Adam Equipment

ADAM STATISTICS PRINTER

ADAM EQUIPMENT CO. LTD.
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1.0 ADAM PRINTER WITH STATISTICS

- The Adam Printer is a general purpose thermo tally roll printer specifically designed to work with the Adam series of balances.

- The Printer with Statistics allows the user to collect data from Adam balances and then print statistical information about the data. Alternately it can be set as a standard printer to collect data without the statistics.

- The printer comes preset to work with the default RS-232 interface found on the Adam balances. It can easily be changed to work as a standard printer with other equipments as well.

- The printer is easy to use with only a Paper Feed button (grey button) and a Print switch (red button).The Print switch sends commands to request data from Adam balances.

2.0 SPECIFICATIONS

Power Supply	8.5 to 14VDC or 7 to 10VAC 15 Watts when printing 3 Watts when idle
Mains Supply	As required. Standard adapters are 230VAC 50/60Hz (UK or European) or 115VAC 50/60Hz (USA)
Environment	5 to 35ºC 10 to 80% humidity, non-condensing
Printer	Dot matrix Thermo printer Bi-directional printing 0.75 lines per second 40 or 80 characters per line
Paper	112mm thermo paper PH65 or HONSHU Standard 20 meter roll maximum diameter 48mm.
Size	60 x 180 x 150mm 0.6kg
Interface	RS-232 or RS-242 (TTL) 5 pin DIN Connector 1200, 2400, 4800 or 9600 baud 8 bit or 7 bit With or without parity

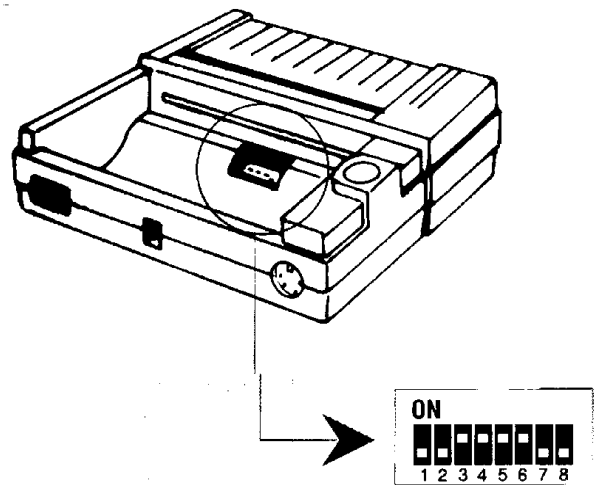
3.0 PAPER LOADING

See the following diagram. Cut the paper at an angle and feed into the slot from rear.

Press and hold the Paper Feed button until the paper passes through the printer.

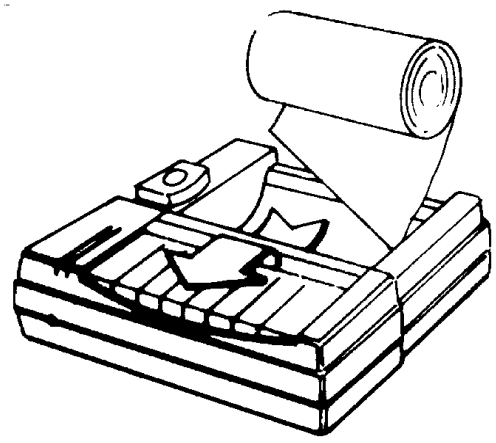
Do not pull the paper or it force through the slot.

If the paper does not feed easily check whether you are using the paper entry slot and there are no obstructions in the paper path.



Configuration
Dip-Switch

Paper Loading
Note direction of paper roll



4.0 CONFIGURATION

- The printer is set with the dip-switches under the paper roll. See the drawing on the previous page.
- When configured as a statistics printer it will work with the Adam balances only. Data from the balances will be collected and the statistical information on the readings from the balance can be printed. The date and time can also be printed with the data.
- When the printer is set for standard printing it can be used with most RS-232 devices to print the data from them. The date and time are not available.
- To reset the parameters turn the printer off. Set the switches as desired and then turn the printer on.

SW8	Off Statistics disabled On* Statistics enabled	
	1200 2400 4800 9600 baud	Select Adam Balances*
SW1	On Off On Off	Off
SW2	On On Off Off	Off
SW3	On 8 bit data Off 7 bit data	not used
SW4	On Check Parity Off No Parity check	Increment number* Do not print number
SW5	On Parity Even Off Parity Odd	Date/time enabled* Date/Time not printed
SW6	On 80 column Off 40 column	Print all statistics* Print only number of readings and total
SW7	On High Quality Print (slow) Off Normal Print (fast)	High Quality Print (slow) Normal Print (fast)*

*The default settings are:

To operate with Adam balances for statistics

4800 baud Date and time enabled 40 column 8 bit Line numbering enabled No parity Fast printing enabled

5.0 INTERFACE

Cable between the printer and balances

Printer	**Adam Lab Balances**
5 pin DIN connector	9 Pin D-Subminiature Socket
Pin 1 RXD ---------- Pin 2 DTR ---------- Pin 3 GND ---------- Pin 4 nu Pin 5 TXD ----------	Pin 3 Data from Scale Pin 1 Not used by Adam balances Pin 5 Signal ground Pin 2 Data to scale Pin 7 Connected to Pin 8 Pin 4 Connected to Pin 6

6.0 STATISTICS OPERATION

- The printer has 2 switches to assist in printing statistical information for data received from balances. The **[Paper Feed]** switch (Grey button) normally advances the paper. In addition the printer has another switch, **[Print]** (Red button) which is used to send the Print command to balances and in conjunction with the Paper Feed for some operations.

- When power is turned on, the Statistics function is automatically enabled if SW8 is ON.

- Send data to the printer from the scale by pressing the **[Print]** key on the printer, by pressing the **[Print]** key on the scale or by setting the scale to automatically print when stable.

- During data collection, the last data can be erased if it is erroneous by pressing the **[Paper Feed]** then **[Print]** switch in sequence.

- Continue to collect the data in this manner. At any time data collection can be stopped by holding down the **[Paper Feed]** and then pressing **[Print]** and releasing both the buttons.

<u>The following options are displayed</u>

PRINT	Press **[Print]** to get a Statistics Report
PRINT + PF	Start a new Series by holding **[Print]** then pressing the **[Paper Feed]** switch
PF + PRINT	Continue by holding **[Paper Feed]** then pressing the **[Print]** switch

The Statistics Report consists of the following information

n	=	number of results
sum x	=	sum of all results
$\bar{x}$	=	average
s	=	standard deviation (n-1)
srel	=	relative standard deviation]
min	=	minimum value
max	=	maximum value
R	=	range (max – min)

The equations used are:

$$s = \sqrt{\frac{\sum \left(x_i - \bar{x} \right)^2}{n-1}} \qquad srel = \frac{s}{\bar{x}}$$

- During the time the data collection is suspended, the printer can be used for normal printing as long as the RS-232 settings are 4800 baud, no parity, 8 bit.

- Hold **[Paper Feed]** and press **[Print]** to continue with the data collection procedure or hold **[Print]** and then press **[Paper Feed]** to start a new set of data collection.

- If the printer detects a change in format or an error during the data collection, a message of * Data Error * will be printed. If the message does not get cleared when the balance data is sent to the printer, it may be necessary to turn the printer off and then on, before starting the data collection again.

7.0 NORMAL PRINTING

- If the printer is changed to perform as a normal serial printer (SW8 OFF) then the setting of the other switches will need to be changed to match the baud rate, parity and the other printer settings.

- Turn the power off when setting the switches and the new parameters will become active when the power is turned back to ON.

- The printer generally uses the IBM Proprinter commands, with additional special codes to print the date and time.

ESC c or ESC C	Print current time
ESC d or ESC D	Print current date

8.0 SETTING DATE AND TIME

- Hold the **[Paper Feed]** key down when the power is turned on. The printer will go into a date/time setting mode. Regardless of the internal switch settings, proceed as follows.

- An ASCII string must be sent to the printer to set the date and time. One method of doing this is to connect the printer to a PC or other terminal device. Send the following commands to the printer from the DOS prompt.

```
C:\>  MODE COMx:1200,E,7,1<enter>
C:\>  COPY CON COMx<enter>
C:\>  Tyy;mm;dd;hh;mm;ss<enter>
C:\>  CTRL-Z<enter>
```

- Comx is the active Com port the printer is connected to. For example to set 18 May 1999, 9:25 AM send T99;05;18;09;25;00<enter> CTRL-Z<enter> then turn the power off. To begin the normal operation turn the power on. The baud rate and parity should be as set above regardless of how the printer is configured using the dip-switches.

- A program to set the date and time is available from Adam Equipment. This program will run under Windows. Contact your supplier for details.

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

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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

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