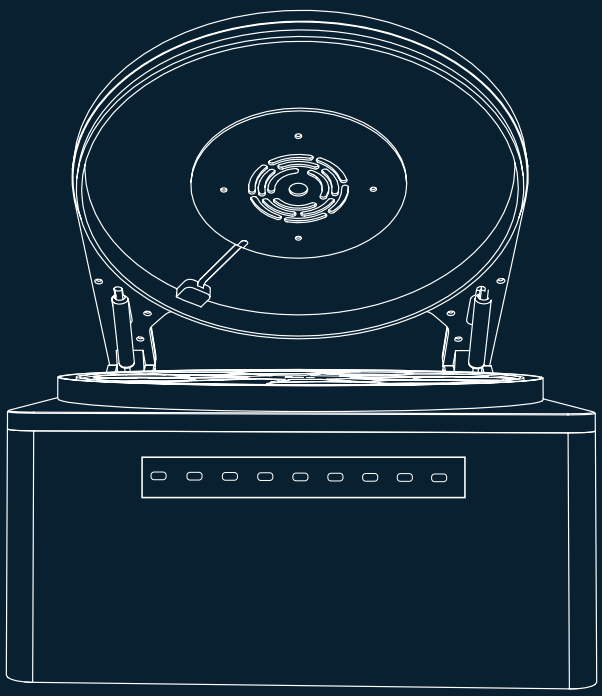
AQUALAB
by Addium

ROS 1



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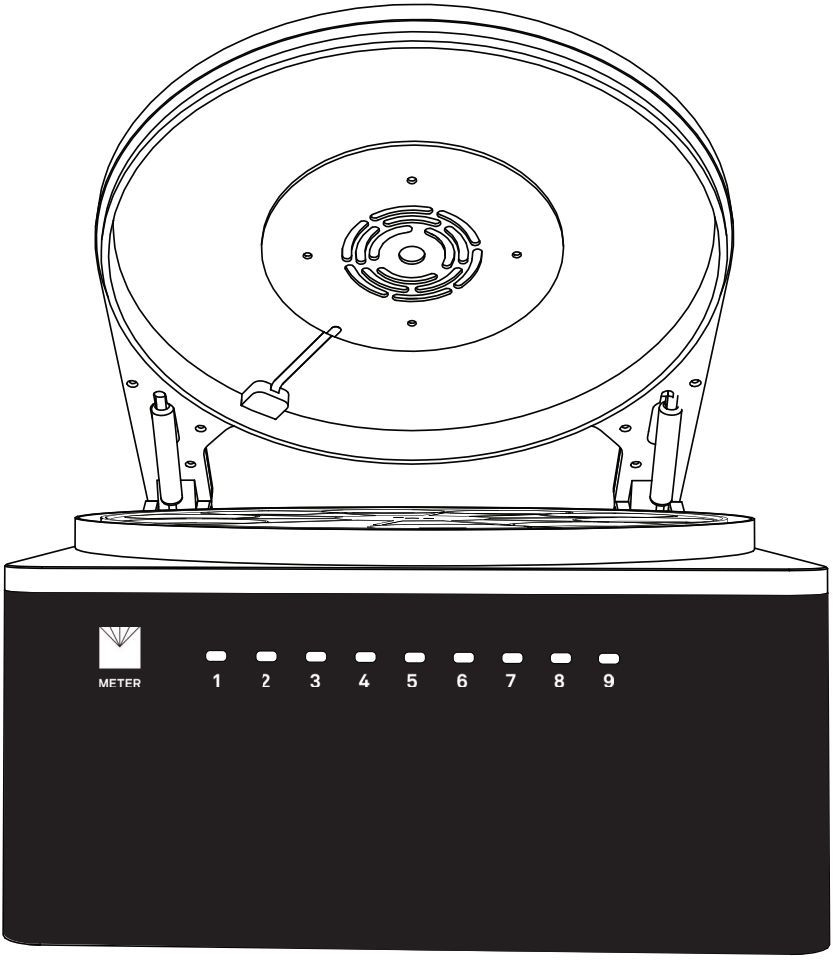
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1. INTRODUCTION

Thank you for choosing the ROS 1 Moisture Analyzer from METER Group. The ROS 1 utilizes a unique design combined with a sound scientific understanding of moisture loss to create the ideal loss-on-drying moisture analyzer.

This manual includes instructions for setting up, verifying the scale calibration, preparing samples, taking readings, and maintaining the ROS 1.

Verify all ROS 1 components are included and appear in good condition:

- ROS 1 Moisture Analyzer
- Certificate of calibration (factory temperature)
- Power cord
- METER USB A to USB A cable (1.28 m, 6 ft)
- 100 sample cups
- Filter papers
- 2.0000-g NIST traceable standard weight
- USB drive with ROS 1 Bridge app

2. OPERATION

Please read all instructions before operating the ROS 1 to ensure it performs to its full potential.

⚠ PRECAUTION

METER instruments are built to the highest standards, but misuse or neglect may damage the device and possibly void the manufacturer's warranty. Before using the ROS 1, follow the recommended user instructions and arrange proper protections to safeguard the instrument from damage.

2.1 INSTALLATION

Follow the steps listed in Table 1 to set up the ROS 1 and start collecting data.

Table 1 Installation

Tools Needed	Microsoft® Windows® computer for ROS 1 Bridge app
Preparation	**Select Stable Location** Select a location where the temperature remains fairly stable to avoid temperature changes that can affect accuracy (i.e., away from air conditioner and heater vents, open windows). Select a stable surface free from vibration. **NOTE: Always ensure the sample chamber is empty prior to moving the instrument.**
Installation	**Plug In Instrument** Plug the power cord into the back of the ROS 1 unit and into an outlet. Only use the supplied power cord or one rated for ROS 1 and certified for the country of use. The cord must be a minimum of 18 AWG and have a rating for 10 A or greater. **⚠ WARNING** **An incorrect main power voltage can dama ge the instrument.** **Turn the Unit ON** Allow the ROS 1 a 2-h warm-up period to bring the scale into constant operating temperature and ensure accurate readings. Leave the ROS 1 powered on when not in use to maintain optimal instrument speed and performance. When not in use, the ROS 1 will automatically enter standby mode.
Connecting	**Download ROS 1 App** Copy the Bridge app from the included USB drive to the computer. Open the Bridge app. Connect the USB cable to a USB port on the ROS 1 and a USB port on the computer. Select the METER USB COM port from the dropdown menu. Click `Connect`. **NOTE: If METER USB is not shown, install the included driver software.**

Table 1 Installation (continued)

Calibration	**Calibrate the Scale** Navigate to the Settings menu in the Bridge app. Click on the **Calibrate Scale** button from the Settings menu.Follow the prompts to complete the calibration. Section 4.1 contains more details about calibrating the scale. To print a certificate of calibration, click the **Generate Calibration Certificate** button from the Settings menu. **WARNING: The 2.0000-g standard weight must be handled only with clean lab utensils such as tweezers. Mishandling the standard weight nullifies the calibration.**

2.2 SAMPLE PREPARATION

Proper sample preparation is important to keep the ROS 1 clean and achieve repeatable results. Carefully prepare and load samples to lengthen time between ROS 1 cleanings and to help avoid downtime. Be consistent in sample preparation methods (e.g., crush, grind, slice the sample) to obtain reproducible results. Exposure of samples to the ambient atmosphere should be minimized since this will affect the measured moisture content.

Place a representative selection of the material in each cup. When adding the sample to the cup, spread it out over the bottom of the cup as much as possible to ensure good contact with the heating surface.

The nature of some samples results in longer reading times and may require additional preparation to ensure accurate readings. Crush, slice, or blend coated or dried samples before testing to increase the surface area of the sample, thus decreasing testing times.

Follow the steps listed below to prepare samples:

1. Make sure the sample to be measured is representative.

   Multicomponent samples (e.g., muffins with raisins) or samples that have outside coatings (like deep-fried, breaded foods) can be measured, but they need to have representative portions in the cup. The moisture is not distributed uniformly among the components, so getting an accurate moisture content depends on the operator's ability to choose a sample that accurately represents the product.

2. Place the sample in a disposable sample cup.

   a. Completely cover the bottom of the cup, if possible.

      The ROS 1 is also able to accurately measure a sample that does not (or cannot) cover the bottom of the cup. For example, raisins only need to be placed in the cup and do not need to be flattened to cover the bottom. A larger sample surface area increases instrument efficiency by providing more area for evaporation per unit sample volume. It also speeds up the reading by shortening the time needed for the sample to get to its drying temperature.

b. Do not fill the sample cup more than half full.

   Overfilled cups slow down the readings.

3. Wipe any excess sample material from the rim and outside of the sample cup with a clean KIMWIPES® tissue.

   Material left on the rim or the outside of the cup can contaminate the carousel and be transferred to adjacent samples.

4. If a sample cannot be measured immediately, put it in a sealed container until it can be measured to avoid water loss.

2.3 TAKING A READING

The ROS 1 can test one to nine samples simultaneously. The sample type will determine the desired test settings: drying temperature, timed test or constant-weight test, and constant-weight test parameters. Several presets are available. Customer Support can help select the appropriate settings for the sample and a video tutorial is also available at metergroup.com/ros1-training.

Use the following steps to take a reading with the ROS 1.

1. Ensure the ROS 1 is plugged in and turned on.
2. In the Bridge app, select the METER USB COM port.
3. Click `Connect`.
4. Select sample test settings in the Bridge app.
5. Open the ROS 1 sample chamber lid.
6. Verify that the sample chamber is clean and free from debris.

   If the sample chamber is dirty, please follow the cleaning steps listed in Section 4.2.

7. Place empty sample cups in the sample chamber in any of the positions.

   NOTE: When drying liquid samples, filter paper may be added to the empty sample cup before taring.

   The ROS 1 can take between one and nine sample test at one time. Any position without a sample cup will be disregarded, meaning all positions on the carousel do not have to contain a sample cup.

8. Close the sample chamber lid.

   NOTE: More accurate weight readings can be achieved by closing the sample chamber lid while weight measurements are being taken.

9. Click `Next` in the Bridge app window.

   The ROS 1 will move the carousel around to detect sample cups and take accurate tare-weight readings.

   NOTE: Both the tare-weight measurement and the sample-weight measurement are critical values for the calculation of moisture content.

After an empty sample cup has been tared, the LED on the ROS 1 will turn green, and a prompt in the Bridge app will appear instructing the user to add a sample.

10. Add a sample.

    NOTE: For samples prone to spilling, remove the sample cup and add the sample to ensure the drying chamber stays clean.

    A rough weight will appear at the bottom of the Bridge app window.

11. Close the sample chamber lid.

12. Follow the onscreen prompts in the Bridge app.

    The ROS 1 will move the sample cups into the weight position and take tare-weight readings.

    When the sample weight has been recorded, the LED for that sample position on the ROS 1 will turn white and the image on the Bridge app window will show a blue circle around that sample position.

    The LED for any unused sample positions will not light up.

    If a sample needs to be replaced, click on the blue sample cup image that is to be replaced shown in the Bridge app. Follow the prompts in the Bridge app to tare a new sample cup and replace the sample.

13. Once the last sample has been weighed, all of the LEDs on the ROS 1 will pulse and the internal air flow and heating process will begin automatically.

    During the test, the ROS 1 Bridge app window will display the in-process readings (clicking the **GRAPH** button will show the same data in graph format).

    When a sample has dried, the corresponding LED on the front of the ROS 1 will turn blue. The light turns blue on the Bridge app window. Sample Drying window, and the moisture content result shown in the % Moisture column will stop changing.

14. Click the **OK** button on the Test complete message that appears in the Bridge app when the test is complete.

    Export data or click on the **NEW TEST** button.

The testing data can be exported at any time during or after a test by clicking the **EXPORT DATA** button.

NOTE: If on the Bridge app Test Prep screen, click the Previous test results button to recall previous tests and export previous test data.

3. SYSTEM

This section describes the specifications, components, and theory of the ROS 1.

3.1 SPECIFICATIONS

MEASUREMENT SPECIFICATIONS

Moisture Range	
Range	0.1–100%
Accuracy	

ROS 1 Precision
± %MC of test results

%MC	Sample Size (g)				
	0.5	2	8	15	25
5	0.2	0.1	0.0	0.0	
10	0.2	0.2	0.1	0.1	0.1
65	0.2	0.2	0.2	0.2	0.2
90	0.3	0.2	0.0	0.0	0.1

Repeatability (4-g samples)	0.05%
Repeatability (10-g samples)	0.01%
Method	Loss-on-drying using any standard method
Scale	
Readability	0.0001 g
Minimum	0.0 g
Maximum	50.0 g
Calibration	Performed in Bridge app
Samples	
Number	1–9
Weight range	500 mg–20 g

COMMUNICATIONS SPECIFICATIONS

Data Communications	
Serial over USB	

PHYSICAL SPECIFICATIONS

Dimensions	
Length	38.1cm (15.0 in)
Width	30.5 cm (12.0 in)
Height	20.3 cm (8.0 in)
Case Material	
Powder-coated steel	
Sample Cup Capacity	
33.173 mL (1.124 fl oz)	
ROS 1 Weight	
12.5 kg Í	
Operating Temperature Range	
Minimum	4 °C
Typical	NA
Maximum	50 °C

NOTE: Sensors may be used at higher temperatures under certain conditions; contact Customer Support for assistance.

Operating Environment	
0%–90% noncondensing	
Power	
110–220 VAC 50/60 Hz	

COMPLIANCE

Manufactured under ISO 9001:2015
EM ISO/IEC 17050:2010 (CE Mark)

3.2 COMPONENTS

The ROS 1 is a loss-on-drying moisture analyzer with the ability to run multiple samples. A carousel enables high-sample throughput by analyzing as many as nine samples simultaneously using primary reference methods. The ROS 1 controls the temperature of each sample position individually using controlled contact drying and tracks the weight loss of each sample over time. The instrument consists of an enclosure that houses the power supply, air flow control, the sample chamber, and scale. The power switch and communications ports are located on the rear of the ROS 1. There are LEDs on the front of the ROS 1 that correspond to each of the nine sample positions on the carousel (Figure 1).

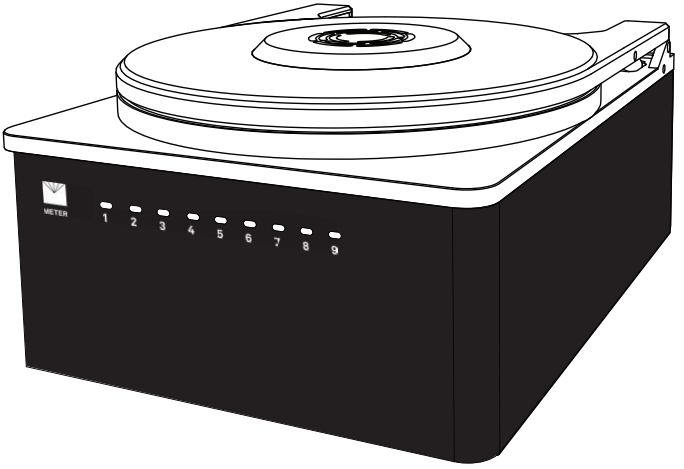

Figure 1 Enclosure

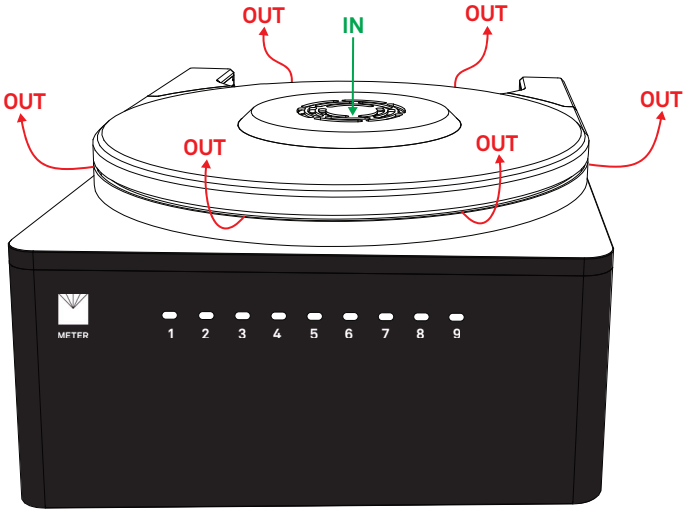

Figure 2 Air Flow Control

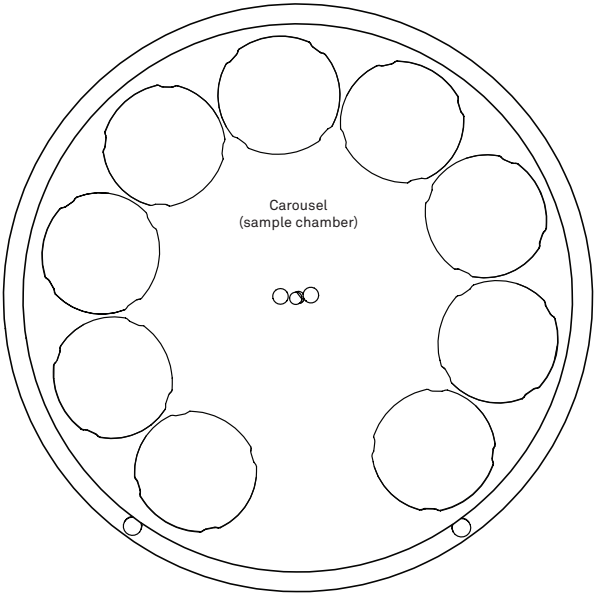

Figure 3 Sample chamber

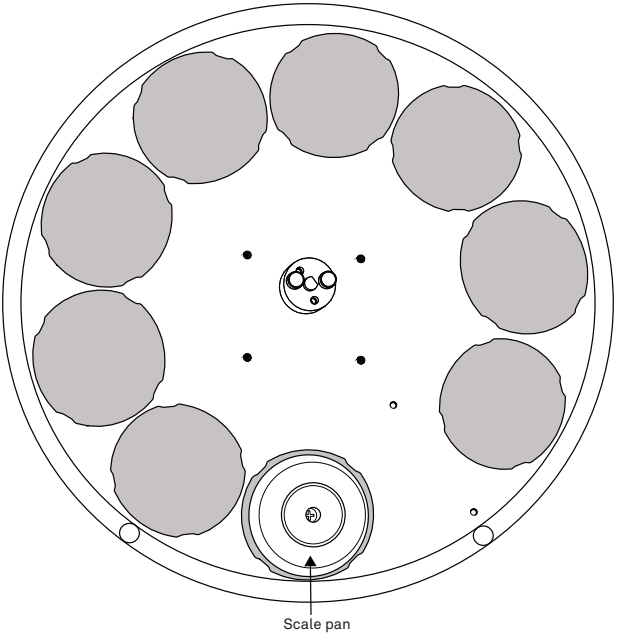

Figure 4 Scale and scale pan

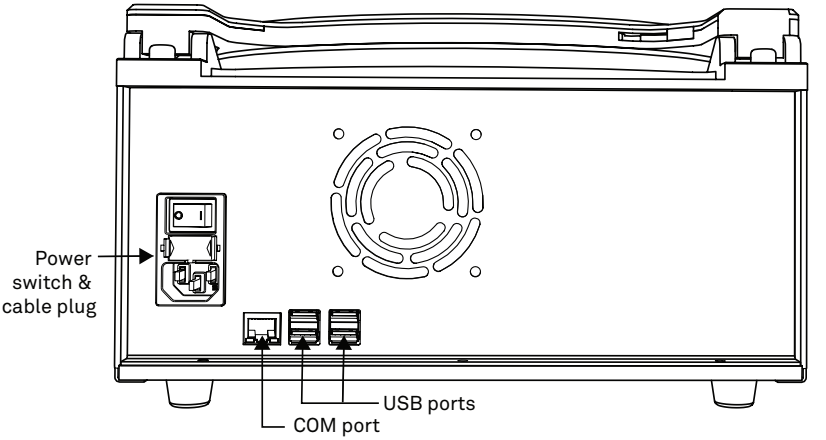

Figure 5 Power Switch and COM ports

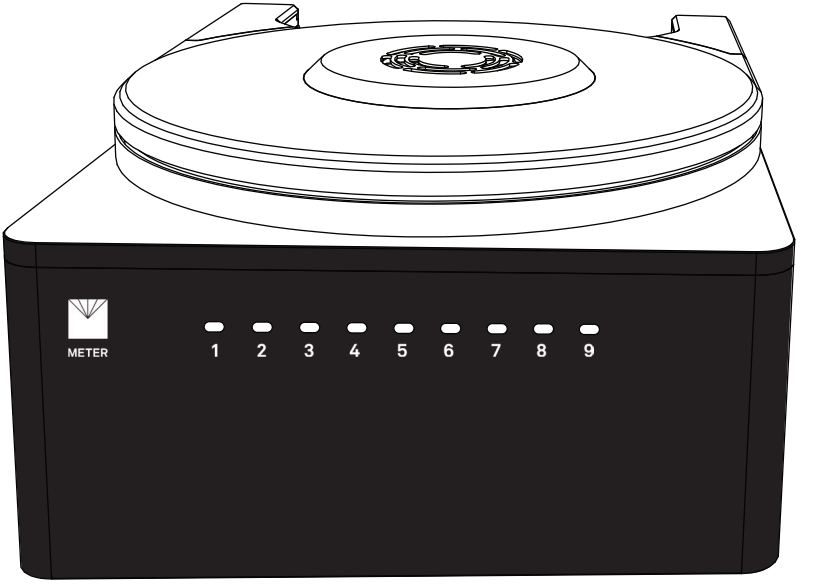

Figure 6 Front panel

3.3 THEORY

The Bridge app user matches any reference moisture method without the need to use extreme temperatures to predict the moisture content. ROS 1 has a growing list of standard configurations based on AOAC, AACC, and Swiss Food Manual standards. The ROS 1 calculates moisture on a dry basis.

Percent Moisture on a Wet Basis (% wb, g/100 g total)

$$\%\ \text{Moisture} = \frac{\textit{initial weight} - \textit{dry weight}}{\textit{initial weight}} \times 100 = \frac{\textit{grams of water}}{\textit{100 grams total}}$$

Percent Moisture on a Dry Basis (% wb, g/100 g solids)

$$\%\ \text{Moisture} = \frac{\textit{initial weight} - \textit{dry weight}}{\textit{dry weight}} \times 100 = \frac{\textit{grams of water}}{\textit{100 grams total}}$$

Many food applications report moisture contents on a wet basis. A simple equation converts between the wet and dry basis.

$$\%\ \text{moisture wet} = \frac{\%\ \textit{moisture dry}}{100 - \%\ \textit{moisture dry}} \times 100$$

$$\%\ \text{moisture dry} = \frac{\%\ \textit{moisture wet}}{100 - \%\ \textit{moisture wet}} \times 100$$

3.3.1 INTRODUCTION TO MOISTURE CONTENT

Two measures are required to completely describe the state of water in a product: water activity and moisture content. Water activity is a measure of the water's energy. It has a sound thermodynamic basis and can be exactly specified and measured. Moisture content, on the other hand, must be defined operationally, since there is no way to actually determine the exact amount of water in a sample.

One way to determine moisture content is to measure the difference between the mass of a sample and its mass in a reference state. The reference state is generally specified as the state of the sample after it is placed in an oven at a specified temperature for a specified time. This state is often assumed to be a state of 0 moisture content, but it is not. Increasing the oven temperature or decreasing the oven vapor pressure will result in additional mass loss from the sample, and some of that mass loss will be water. Some mass loss may be from vaporization of other volatiles present in the sample or oxidization of sample constituents. The uncertainty from these two sources (tightly bound water remaining in the dry sample and nonwater mass loss from the sample) leads some to use the term moisture content rather than water content to describe the result of the measurement. Whatever it is called, the measurement provides valuable information about the state of the water in the product and the product yield, quality, and purity. It is, therefore, important to make the measurement as precisely as possible. The reference state needs to be carefully specified, and the conditions that affect it must be well controlled.

3.3.2 ANALYSIS OF THE DRYING PROCESS

Drying occurs when a sample loses water. When water loss stops, under a specified set of conditions, the sample is said to be dry. Heating is often assumed to be necessary for drying, but high temperatures are only peripherally related to drying.

The integrated form of the Fick equation (Equation 1) gives the rate of water loss from a sample:

$$E = \frac{g_v}{p_a}\left(e_s - e_a\right) \qquad \textbf{Equation 1}$$

where:

E = the evaporation rate ($g \times m^{-2}s^{-1}$)
When the sample is dry, E becomes 0

NOTE: The sample and air-vapor pressures are equal.

g_v = the vapor conductance of the sample surface and the air surrounding the sample ($g \times m^{-2}s^{-1}$)

p_a = the atmospheric pressure (kPa)

e_a and e_s = the vapor pressures of the air (kPa) and of water at the sample surface, respectively.

d = the characteristic dimension

In a well-ventilated oven, the vapor pressure of the air in the oven (e_a) equals the vapor pressure of the air in the laboratory where the oven resides. The vapor pressure of air is the product of the air humidity (expressed as a fraction) and the saturation vapor pressure at air temperature. In a typical laboratory, it is assumed that the relative humidity is 0.4 and the air temperature is 25 °C, the vapor pressure of the oven air would be 1.27 kPa (0.4 × 3.17 kPa = 1.27 kPa, where 3.17 is the saturation vapor pressure (kPa) of air at 25 °C).

The vapor pressure of the sample (e_s) is the product of its water activity and the saturation vapor pressure at sample temperature. A typical standard drying oven temperature is 105 °C. The saturation vapor pressure of water at that temperature is 121 kPa. Knowing the saturation vapor pressure of water and the vapor pressure of the oven air can be used to calculate the water activity of a dry sample. Equation 2 shows the calculation for the specified conditions:

$$a_{wdry} = \frac{1.27}{121} = 0.01 \qquad \textbf{Equation 2}$$

The sample dry water activity can be computed for any vapor pressure that might exist in the oven as shown in Figure 7.

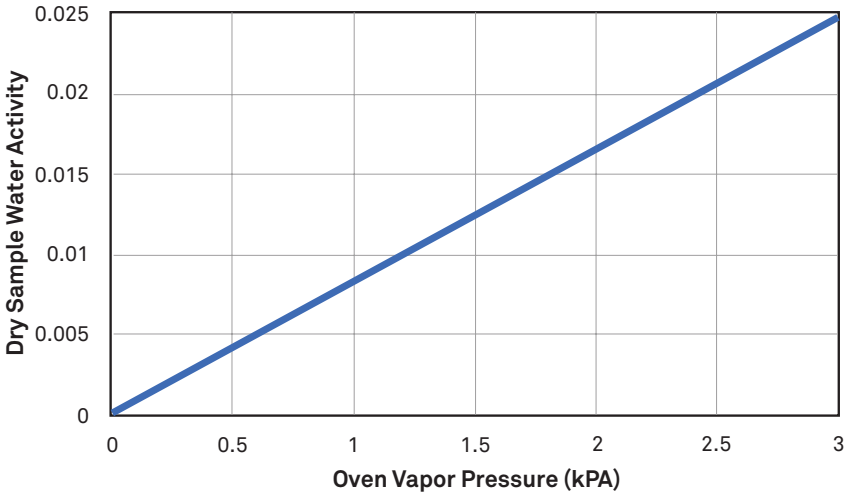

Figure 7 Water activity of a dry sample in an oven

This analysis should make several things clear:

1. Dry does not mean there is no more water in the sample.

   There is always more water in the sample. The amount of water that is removable by the drying process depends on the vapor pressure of the air around the sample and the sample temperature.

2. Anything that alters the oven vapor pressure will alter the dry water activity of the sample, which, in turn, will alter the dry weight of the sample.

   So, increased laboratory humidity or lack of proper oven ventilation will result in an increase in oven dry weight and a decrease in apparent moisture content.

3. Moisture content measurements will be most accurate if there is a specified dry water activity and a requirement that drying methods bring samples to that water activity.

The challenge is to find a method that rapidly dries samples to a specified water activity while minimizing sample oxidation and volatile loss that occurs with heating in an oven.

3.3.3 TEMPERATURE DEPENDENCE OF WATER ACTIVITY

The water activity of all products changes with temperature. Generally, an increase in temperature results in an increase in water activity. At intermediate water activity, the water activity change is around 0.003 a_w per °C. This effect results in additional drying of a typical product at high temperature compared to drying at lower or room temperature, even if the high- and low-temperature samples are at the same final water activity. A precise moisture content measurement, therefore, requires accurate control of both sample temperature and oven vapor pressure.

4. SERVICE

This section describes the scale calibration and maintenance of the ROS 1. Troubleshooting solutions and customer service information are also provided.

4.1 CALIBRATION

Frequent scale calibration is not necessary for ROS 1 moisture content measurements. METER recommends, at a minimum, calibrating the ROS 1 after a thorough cleaning. Operators can calibrate the scale with the included 2.0000-g NIST traceable standard.

⚠ WARNING

The 2.0000-g standard weight must be handled only with clean lab utensils such as tweezers. Mishandling the standard weight nullifies the calibration.

To begin the scale calibration, use the following steps.

1. Ensure the ROS 1 sample chamber is empty and the lid is completely closed.
2. Connect to the ROS 1 using the Bridge app.
3. Open the Bridge app Settings menu.
4. Click on the **Calibrate Scale** button.
5. Select `Next` to begin tarring the scale.

   NOTE: Do not touch the table or ROS 1 during calibration to prevent disturbing the calibration routine.
6. When prompted in Bridge, open the sample chamber lid.
7. Add an empty sample cup to sample position 1 on the carousel.
8. Shut the lid.
9. Select `Next` from Bridge.
10. When prompted, open the sample chamber lid.
11. Add the 2.0000-g standard to the empty sample cup.
12. Shut the lid.
13. Select `Next` from the Bridge.

    The weight offset value will display on the Bridge app window.
14. Select `Next` again to accept and store the weight offset or `Cancel` to abort.

4.2 MAINTENANCE AND CLEANING

ROS 1 may be returned to METER for maintenance in the following areas: system inspection, parts replacement, and instrument cleaning. Replacement parts can also be ordered from METER. Contact Customer Support for more information.

Keeping the ROS 1 sample chamber clean is an important part of regular instrument care and maintenance. Dust, debris, and spills can interfere with the sample cup rotation, disrupt conductance between the heating surface and the samples, and alter weight measurements.

General cleaning procedures that should be performed after each test are listed below:

- Blow out the sample chamber with compressed air between tests.
- Remove spills prior to starting a test.

  Spills left in the sample chamber during a test can burn and become difficult to remove after the test is complete.
- If a spill occurs near the scale pan, remove the scale pan and soak up any liquids or debris in the reservoir under the scale pan Figure 8.

⚠ WARNING

Keep liquid and debris out of the highlighted area in Figure 8. Failure to keep this area free of liquid and debris may result in degraded performance and/or costly repairs.

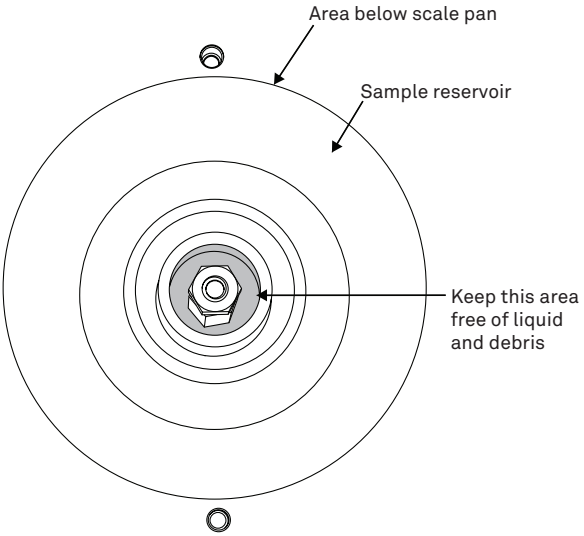

Figure 8 Sample reservoir

- Use a moist towel, sponge, or KIMWIPE tissue and a gentle liquid detergent or isopropyl alcohol to remove most (nonburnt) debris.
- To remove burnt or dried substances, try gently scrubbing using a very fine (scratch free) cleanser (METER has successfully tested Bon Ami cleaner).

• Rinse the surfaces using a moist towel, sponge, or KIMWIPE.

⚠ WARNING

Do not use anything abrasive! Scouring pads, sandpaper, and coarse cleansers wear down the surface of the sample chamber. Kitchen degreasers containing methylene chloride will strip the surfaces of the chamber.

METER recommends checking the ROS 1 daily to see if a more thorough cleaning is needed. For a more thorough cleaning, use the following steps to wash, rinse, and dry each area.

1. Turn the ROS 1 power off.
2. Open the sample chamber lid to expose the sample chamber.
3. Clean, rinse, and dry the sample chamber lid.
4. Remove the carousel by removing the two thumb screws in the center of the carousel (Figure 9 and Figure 10).

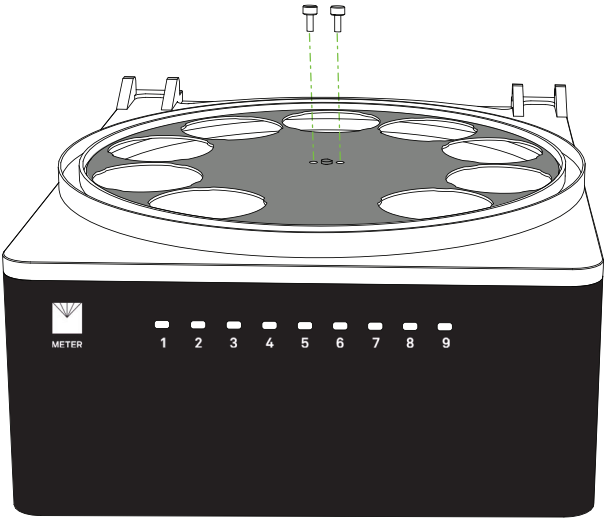

Figure 9 Remove Thumb Screws

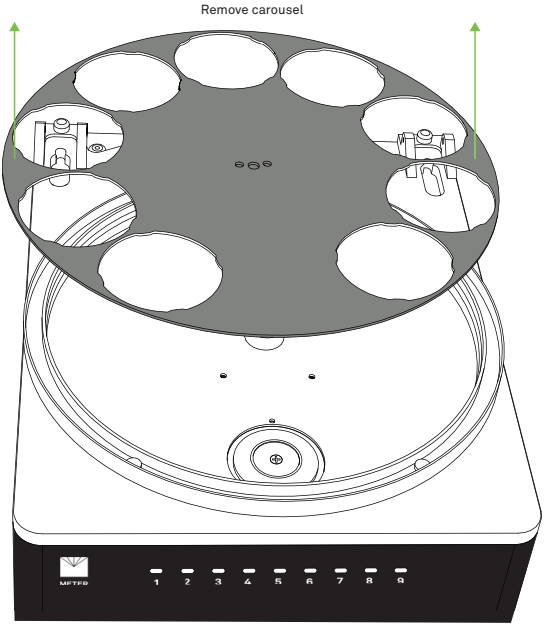

Figure 10 Remove Carousel

5. Clean, rinse, and dry the heating plate.
6. To access the scale well, remove the scale pan by removing the screw from the center (Figure 11).

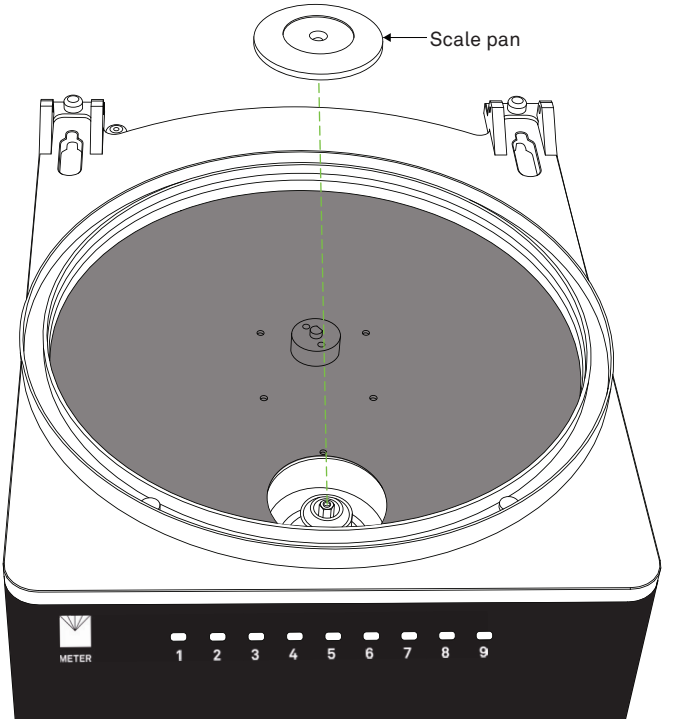

Figure 11 Remove Scale Pan

7. Clean, rinse, and dry the scale pan.

⚠ WARNING

Do not drop debris, water, or cleaning supplies down the scale rod shaft (Figure 11).

8. Replace the scale plan and secure the screw in the center.
9. Clean, rinse, and dry the carousel.
10. Replace the carousel.
11. Screw in the two thumb screws to secure the carousel.

4.3 REPAIR

METER repairs manufacturer defects and instruments within the 1-year warranty at no charge. Repairs outside of the warranty window are charged based on cost of parts, labor, and shipping. An extra fee may be charged for rush work. Contact Customer Support for an estimated repair cost.

All ROS 1 units returning to METER for servicing must be accompanied with a Return Merchandise Authorization (RMA) number. Prior to shipping the instrument, contact Customer Support to obtain an RMA number.

1. Ship the ROS 1 in its original cardboard box.

   If the original packaging is not available, use a box with at least 4 in of packing material (e.g., Styrofoam™ peanuts or bubble wrap) between the instrument and each wall of the box, ensuring the instrument is suspended in the packing material.

2. Do not ship the power cord, serial cable, or any other accessories.
3. On the RMA form, please verify the ship-to and bill-to information, contact name, and problem description.

   If anything on the RMA form is incorrect, please contact Customer Support.

4. Tape the box in both directions for added support.
5. Include the RMA number in the attention line on the shipping label.

   A factory-generated Certificate of Calibration will be issued upon completion of all repair work.

4.4 TROUBLESHOOTING

Table 2 lists common problems and their solutions. If the problem is not listed or these solutions do not solve the issue, contact Customer Support.

The ROS 1 performs a Power On Self Test (POST) whenever the machine is turned on. The POST takes 15 s after the machine is powered on, and gives an overview of the health and status of the ROS 1. After the POST completes, the results are shown on the LED indicators. Table 2 contains the description of each LED indicator.

Table 2 Troubleshooting the ROS 1

Problem	Possible Solutions
Unable to acquire weight reading from scale	Make sure that the ROS 1 is on a steady platform and there is no vibration occurring near the machine. Make sure that the sample cup contains between 500 to 25,000 mg of sample material.
At least one test sample must be present to do a test	There should be at least one empty cup in one of the 1 to 9 positions.
Scale error	Make sure that the ROS 1 is on a steady platform and there is no vibration occurring near the machine. Make sure that the sample cup contains between 500 to 25,000 mg of sample material.

Table 2 Troubleshooting the ROS 1 (continued)

Problem	Possible Solutions
Bridge app cannot connect to the ROS 1	Turn the power switch off and then back on to restart the machine. Wait 30 sec after power on. Make sure both ends of the METER USB cable are plugged in. If multiple COM ports are available, select a different port.
LEDs flash red	Contact Customer Support.
Data shows random low-weight outliers	Ensure sample cups are in good condition (e.g., not bent).
LED 1 shows RED: No scale response	Restart the ROS 1. If this persists, send into METER for maintenance. See Section 4.3.
LED 1 shows YELLOW: Weight mode timeout	Check that the workbench is stable, free from vibration or air currents. Tests may still work, but take longer for critical weight measurements.
LED 2 shows RED: Weight overload	Clean the drying chamber. Remove the scale pan, clean the scale reservior and replace the scale pan. See Section 4.2.
LED 2 shows YELLOW: Weight underload	Clean the drying chamber. Remove the scale pan, clean the scale reservior and replace the scale pan. See Section 4.2.
LED 2 shows GREEN: Improperly formatted scale response	Restart the ROS 1. If this persists, send into METER for maintenance. See Section 4.3.
LED 3 shows RED: Heater board overheat	Needs repair and temperature calibration. Send into METER for maintenence. See Section 4.3.
LED 3 shows YELLOW: Heater board underheat	Needs repair and temperature calibration. Send into METER for maintenence. See Section 4.3.
LED 3 shows GREEN: Heater coil test fail	Needs repair and temperature calibration. Send into METER for maintenence. See Section 4.3.
LED 4 shows RED: Case Fan overspeed	Use compressed air to blow out the fan on the rear panel.
LED 4 shows YELLOW: Case Fan underspeed	Use compressed air to blow out the fan on the rear panel.
LED 5 shows RED: Lid Fan overspeed	Use compressed air to blow out the fan on the top of the chamber lid. Repeat from the other side of the fan (under the lid).
LED 5 shows YELLOW: Lid Fan underspeed	Use compressed air to blow out the fan on the top of the chamber lid. Repeat from the other side of the fan (under the lid).

Table 2 Troubleshooting the ROS 1 (continued)

Problem	Possible Solutions
LED 6 shows RED: Carousel sensor error	If the carousel does not line up the sample positions over the scale pan, use the "`Calibrate tray positions`" button in the settings menu. If the carousel operates normally, do not use the "`Calibrate tray positions`" button.
LED 7: Subsystem communication error	Restart the ROS 1. If this persists, send into METER for maintenance. See Section 4.3.
LED 8: Communication with Temp/RH sensor error	The ROS 1 may operate normally, but some cloud-connected functionality may be impeded. If you subscribe to cloud services please call METER customer service for support.

4.5 CUSTOMER SUPPORT

NORTH AMERICA

Customer service representatives are available for questions, problems, or feedback Monday through Friday, 7:00 am to 5:00 pm Pacific time.

Email: support.food@metergroup.com
sales.food@metergroup.com

Phone: +1.509.332.5601

Fax: +1.509.332.5158

Website: metergroup.com

EUROPE

Customer service representatives are available for questions, problems, or feedback Monday through Friday, 8:00 to 17:00 Central European time.

Email: support.europe@metergroup.com
sales.europe@metergroup.com

Phone: +49 89 12 66 52 0

Fax: +49 89 12 66 52 20

Website: metergroup.de

If contacting METER by email, please include the following information:

Name	Email address
Address	Instrument serial number
Phone	Description of the problem

NOTE: For products purchased through a distributor, please contact the distributor directly for assistance.

4.6 TERMS AND CONDITIONS

By using METER instruments and documentation, you agree to abide by the METER Group, Inc. USA Terms and Conditions. Please refer to metergroup.com/terms-conditions for details.

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