

# **AE ADAM**

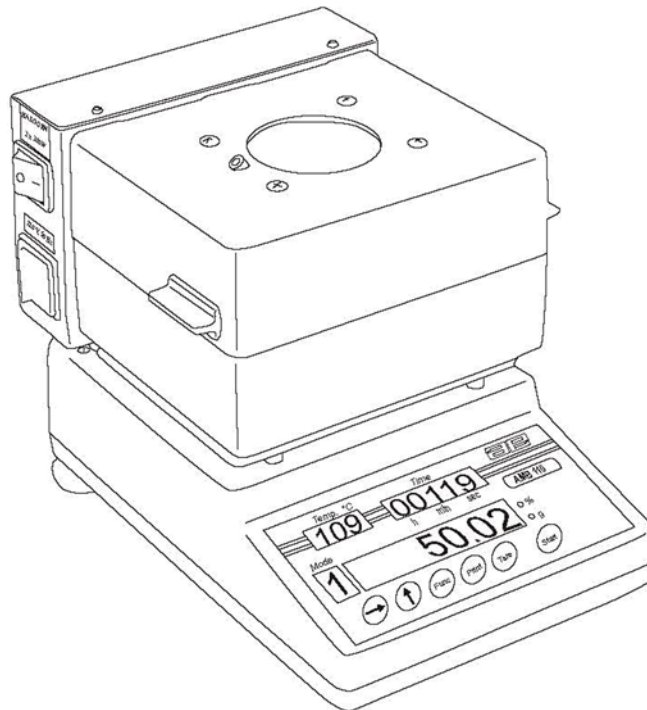
*Adam Equipment*

## **AMB MOISTURE BALANCE**

**(AMB 50)**

**(P.N. 3346, Revision L6, March 2006)**

Software rev.: PAS 16E





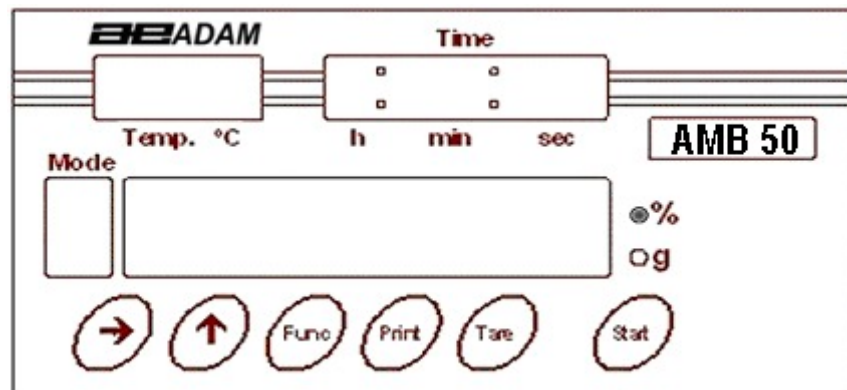
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## 1.0 INTRODUCTION

- The AMB moisture analyser is a precision device for the determination of moisture content in small samples of materials by drying the sample with halogen heaters.
- The AMB moisture balance is easy to use. The user sets the drying parameters into memory, puts the samples into the weighing chamber and then starts the test. The temperature of drying is automatically regulated and the results, elapsed time, current temperature in the chamber and the mode are displayed during the test.
- The user is told when the test has automatically stopped either due to the sample being dry and the weight no longer changing or due to the elapsed time reaching the limit set by the user. The final values are held on the display until the user resets the balance.
- The balance can be interfaced to a printer or computer. The output will show the results as the test progresses. After the test is finished, a summary of the test can be sent to a PC or printer.



The front panel of the AMB balance is shown above. There are 4 display areas: temperature, time, mode and the main display. Next to the main display are 2 indicators to signify the display showing a weight value (g) or the result of a drying test (%).

- The keypad has 6 keys to control the operation. During the weighing mode all keys are available. During a drying test, only the **[Tare]** key is available to abort the test.

## **KEY DESCRIPTION**

<b>[→]</b>	When setting parameters, it selects the digit to modify.
<b>[←]</b>	When setting parameters, it increments the selected digit.
<b>[Func]</b>	Function key selects the parameter to view or modify.
<b>[Print]</b>	It is used to send the weight to the RS-232 output. After a test has been completed, pressing this key will send a summary of the test to the RS-232 output.
<b>[Tare]</b>	Pressing this key will set the display to zero when weighing. During the drying procedure pressing <b>[Tare]</b> will abort the test.
<b>[Start]</b>	Use of this key, initiates the drying procedure.

## **2.0 UNPACKING AND SETTING UP**

- Unpack the moisture analyser carefully. The carton contains:

An AMB Moisture Balance Weighing Chamber Lining Weighing Pan Support Weighing Pans, pack of 10 AC Power Cord and User manual
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(For description, see 5.1)

- Place the moisture analyser on a stable weighing table.
- Do not install the balance near warm and cold sources, such as windows, radiators or air conditioners.
- Protect the balance from vibrations, temperature and dust.
- Turn the adjustable feet (14) until the balance (2) is level. Check the spirit level on the rear of balance.
- Install the weighing chamber liner on the 4 supports so that the edges turn upwards.
- Install the pan support (3) by placing the weighing pan (4) into the receptacle in the weighing chamber. Be careful not to press on the pan as this may damage the balance.
- Place an aluminium sample pan on the pan support. The balance may lock-up if this sample pan is not used.

- Attach the power cord to the AC power. Verify the AMB power requirements match your service. The AMB balance will use approximately 200 watts during normal operation.

## 3.0 OPERATION

### 3.1 TURN ON CYCLE

- **IMPORTANT:** Place an aluminium sample pan on the pan support before turning on the balance. If the balance is started without the sample pan in place it may lock-up during the initial warm-up period.
- Plug the device into an earthed socket. Verify the voltage to the balance is correct. Press power supply switch (8) to turn the balance on.
- The software revision (in this case PAS 16E) will be displayed first, followed by “-tEst-“. Then it will display “tEmp”.
- Pressing [**Start**] will begin a 3-minute warm-up time for the balance. The time display will begin counting up. The heating lamps will cycle during this time and the main display will continue to show “tEmp”. The temperature display will indicate the temperature in °C.
- After the warm-up time the balance will run a self-test by displaying all the digits in the main display and finally show “0.000”. The balance is now ready for setting the drying parameters.
- If you desire to by-pass the warm-up period, press [**Tare**] to abort the test and start the weighing mode. It is advisable not to abort the test when performing moisture analysis.

### 3.2 CALIBRATION

- If the balance is to be used for weighing, calibration is necessary. Follow the procedure given in the calibration section.
- If the balance is to be used only for moisture determination it is not necessary to calibrate the balance because all the results are based upon relative weights.

## Calibration Procedure

- Allow the balance to warm up for the initial warm-up period before calibrating.
- Have a suitable calibration weight ready. It is suggested it should be Class F2 or better.
- The balances use the suggested calibration weight which is 50g.
- Press the **[Tare]** key. The display will show:

-----

- Press the **[Func]** key while the bars are displayed. The display will show the following messages:

**n o C A L**

- Press **[Tare]** to skip calibration or wait for calibration to proceed. Calibration of zero point - the weighing pan must be empty.

- L o A d -

**50**

- Place the calibration weight (50g as requested on the display). Calibration is being executed (please wait).

**n o C A L**

**rELOAd**

- Remove the calibration weight.

-----

**0.00**

- This completes the calibration. Place the calibration weight on the pan to verify. If the displayed value is not correct then repeat the calibration procedure.



### 3.3 DRYING PARAMETERS

- Parameters for the drying procedure are set using the front panel keys.
- Press the **[Func]** key when in the weighing mode to scroll through and set the parameters.
- The parameters must be adjusted using data from the manufacturer of the sample to give the best results.
- The parameters are set in the following order. To advance from one to the next press the **[Func]** key.

#### 3.3.1 “SubSt” Substance Temperature Correction

- This correction allows the user to account for the difference between the temperature measured at the temperature sensor and the temperature of the sample.
- The balance allows 9 correction factors, each up to a value of 0.99 to be entered into memory in order to match the sample temperature to the set point temperature.
- For most tests, the scale will not use this parameter and the arrow keys can be used to select **SubSt=0**.
- **SubSt 1 to 9** are corrections for up to 9 different types of material.
- To determine the correction factor see Appendix A.
- Unless values have been calculated, select **SubSt=0**. This will automatically disable the function.

#### 3.3.2 “modE” Mode Select

Select one of 7 modes of operation. The modes are listed below:

Mode 1 Percent Moisture determination with respect to initial weight

$$\% \text{moisture} = (\text{Weight loss} / \text{Initial weight}) \times 100\%$$

Stop drying when results are same for 3 consecutive strobe intervals.

Mode 2 Percent solids

$$\% \text{Solids} = (\text{Current weight} / \text{Initial weight}) \times 100\%$$

Stop drying when results are same for 3 consecutive strobe intervals.

Mode 3 Percent Moisture with respect to solids

$$\% \text{Moisture} = (\text{Weight loss} / \text{Final weight}) \times 100\%.$$

Stop drying when results are same for 3 consecutive strobe intervals.

Mode 4 Percent Moisture determination with respect to initial weight

$$\% \text{moisture} = (\text{Weight loss} / \text{Initial weight}) \times 100\%$$

Stop drying when results are the same for 3 consecutive strobe intervals or the maximum time limit has expired.

Mode 5 Percent solids

$$\% \text{Solids} = (\text{Current weight} / \text{Initial weight}) \times 100\%$$

Stop drying when results are the same for 3 consecutive strobe intervals or the maximum time limit has expired.

Mode 6 Percent moisture with respect to solids

$$\% \text{Moisture} = (\text{Weight loss} / \text{Final weight}) \times 100\%$$

Stop drying when results are the same for 3 consecutive strobe intervals or the maximum time limit has expired.

Mode 7 Percent moisture determination with respect to initial weight

$$\% \text{moisture} = (\text{Weight loss} / \text{Initial weight}) \times 100\%$$

Stop drying when the maximum time limit has expired.

### **3.3.3 “IntEr” Maximum Time**

When Modes 4, 5, 6 or 7 are selected, the maximum time is set. The time can be in the range 1 minute to 9 hours 50 minutes.

### **3.3.4 “tEmP” Drying Temperature**

The temperature can be set in the range 50°C to 160°C.

### **3.3.5 “StrobE” Strobe Interval Time**

- The STROBE INTERVAL time is the time between one set of results and the next set of results.
- The interval time indicates how often the current results are output to the RS-232 interface.
- When using Mode 1, 2 or 3 the test will stop when 3 results are the same, indicating that there is no more moisture to be taken from the sample.

### 3.4 PROCEDURE TO SET PARAMETERS

The parameters can only be set when the balance is in the weighing mode.

#### 3.4.1 Substance Temperature Selection

- Press the **[Func]** key to display the first parameter, **SubSt**.
- The **modE** display will show the current value for **SubSt**.
- Select a value from 0 to 9 using the **[↑]** key.
- When **SubSt=0** is selected, press the **[Func]** key to step to the Mode function or if one of the other 9 values for **SubSt** is selected, press the **[Func]** key to step to the next function, "**SubCoF**" selecting a value for the correction.
- The values may have been previously selected and stored as described in appendix A. You can choose to use the values stored or enter a new value.
- To use the stored value as shown in the **tEmP** Display window, press the **[Func]** key to step to the **modE** parameter.
- To change the number press the **[↑]** key to increment the flashing digit.
- Press the **[→]** key to change the flashing digit to the next digit to the right.
- When the correction value has been set, press the **[Func]** key.
- If in doubt about a value to set, select **SubSt = 0**, or set the value of **SubCoF= 0.00**. The display will show **FALSE** if a value larger than 0.99 is entered. The **tEmP** display will flash the digits again so a correct value can be entered.

### 3.4.2 Mode

- The Mode display will show the current mode number.
- To change the number, press the [**↑**] key.
- Press the [**Func**] key to step to the next parameter when ready.

### 3.4.3 Maximum Time Limit

- If Modes 4,5,6 or 7 has been selected the maximum time can be set.
- The time can be set in the range of 1 minute to 9 hours 50 minutes.
- The Time display will show the current maximum time limit.
- To change the number press the [**↑**] key to increment the flashing digit.
- Press the [**→**] key to change the flashing digit to the next digit to the right.
- When the time has been set, press the [**Func**] key.
- If a time outside the range is entered the display will show “**FALSE**” and allow you to reset the time to an acceptable value.

### 3.4.4 Temperature

- The temperature can be set in the range of 50°C to 160°C.
- The temperature display will show the current drying temperature.
- To change the number press the [**↑**] key to increment the flashing digit.
- Press the [**→**] key to change the flashing digit to the next digit to the right. When the temperature has been set, press the [**Func**] key.
- If a temperature outside the range is entered the display will show “**FALSE**” and allow you to reset the temperature to an acceptable value.
- Press the [**Func**] key to step to the next parameter.

### 3.4.5 Strobe Interval Time

- The strobe interval time is also displayed in the time display. The strobe interval time can be set in the range of 1 to 59 seconds.
- The time display will show the current strobe interval time. To change the number press the [**↑**] key to increment the flashing digit.
- Press the [**→**] key to change the flashing digit to the next digit to the right. When the time has been set, press the [**Func**] key.
- If a time outside the range is entered the display will show “**FALSE**” and allow you to reset the time to an acceptable value.
- Press the [**Func**] key to step to the next parameter.

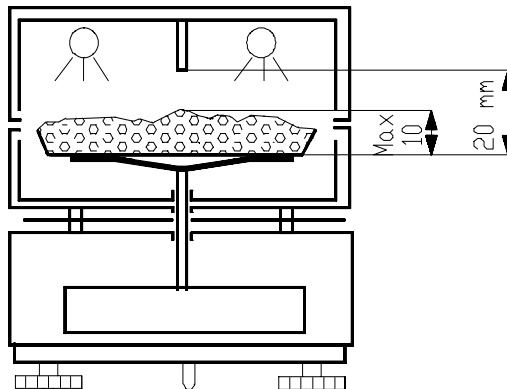
### 3.4.6 Temperature Calibration

- The temperature can be calibrated, when the balance is in the normal weighing mode.
- Through the circular opening on the top, insert the temperature sensor close to the weighing pan.
- Press [**Tare**], followed by pressing [**Print**] and the [**Tare**] key simultaneously.
- On the display, a request for “**code**” will be seen.
- Enter the correct code (“2003”) by using the arrow keys. Use [**↑**] for numerical entry from 0 to 9 and use [**→**] for changing the display point.
- Press [**Func**] key for setting the programme. “**St\_tE**” will be displayed.
- To check the temperature inside the weighing region, press [**Func**] again. The arrow keys should be used to change the temp. if it is not correct.
- Press the [**Func**] key again. If 20 degree C is entered, a number close to 4000 will appear on the screen.
- The [**Func**] key is pressed again to start the Temperature Calibration. The balance will now heat up to 50% of its total power.
- **Note:** For stable result, the balance should not be moved for about 15 minutes.
- The temp. will be close to 80 degree C in the weighing region.
- Press [**Func**] key. On the screen “**opEn**” will be displayed.
- The thermometer can be removed now.

- 2 degree must be added to every temperature value. For instance, if the thermometer shows 79 degree, another 2 degree should be added to enter a value of 81 degree C.
- The temperature calibration process is completed now.

## 4.0 DRYING PROCEDURE

- The procedure for drying a sample can only be carried out after the parameters are set. The sample must be prepared for the drying procedure. The method of preparation is dependent upon the type of sample to be tested.
- In general it is desirable to have the sample of uniform consistency. This may involve a mechanical preparation or a method of spreading the sample over the sample pan evenly.
- Details of these procedures are not covered here as every sample will be different.



**NOTE:** The sample should be spread evenly over the sample pan.  
Do not allow the sample to exceed 10mm in height above the pan.

### 4.1 PROCEDURE

- Place the sample pan with any inert material that may be required on the pan support.
- Press the **[Tare]** key to zero the display.
- Place the sample to be tested on the sample pan, as evenly as possible.

- Close the weighing chamber.
- Press the **[Start]** key to initiate the test.
- The displays will show the current mode, drying temperature and interval time. If these are not correct then reset the parameters as described in section 3.1.
- Press **[Start]** again to begin the test.
- The balance will begin the test displaying results as the test progresses.
- The current temperature, elapsed time and computed %moisture (or %solid) will be displayed.
- The test will stop as described for the modes in section 3.3.2.

#### **For Modes 1-3:**

- The test will stop if the results do not change for 3 consecutive strobe interval time periods.

#### **For Modes 4-6:**

- The test will stop if the results do not change for 3 consecutive strobe interval time periods or the maximum time is reached.
- If three consecutive strobe intervals are equal then the temperature will be increased to temp2 settings and then the maximum time limit is re-started.

#### **For Mode 7:**

- The test only stops when the maximum time is expired.
- At any time it is possible to stop the test by pressing the **[Tare]** key. The balance will return to normal weighing immediately.
- When the test stops automatically the final results are on the display.
- The results can be printed at this time by pressing the **[Print]** key.
- See Section 6.0 RS-232 Interface, for more details.

## **4.2 FOR BEST ACCURACY**

- If the sample mass is bigger, the moisture measurements can be more accurate, but the measurement time will be longer. The sample must not be so deep that the lower part is not heated thoroughly.

- To minimise the time and ensure best heating, place the sample thinly and uniformly on the pan.
- Crumble or powder any coarse-grained or dense materials.
- Some samples may form a protective skin that will prevent moisture from being released and may need special preparation such as being sandwiched between silicon pads or mixed with dry sand.
- Do not test samples that are too light. Errors may appear because of the material's small weight with reference to sensitivity of the balance.
- If you want to assure that the time interval between two strobe measurements was selected properly, additional measurements must be performed with new samples and longer time intervals.
- If there is a difference of moisture values then you should extend the time interval.
- In particular, the strobe time interval must be set higher when there are small samples or samples with low moisture content.
- Also samples that release moisture slowly may end the test prematurely so a higher strobe time or set time limit may be used.
- Errors may be caused by the disturbances of the power supply, if you notice any errors of the measuring cycle, repeat the measurement.
- In the case of samples that dry up very quickly, you should first establish the parameters of desiccation (temperature, time interval), tare the balance with the sample pan and then place the sample on the pan. Be certain the sample pan is tared so that only the sample weight is used to calculate the percent moisture.
- The temperature should be set as high as possible to ensure that all the moisture is released but not excessively high.
- If the temperature is too high the sample may burn off other product giving a higher than normal moisture content.

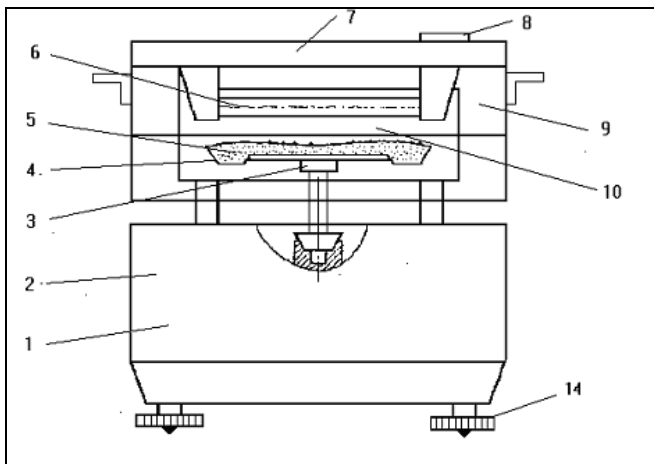


- Where ever possible please refer to the manufacturer of the sample, for guidelines.

## 5.0 TECHNICAL DATA

	<b>AMB 50</b>
Maximum capacity Max	50g
Display interval d	0.001g (1 mg)
Calibration weight (class F2)	50 g
Environmental temperature	+ 15 / + 35°C
Weighing pan dimensions	Φ 100 mm 4 inches
Dimensions	200 x 270 x 195 mm 7.9 x 10.6 x 7.7 inches
Net weight	5.6 kg 12.3 lb
Power supply	230VAC(+10%/-15%) 110VA or 115VAC (+10%/-15%) 110VA optional
Output signal	RS-232 bi-directional
Maximum sample mass	50 g
Suggested minimum sample mass	2 g
Resolution of moisture measurement	0.01%
Number of working modes	7
Drying temperature range	50-160°C
Sampling interval time	1s - 59s
Maximum time of drying, modes 4-7	9h 50min
Typical time of measurement	2 - 20 min
Power of heaters	200W
Internal Chamber dimensions	145 x 111 x 20 mm 5.7 x 4.4 x .8 inches

### 5.1 AMB BALANCE DESCRIPTION



1. Display and Keypad
2. Balance
3. Pan support
4. Weighing pan
5. Weighing sample
6. Halogen heater ( 2 x 200 W)
7. Protection of temperature regulation
8. Power supply switch
9. Cover
10. Sample Chamber
14. Adjustable feet

## 6.0 RS-232 COMMUNICATION

The balance can be connected to a printer or computer through a RS-232 interface.

### A) PARAMETER

The interface parameters are fixed as:

4800 Baud  
 8 data bit  
 No parity  
 1 stop bit  
 No handshaking

### B) CONNECTION

The details of the connectors are as follows:

Output Connector: 9 pin D- Sub-miniature plug  
 Pin 3, Data from Balance  
 Pin 5, Signal Ground  
 Handshaking is not implemented.

### C) WEIGHING FORMAT

During the weighing mode the RS-232 interface will transmit the weight when the **[Print]** key is pressed. The format is:

+xxx.xxx g<CR><LF>  
 xxx.xxx is the current weight displayed

## D) TEST FORMAT

During the test the RS-232 interface will transmit the computed results at the time intervals set by the strobe interval parameter. The format is:

xxx.xx	% <CR> <LF>
xxx.xx	is the current results as displayed

For example:

0.00%
2.03%
5.00%
7.39%
10.82%
15.43%
21.17%
26.21%
29.91%
30.86%
30.86%
31.65%
31.65%
31.65%

## E) FINAL RESULTS FORMAT

This format will print the final results summary at the conclusion of the moisture test when the **[Print]** key is pressed. During the test the **[Print]** key is not active. The format is fixed as follows:-

MODE	1 .	Mode Number
MASS DECREMENT	31,65 %	Percent Moisture
INITIAL MASS	33.44 g	
FINAL MASS	10.52 g	
TEMPERATURE	106 ° C .	Temperature Set
DRYING TIME hh:mm:ss	0:04:20 .	Total Time of Test
FREQUENCY OF READOUT	20 s .	Interval Set

After the test is complete and the results are on the display, press the **[Print]** key to output the results as shown above. This can be repeated as necessary as long as the results are still on the display.

## APPENDIX A

- The **SubSt** parameter is a correction between the measured temperature within a sample and the set temperature (where the measured temperature is greater). This difference can exist because some materials will absorb more heat than others and different textures will heat more efficiently thus becoming hotter than the indicated temperature.
- The balance allows you to store 9 correction factors. The factors are stored in permanent memory.
- To set the corrections factors it will be necessary to dry a sample of the material and measure the temperature on the inside of the sample during the drying process. A small thermocouple sensor is suggested for this purpose.

### PROCEDURE

- 1 > With the balance in normal weighing mode, place a sample of material on the sample pan. Attach a thermocouple sensor to the sample pan with the active part of the sensor buried in the sample.
- 2 > Set the following drying parameters:

**SubSt**= 0  
**modE**= 7  
**IntEr**= 30:00 minutes or longer  
**tEmp**= a typical value for the sample, for this example assume 110°C  
**StrobE** = 20 seconds

- 3 > Press the **[Start]** key to display the parameters. Press **[Start]** a second time to begin the test.
- 4 > After the test has run for some time and the temperature in the sample has stabilised, compute the correction factor from the following:

$$\text{Correction} = \frac{T_{\text{measured}} - T_{\text{set}}}{T_{\text{set}}}$$

- For example, if the measured temperature is 121°C and the set temperature is 110°, the correction is 0.10.
- Record the correction factor.
- Stop the test by pressing the **[Tare]** key.
- Then enter the **SubSt** parameter menu.
- Select the **SubSt** value to enter this correction factor by using the **[Func]** key then the **[↑]** key to increment the flashing digit.
- Press the **[Func]** key to display the current value for the parameter in the “**tEmP**” display.
- Enter the new value into the window,
- The display will show the current value. To change the number press the **[↑]** key to increment the flashing digit.
- Press the **[→]** key to change the flashing digit to the next digit to the right. When the value has been set, press the **[Func]** key as necessary to return to normal weighing.
- The scale will display “**FALSE**” if a value greater than 0.99 is entered.
- The “**tEmP**” display will show again to allow you to change the value.

**Typical values that have been measured are:**

<b>Material</b>	<b>Set Temperature</b>	<b>Measured Temperature</b>	<b>Correction Factor</b>
Flour	100 °C	103.7°C	0.04
Coal Dust	100 °C	122.2°C	0.22
Damp Tea Leaves	100 °C	120.5°C	0.20
Dry Tea Leaves	100 °C	108.5°C	0.08
Cement	100 °C	121°C	0.21

## APPENDIX B

### WARNING

- Avoid touching the parts of the balance such as the ventilation grill, which can become very hot during the operation.
- The balance should not be used to analyse highly inflammable samples or the sample materials which may produce corrosive vapours such as acids.
- The balance should not be used in hazardous locations.
- User should not leave a permanent load on the weighing pan which may cause damage to the measuring equipment.
- Any structural alterations may lead to incorrect weighing results and also concerning safety regulations.
- The balances should only be used in compliance with the guidelines described in this Operator's Manual.
- The following guide notes are offered as examples of temperature, display update time and expected results when drying various substances.
- The preparation, distribution and amount of product can all significantly affect the results.
- It is important to find suitable procedures to process the material, usually by trial and error.
- In general it is recommended that a temperature of 100°C, a time interval of 10 seconds and a sample sized 2-5g be selected for initial test.
- After a number of tests with these conditions this will provide a basis for comparing other times, temperatures or sample preparations.

The items in the following table are taken from actual test results. The user of the AMB balance will need to determine the best procedures for their samples.

### **AMB MOISTURE BALANCE EXAMPLES**

MATERIAL	SAMPLE MASS (g)	DRYING TEMP.(° C)	STROBE TIME(s)	AVERAGE WATER CONTENT	STANDARD DEVIATION	DRYING TIME(min)
DRY APPLE PULP	5-8	100	10	76.5	0.1	10-15
WET APPLE	5-8	100	10	7.5	0	5-10
BUTTER	2-5	138	15	16.3	0.1	4.5
MUSTARD	2-3	130	20	76.4	0.7	10
GROUND COFFEE	2-3	106	5	2.8	0.1	4
CORNFLAKES	2-4	120	15	9.7	0	5-7
YOGHURT	2-3	110	15	86.5	0	4.5-6.5
COFFEE CREAMER POWDER	2-3	130	15	78.5	0.1	6-8
COCOA POWDER	2-3	106	20	0.1	0.1	2
POTATO FLAKES	3-4	106	15	6.9	0.1	7.5
MARGARINE	3-4	138	20	16	0.1	10
MAYONNAISE	1-2	138	20	56.5	0.4	10
MILK POWDER	2-4	90	15	5	0.2	6
MILK CHOCOLATE	2-5	106	15	1.3	0.1	3.5
RED WINE	3-5	100	15	97.4	0.1	15-20
CHOCOLATE POWDER	2-4	100	5	1.9	0.1	4
SUNFLOWER OIL	10-14	138	20	0.1	0	2
POWDERED SOUP	2-3	80	15	3	0.2	4.5-7
SUGAR	4-5	138	15	11.9	0.1	10
MILK	2-3	120	15	88	0.2	6-8
FLOUR	8-10	130	10	12.5	0.1	4-5
CEMENT	8-12	138	15	0.8	0.1	4-5
PAPER	2-4	106	20	6.4	0.1	10
SLIME	11-12	130	15	80	-	90
POLYAMIDE	2-5	138	20	2	0.2	75
DUST	5-10	104	10	7.3	0.3	8-15
CHARCOAL	8-10	120	10	3.8	0.1	8-10
WHITE GLUE	2-5	136	15	54.3	0.1	6-8

**This list will be extended as information becomes available. If you wish to furnish any information that may help others, please contact Adam Equipment or your dealer.**

## 7.0 TROUBLESHOOTING

	<b>Problems</b>	<b>Suggestions</b>
1	Unit does not turn on	Check power supply. Check fuse in plug. Check fuse in balance.
2	Unit turns on but stays on all 888888	Check whether the Pan is installed properly.
3	Unit does not zero after lamp test	Check if the mains power supply has been interrupted. Check whether the display was set to zero initially.
4	Balance weighs but is unstable	Check whether the surface on which the balance is kept, is stable. Check if the location is unsuitable due to the fluctuations in temperature or interference with any electromagnetic field.
5	Balance shows –null- or Low after power on	Check whether the Pan is installed properly.
6	Balance shows wrong weight	Check the Calibration. Check whether the Pan is installed correctly. Check whether the balance was set up properly. Check if the location is unsuitable due to the fluctuations in temperature or interference with any electromagnetic field. Check whether the display was set to zero initially.
7	Balance works OK but drying is not correct	Check parameters and mode selected. Check samples are not hitting the temp. sensor. Check temperature of chamber. Check Lamps. Check if product is suitable for this type of balance.
8	Temperature of Chamber incorrect	Check the temperature sensor calibration.
9	Chamber much too hot	Check the temperature sensor calibration.
10	Heating lamps will not turn on at any time	Check whether the lamp is working.
11	Lamps will not turn off	Check the temperature sensor calibration.



## 8.0 REPLACEMENT PARTS AND ACCESSORIES

If you need to order any spare parts and accessories, contact your supplier or Adam Equipment. A partial list of such items is as follows-

- Main Power cord
- Replacement sample pans
- Stainless Steel Pan
- Printer, etc.

## 9.0 SERVICE INFORMATION

This manual covers the details of operation. If you have a problem with the scale that is not directly addressed by this manual then contact your supplier for assistance. In order to provide further assistance, the supplier will need the following information which should be kept ready:

### **A. Details of your company**

- Name of your company:
- Contact person's name:
- Contact telephone, e-mail, fax or any other methods:

### **B. Details of the unit purchased**

(This part of information should always be available for any future correspondence. We suggest you to fill in this form as soon as the unit is received and keep a print-out in your record for ready reference.)

<b>Model name of the scale:</b>	AMB 50
<b>Serial number of the unit:</b>	
<b>Software revision number (Displayed when power is first turned on):</b>	
<b>Date of Purchase:</b>	
<b>Name of the supplier and place:</b>	

### **C. Brief description of the problem**

Include any recent history of the unit. For example:

- Has it been working since it's delivered
- Has it been in contact with water
- Damaged from a fire
- Electrical Storms in the area
- Dropped on the floor, etc.

## **WARRANTY INFORMATION**

**Adam Equipment offers Limited Warranty (Parts and Labour) for the components failed due to defects in materials or workmanship. Warranty starts from the date of delivery.**

**During the warranty period, should any repairs be necessary, the purchaser must inform its supplier or Adam Equipment Company. The company or its authorised Technician reserves the right to repair or replace the components at the purchaser's site or any of its workshops depending on the severity of the problems at no additional cost. However, any freight involved in sending the faulty units or parts to the service centre should be borne by the purchaser.**

**The warranty will cease to operate if the equipment is not returned in the original packaging and with correct documentation for a claim to be processed. All claims are at the sole discretion of Adam Equipment.**

**This warranty does not cover equipment where defects or poor performance is due to misuse, accidental damage, exposure to radioactive or corrosive materials, negligence, faulty installation, unauthorised modifications or attempted repair or failure to observe the requirements and recommendations as given in this User Manual.**

**Repairs carried out under the warranty does not extend the warranty period. Components removed during the warranty repairs become the company property.**

**The statutory right of the purchaser is not affected by this warranty. The terms of this warranty is governed by the UK law. For complete details on Warranty Information, see the terms and conditions of sale available on our web-site.**



### **Manufacturer's Declaration of Conformity**

This product has been manufactured in accordance with the harmonised European standards, following the provisions of the below stated directives:

Electro Magnetic Compatibility Directive 89/336/EEC

Low Voltage Directive 73/23/EEC

Adam Equipment Co. Ltd.  
Bond Avenue  
Denbigh East Estate  
Milton Keynes, MK1 1SW  
United Kingdom

### **FCC COMPLIANCE**

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. The equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at own expense.

Shielded interconnect cables must be employed with this equipment to insure compliance with the pertinent RF emission limits governing this device.

Changes or modifications not expressly approved by Adam Equipment could void the user's authority to operate the equipment.

**ADAM EQUIPMENT** is an ISO 9001:2000 certified global organisation with more than 30 years experience in the production and sale of electronic weighing equipments. Products are sold through a world wide distributor network -supported from our company locations in the UK, USA, SOUTH AFRICA and CHINA. The company and their distributors offer a full range of Technical Services such as on site and workshop repair, preventative maintenance and calibration facilities.

**ADAM's** products are predominantly designed for the Laboratory, Educational, Medical and Industrial Segments. The product range can be classified as follows:

- Analytical and Precision Laboratory Balances
- Top Loading Balances for Educational establishments
- Counting Scales for Industrial and Warehouse applications
- Digital Weighing/Check-weighing Scales
- High performance Platform Scales with extensive software features including parts counting, percent weighing etc.
- Digital Electronic Scales for Medical use
- Retail Scales for price computing

<p><b>Adam Equipment Co. Ltd.</b> Bond Avenue Milton Keynes MK1 1SW UK</p> <p>Phone: +44 (0)1908 274545 Fax: +44 (0)1908 641339</p> <p>e-mail: <a href="mailto:sales@adamequipment.co.uk">sales@adamequipment.co.uk</a></p>	<p><b>Adam Equipment Inc.</b> 26, Commerce Drive Danbury, CT 06810 USA</p> <p>Phone: +1 203 790 4774 Fax: +1 203 792 3406</p> <p>e-mail: <a href="mailto:sales@adamequipment.com">sales@adamequipment.com</a></p>	<p><b>Adam Equipment S.A. (Pty) Ltd.</b> P.O. Box 1422 Kempton Park 1620 Johannesburg Republic of South Africa</p> <p>Phone +27 (0)11 974 9745 Fax: +27 (0)11 392 2587</p> <p>e-mail: <a href="mailto:sales@adamequipment.co.za">sales@adamequipment.co.za</a></p>
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The latest version of this publication can be found on our Website.

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