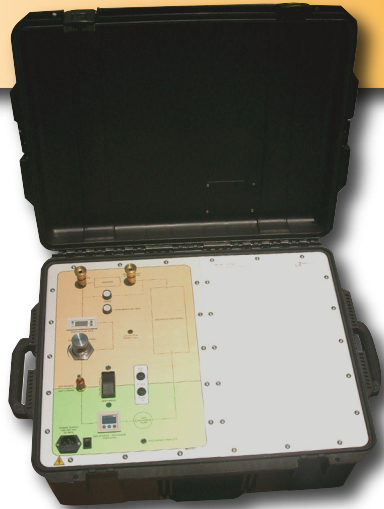


**Model GCTU-M
Gas Collection and Transfer Unit
AC Powered**



Instruction Manual



Safety Information

The **Model GCTU-M** is designed to be connected to hazardous electric voltages (100 - 250V) and protected by a 13A fused plug to the AC Power supply socket.

The Model GCTU-M 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 Power supply but returned to the supplier for rectification.



Warnings

Risk of electric shock - Do not open any part of the enclosures of the **Model GCTU-M** or any electrical apparatus whilst connected to the AC Power supply.

Do not connect the **Model GCTU-M** or any electrical apparatus to the AC Power supply until they are in their permanent positions for sample analysis.

Ignoring this safety information can result in severe personal injury and/or mechanical damage to the **Model GCTU-M**.

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

Do not connect the **Model GCTU-M** to any other device that is not recommended in this manual. If in any doubt - contact **Alpha Moisture Systems**.

Ensure that the **Model GCTU-M** does not come into direct contact with water or any other liquids.

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 Power supply and ensure it is safe before use.



Safe Isolation

Switch off at the AC Power 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.



CERTIFICATE No. FM35600
BS EN ISO 9001:2015



Model GCTU-M Gas Collection and Transfer Unit AC Powered



Document Reference:
1848 - Issue 2

21/06/2018

Instruction Manual

This is a step by step instruction manual to help you quickly and successfully set up correctly the **Model GCTU-M** before use.

This manual should be kept with the **Model GCTU-M** for future reference.

Please read this manual carefully from the start.

Index

Introducing your New GCTU-M	4
Recommended Portable Dewpoint Analysers for use with GCTU-M	5 - 6
Features - GCTU-M	7
Features - Transportation Case	7
Operating Instructions	8 - 11
Procedure for Transferring gas from the gas collection vessel to the original gas source or an auxiliary vessel	12 - 13
Taking care of your New GCTU-M	14
Terms, Conditions & Warranty	15
Contact Information	16

Introducing your New GCTU-M

Thank you for purchasing the **Alpha Moisture Systems Model GCTU-M**.

We are sure you will agree the **GCTU-M** is easy and quick to use.

The GCTU-M stands for “**Gas Collection and Transfer Unit**” and is **AC Powered**.

The **GCTU-M** has been specifically developed to meet worldwide regulations on green house gas emissions, especially **SF₆** where these damaging gases or global warming potential (GWP) to the environment can be returned back to source and recycled after sampling.

This unit will accept many types of instruments for several species analysis although for moisture measurement, we recommend the use of **Alpha Moisture Systems SADPMini, SADPmini-Ex (as pictured in this manual), DILO P3, P35 or DSP-FCI**.

Your **GCTU-M** has the most reliable quality components installed. They have undergone rigorous testing to ensure that you get the reliability, peace of mind and confidence you would expect from any **Alpha Moisture Systems** product.

By using this quality product correctly you are safeguarding the environment from (GWP) damaging greenhouse gases like **SF₆** of which is approximately 26,500 times more damaging than **CO₂**.

Finally, we would be very grateful to receive any feed back or comments you may have on any of our products and services. This helps us to continually improve our product range offering, our services and equally important - your customer satisfaction.

We work hard to maintain our excellent global reputation for Quality and Customer Services through really listening to our customers, therefore please feel free to leave any comments, however small, at this address. info@amsystems.co.uk

Thank you once again for purchasing the **Model GCTU-M**.

Kind Regards

The Alpha Moisture Systems Team

Recommended Portable Products for use with the GCTU-M

SADPMini (Hand-held analyser)

- Various Overall Range: -110°C (-166°F) to +20°C (+68°F) Dewpoint
- Accuracy Guaranteed to $\pm 2^\circ\text{C}$ Dewpoint
- Selectable Engineering Units in $^\circ\text{C}$, $^\circ\text{F}$, ppb(v), ppm(v), ppm(w), g/m^3 & lb/MMSCF
- Desiccant Dry-Down Chamber for Rapid Measurements
- Battery Life - 270 Hours of Continuous Operation
- Self-Diagnostics on Start-up
- Automatic Switch Off
- Quick Connect SS Coupling
- Portable - Fully Self Contained
- User Friendly - Simple Operation



This is a fully self-contained digital portable dewpoint meter which will deliver the most dependable moisture measurements in industrial and laboratory applications.

The **Model SADPmini** is the first truly portable device of its kind. Weighing only 1.2kg, the unit is designed to fit and be used in the hand. Its diminutive size and weight however, delivers, full functionality, with a host of features. The incorporation of stainless steel quick connect fittings, together with the Desiccant Dry-Down Chamber, allows rapid dewpoint measurements which saves both time and cost.

Model SADPmini is available in various ranges from -110°C (-166°F) to +20°C (+68°F) Dew Point.

The Large backlit Graphical display reads in a variety of user selectable units ($^\circ\text{C}$, $^\circ\text{F}$, ppmV, ppmW, ppbV, g/m^3 , lbs/MMSCF) and display logged data graphically over a selectable time period.

SADP μ (Analogue or digital)

- The **Model SADP μ** is a cell operated portable unit designed for spot checks or continuous use, and gives direct indication in Dewpoint temperature and parts per million on a 12cm. analogue scale.
- The **Model SADP μ** is fitted with a microprocessor based PCB which allows very accurate calibrations to be performed.
- The instrument is operated with its own internal cells and requires no external power source. The instrument comes supplied with 6 "C"-size cells. In normal operation these will last for upto 5-6 months.
- The unique measuring head is designed to keep the sensor dry when the instrument is not in use, making spot checks a simple and speedy process with minimum air or gas usage.
- The instrument is provided as standard with a padded carrying case with shoulder strap, a moisture calculator, a screwdriver for the Automatic Calibration control, a special key for the security plate covering the cell carriers, and a 2 meter length of flexible PTFE (Teflon) sample pipe.
- The instrument is certified for use in hazardous areas (Ex ia IIC T3/T4 Ga).



For more information please call Delta Instrument Toll Free on: 866-628-8457

Recommended Portable Products for use with the GCTU-M - Continued.

P35 - Portable SF6 Dewpoint Transmitter

- Overall Range - 80°C to 0°C Dewpoint (-112°F to +32°F)
- Guaranteed Accuracy $\pm 2^\circ\text{C}$ Dewpoint
- User Friendly - Simple Operation
- Portable - Fully Self Contained
- Digital Indication in °C or °F
- Automatic Calibration
- Sample Flow Indication
- Quick Connect SS Fittings
- Cell or AC Powered
- Supplied With Calibration Certificate
- Sample Flow Control for Inlet Pressure up to 20 barg
- Desiccant Dry-Down Chamber For Rapid Measurements (-112°F to +32°F)



The **Model P35** is a fully self-contained portable hygrometer from **Alpha Moisture Systems**, designed specifically for use during the assembly, commissioning and service of SF₆ gas insulated switchgear, though its features make it ideal for many other on-site applications.

Designed with the operator in mind, **Model P35** is extremely easy to use and the microprocessor technology enables accurate and reliable readings over long periods of time, ensuring the most dependable moisture measurement in both industrial and laboratory applications.

DSP-FCI - Portable Dewpoint Meter

- Overall Range -110°C (-166°F) to +20°C (+68°F) Dewpoint
- Portable - Fully Self Contained
- Self-Diagnostics on Start-up
- Quick Connect SS Coupling
- Ordinary "C" Type cells
- Sample flow control for inlet pressure up to 20 barg
- Sample flow indication
- Excess of 250 Hours of continuous operation
- Desiccant Dry-Down Chamber for rapid measurements
- Selectable engineering units in °C, °F, ppb(v), ppm(v), ppm(w), g/m³ & lb/MMSCF



Model DSP-FCI is a fully self-contained portable hygrometer from **Alpha Moisture Systems** which will deliver the most dependable moisture measurement in industrial and laboratory applications. Designed with the operator in mind, **Model DSP-FCI** is extremely easy to use and the digital dewSMART™ technology ensures accurate and reliable readings over long periods with little or no maintenance. The incorporation of stainless steel quick connect fittings, together with the Desiccant Drydown Chamber, allows rapid measurements which saves both time and cost.

For more information please call Delta Instrument Toll Free on: 866-628-8457

Features - GCTU-M

Sampling System:

- Swagelok QC4 male self-sealing process connector, (maximum process pressure 175PSIG (12 barg),
- Process pressure indicator, sample flow regulator (sample flow controllable between 0.2 and 10 SCFH (0.1 and 5.0 LPM),
- Sample flow indicator,
- Swagelok QC4 female self sealing analyser connections,
- By-pass purge facility and gas collection vessel.

Transfer System:

- Quality hard wearing discharge pump (Maximum discharge pressure 175PSIG (12 barg)).

Power supply:

- AC input: 100-250 VAC 50/60Hz.

Accessories included:

- 6ft (2 mts) of quality stainless steel braided PTFE lined process connection hose with mating connector.
- ¼" Swagelok self sealing quick mating connectors for analyser connections.

Dimensions:

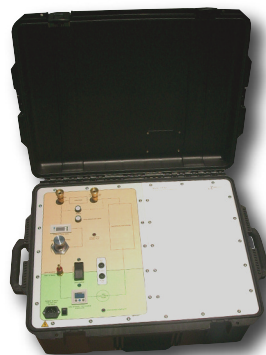
- 24.6" x 19.7" x 11.6" (625 x 500 x 297mm)

Weight:

- 55lb (25kg)

Features – TRANSPORTATION CASE

- Robust and toughest protective case in the industry.
- Fully integrated protection system.
- Manufactured from a unique patterned high performance resin.
- Quality easy press/pull latches and easy open hinge.
- Hardwearing, comfortable and soft non-slip grip handles side and top.
- Waterproof with full foam lid seal – NEMA 4X, 6 (IP67) rating.
- Hasps for pad locking.
- Tough high quality urethane wheels.
- Pressure vents for air transportation.
- Retractable soft non-slip grip pull along handle (as pictured).



Operating Instructions

Procedure for sample analysis and gas collection.

Ensure the **GCTU-M** is on a firm, safe and clean surface to work from before testing.



DO NOT DROP OR BANG THE GCTU-M - this can damage the components inside.

This unit will give up to approximately 10 minutes (assuming a sample flow rate of 4 SCFH (2 LPM) of test time before the “**Collection Vessel Full**” indicator light switches on.

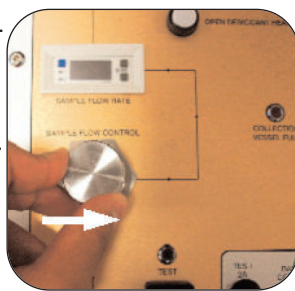
Pressure used, diameter and length of gas source pipeline will effect test times slightly.

Therefore, use the smallest pipe practical.

1. Shut off the “**Sample Flow Control**” by turning the knob fully anti-clockwise until finger tight. (Do not over tighten).

Fig. 1

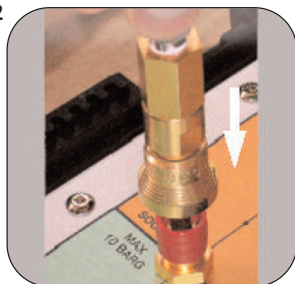
Fig. 1



2. Connect the gas source to the “**Gas Source**” connection by pressing the hose connector over the source connector until it is felt to lock/click into position. Ensure that the maximum pressure of 175PSIG (12 barg), is not exceeded.

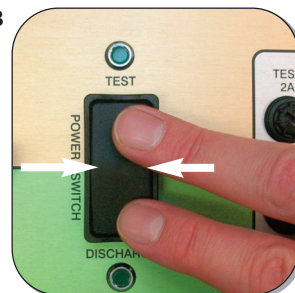
Fig. 2

Fig. 2



3. Ensure that the “**Test / Discharge**” switch is in the “**OFF**” CENTRAL position **before** switching the AC power supply on. **Fig. 3**

Fig. 3



4. Connect the AC power supply and switch **ON**. Allow approx 1 minute for the Gas Source/Discharge pressure monitor to “Boot Up” before continuing.

Note: If not seen to be working, check all connections and switches are on and retry. **Fig. 4**

Fig. 4



5. Switch the power switch to the “Test” position. The “Test” LED will illuminate and the “Sample Flow Rate Indicator” will also turn on. **Fig. 5**

Fig. 5



Fig. 6

6. Press and **hold** the “Purge” button, and turn the “Sample Flow Control” knob slowly **clockwise** until the “Sample Flow Rate” indicator displays the required flow rate for the analyser in use and after fully purging the sample line, release the “Purge” button. **Fig. 6**



7. The measurement instrument should be fitted at this stage (for this example we have used an **Alpha Moisture Systems SADPMini-Ex**).

FIRST, Connect the **OUTLET** of the analyser to the “Sample From Analyser” connection point.

SECOND, Connect the **INLET** of the analyser to the “Sample to Analyser” connection point. **See Fig. 7 overleaf.**

Fig. 7

Ensure all compression fittings are gas tight and the system fully purged then proceed with the next step.



8. In the case of any **Alpha Moisture Systems Portable products** such as the **SADPMini, SADP μ , P35, DSP-FCI, SHAW SADP** or **DILO P3** allow the sensor head to purge in the CLOSED POSITION. Then switch on the instrument.

Fig. 8

Raise the desiccant head of the analyser by pressing the “**Open Desiccant Head**” button until it is fully extended **Fig. 8**.



Fig. 9

Then release the button and allow the instrument to stabilise before taking analysis.

When analysis is complete, manually close the desiccant head carefully and slowly. **Fig. 9**



Fig. 10

9. If the desiccant head is closed too quickly the “**Collection Vessel**” indicator may switch on. The power switch must then be turned off and then back on again to reset the unit before the head can be lowered. **Fig. 10**



NOTE: If the **Collection Vessel Full** LED is on you will not be able to push the head down on Alpha Moisture System Products. Switch to “**discharge**” for a minimum of 20 seconds then switch back to the **Test** position and retry.

Procedure for transferring gas from the gas collection vessel to the original gas source or an auxiliary vessel.

Transfer to an auxiliary vessel:

Remove the connection from the “Gas Source” connection and make a separate connection from the auxiliary vessel to the “Gas Source” connection ensuring that the maximum pressure of 175PSIG (12 barg) is not exceeded.

Transfer to the original gas source:

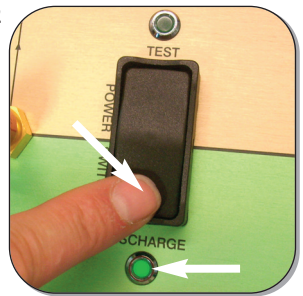
If the gas is to be returned to the original “Gas Source” leave all connections as made for gas analysis.

1. Switch the power switch to the “Discharge” position. The “Discharge” LED and the “Gas Pressure” indicator will turn on (self test for approx 3 seconds will be seen).

Fig. 12

The “Gas Discharge Pump” will then start to run. The “Gas Pressure” indicator will display the discharge pressure and the “Gas Collection Vessel” will begin to empty as the gas is transferred.

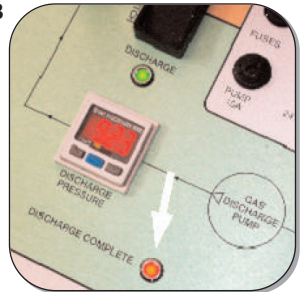
Fig. 12



2. When the “Gas Collection Vessel” is completely empty the “Discharge Complete” LED will illuminate and the “Gas Discharge Pump” will automatically stop.

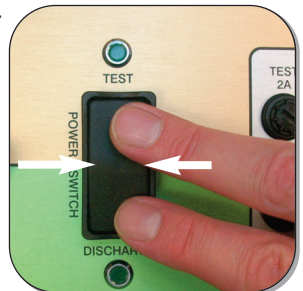
This should take no longer than 3 ½ minutes to discharge from full. **Fig. 13**

Fig. 13



3. When the gas discharge is complete, switch the Test/Discharge switch to the OFF CENTRAL position. The “Discharge” Led will go out and the “Discharge Pressure” indicators will remain on. **Fig. 14.**

Fig. 14



- This completes the discharge procedure, if no further analysis or gas collection is required the pipe work/connections can be carefully and safely disconnected.
- The **AC power switch** can now be turned **OFF**.

NOTE: If the “Discharge Pressure” exceeds 175PSIG (12barg) the “Discharge Pump” will automatically stop. In this case, re-connect to the gas source to reduce pressure.

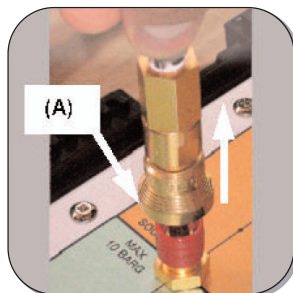
Fig. 15

- On completion of the test, close the “**Sample Control Valve**” anti-clockwise. Fig. 15



Fig. 16

- Isolate the gas source first before removing the gas source from the “**Gas Source**” connection. To unlock the connector push down firmly on the collar **(A)** carefully separate the two halves of the connector. Fig. 16



- Carefully remove the instrument and pipe work from the Analyser points on the **GCTU-M** if no more tests are to be carried out.

Taking care of your NEW GCTU-M

We recommend that you store your **GCTU-M** in a safe, cool and dry place. Avoid prolonged direct sun light. The **GCTU-M** is a heavy item 55lbs (25kg) and care should be taken to store the unit no higher than waist height.

Fig. 17



Ensure that the unit will not fall from the storage place as this may cause injury, it may cause damage to the unit also. Ensure that all essential accessories that came with the unit are kept within the transportation case and not kept separately.

Keep your **GCTU-M** clean and free from debris in particular the analyser points and gas source connection as this could contaminate the unit and any instruments used.

Check regularly for damage to the external components. Do not use if any damage can be seen. With all electronic equipment, care must be taken not to drop, bang, rough handle, or store heavy items on the **GCTU-M** as this could cause the unit to malfunction.

Note: When using the retractable handle (**Fig. 17**) to transport the **GCTU-M** on its wheels, avoid strong vibration by choosing a smooth surface – care must be taken to protect the components and electronics at all times when transporting.

Indicate on the unit “**Fragile & Heavy**” when transporting via public transport i.e. air, sea, train, bus etc.

Fig. 18



Keep it upright (wheels and retractable handle facing downwards) when storing as shown in **Fig. 18**

Do not leave unattended at any time. Do not let unauthorised persons operate the **GCTU-M** without supervision.

Do not attempt to open the case to expose the internal electronics and components as this may render your warranty null and void.

Keep out of reach of children and animals.

Terms, Conditions & Warranty

- Despatch:** 2 to 4 weeks from receipt of official order
- Validity:** 90 days from date of proposal submission.
- Terms:** 30 days nett monthly account. Subject to credit status.
- Title:** All goods shall remain the property of Alpha Moisture Systems until account is settled in full.
- Warranty:** 24 months from date of delivery. Warranty covers faulty workmanship and materials on a return to factory basis.
- Application:** For measurements of atmospheric dewpoint in a clean, non-corrosive process gas that is free of contaminants.

Contact Information



Head Office:

Alpha Moisture Systems

Alpha House
96 City Road
Bradford
West Yorkshire
BD8 8ES
United Kingdom

Tel: +44 (0) 1274 733100

Fax: +44 (0) 1274 733200

Email: info@amsystems.co.uk

Web: www.amsystems.co.uk

Office Opening Hours:

Monday - Thursday

8.30am - 5.30pm GMT

Friday

8.30am - 5.00pm

Saturday and Sunday - Closed



Distributed throughout the USA and Canada by:

Delta Instrument LLC

148 Veterans Drive, Northvale, NJ 07647

Tel: (201) 768-7200 **Fax:** (201) 768-5020

Email: info@deltainstrument.com

Web: www.DeltaInstrument.com

Houston Branch: Phone: (281) 361-8959 **Fax:** (281) 360-5271

Toronto Branch: Phone: (905) 643-3500 **Fax:** (905) 643-3512

Notes:
