M1

DIGITAL WEIGHT INDICATOR

OPERATION MANUAL

WESTERN SCALE CO. LTD.

M1 INDICATOR
OPERATION MANUAL

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Western Scale Co. Limited
1670 Kingsway Avenue
Port Coquitlam, B.C.
CANADA
V3C 3Y9

Tel: (604) 941-3474
Fax: (604) 941-4020

info@westernscale.ca
www.westernscale.ca

**FOR TECHNICAL SUPPORT REGARDING THIS PRODUCT, PLEASE CALL
YOUR AUTHORIZED WESTERN DEALER:**

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INTRODUCTION

Best suited to bench and floor scales, the M1 is a basic, 5 button indicator that features the same high resolution and speed found in other Western instruments. A compact, stainless steel enclosure and large display make the M1 perfect for virtually all light industrial weighing applications while advanced features like time & date and programmable tickets ensure the M1 will continue to meet customer requirements well into the future.

Western's continued dedication to durability, functionality and versatility make the M1 *engineered for the diversity of the weighing industry.*

The following User information is for the exclusive use of **WESTERN** Dealers and Customers.

Safety

Installation, configuration and servicing are only to be performed by qualified Scale Service Technicians as authorized by Western.

Power must be disconnected before servicing the unit. Disconnection from the line voltage is done by disconnecting the mains plug.

This equipment must be connected to a socket-outlet with a protective earthing connection. The socket outlet shall be installed near the equipment, and shall be easily accessible.

This equipment is intended for connection to multiple RATED VOLTAGES or FREQUENCIES. The switchover to the corresponding voltage is done automatically by the equipment.

CAUTION! HIGH VOLTAGES are present inside the M1 enclosure.

Scale Service Technicians handling M1 PCBs must observe proper electrostatic discharge (ESD) handling procedures.

ATTENTION! Unauthorized installation and service of this unit may void the warranty.

Features

Simple Interface
- Large, easy to read LED display digits (7/8^{ths} inch / 22 mm)
- Oversize keys with international symbols
- 8 Annunciators display the scale data
- MENU key accesses tickets and macro functions

Durability
- Compact enclosure with swivel bracket for mounting
- 304 stainless steel construction

Excellent Serviceability
- Easy to navigate software menu and calibration
- Calibrate to any test weight value
- Terminal wiring

Advanced Capabilities & Quality
- Time & Date
- MACRO II Ticket System
- *2 Year Warranty*
- *MADE IN CANADA.*

Specifications

Excitation:	5 VDC, Up to 4 x 350 Ω or 8 x 700 Ω load cells
Analog Input Range:	0 - 19 mV
Resolution:	10,000d Class III / IIIL; 20,000d class IIIHD (Can.)
	1 million internal counts
Measurement Speed:	50 weight samples/sec.
Power:	AC Input: 90 - 240 VAC
	Consumption: 500 mW
Display:	6 digit, 7 segment, LED weight display
	8 LED annunciators
Communications:	2 Full duplex RS-232 serial ports
	Configurable data format
	Selectable output strings
Temperature Range:	14°F to 104°F / -10°C to 40°C
Approvals:	NTEP & Measurement Canada approved

### INSTALLATION

Mounting Instructions

1. The M1 can be mounted to horizontal or vertical surfaces using the mounting bracket.

2. Ensure that mounting structures (walls, posts, etc.) will bear the weight of the indicator (Approx. 1.5 kg / 3.5 lb).

3. Use proper hardware, including wall anchors where necessary, when mounting the bracket and indicator.

4. Installers must take proper steps to prevent noise, static, or other power problems.

> ⚠️ *ATTENTION! In noisy industrial environments, power-conditioning filters are a requirement to ensure a fail-safe operation under all conditions. Indicators should not share AC power with electrical motors and switchgear. Consult the site engineer for clean AC power.*

DISPLAY & ANNUNCIATORS

The M1 uses a high intensity Light Emitting Diode (LED) display with a quick update rate. The LED annunciator lamps communicate scale status and mode information to the user.
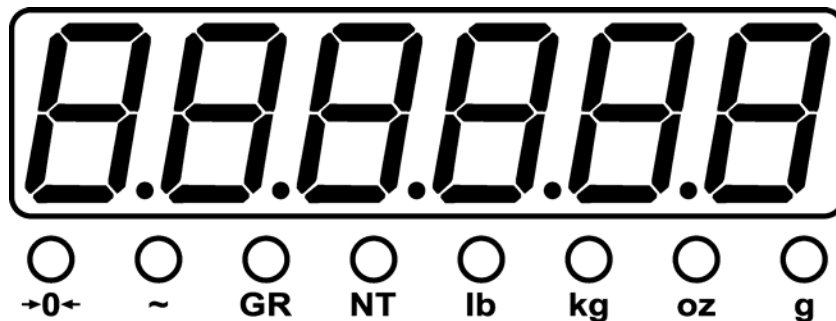
M1 Display

Weight Display

- 6 digits (7 segments each). Up to 3 decimal points.

- Negative weights are indicated by a minus sign (-) on the far left character.

Annunciators

○
-0-
CENTRE ZERO: The scale is within **±0.2** graduations of TRUE ZERO.

○
~
MOTION: The scale is **in motion**.

○
GR
GROSS: The scale is in GROSS weighing mode.

○
NT
NET: The scale in NET weighing mode (a tare weight is stored)

○
lb
lb: The scale is weighing in **POUNDS**.

○
kg
kg: The scale is weighing in **KILOGRAMS**.
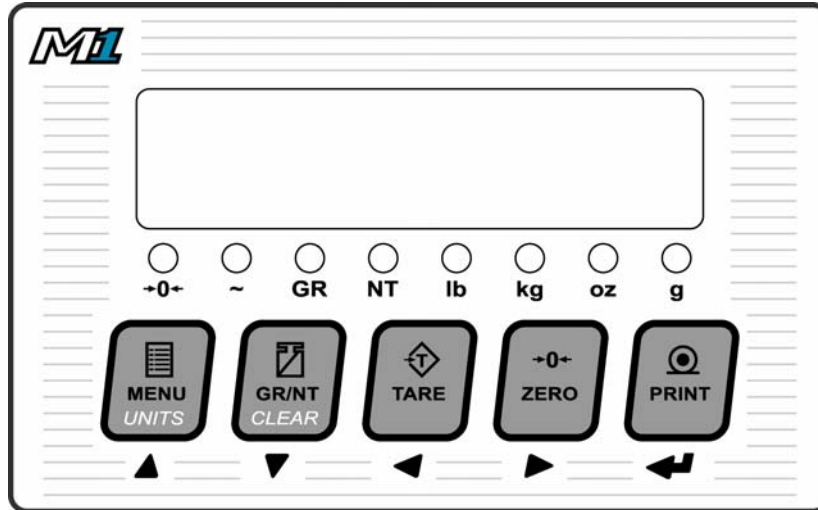
○
oz
oz: The scale is weighing in **OUNCES**.

○
g
g: The scale is weighing in **GRAMS**.

KEYPAD & SCALE FUNCTIONS

The M1 indicator utilizes 5 keys for operator interfacing. To maximize indicator functionality, some keys perform multiple functions.

M1 Keypad

	Press the key:	**MENU** – Cycles through the USER MENU to access additional Scale Tickets & functions (See Pg. 10)
	Press & hold the key (2 sec):	**UNITS** - Toggles between Primary, Secondary and Tertiary Weighing Units (if enabled).

Alternate Units may be selected or disabled in Calibration Mode by Qualified Technicians.

	Press the key:	**GR/NT** - Toggles between GROSS and NET weighing modes if a tare value is stored.
	Press & hold the key (2 sec):	**CLEAR** - Clears any previously acquired tare values. When used in Legal for Trade applications, tares can only be cleared when GROSS weight is at no load.

Clears Peak Hold (locked weight) values when the Peak Hold function is enabled.

TARE: Acquires tare value from weight on the scale (Container, Box, etc.).
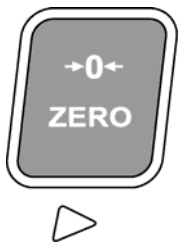
The scale will not tare if:

- Weight on the scale is in MOTION;

- The scale weight is zero or negative;

  When one of these situations occurs, the display will briefly read "Err 2".

The TARE button may be disabled in Calibration Mode by Qualified Technicians

In Canadian Legal for Trade applications, previous tare weights must be cleared before a new tare weight can be acquired.

ZERO: Sets the weight display to ZERO.

The scale will not zero if:

- Weight on the scale is in MOTION;

- The weight on the scale exceeds the allowed ZERO RANGE *(Display reads "Err 4)".*

PRINT: Transmits data string or scale ticket through COM1.

If tickets are programmed, Ticket 1 is always assigned to the PRINT key.
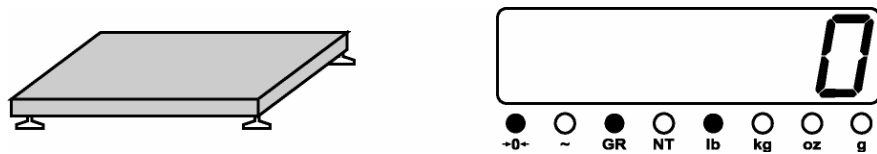
OPERATION (WEIGHING MODE)

Start-Up

1. Connect the AC power cord from the indicator into a power outlet.

2. The indicator will perform a short start-up sequence including the software version before entering Weighing Mode (displaying the scale weight).

$$\boxed{\text{M7 1}} \rightarrow \boxed{\text{1-42}} \rightarrow \boxed{\text{0.0}}$$
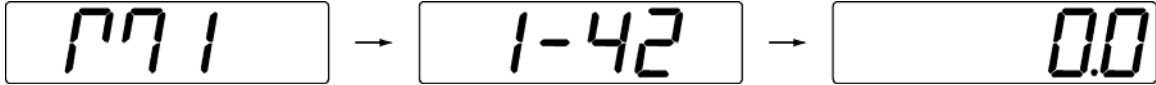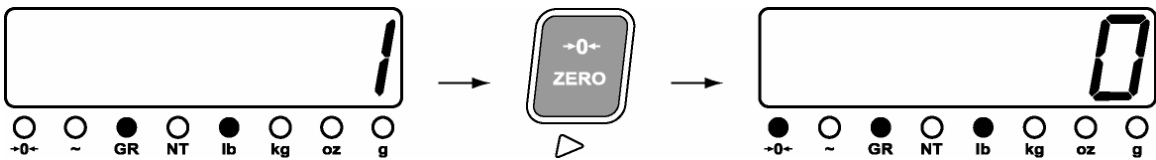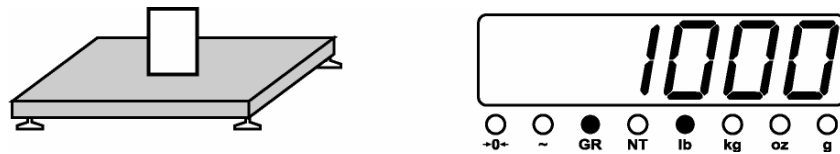
Basic Weighing

1. Ensure the weighing platform (scale) is empty and the indicator reads '0'.

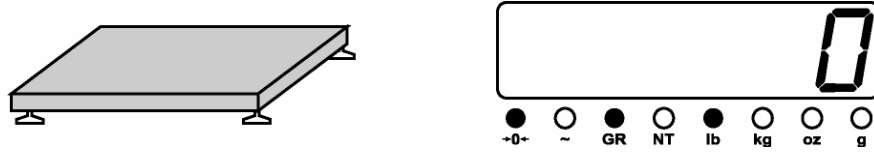2. If the indicator does not read '0', press the **ZERO** key.

3. Load commodities on the scale and read weight data on the indicator.

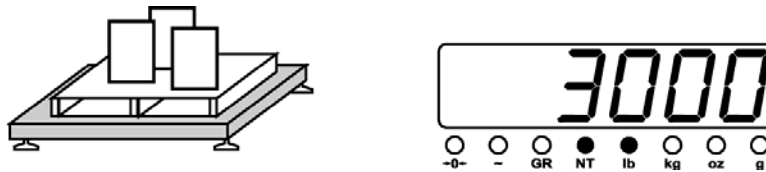**Weigh Using a Tare (Containers, Pallets, etc.)**

1. Ensure the weighing platform (scale) is empty and the indicator reads '0'.

2. Load the container on the scale and press the **TARE** key. The indicator will read '0' and the **NT** annunciator (net weight) will be illuminated.
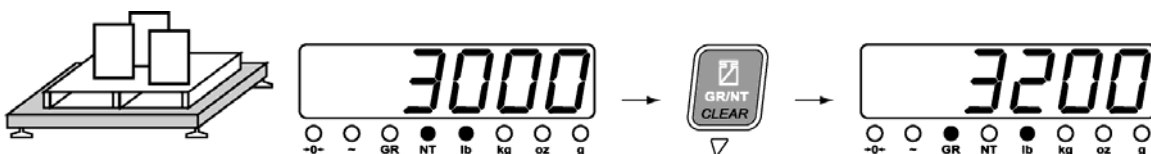
3. Load commodities into the container on the scale and read weight data on the indicator.

4. To clear the tare, remove all weight from the scale. Press and hold the **CLEAR** key until the indicator reads '0' and the **GR** annunciator (gross weight) is illuminated.
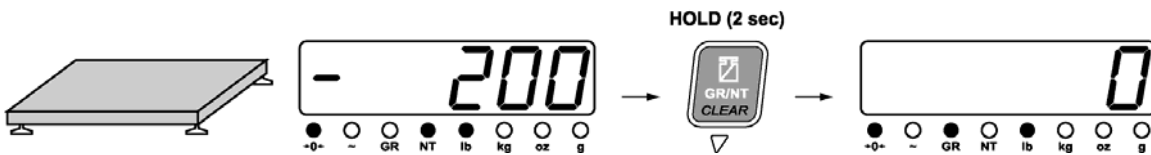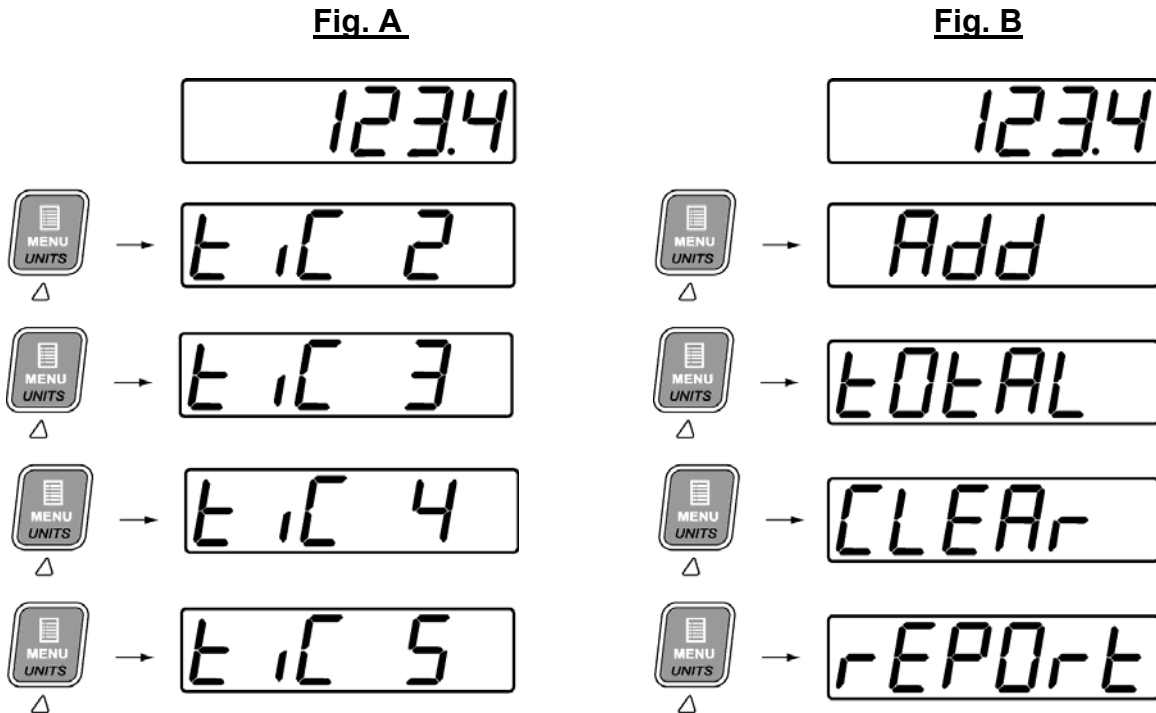
5. To view the gross weight when the scale is in net mode without clearing the tare, press the **GR/NT** key.

User Menu

The User Menu gives Scale Operators access to additional indicator functions and features.

1. From Weighing Mode, press the **MENU** key to enter the User Menu.

   - Tickets are numbered by default as in Fig. A.

   - Tickets may be named in Calibration Mode to describe functions as in Fig. B.

   - If there are no active tickets or functions, the User Menu will be empty.

2. Use the **UP** & **DOWN ARROW** keys to cycle through the User Menu functions.

3. When the desired menu item is displayed, press **ENTER** to activate or wait 8 seconds for the User Menu to time out and return to Weighing Mode.

<div style="text-align:center">

Fig. A   **Fig. B**

</div>

Fig. A	Fig. B
123.4	123.4
tiC 2	Add
tiC 3	total
tiC 4	CLEAr
tiC 5	rEPOrt

> ⚠️ *The User Menu options (tickets, functions, etc.) must be programmed in Calibration Mode by Qualified Technicians.*

COMMUNICATIONS

Default Communications Settings (Com1 & Com2):

- 9600 Baud
- No Parity
- 8 Data Bits

- 1 Stop Bit
- No Hardware Handshaking
- Continuous Transmit (DF 1500)

Default Communications Format:

<u>DF1500 Data String</u>

<STX><P><W><W><W><W><W><W><W><S><U><U><S><M><M><S><ST><CR><LF>

|	
STX: Start of Text (ASCII 02)	M: Mode Character (GR or NT)
P: Polarity (- or Spc)	ST: Status Character (Spc, O, M, or -)
W: Weight Character (# or Spc)	CR: Carriage Return (ASCII 13)
S: Space (ASCII 32)	LF: Line Feed (ASCII 10)
U: Units Characters (KG or LB)	

> *Communication settings may be adjusted in Calibration Mode by Qualified Technicians.*

OPERATION (REMOTE DISPLAY MODE)

The M1 may function in Remote Display Mode when connected to other Western Indicators (Models **M2000**, **MAX**, **Lightspeed** & **M1**).

Display & Annunciators

In Remote Display Mode, the M1 uses the connected indicator's output string to display the same weight and scale status information to the user as in Weighing Mode. For more display info, see pages 4 & 5.
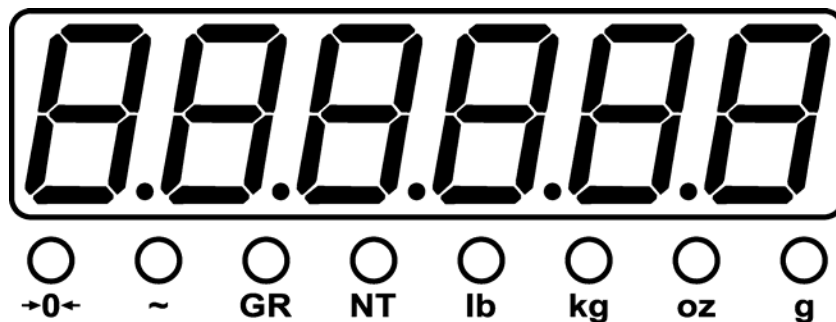
Start-Up

1. Connect the AC power cord from the indicator into a power outlet.

2. The indicator will perform a short start-up sequence including the software version before entering Remote Display Mode (the word 'dSPLAY' briefly appears on the screen). The scale weight from the connected indicator is then displayed.
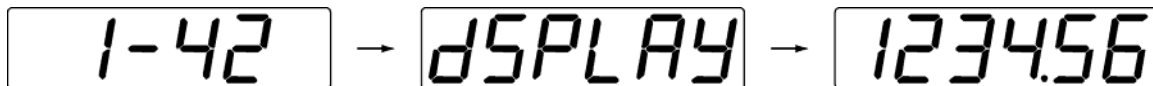
Remote Keypad Functions

Remote Display Mode utilizes 5 keys to send serial commands for remote operation of indicator functions. To maximize functionality, some keys perform multiple functions.

Press the key: **MENU** – NO FUNCTION.

Press & hold   **UNITS** - Sends a serial command to toggle
the key (2 sec): between Primary and Secondary Weighing Units.
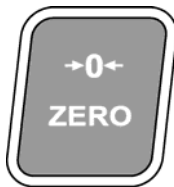
Press the key: **GR/NT** - Sends a serial command to toggle
                      between GROSS and NET weighing modes if a
                      tare value is stored.

Press & hold   **CLEAR** - Sends a serial command to clear any
the key (2 sec): previously acquired tare values.

TARE: Sends a serial command to acquire a tare value from
                      weight on the scale (Container, Box, etc.).

ZERO: Sends a serial command to set the weight display to
                      ZERO.

PRINT: Sends a serial command to transmit a scale ticket.

TIME & DATE

1. From Weighing Mode, press and hold the **TARE** key until "CLOC" is displayed, followed by the time.

   - If 12 Hour Clock is selected, the time will appear HH.MM.A/P

   - If 24 Hour Clock is selected, the time will appear HH.MM

2. Adjust the time using the **LEFT** & **RIGHT ARROW** keys to select digits and the **UP** & **DOWN ARROW** keys to alter digits.

3. Press **ENTER** to confirm and the date will be displayed.

   - If International Date is selected, the date will appear DD.MM.YY

   - If US Date is selected, the date will appear MM.DD.YY

4. Adjust the date using the **LEFT** & **RIGHT ARROW** keys to select digits and the **UP** & **DOWN ARROW** keys to alter digits.

5. Press **ENTER** to confirm and return to Weighing Mode.

> *Time & Date default format is **12 Hour Clock** and **International Date**. Changes may be made in Calibration Mode (P9.8).*

BATTERY / BATTERY REPLACEMENT

The M1 uses a 3 Volt lithium battery. Power is drawn from the battery only when the unit is disconnected from AC power. If the time and date are lost when the unit is disconnected from AC power, the battery likely needs replacement.

> *CAUTION! Risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to their instructions.*

> *CAUTION! HIGH VOLTAGES are present inside the M1 indicator enclosure. Batteries should only be replaced by qualified Technicians.*

TROUBLESHOOTING & ERROR MESSAGES

Unit won't power up:	Check diagnostic LED lamps on the Mother board.
GREEN LED **OFF**:	The Power Supply module is NOT receiving AC power. • Verify power source (Cords, Outlets, breakers). • If power source is good, the Power Supply module may be damaged.
GREEN LED **ON**:	The Power Supply module is receiving AC power. • Check Power Supply module connection to Mother board. • Power Supply module or Mother Board may be damaged.

Error Message	Condition	Solution
Err 1	Cannot print on motion.	Wait for scale weight to settle before attempting to print.
Err 2	Cannot TARE on motion or if gross weight is at zero or below zero.	Place a weight on the scale and wait for weight to settle before attempting to tare.
Err 3	Calibration Checksum Error. The calibration memory is corrupted.	Call your local Scale Service Company.
Err 4	Cannot ZERO. Scale outside of allowable zero range.	Clean scale (debris may have accumulated): - or -; Deadload scale; - or -; Increase the Pushbutton Zero Range (P2.0).
EEEEEE	Scale Overload Error: Weight on scale is greater than maximum scale capacity.	Remove weight from scale immediately.
– – – – – –	Remote Display Mode: Communications lost.	Verify wiring/cable; Verify indicator requirements (Data format and Output String, etc.); Verify indicator is transmitting.