APX
PROGRAMMABLE INDICATOR

OPERATION MANUAL

APX

1670
gross   lb   Scale1

PRELIMINARY

WESTERN SCALE CO. LTD.

APX INDICATOR
OPERATION MANUAL (PRELIMINARY)

SOFTWARE RELEASE 1.00, 02/2015

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

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INTRODUCTION

The APX programmable indicator is the pinnacle of accuracy and process control, delivering the highest level of performance for all weighing applications. Up to 4 weighing channels may be utilized and the modular design allows incredible connectivity options and integration with virtually any system. The technician-friendly design, full numeric keypad, navigation keys and 5.6 inch color display make the APX easy to install, configure and calibrate.

Western's continued dedication to durability, functionality, and versatility make the APX *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 done 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 APX indicator enclosure.

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

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

Features

- Ultra-fast ARM Cortex Processor
- Full Color! Graphic display shows multiple scales and real-time application progress.
- Configurable scale display layout with variable sized digits
- 5 programmable function keys
- Full keypad calibration to any test weight amount.
- Modular design for easy service & upgrading
- Huge memory for Truck Databases & more.
- Removable SD card memory
- Password & Category 1 Audit Trail

- Custom Weigh Ticket Editor
- Programmable communication outputs
- Time & Date
- International Symbols and options
- Standard 304 stainless steel enclosure with swivel bracket
- Easy to navigate software menus
- Calibrate to any test weight value
- Terminal wiring
- Time & Date
- 2 Year Warranty
- *Made in Canada*

Specifications

SCALE INTERFACE
- Up to 4 Scale Channels (Multi A/D)

EXCITATION
- 7.5 VDC. Up to 16 350 Ω or 32 700 Ω load cells

RESOLUTION
- 1,000,000 internal A/D counts
- Up to 100,000 displayed divisions
- 10,000 divisions LFT (Class III/IIIL)
- 20,000 divisions LFT (Class IIIHD)

MEASUREMENT RATE
- 100 weight samples/second

ANALOG SIGNAL SENSITIVITY
- .3µV

SYSTEM LINEARITY
- 0.01% of Full Scale

RFI PROTECTION
- Filtered Excitation, Signal, and Sense lines

COMMUNICATIONS – COMING SOON
- 2 fully configurable, full duplex RS-232 serial ports.
- 1 fully configurable, full duplex RS-232 / RS-422 serial port.
- USB port (device & host) for external memory, keyboard or direct communication
- Wireless RF Module (Optional)
- Ethernet Module (Optional)
- PLC Interface Modules (Optional)

OTHER I/O – COMING SOON
- 6 bi-directional I/O ports supporting industry standard OPTO22 boards
- Additional 24 I/O with optional expansion rack
- 4-20mA, 0-10V Analog Outputs (o)
- More connectivity options!

POWER REQUIREMENTS
- 100-240 VAC 50/60 Hz 1A
- Consumption: Avg 240 W (max)

KEYPAD
- Membrane keypad: 27 numeric, scale function, navigation & program keys.

DISPLAY
- TFT LCD color graphic display
- Size: 4.6" x 3.2" (320 x 240 pixels)

OPERATING TEMPERATURE
- 14°F to 104°F (-10°C to 40°C)

APPROVALS
- NTEP Class III/IIIL (10,000d): 15-086
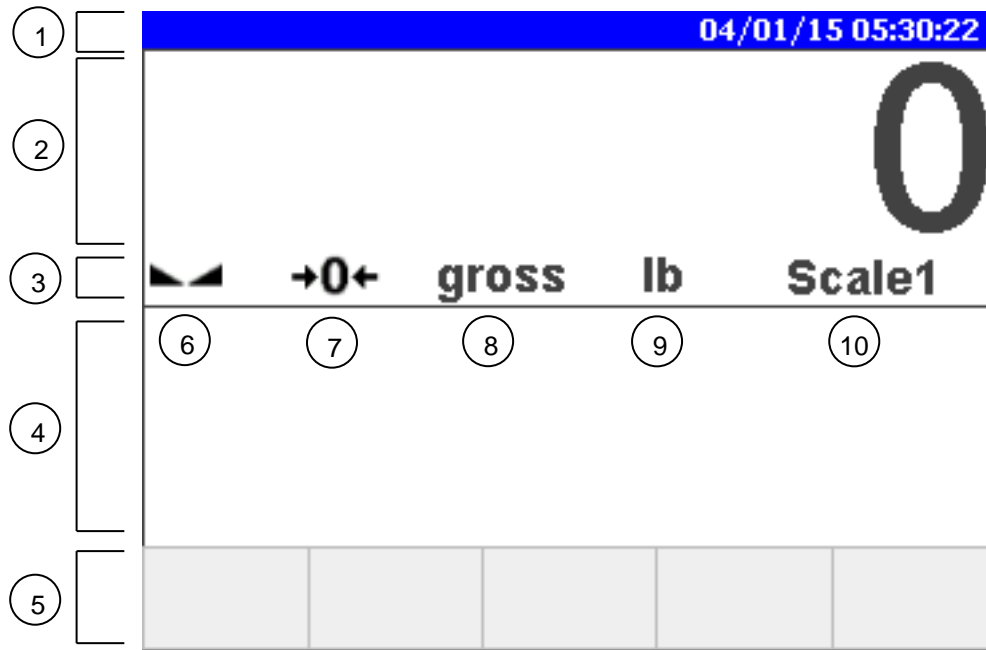- Measurement Canada Class III (10000) / IIIHD (20000): AM-5992

WARRANTY
- 2 year standard warranty

DISPLAY & ANNUNCIATORS

The APX uses a large, full-color, Liquid Crystal (LCD) display with a 320 x 240 pixel resolution. Up to 5 weight displays (4 scales and total) may be shown at once with each display communicating full scale data and status to the user.

Single Scale Display

1. Information Bar	6. Stable/Motion Annunciator
2. Weight Display	7. Centre of Zero Annunciator
3. Annunciator Bar	8. Gross/Net Annunciator
4. Application Display	9. Units Annunciator
5. Function Key Bar	10. Scale Name (Red = Selected)

Weight Display

- 6 digits. Up to 4 decimal points.
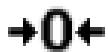- Negative weights are indicated by a minus sign (-).

Annunciators

STABLE: The scale weight is **STABLE**. Weight readings are not fluctuating (in motion).

MOTION: The scale weight is in **MOTION**. Weight readings are not stable.

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

gross   **GROSS:** The scale is in **GROSS** weighing mode.

net   **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**.

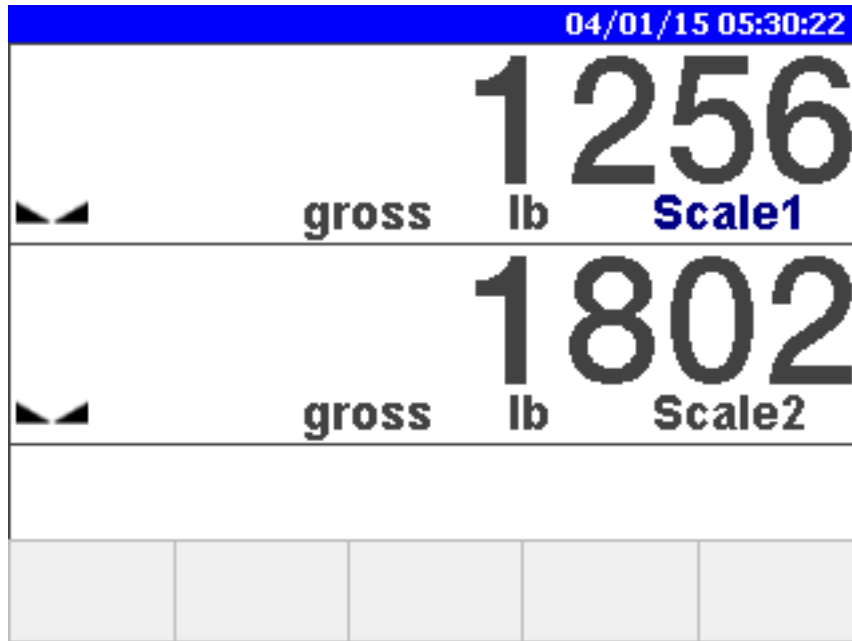**oz**   **oz:** The scale is weighing in **OUNCES**.
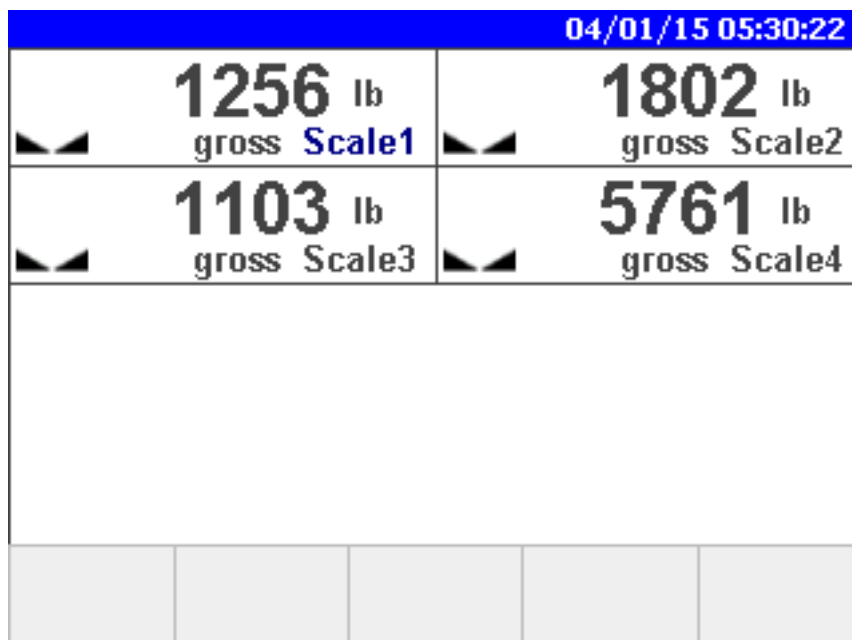
g   **g:** The scale is weighing in **GRAMS**.

Multi-Scale Display

When multiple scales are enabled, each weight display contains its own annunciator bar. Weight Displays are sized automatically unless otherwise specified during installation.

2 Scales

4 Scales

Multi-Scale TOTAL Display

When scale summing or Total Mode is used, a weight display is created showing the sum of all the enabled scale channels. The summed weight display may be shown on its own or grouped with the individual scale channels connected.

<u>In Summing (Total) Mode:</u>

- All scale channels accept keypad commands (scale functions) simultaneously, including:
    - ○ Zero
    - ○ Tare
    - ○ Gross/Net toggle
    - ○ Units toggle

- Tares will only be accepted if all scales are in a tare accepting condition. For more information on these conditions, see page 9.

- Operator entered keypad tares are applied to the sum weight only.

KEYPAD & SCALE FUNCTIONS

The APX indicator's primary operator interface is the keypad. Keys are used to access scale functions, navigate menus, access program functions, and more…
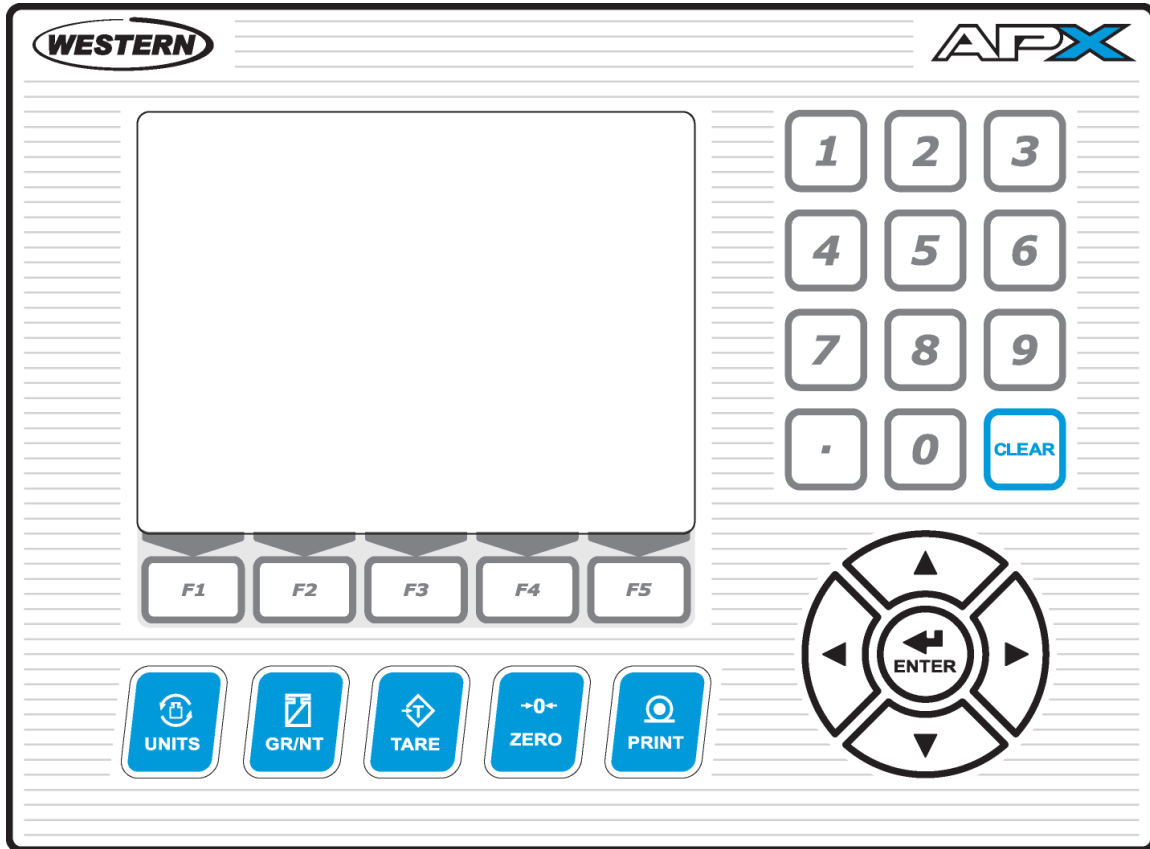
APX Keypad

Scale Keys / Standard Scale Functions

UNITS: Toggles between Primary and Secondary Weighing Units (if enabled).

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

GR/NT: **GR/NT** - Toggles between GROSS and NET weighing modes if a tare value is stored.

Scale Keys / Standard Scale Functions… (Cont.)

TARE: Acquires a tare value from weight on the scale (Container, Box, etc.).

The indicator will not tare if:

- Scale weight is in MOTION
- Scale weight is zero, negative or over capacity

An error message is briefly displayed when one of these tare errors occurs.

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 indicator will not zero if:

- Scale weight exceeds allowed ZERO RANGE
- Scale weight is in MOTION or over capacity

An error message is briefly displayed when one of these zero errors occurs.

PRINT: Transmits a scale ticket or data string.

**CLEAR:** Erases any previously acquired tare values.

Secondary Function (Text entry fields):
Moves the cursor back, erasing entered text.

Navigation & Enter Keys

The **ENTER** key is used to execute various commands

The Navigation or **ARROW** keys are used primarily for accessing parameters in Configuration & Calibration Mode and cursor control in Application Programs.

UP ARROW

LEFT ARROW   ENTER   RIGHT ARROW

DOWN ARROW
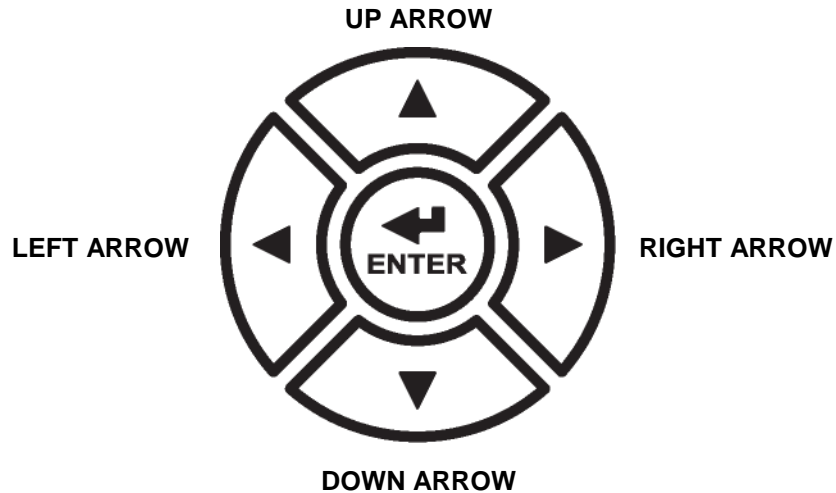
Function Keys

The Function Keys are programmable "soft keys" primarily used in Application Programs and for performing functions in Configuration & Calibration Mode.

Each key (F1 to F5) corresponds to a Function Key Bar cell on the screen. If the key is enabled, its function appears here.

APX DISPLAY

FUNCTION
KEY BAR

				TIME DATE
F1	F2	F3	F4	F5
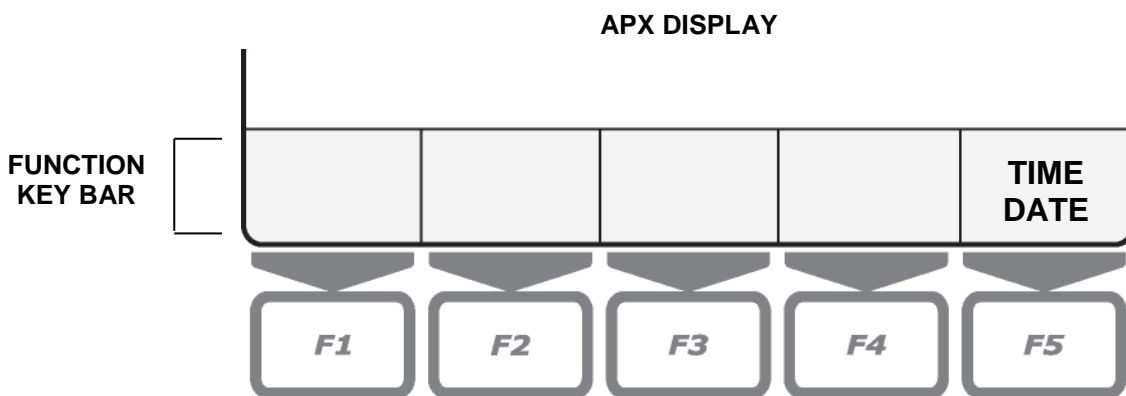
Example:
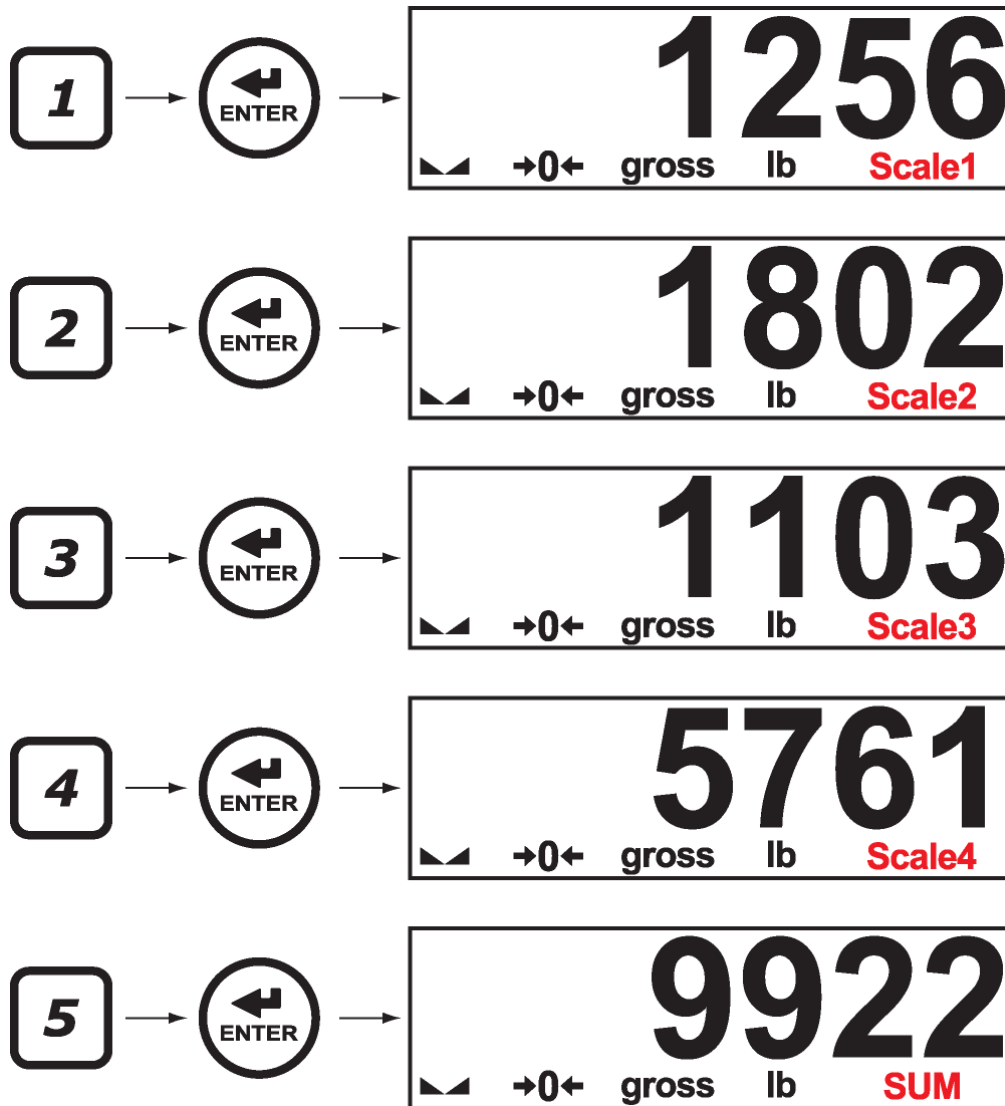
The diagram above shows the **F5** key programmed to perform a "Time/Date" function. The other function keys are not enabled.

Multi-Scale Option Functions

APX indicators with the multi-scale option may utilize up to 4 independent scale channels and a scale summing display.

To view the weight display for the desired channel, press the corresponding scale channel number key (1, 2, 3, 4 or 5 for Total Mode) on the **numeric keypad** followed by the **ENTER** key.

The Scale Name of the selected scale channel will turn **RED**.

1 → ENTER →	**1256**	gross lb Scale1
2 → ENTER →	**1802**	gross lb Scale2
3 → ENTER →	**1103**	gross lb Scale3
4 → ENTER →	**5761**	gross lb Scale4
5 → ENTER →	**9922**	gross lb SUM

Scale Channels 2, 3, 4 and Total Mode (scale summing) must be enabled in Calibration Mode by Qualified Technicians.

INSTALLATION

Pre-Installation

It is always good practice to verify that your Western APX indicator is complete and undamaged upon receipt.

- Check over packaging for any signs of damage.
- Remove APX from protective packaging and check for damage.
- Verify that the box includes the APX indicator complete with:
  - o User Manual;
  - o Mounting bracket and thumb screws.

CAUTION! HIGH VOLTAGE! Only trained personnel should access any internal wiring and/or components.

Mounting Instructions

1. The APX 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. 3.2 kg / 7 lb).

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

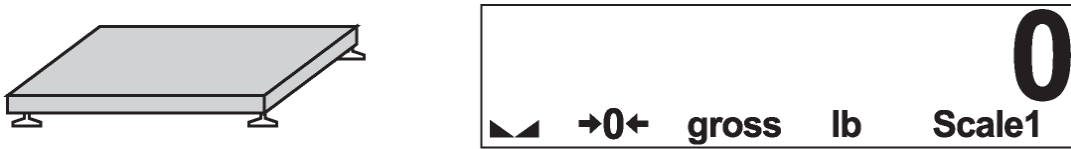## OPERATION (WEIGHING MODE)

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 a digit/display test before entering Weighing Mode (displaying the scale weight).
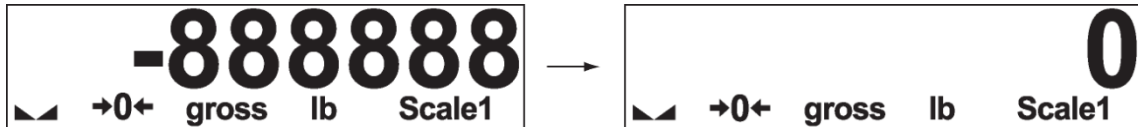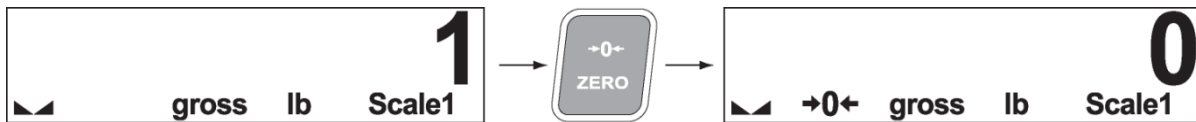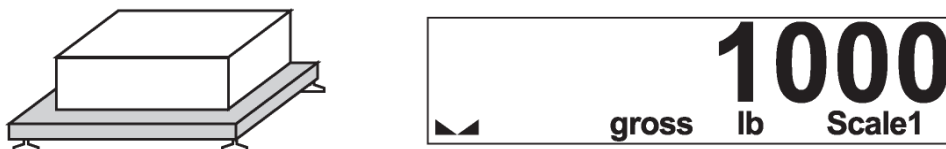

Basic Weighing

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

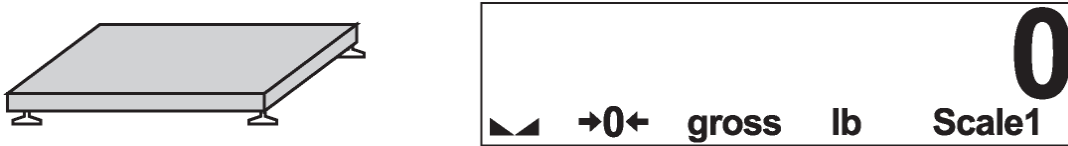2. If the indicator does not read '0', press the **ZERO** key.

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'.

0
→0←   gross   lb   Scale1

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

200
gross   lb   Scale1 → TARE → **0**
net   lb   Scale1

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

3000
net   lb   Scale1

4. To view the gross weight when the scale is in net mode without clearing the tare, press the **GR/NT** key.

3000
net   lb   Scale1 → GR/NT → **3200**
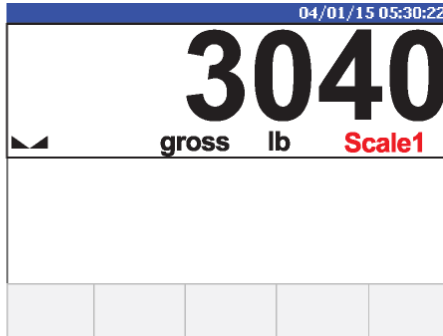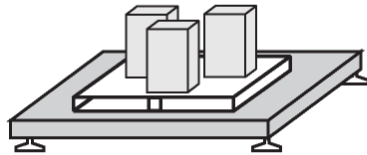gross   lb   Scale1

5. To clear the tare, remove all weight from the scale and press the **CLEAR** key. The indicator will read '0' and the **GR** annunciator (gross weight) will be illuminated.

-200
net   lb   Scale1 → CLEAR → **0**
→0←   gross   lb   Scale1

**Manual or Keypad Tare (Containers, Pallets, etc.)**

1. The weighing platform may be empty or loaded. In this example, the scale is loaded with a 3040 lb pallet.

2. Enter the tare weight using the **NUMBER** keys. Once a number key is pressed, it will appear in the entry field. In this example, the pallet (tare) weight is 40 lb. To cancel the entry, press the **F1** function key below the "CANCEL" label.
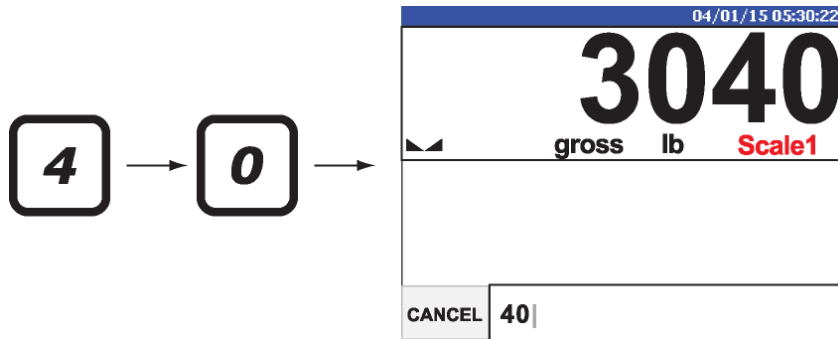
3. Press the **TARE** key to enter the tare weight value. This value will be subtracted from the gross weight and the **NT** annunciator (net weight) will be displayed.
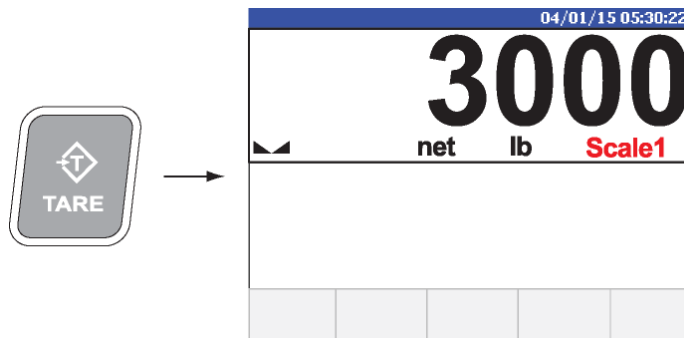
4. To clear the tare, remove all weight from the scale and press the **CLEAR** key. The indicator will read '0' and the **GR** annunciator (gross weight) will be displayed.

PRINTING

Press the **PRINT** key to print a basic ticket to a connected serial printer.

COM1 Default Communications Settings:

- 9600 Baud
- No Parity
- 8 Data Bits

- 1 Stop Bit
- No Hardware Handshaking
- Ticket Mode (Print button)
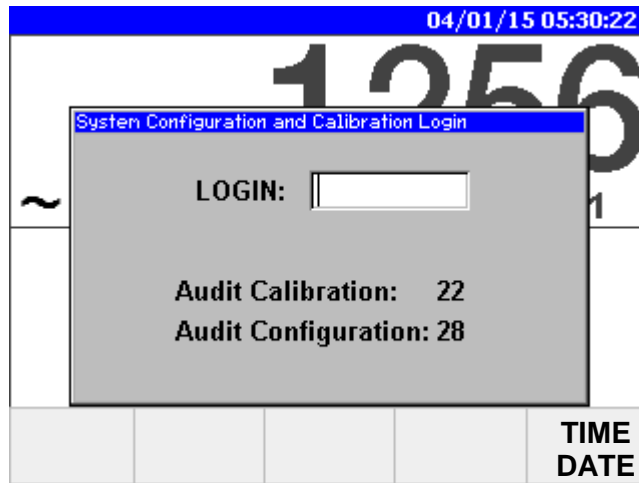
Ticket Mode (Sample Printout)

```
11:42:15    04/01/15

Scale 1:  1345 kg

Scale 2:  1411 kg

Sum:  2756 kg
```

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

TIME & DATE

1. Access the Calibration & Configuration Login screen by pressing and holding the **LEFT** and **RIGHT ARROW** keys together.

2. Press the **F5** function key below the "TIME DATE" label.

3. Highlight the Hour, Minute, Day, Month or Year using the **UP** & **DOWN ARROW** keys. Press **ENTER** to select.

4. Use the **UP** & **DOWN ARROW** keys to highlight the parameter value or the **NUMBER** keys to enter values. Press **ENTER** to select.
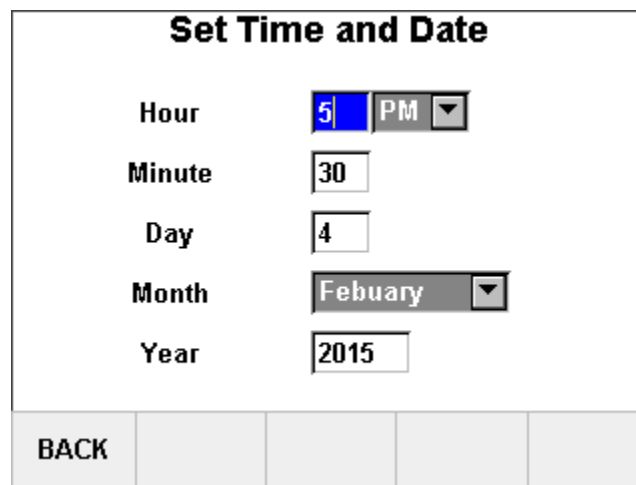
5. Press the **ENTER** key to return to Weighing Mode.

> *The **LEFT** & **RIGHT ARROW** keys may be used to move the cursor. The **CLEAR** key can be used to delete and entry.*

SEALING THE INDICATOR (LEGAL FOR TRADE)

Electronic Seal

Calibration and configuration settings are electronically sealed. This safeguard helps prevent accidental or unauthorized alteration of important scale settings.

The APX features a **Category 1 Audit Trail System** for recording changes in calibration. Two counters are utilized:

Calibration Counter:	Increments by 1 whenever the scale is deadloaded or calibrated.
Configuration Counter:	Increments by 1 whenever changes are made to parameters affecting scale setup.

The counters can be accessed at any time by pressing the **LEFT** and **RIGHT ARROW** keys together in Weighing Mode.

The Calibration audit counter and Configuration audit count will display in the "LOGIN" dialog box on the screen.
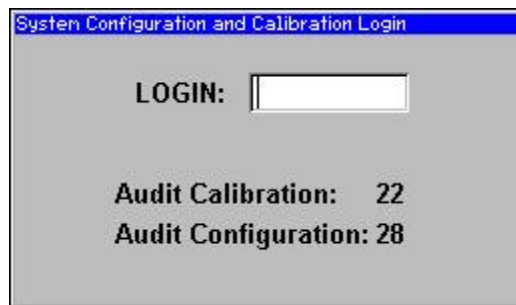
TROUBLESHOOTING & ERROR MESSAGES

Unit won't power up:	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.

All error messages and descriptions appear and on the APX screen in real-time.