alphamoisture SYSTEMS

SF6-Analyzer GCTU-PDT-PTY-SO2
Gas Collection and Transfer Unit - with Pump-Back & Vacuum. AC Operated.

User Manual

English

Safety Information

The **SF6 Analyzer GCTU-PDT-PTY-SO2** is designed to be connected to AC/Mains electric voltages (110V).

The SF6 Analyzer GCTU-PDT-PTY-SO2 must be earthed.

Check to establish that all wiring and connections are not damaged. If damage is observed to any electrical wiring or damage to the apparatus they must not be connected to the AC/mains supply but returned to the supplier for rectification.

Warnings

Risk of electric shock - Do not open any part of the **SF6 Analyzer GCTU-PDT-PTY-SO2** or any electrical apparatus whilst connected to the AC/mains supply.

Ignoring this safety information could result in severe personal injury and/or mechanical damage to the **SF6 Analyzer GCTU-PDT-PTY-SO2**.

Do not connect the **SF6 Analyzer GCTU-PDT-PTY-SO2** or any electrical apparatus to the AC/mains supply until they are in their permanent positions ready for sampling.

The product specifications must not be exceeded at anytime as this may cause damage to the instrument or cause risk of damage or fire.

Do not connect the **SF6 Analyzer GCTU-PDT-PTY-SO2** to any other device that is not recommended in this manual. If in any doubt - contact **Delta Instrument LLC Tel: NJ 201-768-7200**

Ensure that the **SF6 Analyzer GCTU-PDT-PTY-SO2** does not come into direct contact with water or any other fluids or liquids. Avoid direct sunlight.

To avoid the risk of electric shock, risk of damage or fire, these safety instructions and guidelines must be followed. Only qualified personnel/technicians should install this instrument to the AC/mains supply and ensure it is safe before use.

Safe Isolation

Switch off at the AC/mains socket and remove the plugs before any maintenance is carried out by a qualified person. Always test components with an approved voltage meter before handling to ensure it is completely dead.

SF6-Analyzer GCTU-PDT-PTY-SO2
Gas Collection and Transfer Unit - with Pump-Back & Vacuum. AC Operated.

Document Reference:
2413 - Issue 2

18/04/2018

User Manual

This is a step by step instruction manual to help you successfully set up and operate the **SF6 Analyzer GCTU-PDT-PTY-SO2** correctly before use.

This manual should be kept with the **SF6 Analyzer GCTU-PDT-PTY-SO2** for future reference.

Please read this manual carefully from the start.

CAUTION: The SF6 Analyzer GCTU-PDT-PTY-SO2 is a fragile instrument and great care must be taken not to drop, impact or shock the instrument, doing so could severly damage the electronics and/or other components, particularly when transporting the unit.

Index

Introducing your new SF6 Analyzer GCTU-PDT-PTY-SO2

Thank you for purchasing the **Alpha Moisture Systems SF6 Analyzer GCTU-PDT-PTY-SO2.** We are sure that after using this instrument you will agree that the **SF6 Analyzer GCTU-PDT-PTY-SO2** is quick and easy to use.

The instrument has many functions and features specifically designed with the operator in mind to fully optimize the instrument to specific applications. The instrument is pre-factory set and calibrated to take standard measurements straight away.

The **SF6 Analyzer GCTU-PDT-PTY-SO2** has been developed to meet worldwide regulations on green house gas emissions, especially SF_6 and other flourine gases. These damaging gases have global warming potential (GWP) to the environment which is why your **SF6 Analyzer GCTU-PDT-PTY-SO2** has the most reliable quality components installed for safety and reliability.

The whole purpose of this popular **SF6 Analyzer GCTU-PDT-PTY-SO2** instrument, is to allow the user to accurately and quickly measure moisture content (dewpoint), purity and SO2 levels in SF6, and **return** the entire SF6 sample back to source, quickly and secularly with zero effect to the installation, and without releasing the gas to atmosphere. This is achieved by a very simple procedure, and with the help of the internal pump-back system integrated within the **SF6 Analyzer GCTU-PDT-PTY-SO2**.

As we work hard to maintain and increase our excellent global reputation for Quality and Customer Services through really listening to our customers, we would welcome any feedback or comments you may have, however small, at this address please: **info@amsystems.co.uk.**

Thank you once again for purchasing the **SF6 Analyzer GCTU-PDT-PTY-SO2**.

Best Regards

The Alpha Moisture Systems Team

Protect the Environment - Never release SF6 to atmosphere.

Functions and Features - SF6 Analyzer - GCTU-PDT-PTY-SO2

High Quality Dewpoint Transmitter:
- Model PDT 4-20mA transmitter.
- Measuring Range: -76 to +68°F (-60 to +20°C) Dewpoint.
- Accuracy: ± 3.6°F (2°C) Dewpoint.
- Fast Response.
- Calibrated to International Standards

SF6 Purity Analyzer (%):
- Sensor Type: NDIR.
- Range: 0 - 100%.
- Accuracy: ± 0.5%.
- Displayed: Color Touch Screen LCD.
- Factory alarm pre-set for **MV** and **HV** installations.

SO2 Sensor Analyzer (ppmv):
- Sensor Type: Electrochemical Gas Sensor 4-20mA.
- Range: 0 - 100ppmv.

Connections, Pressure and Flow:
- Swagelok® QC4 male self-sealing process connectors, (maximum process pressure 12 barg),
- Process pressure indicator, sample flow regulator (sample flow controllable between 0.1 and 0.9 l/min),
- Sample flow indicator.
- Auto sample shut off when collection vessel is full.
- Vent for Vacuum.

Transfer (Pump-Back) and Vacuum System:
- Quality hard wearing oil-less discharge pump. No oil residue emissions. (Maximum discharge pressure 175 p.s.i.g. (12 BARG)

Power supply:
- AC input: 110 VAC - 50/60Hz.

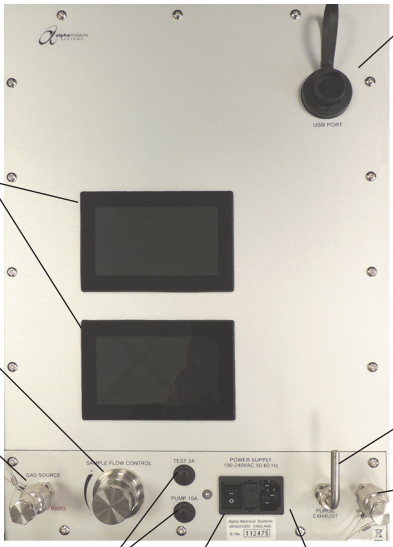
Accessories included:
- 2 metres of quality PTFE lined stainless steel braided connection hose with ¼" Swagelok self sealing quick mating connector.
- USB to USB cable for logging download.
- PC/Laptop logging software.
- AC/Mains cable.

Dimensions:
- 24.6" x 19.7" x 11.6" (625 x 500 x 297mm)

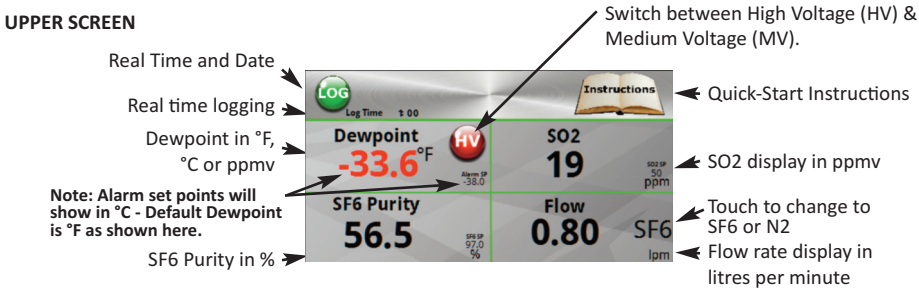
Weight:
- 49.5lb (22-5kg)

Features – Transportation Case
- Robust and toughest protective case in the industry.
- Fully integrated protection system.
- Quality easy press/pull latches and easy open hinge.
- Hard wearing, comfortable and soft non-slip grip handles side and top.
- Waterproof with full foam lid seal – IP rating 67.
- Tough high quality urethane wheels.
- Pressure vents for air transportation.
- Retractable soft non-slip grip pull along handle (as pictured).

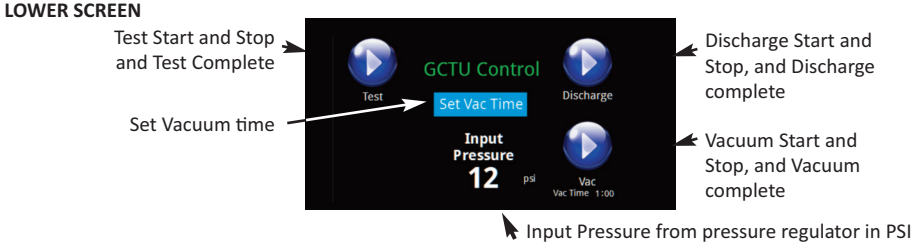
The SF6 Analyzer GCTU-PDT-PTY-SO2 Control Panel



UPPER SCREEN



LOWER SCREEN



Quick Start Guide

Ensure that the GCTU-PDT-PTY-SO2 is situated on a flat, level and secure surface before connecting up. Locate the nearest AC/mains power point.

NOTE: If purging with other dry gases, such as nitrogen, prior to SF6 sampling - follow the same steps below.

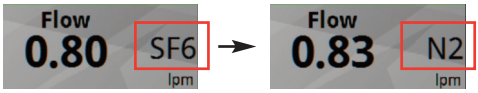
1. Connect the GCTU-PDT-PTY-SO2 to the AC/Mains and switch on.
2. Ensure that the Sample Flow Control Valve is turned off (**Fully Counter-Clockwise**).
3. With a sealed connection/fitting already attached to the end of the sample line, to be connected later to the installation after the Vacuum procedure is completed, connect the other end of the sample line (with the Swagelok® fitting) to the Vacuum Inlet on the GCTU-PDT-PTY-SO2 and press Vac (Vacuum) on the touch screen display. **Do not connect the sample line to the installation at this stage.**

Note: The GCTU-PDT-PTY-SO2 is pre-factory set to vacuum for 1 minute. Press Vac Time prior to Vacuum to increase/decrease the Vac time using the **+** or **–** buttons, then press save to load the new time value.

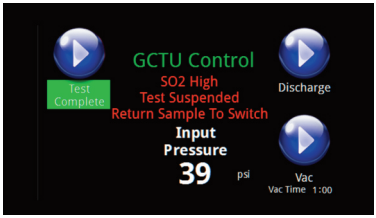
4. After the Vac is completed, disconnect from the Vac connection inlet and connect to the the SF6 Inlet Fast Connect (Gas Source). Connect to the installation under test (Switchgear for example), ensure gas tight ready for sampling.

5. Select "Test" on the lower screen and slowly open the Sample Flow Control Valve (**Clockwise**) until the flow reaches 0.8 Litres per minute (lpm).

Ensure the flow states SF6. If purging with nitrogen press the flow reading to change the flow to N2.



Note: The SO2 test will automatically run first for 1 minute, if successful, the rest of the test will then continue. If unsuccessful, a message will be seen on the lower screen, a Discharge (Pump- Back) will need to be performed before a re-test, this will reset the GCTU-PDT-PTY-SO2.

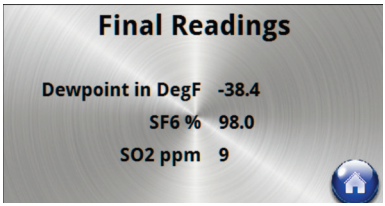


Quick Start Guide - Continued

6. Allow the display to stabilize before taking readings.
7. Press the “LOG” button (upper screen) to record 1 minute blocks of readings (optional).

After Sampling Procedure

1. When final readings have been obtained and “Stop” is selected, or when the internal vessel is full, the final readings will be displayed. Select “Discharge” in the lower screen to return the sample.



2. When all sampling is complete, shut off the Sample Flow Control Valve by turning **Fully Counter-Clockwise** until light resistance is felt. Do not over tighten.

3. Power down the unit.
4. Isolate and disconnect the gas source first (Switchgear for example) before removing the gas source from the GCTU-PDT-PTY-SO2 connection. To unlock the Gas Source connector push down firmly on the collar carefully separate the two halves of the connector.
5. Disconnect the power at the AC/Mains Power point first, then at the GCTU-PDT-PTY-SO2.

General Information

The **SF6 Analyzer GCTU-PDT-PTY-SO2** is a **110V AC** operated unit. It is a fully self contained unit incorporating a Dewpoint Transmitter, SF6 Purity and SO2 analyzer, integral collection vessel (up to 15 litres capacity) and powerful pump (up to 175 p.s.i.g /12barg back pressure) for Vacuum and Pump-Back functions.

The **SF6 Analyzer GCTU-PDT-PTY-SO2** is supplied pre-factory set and calibrated, and is ready for immediate use. It has been specifically designed for ease of operation and is a stand aloan instrument.

Dewpoint Range of the SF6 Analyzer GCTU-PDT-PTY-SO2

- -76°F to +68°F Dewpoint (-60°C to +20°C Dewpoint)

Instrument Part Number Definition:

GCTU = Gas Collection and Transfer Unit
PDT = Polymer Dewpoint Transmitter
PTY = Purity Sensor (in %)
SO2 = Sulphur-Dioxide Sensor (in ppmv)

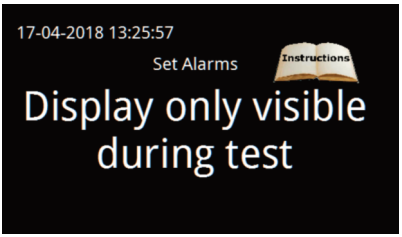
Logging

Logging is via USB/USB to PC or Laptop.
PC Software provided.

Control Display Screens - Navigation and Functions

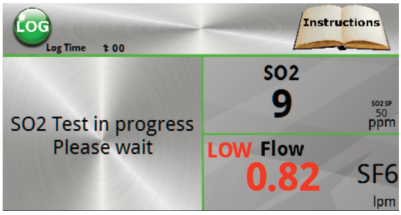
Below are displays of the screens and an explanation to each of their functions:

1.



1. This display in the Upper Screen is displayed when the GCTU is first turned on.

2.



2. When the Test button is pressed in the Lower Touch Screen, this display will appear in the Upper Screen showing date/time, and five touch screen buttons: LOG, Instructions, HV/MV - (change alarm pre-sets) for High/Medium Voltage Installations).
Dewpoint can be changed to °F, °C, ppm(v) or ppm(w), and flow can be set to SF6 or N2 if purging.

The user will see in real time the output from the sensors: dewpoint, SF6 purity, SO2 (if fitted), and flow.

Press **LOG** at any time after **all** readings have settled and are stable, this will now commence logging for 1 minute on the internal memory. **Tip**: Manually take note of the time/date and the installation under test to help when reviewing the data on a PC/Laptop.

To see the logged data on a PC/Laptop follow this procedure - Install the logging software that came with the GCTU onto a PC or Laptop with Windows XP® or above. Plug the USB cable into the USB port on the GCTU and plug also into the PC/Laptop where the software is installed.

Note: AC power to the GCTU is not needed as the software will power the screen on the GCTU via the USB from the PC/Laptop. Start the software on the PC/Laptop, all logged data can now be seen in 1 minute logged blocks.

Having taken note prior to logging of the time/date of the installation under test will help determine which logged block of data belongs to which installation if the user is making multiple installation tests. The logged data blocks can be saved as a CSV file onto the PC/Laptop hard drive.

To delete permanently the logged data in the GCTU fixed memory, please refer to the instructions for the software that came with the GCTU.

See next page on how to download logged data.

Control Display Screens - Navigation and Functions - Continued

Downloading Logged Data

To download logged data:-

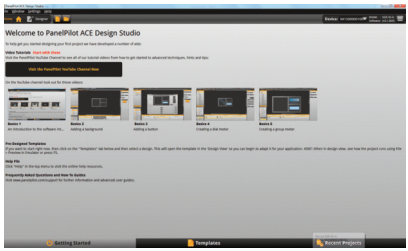
1 Open the Design Studio.

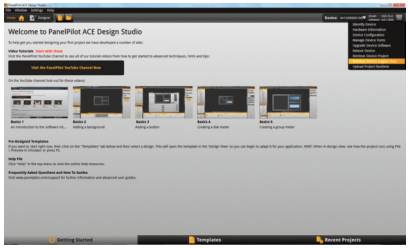
2 Connect the supplied USB lead to the unit.

3 When the computer recognises the unit use the top right menu button to see the drop down list.

4 Select “Retrieve Device Logged Data”

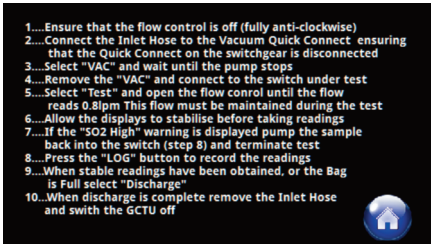
5 Follow the instructions, select the log file and download. You can chose to keep the data on the GCTU or clear it after download.
Open the saved file with “Word” and save as a .csv file. This can then be opened in “Excel” and manipulated as required. Please note that the “Project” cannot be uploaded from the GCTU via the Studio.





On-Board Manual

The on-board manual is a quick guide - It gives basic information to get started, and will display like this below. Press the blue Home button to return to the main display screen.



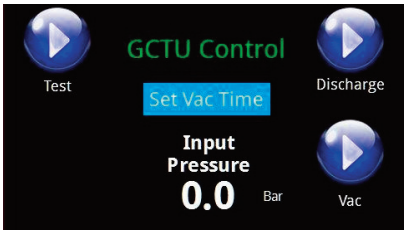
Control Display Screens - Navigation and Functions - Continued

This touch screen button allows the user to switch between **HV** or **MV**.

Note: Doing so will also change the pre-set alarm points. See also pre-set alarm points on **page 12**.

Note: Alarm set points must be in °C.

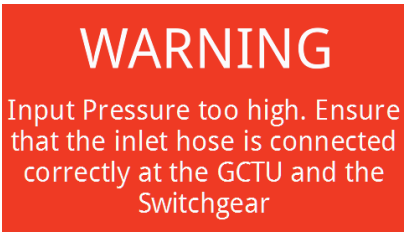
3.



3. After a short boot-up after switch on, this display will appear .

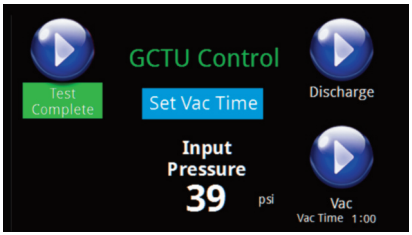
The user will control the Test Start/Stop, Discharge (Pump-Back) Start/Stop, Vacuum and Vacuum duration. Also displayed here is the Input Pressure.

4.



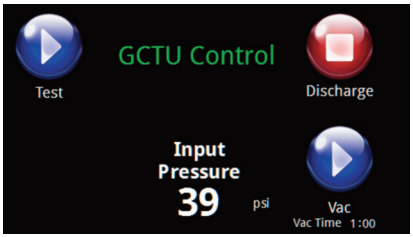
4. When you see this message, re-check that both connections are fitted properly.

5.



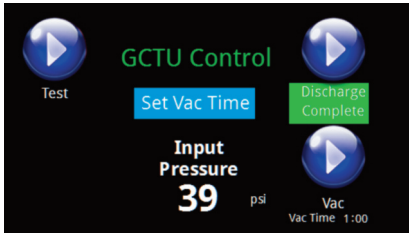
5. The capacity of the internal vessel holds approx 15 litres and will give the user at least 10 minutes sampling time.

When the vessel becomes full, sampling will automatically stop. To pump-back the sample to the installation, simply touch the **blue** "**Discharge**" button, the pump will be heard working. Full discharge takes about 5 minutes. The "**Discharge**" button will turn **red** until completed as the display example below.



The discharge can be stopped at any time by touching the red discharge button.

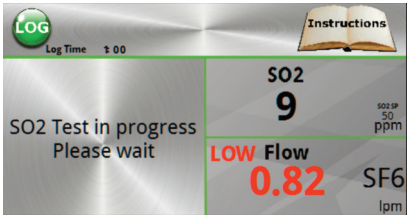
When discharge (pump-back) has been completed, the pump will stop and the "**Discharge Complete**" message displayed, shown here.

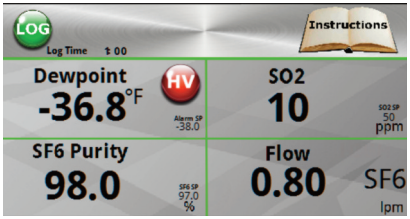


Control Display Screens - Navigation and Functions - Continued

Whilst still connected to the installation, if the user wishes to re-take the sample, touching the "Test" button again will start the process.

6.



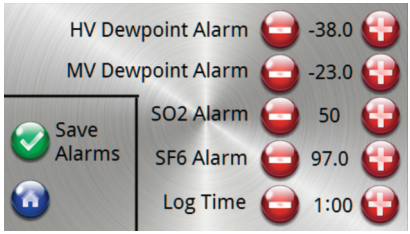


6. Alarm Set Points -
This instrument has been factory pre-set to visually alarm in accordance with **IEC 60480:2004** for dewpoint, purity and SO2 for both HV, *and* MV.

Alarm points High Voltage (HV) Installations:
Dewpoint: -32.8°F (-36°C) or 198ppmv
Purity: 97%
SO2: MAX 50ppmv

Alarm points Medium Voltage (MV) Installations:
Dewpoint: -9.4°F (-23°C) or 762ppmv
Purity: 97%
SO2: MAX 50ppmv

When an alarm set point has been reached or exceeded, the digits for that measurement will turn **red** as the above examples.

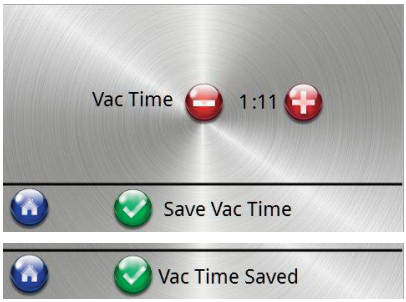


Note: Alarm set points must be in °C.

The alarm set-points can be changed in this display by pressing the + / - buttons and saving the new setting by pressing the green tick button "Save Alarms"

When the new settings have been saved successfully the "Alarms Saved" message will appear, as shown above.

7.



7. The Vacuum timer can be changed in this display by pressing the + / - buttons and saving the new setting by pressing the green tick button "Save Vac Time"

When the new settings have been saved successfully the "Vac Time Saved" message will appear, as shown above.

Contact Information

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Friday
8.30am - 5.00pm
Saturday and Sunday - Closed

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