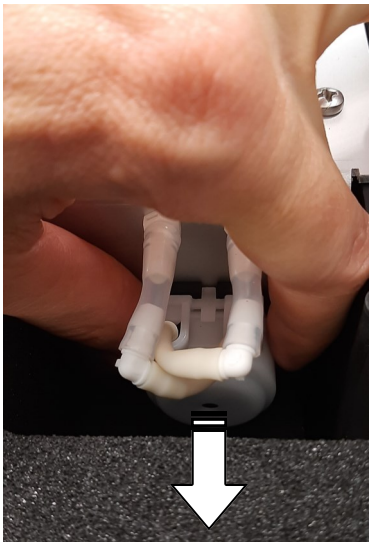
7.2 PERISTALTIC PUMP ROTOR REPLACEMENT

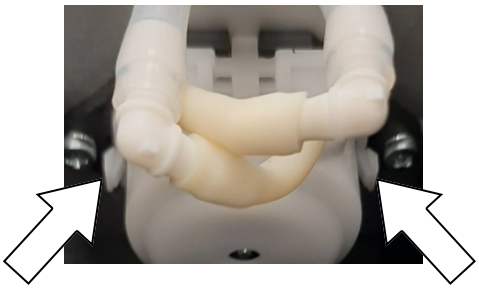
For the replacement of the peristaltic pump rotor, proceed as follows

1. Switch off the instrument and disconnect the power cable from the instrument connector.

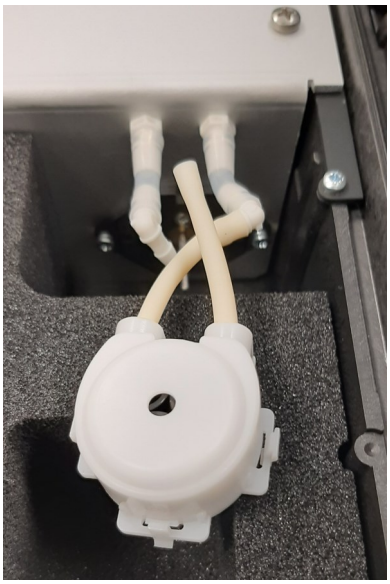
2. Locate the rotor of the peristaltic pump.

3. Pull out the rotor of the peristaltic pump, holding inward the two plastic fins indicated by the arrows and at the same time, extract the rotor.





4. Remove both tubes from the elbow fittings.

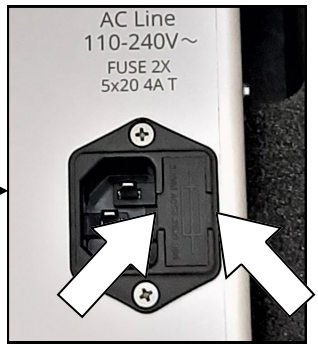


5. Pulled out the old rotor, replace it with a new one doing reverse operations up to here described, paying attention to the correct insertion of the tubes that must be crossed.

7.3 FUSES REPLACEMENT

If it is necessary to replace the fuses of the instrument, proceed as follows.
For technical specifications of fuses, see Chapter “2.0 Technical features”.

1. Switch off the instrument and disconnect the power cable from the instrument connector. Locate the fuse holder drawer and pull it out.

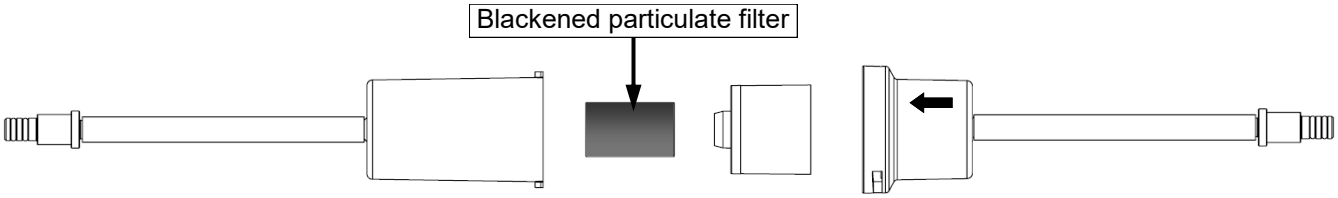


2. Pull out the fuses, with the help of a screwdriver, taking care not to damage the fuse holder drawer and/or the fuses.

7.4 MAINTENANCE OF THE PARTICULATE TRAP / FILTER ASSEMBLY

REPLACE THE PARTICULATE FILTER IF IT IS VISIBLY DIRTY OR HUMID.
DO NOT PERFORM MEASURES WITHOUT THE FILTER OR WITH A DIRTY FILTER IN ORDER TO AVOID IRREVERSIBLE DAMAGES TO THE SENSORS.

Replacing the particulate filter
In case the particulate filter is blackened, especially on the outside surface, it becomes necessary the immediate replacement. So, in this way, any obstruction to the gas flow is avoided.



To remove the water trap, just rotate the cover and unhook the filter holder body; remove the internal cup and then replace the filter (see figure).
Clean all the filter parts using water only, dry the components and reassemble the filter.

8.0 SPARE PARTS AND TECH. ASSIST.

8.1 Spare parts

CODE	DESCRIPTION
WFUS5X20004R	5x20mm 4A delayed fuse
AACFA01	Particulate filter
WPOMR0001	Peristaltic pump rotor with neoprene tube (to be replaced once a year as precaution or if it is broken)
WRAC0007101	Female-female ø8mm junction
AATS01	Remote condensation drain tube.
AAEP01	Extension for pressure measurement (length 30cm)
AATA03B	Condensation water trap & particulate filter + dual metal connectors
AACTA03	Condensation water trap & particulate filter

8.2 Accessories

CODE	DESCRIPTION
AACCV01	Electric cable with a Schuko plug.
AACCV04	Cable with European plug.
AACCV06	Cable with US plug.
AASF31	180 mm. gas probe, with 3 m. cable. Working temperature: 400°C.
AASF32	300 mm. gas probe, with 3 m. cable. Working temperature: 600°C.
AASF35	750 mm. gas probe, with 3 m. cable. Working temperature: 800°C.
AASF36	1000 mm. gas probe, with 3 m. cable. Working temperature: 1200°C.
AASX03	750 mm probe for industrial motors, with 3 m. cable.
AACEX02S	3 m extension cable for gas sampling probe.
AASP01	Heat protective screen for gas sampling probe.

8.3 Service Centers

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