# Alpha Moisture Systems

## PSS - Portable Sample System

2529 - PSS User Manual
Issue 5.

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**Authorised Distributor Contact Information**

## Warranty

**Alpha Moisture Systems Ltd. (AMS)** warrants the products it manufactures, or distributes, to be free of defects in material and workmanship under normal use and service when operated within the specified design limitations for a period of 24 months from date of initial shipment.

Under this Warranty, AMS will, at its discretion, repair or replace any component that upon examination by AMS or its duly authorized representatives proves to be defective during the warranty period, provided the system is returned to the factory for inspection and repair shipping prepaid.

Improper or unauthorized maintenance, storage, repair, or alteration of any kind by personnel other than AMS, or its duly authorized representatives, may void all warranties. Warranty may also be voided for misuse, neglect, accident, corrosion, and improper installation.

This Warranty is exclusive and in lieu of any and all other warranties of merchantability, fitness for a particular purpose, or any other warranty, expressed or implied, and all other liabilities and obligations on the part of AMS. AMS will not be liable for any other claims or damages, either direct, indirect, or consequential arising out of the use of its products.

Original manuals are prepared in English. Translations in other languages may be available, but in the event of any discrepancy, the English version will be considered as the official version, which is subject to change without notice.

**NOTE:** The sensor should not be exposed to ammonia ($NH_3$), mercury (Hg), carbon monoxide (CO) or acid gases, such as chlorine (Cl) and hydrogen chloride (HCl), as they chemically attack the sensor and destroy it. Strong oxidising agents, such as ozone ($O_3$) should also be prevented from coming into contact with the sensor.

For more information please contact us below.

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# 1 Introduction

This User Manual is only for use with the instrument supplied. All information required for the safe and proper operational use of the instrument is contained here. Make sure you read and understand the information and instructions in this User Manual before using the instrument. Failure to operate the instrument as directed in this User Manual may:

- Expose personnel to risk of injury
- Cause damage to and/or impair the function of the instrument
- Invalidate the instrument warranty

## 1.1 Explanation of Prohibition, Warning and Note Symbols used

Local health and safety regulations should be observed as should the safety critical prohibitions, warnings and notes highlighted in this user manual.

| DO NOT | |
|---|---|
|  | **Prohibited actions or behaviours** |

| WARNING | |
|---|---|
|  | **Danger to personnel and / or damage to equipment** |

| NOTE | |
|---|---|
|  | **Additional information** |

## 1.2 Warranty

The PSS is supplied with a two-year warranty from the date of purchase.
This warranty is subject to the proper operational use of the instrument and following the information provided in this User Manual. The instrument should not be repaired without prior inspection or authorisation by Alpha Moisture Systems or an authorised distributor. Any unauthorised alteration or misuse may invalidate the instrument warranty.

| NOTE | |
|---|---|
|  | **Please retain the original equipment packaging so the PSS can be returned to Alpha Moisture Systems or your authorised distributor if required.** |

### 1.3 Instrument Description

The PSS Portable Sample System has been specifically designed to condition pressurised gas samples (>2900 psi max / 200 barg.
See specifications for details) for use with SADPmini2, SADPmini2-Ex, SADPmini and SADPmini-Ex dewpoint meters.

Although the PSS chassis is constructed from high quality 304 stainless steel, care should be taken when it is in transit and appropriate packaging used.
Do not drop or shock the instrument, especially when a dewpoint meter is installed to the PSS as damage to both units could occur.

### 1.4 General Arrangement

**Fig 1.** **PSS-R-F-Q** shown here for illustration purposes.


### 1.5 Dimentions

## 2 Quick Start Guide

Below is a general guide to get started, but first, ensure that the PSS is located on a flat, level, dry and non-slip safe surface, close to the sample point (gas source).
For faster results we recommend the sampling line to be as short as possible to reduce purging time. Please read this section carefully and understand it.

**2.1** Connect the SADPmini2 or SADPmini dewpoint meter to the PSS using the appropriate connecting tubes supplied, and ensure a gas tight seal on both sides of the instrument. **Fig 2**.

The user will need a 9/16" (or 14mm) open ended wrench size and a 5/8" (or 16mm) holding wrench to prevent rotation of the bulkhead fittings.

**Fig 2**.

Installing the SADPmini2 into the PSS

**Fig 3**.

Ensure the SADPmini2 head is down fully

The Head of the SADPmini2 must be in the down closed position at this stage. **Fig 3**.

**2.2** Ensure that (if fitted) the Pressure Regulator Valve is turned fully **anti-clockwise** and is fully closed. **Fig 4**. On next page.

If a Needle Valve is fitted, then ensure that this is fully closed by turning fully **clockwise**. **Fig 5**. On next page.

**2.2** Continued.

**Fig 4**.

Pressure Regulator fully closed **anti-clockwise**

**Fig 5**.

Needle Valve fully closed **clockwise**

**2.3** Before connecting a sample line to the Isolation valve at the gas source, first check that the gas to be sampled is free from excessive moisture and/or particle contaminants by placing a white filter paper (or similar) approximately 1 cm from the outlet and very slowly and carefully opening the Isolation Valve to achieve a steady flow of gas/air onto the white filter paper for approximately 1 minute. **See Fig 6.**

**Fig 6**.


Isolation Valve Test

| NOTE | |
|---|---|
|  | Sample Point Isolation Valves, as pictured in **Fig 7**. are <u>not</u> supplied with the PSS - Please contact your local distributor on how to order. |

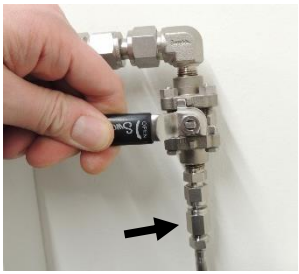
If contaminants are seen on the white filter paper, a filter unit must be installed at the Isolation Valve outlet and before the sample hose.

When the filter unit is fitted, repeat the above procedure with the white filter cloth.

**For Technical Help Contact Alpha Moisture Systems.**

**2.4** If no contaminants are seen on the white filter paper, close the isolation valve and connect the sample line to the Isolation Valve and ensure a gas tight seal. **Fig. 7**.

**Fig 7**.



Isolation Valve fully closed and connected to Sample Line

**2.5** Connect the other end to the PSS (depending on the type of fitting used) and ensure a gas tight seal. **Fig. 8 and 9**.

**Fig 8**.

Sample Line to Inlet Connection

**Fig 9**.


Quick connect shown

## 3. PURGING the instrument before taking a sample:

Ensure all pipework is connected and leak tight. The head is down on the SADPmini2.

Very slowly and carefully open the Isolation Valve at the gas source.
See **Fig 10** on next page.

## 3. Continued.

**Fig 10**.

Partly open the Isolation Valve

**3.1 <u>Carefully open the Pressure Regulator Valve</u>** by turning **<u>clockwise</u>**

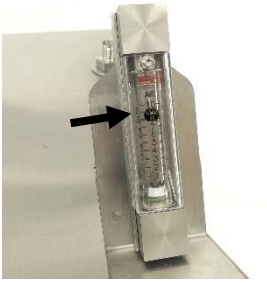
**Fig 11** until a flow of 8 to 9 litres per minute can be seen on the flow indicator. **Fig 12**.

or, if a needle valve is fitted, carefully open by turning this **<u>anti-clockwise</u>**. **Fig 13**. until a flow of 8 to 9 litres per minute can be seen on the flow indicator. **Fig 12**.

**Fig 11**.

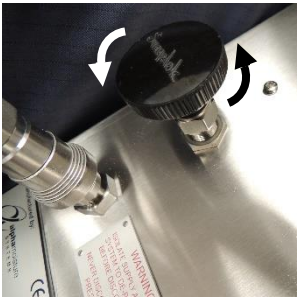
Open Pressure Regulator Slowly Clockwise

**Fig 12**.



Flow Indicator showing 8-9 Litres/Minute flow rate

**Fig 13**.



Open Needle Valve Slowly Anti-Clockwise

**3.2** Now turn on the SADPmini2 (/Ex). **Fig 14**. and ensure that the display indicates that the measuring sensor is dry. (Typically < -70°C dewpoint).

If not, refer to the instrument user manual.

**Fig 14**.


Press ON for 2 seconds

**3.3** <u>After purging for a minimum of 2 minutes</u>, place a finger over the VENT on the Flow Indicator until the desiccant head on the instrument is fully raised as shown in **Fig 15**.

**Fig 15**.


Place finger over VENT tube
to raise the desiccant head and expose
the sensor to the gas

**Fig 16**.

**Do Not Pull Head Up**

| **WARNING** | |
|---|---|
| ⚠ ✗ | Pulling up the head will draw moisture from ambient air in the work place into the head chamber where the sensor is exposed, this will result in a contaminated sample and give a false measurement. **Fig 16.** The sample flow must always flow in one direction from the gas source and pass the sensor in the head for an accurate result. |

**3.4** When the desiccant head is fully extended and the sensor exposed to the sample gas, the displayed moisture reading should rise to that of the sample gas.

Take a reading when the dewpoint value on the screen has settled and is stable. **Fig 17.**

**Fig 17**.


Take reading when settled

**3.5** After a reading has been taken and sampling is complete, push the desiccant head down slowly and carefully to isolate the sensor **Fig 18** and turn off the instrument. **Fig 19.**

**Fig 18**.


Push Head Down Slowly

**Fig 19**.


Press Home Key for 2 Seconds
to turn off instrument

## 4. DISCONNECTION - FOLLOW THIS PROCEDURE EXACTLY

| DO NOT | |
|---|---|
| ⚠ | **Do not disconnect any connections whilst the Isolation Valve at the gas/air source is still open. Doing so could cause serious injury to the operator and persons near by.** |

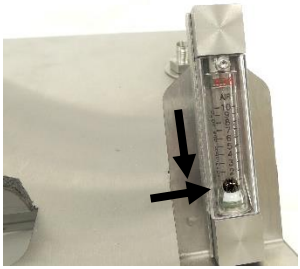
| DO NOT | |
|---|---|
| ⚠ | Do not turn off the Pressure Regulator or Needle Valve at this stage.<br>Doing so will retain pressure in the sample line. |

**4.1** First, **TURN OFF the Isolation Valve fully** and allow the system to fully de-pressurise. **Fig 20.**

**Fig 20**.

**Fully Closed – SHUT OFF**

**Fig 21**.



**BALL - ZERO FLOW**

**4.2** When the BALL in the flow indicator has fallen to "**0**" (ZERO litres per minute) as shown in **Fig 21** above, it is now safe to disconnect the sample line from the PSS and the Isolation Valve.

**4.3** Turn OFF the Pressure Regulator or Needle Valve.

**See section 2.2 on Page 8-9, Fig 4** and **Fig 5**.

## 5 Filter Replacement (If fitted)

| WARNING | |
|---|---|
| ⚠ | Before disassembling the filter unit (if fitted), the user must follow the de-pressurisation procedure. **See section 4 on page 14**. |

**5.1** Using a 3/4 (19mm) wrench, carefully untighten the filter housing **anti-clockwise Fig 22** to gain access to the filter cartridge. Unscrew the filter cartridge retaining cap and replace the filter as necessary.

Re-assembly is the reverse of the dis-assembly procedure. Tighten lightly only.

**Fig 22**.

Unscrew anti-clockwise

## 6 Sampling very dry gasses and/or at very low pressure

For very dry gases and/or very low pressure, use the “Pig-Tail” VENT tube to stop back diffusion and contaminating the sample head/sensor. **Fig 23. Part No. PPE417**.

**Fig 23**.


‘Pig-Tail’ Optional Extra

## 7 Cleaning the PSS

The PSS instrument must only be cleaned with a soft cloth dampened with mild soapy water only.

| DO NOT | |
|---|---|
|  | Do not use solvents, silicones or abrasives to clean the system. |

## 8 Gases to Avoid

Most gases can be moisture tested with no calibration necessary between sampling different gases. However, due to their corrosive or other properties not all gases are compatible with this instrument. The table below details the gases that should be avoided. If in doubt contact your authorised distributor.

| Gas and Chemical Symbol | Sample Suitability |
|---|---|
| Ammonia ($NH_3$) | Not Permitted |
| Mercury (Hg) | Not Permitted |
| Ozone ($O_3$) | Not Permitted |
| Chlorine ($Cl_2$) | Not Permitted |
| Hydrogn Chloride (HCl) | Not Permitted |
| Sulphur Dioxide ($SO_2$) | Permitted when moisture content is less than 100ppm(v) |

## 9 Specifications

**Chassis:**
Powder coated 304 stainless steel
**Internal Pipework:**
316 stainless steel
**Internal Fittings:**
316 stainless steel
**Quick Connection (inlet) Swagelok®:**
maximum connected pressure 2900PSI (200barg)
maximum un-connected (uncoupled) pressure 250PSI (17barg)
**Flow Indicator:**
0 - 20 litres

## 9 Specifications continued

**Carrying Bag:**
Antistatic PVC foam faux leather with rubber feet.
**Filter Unit (when fitted):**
High grade stainless steel with removeable housing for access to replaceable filter cartridges.
**Pressure Regulator (where applicable):**
High grade stainless steel. Pressure range 0-3045PSI (210barg).
**Needle Valve (where applicable):**
316 High grade stainless steel. Pressure range 0 -4989PSI (344barg).