Prove

Statistical Printer

User Guide

RICE LAKE
WEIGHING SYSTEMS

Contents

1.0   Introduction

This manual contains operating procedures for the Prove statistical printer and provides you with all the information necessary for setup and operation.

Manuals can be viewed or downloaded from the Rice Lake Weighing Systems website at **www.ricelake.com/manuals**

1.1   Overview

The Prove statistical printer is an ultra-compact, lightweight portable printer that is housed in an innovative enclosure. It is designed to work with Rice Lake balances, TC/TP, TA, Equipoise, the CW-90 indicator and A&D GF balances.

Features include:

- Easy load paper
- Power supply options
- RS-232 interface
- High speed, high resolution printing capability
- Quiet, non-impact system
- Maintenance free
- Ultra-compact and lightweight
- High reliability line head mechanism
- Versatile for use with text or graphics
- Low power mode
- Range of configurable options

1.2 Safety Instructions

⚠️ **WARNING**

Failure to heed may result in serious injury or death.

Don't pour any liquid near the equipment, as it may result in electric shock.

Only qualified service personnel should open the equipment.

Don't repair or adjust energized equipment alone under any circumstances. Someone capable of providing first aid must always be present for your safety.

Danger of explosion if battery is incorrectly replaced. Replace only with the equivalent type recommended by the manufacturer.

Dispose of batteries according to the manufacturer's instructions.

Hazardous moving parts, keep fingers and other body parts away.

(!) **Important**

To prevent equipment damage:

Keep the equipment away from humidity.

Before connecting the equipment to a power outlet, check the voltage of the power source.

Disconnect the equipment from the voltage of the power source to prevent possible transient over-voltage damage.

1.3 Keypad Functions

The Prove statistical printer has four buttons and a status LED light. The function of each one is described below.

Key	Description
POWER ⏻	Turns printer on/off.
RESET ↻	Resets printer to zero.
⚙ CONFIG	Allows to access configuration parameters
▥ RSLT	Prints the statistical results

Table 1-1. Key Functions

1.4   Low Power Mode

The Prove statistical printer incorporates two low power modes. These can be configured via option 9 (see Section 3.0 on page 6 for more information), but the printer will not enter low power mode if the charger is attached.

Sleep Mode

While in Sleep Mode, the printer enters low power mode after a preset period of inactivity. Once asleep, the printer can be woken up by sending a NULL character one second before data is to be printed, or the printer can be woken up by pressing the Mode button.

Auto Off Mode

In this mode, the printer cannot be woken by any data transfer and must be powered on manually.

1.5   Status LED

The Prove statistical printer incorporates an LED indicator to report conditions of the printer.

2.0   Setup

This section describes procedures for setting up the Prove statistical printer.

2.1   Insert Batteries

Each unit comes with four NiMH rechargeable batteries. They have been removed from the unit during transit. To insert the batteries back into the unit, remove the battery cover from the base of the printer and insert the batteries, taking care to ensure the batteries are inserted correctly. Use the illustration located inside the battery compartment to guarantee the batteries are inserted correctly.

2.2   Charging the Printer

When the printer is first delivered there may be little or no charge in the printer's batteries. Make sure the printer is turned off. Connect the power adapter to the printer and plug it into an outlet.

It should be allowed to charge for a total of 16 hours before it is used for the first time.

It is recommended to connect the printer to the power adapter and recharge the batteries as soon as the status LED indicates a low battery.

The printer can be connected to the power adapter continuously to trickle charge the batteries. If the printer is asleep, it will wake up when the adapter is connected and will not sleep while it is connected. To "fast" charge the batteries, the printer must be turned off.

If the batteries in the printer become exhausted, printing will become faint, erratic or not at all. Turn the printer off and recharge the batteries for at least 15 minutes before attempting any further printing. The power adapter can't supply the full power requirements for the printer during printing, so the batteries must be partially charged before printing is possible.

(!) **Important**   *Always use a Rice Lake approved power adapter. Use of an unapproved power adapter will void the printer's warranty.*

The printer comes with a 110-240 AC adapter with a universal plug set. Use the appropriate adapter for your needs.

Figure 2-1. Multiple Plug-in Heads

2.3 Turning the Unit On

Once the batteries have been charged, open the paper cup lid and ensure that a roll of paper is there and that there are no foreign objects inside the paper cup. Close the lid, making sure that the paper passes through the paper exit slot.

Briefly press the **Power** button to turn the printer on. The status LED will illuminate and the printer mechanism will reset. A brief press of the Power button will turn the printer off. When the printer is asleep, press the Power button to wake the printer up.

2.4 Configuring the Printer For a Balance

To operate the Prove statistical printer with various balances you must configure the balances with the following settings to work with the printer.

Equipoise Balance

Connector: part number 130789
Settings: 9600 baud rate, 8 Data Bits, None
F3 - TP Ticket Printer, P port, press Print

GF Balance

Connector: part number 41279
Settings:
- SiF bPS 4 - 9600 baud
- btPr 2 - 8 bits none
- CrLF 0 - CR LF
- tYPe 0 - A & D standard format

TC/TP

Connector: part number 158583
Spec settings:
- 7. I. F.2 seven digit
- 7.I.o.c.7 Press memory print key
- 72 b.1. 4 - 9600 baud rate

CW-90

Verify settings: 9600 baud rate, 8 Data Bits, None
Set up Print out
GROSS<SP><G><NL>

TA

- 7 I. F * 2 Numeric 7-digit
- 7 1 oc * 7 Output once when print key is pressed
- 7 2 bL * 4 9600 baud rate
- 7 3 PR * 0
- 7 6 un * 0
- 7 7 rEs * 1

3.0   Configuration

The Prove statistical printer incorporates a number of configurable options, each of which has a number of settings. The default settings of the standard printer are detailed in Table 3-1 in bold. To change the settings of any option, follow the directions below.

1.   Ensure power to the printer is off.
2.   Press and hold the **Mode** button. In approximately five seconds the status light (LED) will flash five times to show that the printer is in configuration mode. Release the **Mode** button.
3.   Press the **Power** button the same number of times as the option that you want to change (for example, to change the baud rate, press the **Power** button twice).
4.   After a short delay, the status light will flash the same number of times as the option you have chosen. If you make a mistake at this stage, simply wait a moment, and the printer will power on without changing any options.
5.   To proceed with configuration, press the **Power** button the same number of times as the setting you wish to make.

Option Numbers	Description	Settings	Setting Number
1	RS-232 Protocol	8, no parity 8, odd parity 8, even parity 7, odd parity 7, even parity	1 2 3 4 5
2	RS-232 Baud Rate	115200 57600 38400 19200 9600 4800 2400 1200 600 300	1 2 3 4 5 6 7 8 9 10
3	RS-232 Flow Control	None Software Hardware	1 2 3
4	Font	Arial 16, 24 CPL Arial 12, 32 CPL Arial 8, 48 CPL	1 2 3
5	Character Format	Normal Double width Double height Double width and height	1 2 3 4

Table 3-1. Configuration Options

Option Numbers	Description	Settings	Setting Number
6	Print Density	Lowest	1 2 3 4
7	Printer Current	Highest	1 2 3 4
8	Print Format	Standard paper, normal printing Standard paper, upside down printing Labels, normal printing Labels, upside down printing	1 2 3 4
9	Sleep/Wake-up	Never sleep Sleep after one minute Sleep after two minutes Sleep after five minutes Sleep after ten minutes Off, one minute Off, two minutes Off, five minutes Off, ten minutes	1 2 3 4 5 6 7 8 9

Table 3-1. Configuration Options

3.1   Set Print Mode

There are two ways to set up the print mode on the Prove statistical printer.

- Print everything on a label
- Scales and balance mode

Scales and Balance Mode (Statistical)

1. Power on the printer
2. Press and hold the **CONFIG** button until the LED on the unit flashes.
3. Release the **CONFIG** button and press 10 times.
4. After five seconds, the LED will flash 10 times.
5. Press the **CONFIG** button.
6. After five seconds the LED will flash twice and reset.

Tape Printer Mode (Non-Statistical)

1. Power on the printer
2. Press and hold the **CONFIG** button until the LED on the unit flashes.
3. Release the **CONFIG** button and press 10 times.
4. After five seconds, the LED will flash 10 times.
5. Press the **CONFIG** button twice.
6. After five seconds the LED will flash twice and reset.

3.2 Serial Interface

The Prove statistical printer uses a standard RS-232 interface. The printer is fitted with a 6-way RJ12 socket that plugs into the following location.
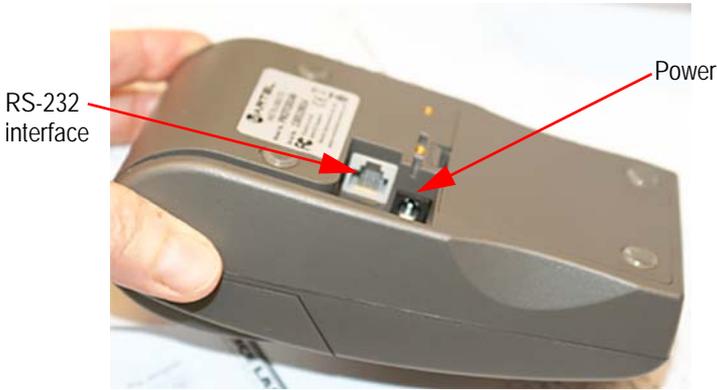
Figure 3-1. RS-232C Plug in Location

Pin assignments and interface signals are shown in Table 3-2.

Pin	Signal	I/O	Definition
1	GND	N/A	Signal ground
2	TxD	0	Transmitted date to host
3	RxD	1	Received data from host
4	CTS	0	Clear to send
5	N/C	N/A	No connection
6	N/C	N/A	No connection

Table 3-2. RS-232C Pin Assignments

3.3 Software Selectable Functions

The following selectable functions are available with the Prove statistical printer.

- Underline
- Double height
- Double width
- Graphics
- Horizontal tab, plus setting
- Form feed, plus setting
- 11 selectable international character sets
- Reverse printing
- Inverse printing
- Reset
- Barcodes

4.0   Operation

Operation of the Prove statistical printer is simple.

1.   Enter all of the data into the printer.

2.   Press the **Result** button to print out the statistical data.

The following printout illustrates an example of a TA balance.

```
001:          1.0558    G
002:          1.0554    G
003:          1.0556    G
004:          1.0554    G
005:          1.0555    G
006:          1.0555    G
007:          1.0557    G
008:          1.0554    G
009:          1.0554    G
010:          1.0555    G
011:          1.0556    G


n                  11
Σx           11.6108    G
x̄            1.0555    G
min           1.0554    G
max           1.0558    G
range         0.0004    G
SD            0.0001    G
CV              0.01    %
```

Figure 4-1. TA Balance Printout

5.0   Appendix

5.1   Power on Self Test

The self test procedure checks most of the printer's functions (printer mechanism, control circuitry, firmware version, etc), except for the serial interface.

When the printer is turned off, press and hold the power button for approximately two seconds. Release the power button and the printer will power on and print a self-test report.

Figure 5-1. Self Test Sample Printout

5.2   Status LEDs

The following table shows the status LEDs and their conditions.

LED indication	Condition	Solution
On	Printer on	NA
Off	Printer off or asleep	NA
Short Flash Every Second	Fast charging	MCP7810-349 only
* * *	Paper out	Fit new paper into printer
** ** **	Thermal head too hot	Allow head to cool
*** *** ***	Battery cutout (no charge remaining)	Recharge batteries - MCP7810-349
*** *** ***	Battery low (approximately 20% of charge remaining)	

Table 5-1. LED Status Lights

5.3   Paper Out

The printer will automatically detect when the printer paper has run out, and report this using the status LED. Replace the paper roll described in Section 5.6.

5.4   Head Thermal Limit

After extensive printing the print head temperature may rise to an unusable level. The status LED will report when this occurs, and printing will stop until the head temperature returns to normal levels.

5.5   Opening the Paper Reservoir Lid

To open the printer, squeeze and pull the level upward and forward until the lid is released from its locked position. To avoid damage to the unit, do not use excessive force.

Figure 5-2. Opening Paper Reservoir

5.6   Replacing Paper Roll

When the paper roll needs replacing, use the following steps.

1. Open the paper reservoir lid and remove the remaining paper.

2. Reel off a few centimeters from a new roll of paper.

3. Hold approximately five centimeters of paper outside the printer as the roll is placed into the reservoir.

4. Close the lid by applying gentle and equal amounts of pressure on each side until the lid is in the locked position. Now tear the surplus away.

Note *The thermal side of the paper should be facing forward.*

Figure 5-3. Replace Paper Roll

5.7   Disposal

If in use in the EU the printer should be disposed of in accordance with the Waste Electrical and Electronic Regulations (WEEE Regulations). This also applies with national requirements in other countries.

The Prove statistical printers contain batteries that should be disposed of by a qualified hazardous material handler.

5.8   Replacement Parts

The following is a list of replacement parts associated with the Prove statistical printer.

Part No	Description
	Universal power supply (USA, EU and UK heads)
75947	Thermal printer paper roll, 25 m
	Serial data cable (RJ12/D9)
	Battery, AA, 12V, Ni-MH (4 required)

Table 5-2. Replacement Parts

5.9   Specifications

Printing System	Direct thermal line head
Max characters per line	48, 32, 24 (default)
Character matrix	24x8, 24x12, 24x16
Character size	3mm x 2mm, 3mm x 1.5mm, 3mm x 1mm (approximately 13, 17, 25cpi)
Horizontal dot pitch	0.125mm (approximately 200 dpi)
Vertical dot pitch	0.123mm
Text line composition	24 x 384 dots
Printing width	44mm
Average printing speed	10 lines per second (max)
Power Supply - MCP7810-349	Internal 4 x 1.2V NiMH 1600mAH, AA cells
Paper width	58mm
Paper capacity	45mm dia. 25m (standard paper)
Recommended paper	Thermal paper (PN 75947)
Character set	ASCII
Country codes	USA, France, Germany, UK, Denmark I/II, Sweden, Italy, Spain, Japan
Interface date format	RS-232C (9600, 8 Data, 1 Stop, No parity)
Connector	6-way, RJ12 socket
Baud rates	300, 600, 1200, 4800, 9600, 19200, 38400, 57600, 115200
Handshake hardware (CTS line) or software (XON/XOFF) buffer size	5 Kbytes
Operating range	32° to 122°F (0° to 50°C)
Storage range	-4° to 140°F (-20° to +60°C)
Charging range	50° to 113°F (+10° to +45°C)
MTBF	Approx. 10 million lines (20 C, print ratio = 25%)
Charge life	Approximately 6000 lines (18m) of continuous printing

Table 5-3. Printer Specifications

Prove Statistical Printer Limited Warranty

Rice Lake Weighing Systems (RLWS) warrants that all RLWS equipment and systems properly installed by a Distributor or Original Equipment Manufacturer (OEM) will operate per written specifications as confirmed by the Distributor/OEM and accepted by RLWS. All systems and components are warranted against defects in materials and workmanship for one year.

RLWS warrants that the equipment sold hereunder will conform to the current written specifications authorized by RLWS. RLWS warrants the equipment against faulty workmanship and defective materials. If any equipment fails to conform to these warranties, RLWS will, at its option, repair or replace such goods returned within the warranty period subject to the following conditions:

- Upon discovery by Buyer of such nonconformity, RLWS will be given prompt written notice with a detailed explanation of the alleged deficiencies.
- Individual electronic components returned to RLWS for warranty purposes must be packaged to prevent electrostatic discharge (ESD) damage in shipment. Packaging requirements are listed in a publication, "Protecting Your Components From Static Damage in Shipment," available from RLWS Equipment Return Department.
- Examination of such equipment by RLWS confirms that the nonconformity actually exists, and was not caused by accident, misuse, neglect, alteration, improper installation, improper repair or improper testing; RLWS shall be the sole judge of all alleged non-conformities.
- Such equipment has not been modified, altered, or changed by any person other than RLWS or its duly authorized repair agents.
- RLWS will have a reasonable time to repair or replace the defective equipment. Buyer is responsible for shipping charges both ways.
- In no event will RLWS be responsible for travel time or on-location repairs, including assembly or disassembly of equipment, nor will RLWS be liable for the cost of any repairs made by others.

These warranties exclude all other warranties, expressed or implied, including without limitation warranties of merchantability or fitness for a particular purpose. Neither RLWS nor distributor will, in any event, be liable for incidental or consequential damages.

RLWS and buyer agree that RLWS' sole and exclusive liability hereunder is limited to repair or replacement of such goods. In accepting this warranty, the buyer waives any and all other claims to warranty.

Should the seller be other than RLWS, the buyer agrees to look only to the seller for warranty claims.

No terms, conditions, understanding, or agreements purporting to modify the terms of this warranty shall have any legal effect unless made in writing and signed by a corporate officer of RLWS and the Buyer.