Adam Equipment

MDW-250 L

Service Manual

Adam Equipment Co. Ltd.
p.n. 6094, Rev. B1, June 2005

CONTENTS

1.0 INTRODUCTION

The MDW 250L scale is a Digital Physician Scale. It is an accurate electronic device with advanced design and stable performance. It is designed to measure both the weight and the height of a person.

2.0 KEYS AND DISPLAY DESCRIPTION

KEYS	FUNCTIONS
[Tare/Zero On/Off]	To turn the scale on or off. To zero the scale if the display drifts from zero. To tare the scale, if necessary.
[Hold]	To lock the reading even if the person to be weighed is moving.
[Kg/ lb]	To toggle the weighing unit between Kg. and lb

DISPLAY	DESCRIPTIONS
ZERO	This indicator will be displayed in the left corner when the scale reaches zero.
▶	The arrow indicator will point at Kg, lb, Hold or/and Tare marked near the LCD panel, as on when they are chosen.
	When the battery is low, this symbol will be displayed in the left of the display. Connect the adapter to recharge the battery.
Charge	The charge light will be on when the battery is recharging.
FULL	When the load on the platform is over the maximum capacity, it will appear on the display.

3.0 TROUBLESHOOTING THE MDW-250L

PROBLEMS	SUGGESTIONS
Nothing happens when **[On/off]** is pressed	Press the switch situated on side of the indicator to **ON**, for battery operation
Display turns ON but then goes off	Charge the battery
Display shows "**FULL**" and does not change when the person to be weighed stands on the platform	Check whether the cable from the base is properly plugged into the socket on the indicator Check whether the cable is damaged
The scale does not weigh accurately	Calibrate the scale Check the kg/lb selection before weighing Charge the battery Check the cable The person on the scale should not move Check nothing is rubbing against the platform Check the base assembly is not damaged Replace the PCB
Display does not change	Check **HOLD** is not activated

4.0 TECHNICAL SPECIFICATIONS

Maximum capacity	250 kg
Minimum capacity	2 k g
Scale division	100 g
Height range	70cm-190cm
Division of measurement	0.5cm
Accuracy class	III
Display	LCD
Size of platform	372X272cm
Overall dimension	535X275X940mm
Deadweight	13Kg
Environment for Use	Temperature: 5'C-40'C; Humidity: <85% RH
Power	AC 220V through an adapter
Battery	Internal, re-chargeable 6V, 5 hours approx.

5.0 SETTING UP THE SCALE

- Take the Physician scale out of the box.

- Remove the two M4 screws from the bottom of the pillar.

- Rotate the pillar and secure it to an upright position using the two M4 screws.

- Slide the pole cover to the bottom.

- Remove the M6 screw at the top of the pillar and turn the indicator panel to 180 degree. Tighten the M6 screw until the indicator panel is secured.

- Position the height measuring rod and secure it by fixing its threaded end.

- Connect the adapter power supply to the main power supply and put the switch at the rear of the scale to ON.

6.0 FUNCTION

6.1 WEIGHING

- Place the Physician Scale on an even floor and press the **[On/Off]** key.

- The instrument performs a self-test after which it is ready for operation. The display will show "SCALE", "250.00" (Capacity), "Ur X.XX" (the software revision number), "10.0.0.0.0", "DC. 6.00" (the voltage of the battery) and then will show "0.0000" with an arrow symbol, indicating the last chosen unit (kg or lb).

- Press the **[On/Off]** key for 2 or 3 seconds and the machine switches off. If the machine is not to be used for a long time, the main power switch shall be turned off.

- The scale has a back-light which is switched on every time the scale is turned on or the **[On/Off]** key is pressed during the operation.

- When in the weighing mode, press **[On/Off]**, the scale will show "**0.000**" when the initial zero is within 4%of the maximum capacity.

- The person to be weighed can step on to the platform now. The weight will be display in Kg. or lb. depending on the units chosen by the user.

- If the weighing value is to be tared to obtain the net value, press the **[On/Off]** key again.

- Press the **[kg/lb]** key for changing the weighing unit to kg or lb. An arrow will indicate towards the chosen unit.

- **Overload display**: When "**FULL**" appears on the display, it shows that the load on the platform is over the maximum capacity. Under these circumstances, it is necessary to reduce the load otherwise the sensor or the platform will be damaged.

- **Hold Function:** To lock the weighing result, press the **[Hold]** key. The arrow indicator will point towards **HOLD** and it will the show a steady reading even if the person on the platform is moving or goes away from the scale and will not affect the next weighing. To release the function, press the **[Hold]** key again.

- Do not press the **[On/Off]** key if you do not want to weigh as pressing the **[On/Off]** key will switch the scale to **ON**.

6.2 MEASURING HEIGHT

- While measuring the height, it is necessary to pull up the measuring board at a right angle with the inside tube.

- When the tube is pulled out straight, it is sufficient to measure the height form 70-126cm. The number can be obtained upon the conjoint place where the upper part of middle tube screw meets with the inside tube scale.

- Further, if the middle tube is pulled out straight, it is possible to measure the height from 126-190cm. The reading can be obtained at the conjoint place where the upper part of outside tube screw meets with the middle tube scale.

7.0 USER CALIBRATION

1. Press **[On/Off]** key when the display shows "**SCALE**".

2. Press **[On/Off]** key again.

   If the display is not showing "**Id01**" open the upper housing and switch the span jumper on PCB to **ON**.

   Start again by pressing **[On/off]**.

   The display shows "**Id01**", "**Id-02**", "**Id05**", "**Id10**","**Id-20**", "**Id-50**".

3. Select "**Id01**" for 100g increments and press the **[On/Off]** key once.

4. The indicator will show the selection capacity: "**P1000**" "**P2000**"...."**P5000**", Select "**P2500**" for 250kg, then press the **[On/Off]** key once.

5. Indicator will automatically show the decimal points: "**POT 0**" "**PT0.0**" "**T0.00**" "**T0.000**", "**POT 0**". Select the "**PT0.0**" and press the **[On/Off]** key again.

6. Indicator will display "**ULOAD**". Press the **[On/Off]** key again.

7. Indicator will show the internal value. After it is stable, it will show "**LOAd**".

8. Put the mass (suggest the full capacity) and press the **[On/Off]** key, the indicator shows the internal value (after loading) and the will show "**Ld-In**" after stable.

9. Press the **[On/Off]** key. Then press the **[Hold]** key. The last digit of the display will be moving from "**0-9**". Press the **[Hold]** key, the digit will move forward to one position. When the figure displayed is same as the capacity of the standard weight, press the **[On/Off]** key.

   For example: If a 10 kg weight is used instead of full capacity:

   After you process till the step (9) as above, press the **[On/Off]** key.

   The indicator will show: "**0.0**". Press the **[Hold]** key, the last digit will be automatically jumped from "**0**" to"**9**". When the figure jumps to "**1**", press the **[Hold]** key three times. Now, the "**1**" will be moved to the 3rd forward position and the display will be changed to "**10.0**". At this time you are required to press the **[On/Off]** key immediately.

   Next the display will show the current weight on the pan.

10. The Calibration is now complete.

11. Set the span jumper on the PCB to **OFF** position and re-seal the indicator.

12. If the selections made during calibration are not as described as above, the scale may still work but will not show accurate results. In such cases, re-do the calibration as shown above.

8.0 WARNING

- Do not dismantle the weighing machine without following the necessary instructions.

- Do not jump while standing on the load-bearing board. This may damage the sensor inside.

- Do not move the weighing machine violently and abruptly. It is recommended to move and put down the weighing machine gently.

- It is suggested to wipe the stains with soft cloth soaked with detergent and to wipe later with soft cloth too. Do not use organic solutions and boiled water to wipe the stains. Do not use water for cleaning.

- Keep the weighing machine in a dry and clean environment. Do not expose it outdoor or use it in locations near fire, under direct sunshine or with high temperature.

- When lifting the height meter, it is suggested to pull it straight along the pipe without using excessive force.

- The **[On/Off]** key on the screen board only switches off the screen power instead of the entire power to the weighing machine. Therefore, it is necessary to switch off the main power supply when the weighing machine is not in use for a long time. Otherwise the battery may be damaged as a result of over-discharge of electricity.

9.0 ADJUSTMENT AND REPAIRS

9.1 ADJUSTMENT

The users can not make any adjustments other than Calibration.

9.2 REPAIRS

9.2.1 ELECTRONICS REPAIR

The most common electrical problems are-

1> Broken cables between the base and indicator,
2> Broken cables or poor connections on cables within the indicator.
3> Lead Acid battery has reached the end of its life.

Check the cables for loose connections, poor contact or abrasions on the sides and replace as necessary.

The battery for the scales is a Lead Acid type with 6V, 5AH capacity. If the battery must be replaced, use another Lead Acid battery of similar capacity only.

If the battery shows less than 6.5Vdc after charging, it is probably not holding the charge and should be replaced.

The electronics used in the MDW- 250L scales consist of a main PCB assembly with a second small PCB for the keys. The main PCB assembly is not user serviceable. If a problem is found on the PCB, it should be replaced.

Contact your Dealer or Adam Equipment for assistance.

9.2.2 MECHANICAL REPAIR

The mechanics of the scale consists of a lever system to transfer the weight to the single load cell. The lever system has series of bearings and knife edges to transfer the weight from the platform to the load cell.

Any broken knife edges, bent “S” links or severe misalignment can cause poor weighing results. Inspect for damage and try to re-align parts if necessary. If any of the mechanical parts are damaged or missing, it is usually not possible to do a cost-effective repair.

Contact your Dealer or Adam Equipment for assistance.

If the load is being directed to the load cell properly and still the weighing results are not satisfactory, then the load cell may be faulty.

A couple of tests which are to be done to verify the load cell are as follows-

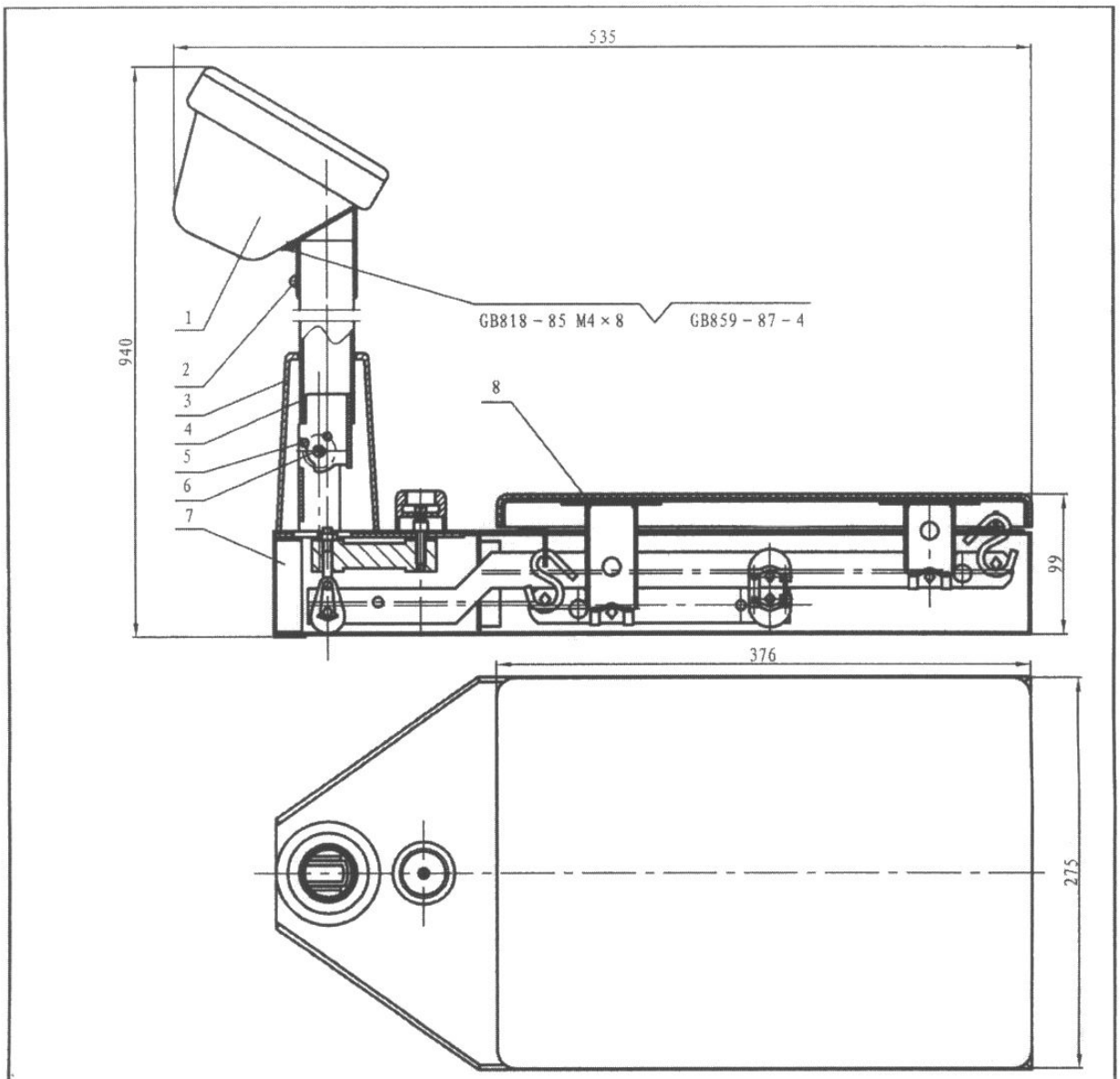
- Within the indicator identify the load cell connector on the PCB. Voltage measurement between pins 1 and 4 should be 5Vdc ±5%. If this voltage is not correct then the main PCB should be replaced.

- Voltage between pins 2 and 3 should be approximately 0 to 1mv. This voltage should increase as the load is applied to the platform up to about 8mv. With 250kg on the scale, if the voltage is zero and does not increase- check the cable connecting the load cell to the indicator.

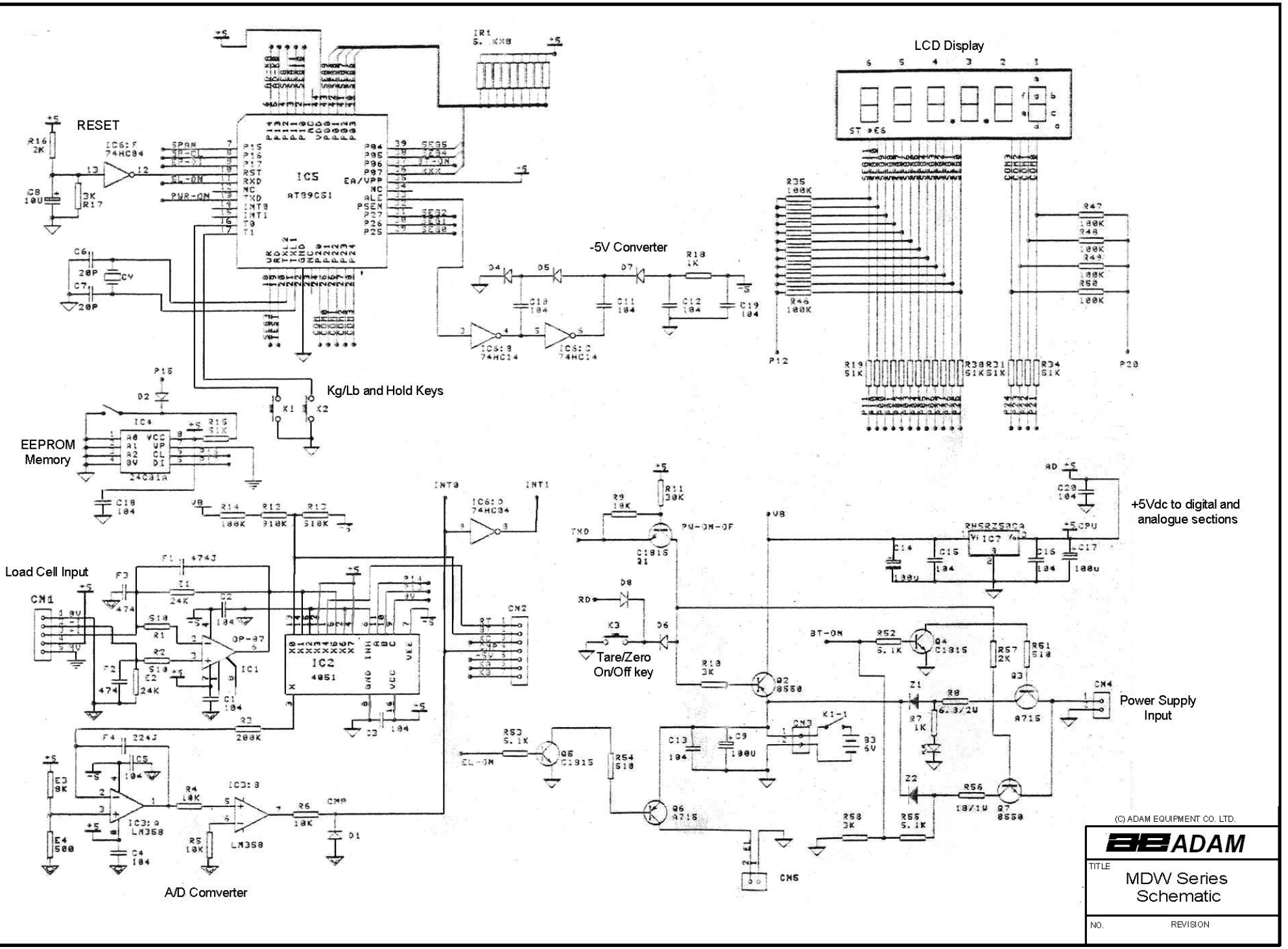
- If the voltage with 0 kg load is greater than 2mv then the load cell is likely to be damaged.

- If the voltage does not change with load then check the mechanical linkage to the load cell. Otherwise the load cell is damaged.

10.0 DIAGRAMS



1	Display	**TITLE:** SECTIONAL VIEW OF MDW-250L
2	Pillar fastener	
3	Pillar support	
4	Pillar	**NO:** 7656
5	Pillar bracket	**DATE:** 20.02.2003
6	Fastening screws	ADAM EQUIPMENT COMPANY
7	Base assembly	
8	Scale platform	


RESET
LCD Display
-5V Converter
Kg/Lb and Hold Keys
EEPROM Memory
Load Cell Input
Tare/Zero On/Off key
+5Vdc to digital and analogue sections
Power Supply Input
A/D Comverter
(C) ADAM EQUIPMENT CO. LTD.
ADAM
TITLE
MDW Series Schematic
NO.
REVISION

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 his 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 and SOUTH AFRICA. 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

Adam Equipment Co. Ltd.	**Adam Equipment Inc.**	**Adam Equipment S.A. (Pty) Ltd.**
Bond Avenue Milton Keynes MK1 1SW UK	26, Commerce Drive Danbury, CT 06810 USA	P.O. Box 1422 Kempton Park 1620 Johannesburg Republic of South Africa
Phone:+44 (0)1908 274545 Fax: +44 (0)1908 641339	Phone: +1 203 790 4774 Fax: +1 203 792 3406	Phone +27 (0)11 974 9745 Fax: +27 (0)11 392 2587
e-mail: sales@adamequipment.co.uk	e-mail: sales@adamequipment.com	e-mail: sales@adamequipment.co.za

The latest version of this publication can be found on our Website.

Visit us at **www.adamequipment.com**