MAX

DIGITAL WEIGHT INDICATOR

TECHNICAL MANUAL

WESTERN SCALE CO. LTD.

MAX DIGITAL WEIGHT INDICATOR
TECHNICAL MANUAL

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INTRODUCTION

The MAX digital weight indicator has been specifically designed for mobile weighing applications. Multiple power inputs, a versatile display, and a weather-proof stainless steel enclosure allow efficient and hassle-free scale operation in any location.

Built from the ground up with battery-friendly components, the MAX incorporates Western's unique PowerMAX operating platform that intelligently identifies when to supply or conserve power resources. This industry leading power efficiency stretches battery life to over 500 hours!

The MAX also utilizes sophisticated filtering algorithms and display modes to offer the best solution to vibration and dynamic weighing problems such as livestock. Designed with the durability, functionality, and versatility expected from Western, the MAX is truly *engineered for the diversity of the weighing industry.*

Disclaimer

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

Installation and configuration procedures (as described in this manual) should only be carried out by qualified Scale Service Technicians as authorized by Western.

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

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

CAUTION! HIGH VOLTAGES are present inside the MAX enclosure.

Features

Mobile & Versatile

- Large LCD display (1-1/8th" digits)
- Easy to read in low light and direct sunlight
- Weather-proof, stainless steel enclosure
- Perfect for outdoor use

Multiple Power Inputs

- Direct AC Power
- 6 "C" cell alkaline batteries (Up to 500 hours)
- 12 Volt input terminal for car batteries

Easy to Use

- Flashlight style battery compartments
- Easy to navigate software menu and calibration
- Calibrate to any test weight value
- Terminal wiring

Advanced Capabilities

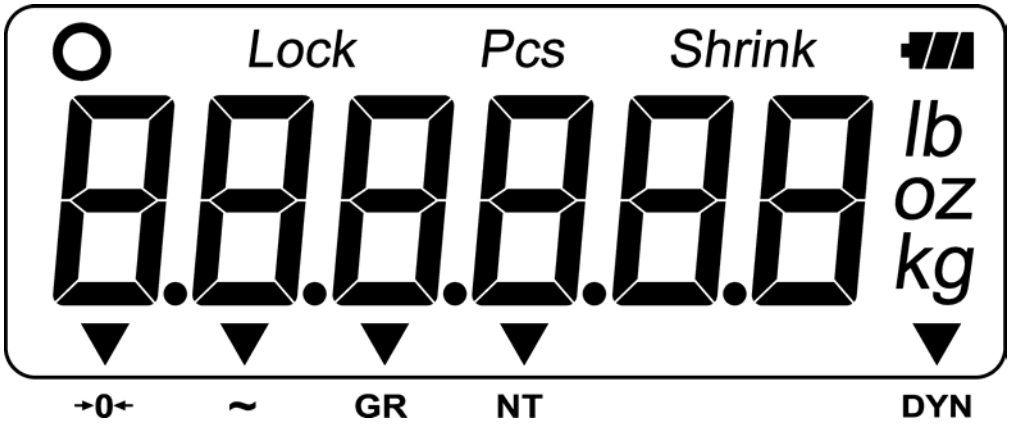
- DYNArrest digital filtering system for fast and stable dynamic weighing.
- Scale tickets
- *MADE IN CANADA.*

Specifications

Excitation:	5 VDC, Up to 4 x 350 Ω or 8 x 700 Ω loadcells
Analog Input Range:	0 - 19 mV or 0 - 39 mV (Selectable)
Resolution:	10,000 d (LFT), 1 million (Internal counts)
Measurement Speed:	10 - 80 weight samples/sec. (Automatic)
Power:	Battery: 6 "C" cell alkaline batteries AC Input: 90 - 240 VAC DC Input: 12 VDC Consumption: 500 mW
Display:	6 digit, 7 segment, LCD display with backlight 1-1/8th inch digits (XXX cm)
Communications:	Full duplex RS-232 serial port Configurable data format Selectable output strings
Temperature Range:	14°F to 104°F / -10°C to 40°C
Approvals:	NTEP & Measurement Canada pending

DISPLAY & ANNUNCIATORS

The MAX uses a Liquid Crystal Display (LCD) with an LED backlight. HTN technology gives the display better contrast over wider viewing angles. LCD arrow and display annunciators communicate scale status and mode information to the user.



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.

Arrow Annunciators

→0← **CENTRE ZERO:** The scale is within **±0.2** graduations of **"Centre of 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).

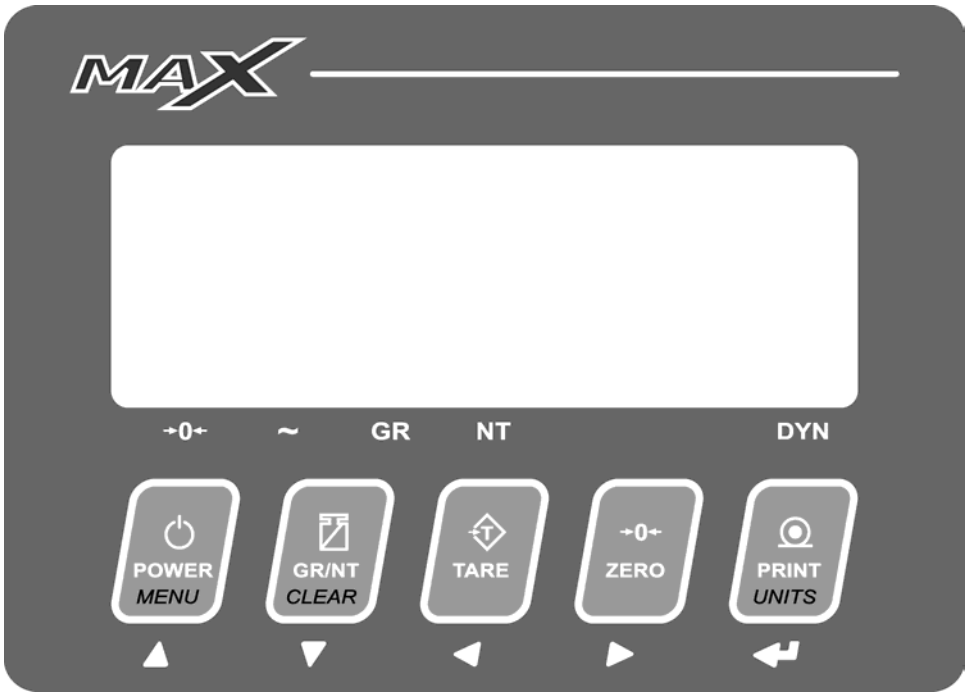
DYN **DYNAMIC:** The scale is weighing in DYNAMIC mode (if enabled).

Display Annunciators

lb	Scale is weighing in **POUNDS**.
oz	Scale is weighing in **OUNCES**.
kg	Scale is weighing in **KILOGRAMS**.
O	The weight on the scale is **STABLE**.
Lock	The averaged scale weight has been **LOCKED** on the display (Only if dynamic weighing is enabled – Not Legal for Trade).
Shrink	The indicator is displaying a **SHRINKAGE** weight.
	Indicates the **BATTERY LIFE** remaining. 3 segments = Full battery life 2 segments = Med battery life 1 segment = Low batter life. Change batteries soon.

KEYPAD & SCALE FUNCTIONS

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



Press the key: **MENU** - Enters the User Menu. Pressing the key again scrolls through the User Menu (See page XX).

Press & hold the key (2 sec): **POWER** - Turns the indicator ON and OFF

Press the key: **GR/NT** - Toggles the MAX 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.

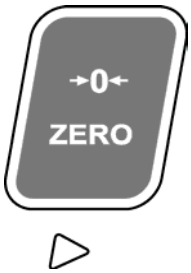
Press the key: **TARE** - Acquires tare value from weight on the scale (Container, Box, etc.)

The scale cannot be tared if:

- The scale weight is negative;
- Weight on the scale is in MOTION;
- The TARE function has been disabled.

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

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



Press the key: **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;
- The ZERO function has been disabled.

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

Press the key:: **PRINT** - Transmits data string or scale ticket through COM1.

Press & hold the key (2 sec): **UNITS** - Toggles between Primary and Secondary Weighing Units.

Units are selected or disabled in Calibration Mode.

INSTALLATION

Pre-Installation

It is always good practice to verify that the MAX indicator is complete and undamaged upon receipt.

- Check over packaging for any signs of damage.
- Remove the MAX from protective packaging and check for damage.
- Verify that the box includes the Max indicator with:
  - Power cord (batteries not included)
  - Mounting bracket
  - User Manual

AC Power

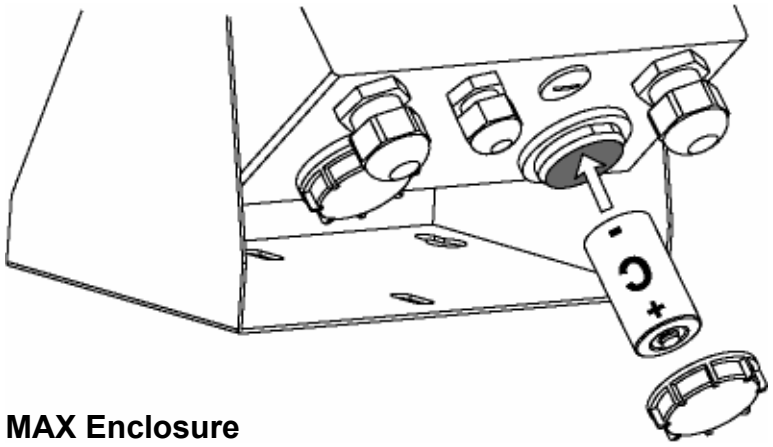
1. Connect the AC power cord from the indicator into a power outlet.
2. Installers must take proper steps to prevent noise, static, or other power problems.

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.

CAUTION! HIGH VOLTAGE! Only trained personnel should attempt any internal AC wiring.

Loading Batteries

1. Unscrew battery compartment caps.
2. Insert 3 “C” cell alkaline batteries in each compartment, checking for correct polarity.
3. Screw battery compartment caps back on. Hand tighten only. Do not over tighten.



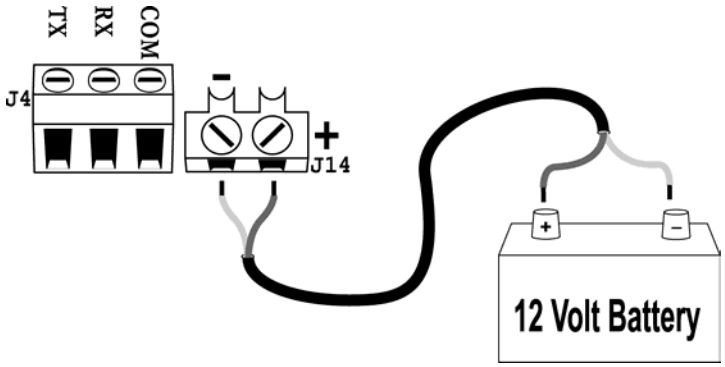
Opening the MAX Enclosure

1. Make sure the unit is disconnected from power.
2. Remove the screws from the back of the enclosure.
3. Lift the back cover away from the enclosure to expose the wiring terminals. Be sure to observe proper ESD procedures when handling PCBs.

12 Volt Battery Wiring

The MAX indicator can be wired for power directly to a 12 Volt (car) battery. See table below:

MAX 12 VOLT POWER TERMINAL (J1)	12 VOLT BATTERY
+	+
–	–



Load Cell Wiring

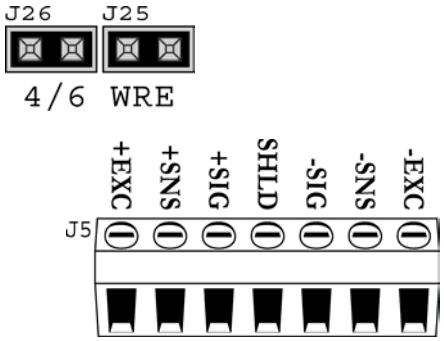
1. Ensure the unit is not plugged in or powered on.

2. Run the cable from the load cell or junction box through the strain-relief and wire the indicator power to the Load Cell Terminal Block (J5). See table below:

MAX LOAD CELL TERMINAL (J5)	LOAD CELL WIRE
+EXC	Positive Excitation
+SNS	Positive Sense
+SIG	Positive Signal
SHLD	Shield Wire
-SIG	Negative Signal
-SNS	Negative Sense
-EXC	Negative Excitation

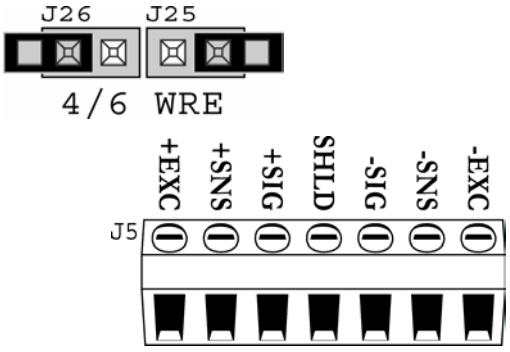
4 Wire Load Cells

When using load cells WITHOUT sense wires, the pins on J25 and J26 must be jumpered (default from factory). See illustration below:



6 Wire Load Cells

When using load cells WITH sense wires, remove the jumpers from the pins on J25 and J26. See illustration below:



Communications Wiring (RS 232)

1. Ensure the MAX and communicating device (printer, remote display, PC) are disconnected from power.

2. Run communication cable through the strain-relief and wire to the COM Port Terminal (J4). See table below:

MAX COM TERMINAL (J4)		COMMUNICATING DEVICE
RX	←	TX
TX	→	RX
COM	↔	SIG GND, or COM

Default Communications Settings:

- **9600 Baud**
- **No Parity**
- **8 Data Bits**
- **1 Stop Bit**
- **Transmits CONTINUOUSLY (Every ¼ second)**

Default Communications Format:

DF1500 Data String

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

Communications settings can be adjusted in Calibration Mode by qualified Technicians.

Mounting Instructions

1. The Max can be mounted on interior or exterior surfaces using the mounting bracket.

2. Ensure that mounting structures (walls, posts, etc.) will bear the weight of the indicator (3 kg / 7 lbs with batteries).

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

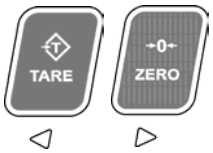
CALIBRATION MODE

Calibration Keys

UP **DOWN** **LEFT** **RIGHT** **ENTER**

Entering Calibration Mode

With Electronic Seal (Default)



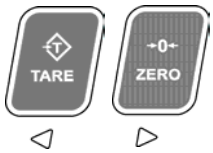
1. Press the **LEFT** and **RIGHT ARROW** keys together.
2. '"**CAL**" is displayed, followed by "**PASS**" for password.
3. Key in the 4 digit password. The factory default password is "**0001**".

   Use the **LEFT** & **RIGHT ARROW** keys to select the digit. The selected digit will flash.

   Use the **UP** & **DOWN ARROW** keys to increase and decrease the value of the digit.

   Press the **ENTER** key when done.
4. The first Calibration Mode parameter (**P1.0**) is displayed. If the password is incorrect the display will read "**FAIL**".

With Physical Seal



1. Open the MAX enclosure.
2. Place a jumper on the mother board's CAL pins (J30).
3. Press the **LEFT** and **RIGHT ARROW** keys together.
4. The first Calibration Mode parameter (**P1.0**) is displayed.

The MAX supports both electronic (default) and physical sealing. Physical sealing must be set-up in Calibration Mode. For more information on sealing and the electronic audit trail, see page XXX.

Navigating Calibration Parameters

1. Use the **UP** and **DOWN ARROW** keys to find the parameter. Calibration Parameters are displayed by the letter "P" preceding the parameter number (Ex. "**P1.1, P1.2, P1.3 …**").

2. Holding down the **UP** or **DOWN ARROW** key for more than 1 second will scroll through the Calibration Sub-blocks for quicker navigation. (Ex. "**P1.0, P2.0, P3.0 ...**").

3. Press the **ENTER** key to select the parameter for editing.

In Calibration Mode, if no keys are pressed for 10 seconds, the scale weight is displayed with a blinking "C" on the left-hand side.

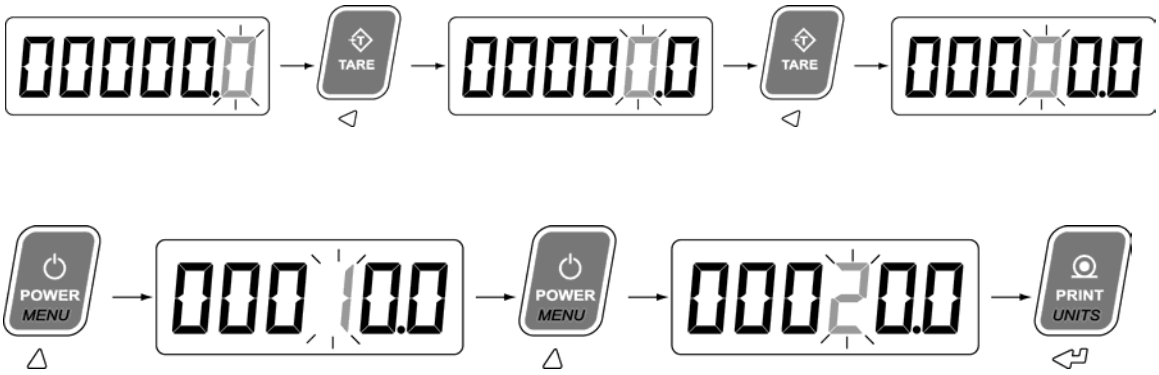
Editing Calibration Parameters

1. Use the **UP** and **DOWN ARROW** keys to edit the parameter value.

2. Press **ENTER** to confirm the parameter value.

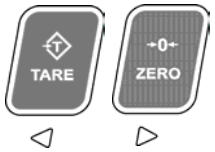
To edit a numeric value (Ex. Weight), use the **LEFT** and **RIGHT ARROW** keys to select the digit and the **UP** and **DOWN ARROW** keys to alter the digit's value. Press the **ENTER** key when done.

Example: Enter 20.0 (Note: Decimal point is determined by P1.2)



Exit & Save Calibration

1. Press the **LEFT** and **RIGHT ARROW** keys together.



2. The indicator will exit Calibration Mode and return to Weighing Mode. All calibration information is saved.

CALIBRATION PARAMETERS

Scale Calibration Sub-block 1.x

Parameter	Value	Description
P1.0 Graduations	**1d <** 2d 5d 10d 20d 50d 100d	Select scale graduations (d). Setting this parameter to higher than 10d will set the decimal point to 0, and display 2 leading zeros at ZERO (00). Setting to 100D will result in 3 zeros at ZERO (000).
P1.1 Decimals	0 0.0 **0.00 <** 0.000	Select decimal places (Up to **3**).
P1.2 Deadload Scale	**E SCL**	Displays "**E SCL**" to empty scale. Once the scale is empty, press **ENTER** to calibrate deadload value (Scale zero calibration).
P1.3 Calibrate Scale	**SPAn** **100.00 <**	Displays "**SPAn**". Place test weight on the scale. Enter the test weight value using the **ARROW** keys. Press **ENTER** to start calibration.
P1.4 Scale Capacity	**1000.00 <** 0 to 999999	Enter the Scale Capacity using **ARROW** keys. Press **ENTER** to select.
P1.5 Overload	**0d <** 1d 2d 2PC (2%)	Selects the number of divisions over scale capacity in which blanks the display for a scale over condition. Choose between 0,1,2 divisions or 2% of capacity.
P1.6 Calibrated Units (Primary Units)	**1 = kg <** 2 = lb	Selects the Primary scale units used for calibrating the scale. Setting this parameter affects P1.7 and P1.8 automatically.
P1.7 Power ON Units	**1 = kg <** 2 = lb 3 = oz	Selects the default units that the scale powers up to.
P1.8 Alternate Units 1	0 = Disabled 1 = kg **2 = lb <** 3 = oz	Selects alternate unit of measurement 1. Setting to 0 disables alternate unit of measurement 1.
P1.9 Alternate Units 2	**0 = Disabled <** 1 = kg 2 = lb 3 = oz	Selects alternate unit of measurement 2. Setting to 0 disables alternate unit of measurement 1.

***** Not Available in VER 4.50. Factory default values are **bold <**.

Zero and Motion Settings Sub-block 2.x

Parameter	Value	Description
P2.0 Pushbutton Zero Range	**2% <** 18% 90%	Selects the range (from zero to capacity) within which the scale can be zeroed. LFT must be 2%. Example: Scale can be zeroed within ± 2% of calibrated zero.
P2.1 AZSM Zero Tracking	OFF **0.5d <** 1d 2d 3d	Selects the zero tracking range specified in +/- displayed divisions. Example: Automatically zeros the scale within ± 0.5d of calibrated zero. Must be within the Zero Range.
P2.2 Power Up ZERO IZSM	**0 = Disabled <** 1 = Enabled	When enabled, the scale will automatically zero on power up (Up to 18% of scale capacity).
P2.3 Scale Motion	OFF 1d **2d <** 3d 5d 10d	Selects the Scale Motion band in displayed divisions. Determines the number of divisions at which the scale is sensitive to motion (Motion annunciator turns ON).
P2.4 Motion Timer	**4 <** Range: 2 - 20	Selects the time (in 0.25 second intervals) the Motion annunciator will remain ON after the scale weight stabilizes within tolerance. Example: For a motion time of 1 second, set this value to 4.
P2.5 Blank Display on Motion	**0 = Disabled <** 1 = Enabled	When enabled, the display blanks when motion is detected.

***** Not Available in VER 4.50. Factory default values are **bold <**.

Tare Settings Sub-block 3.x

Parameter	Value	Description
P3.0 Regulatory	**0 = NTEP <** 1 = CANADA 2 = NONE	Sets how the TARE operates based on regulatory agency. **NTEP:** Allows a tare weight to be acquired at any positive weight (>0). Tares can only be cleared when GROSS weight is at no load. New tares may be acquired even if a previous tare weight is present. **CANADA:** Allows a tare weight to be acquired at any positive weight (>0). Tares can only be cleared when GROSS weight is at no load. Previous tare weights must be cleared before a new tare weight can be acquired. **NONE:** Allows a tare weight to be acquired at any positive weight (>0). Tares can be cleared at any time. New tares may be acquired even if a previous tare weight is present.
P3.1 Lockout Tare	**0 = Disabled <** 1 = Enabled	Locks out the **TARE** key. The Operator cannot tare the scale.
P3.2 Auto Tare	**0 = Disabled <** 1 = Enabled	Automatically tares the scale when the weight is greater than 5 displayed divisions, there is no motion, and the scale is in GROSS mode.
P3.3 Auto Clear	**0 = Disabled <** 1 = Enabled	Automatically clears tare values when the scale is at GROSS zero.

***** Not Available in VER 4.50. Factory default values are **bold <**.

Scale Filtering Settings Sub-block 4.x

Parameter	Value	Description
P4.0 Filter Preset	1 = Light **2 = Medium <** 3 = Heavy 4 = Animal 1 5 = Animal 2 6 = Animal 3	Adjusts filter parameters **P4.1 to P4.4** to a preset value. Use this to quickly find a starting point for scale filtering. The User can then fine tune the filtering if required using the parameters below.
P4.1 Filter Frequency	0.5 Hz 1 Hz **3 Hz <**	Frequency in Hertz of the front end digital filter. A lower frequency will make the scale more immune to vibrations, but will also slow down the response time of the display.
P4.2 A/D Averaging	5 10 **50 <** 75 100 150 200	Selects the number of A/D conversions that are averaged to obtain a displayed reading. A higher number gives a more accurate display by reducing noisy readings, but slows down the settling rate of the display.
P4.3 A/D Averaging Cut-Out Threshold	**2d <** 4d 8d 12d 14d 18d	Sets the weight change threshold in displayed divisions where the A/D averaging is suspended. This will make the display more responsive to weight changes above the cut-out threshold.
P4.4 A/D Averaging Cut-Out Sensitivity	2 **5 <** 8 10 12 15	Specifies the number of consecutive A/D samples above the Cut-Out Threshold before A/D Averaging is suspended.
P4.5 Display Update Rate	**0 <** 0.25 0.50 0.75 1.00	Configures how often the display is updated in seconds. If set to 0 the display updates at full speed.

* Not Available in VER 4.50. Factory default values are **bold <**.

Serial Communications Sub-block 5.x

Parameter	Value	Description
P5.0 **Baud Rate** **COM1**	1200 2400 4800 **9600 <** 19200	Transmission speed (baud rate) for COM1.
P5.1 **Data Format** **COM1**	**8-non <** 7-Evn 7-Odd	Parity and bits for COM1. 8-bit No parity, 7-bit Even parity, or 7-bit Odd parity.
P5.2 **Output Mode** **COM1**	**0 = Stream <** 1 = Transmit on print 2 = Ticket 3 = Poll Mode 4 = Stream No Motion 5 = Disabled	Controls the operation of the COM1 port: 0: Continuous output or "stream" mode. 1: Output data string when **PRINT** key is pressed. 2: COM port operates in ticket mode* 3: Poll Mode. Indicator responds to these commands: '?' Poll for weight 'Z' ZERO 'T' TARE 'C' CLEAR 'P' PRINT
P5.3 **Data String** **Emulation** **COM1**	**0 = DF1500 <** 1 = Condec 2 = Toledo 3 = Cardinal 4 =Weightronix	String emulation for continuous serial stream.
P5.4 **Stream Delay** **COM1**	0 sec **0.25 sec <** 0.5 sec 0.75 sec 1 sec	Inserts a delay between serial transmissions (select 0.25 second intervals). 0 = No delay.

* Not Available in VER 4.50. Factory default values are **bold <**.

Power Management Sub-block 6.x

Parameter	Value	Description
P6.0 Backlight	**0 = AUTO <** 1 = Always ON 2 = Always OFF	Controls the backlight of the LCD display. For optimal battery life AUTO or OFF is recommended.
P6.1 Backlight Duration	2 sec **5 sec <** 10 sec 20 sec	Selects the number of seconds the backlight remains turned ON when scale motion is detected.
P6.2 PowerMAX Power Management System	**0 = Normal <** 1 = PowerMAX 2 = AUTO OFF	Normal: The Indicator is always ON. PowerMAX: The indicator automatically reduces power consumption on inactivity, and restores power when scale activity is detected. Prolongs battery life by more than 2X. AUTO OFF: If there is no scale activity for the set period of time (6.3), the indicator automatically powers off.
P6.3 AUTO OFF Timer	5 min **10 min <** 15 min 20 min	If 6.2 is set to AUTO OFF, the indicator will power down after no scale activity for this amount of time.

***** Not Available in VER 4.50. Factory default values are **bold <**.

Scale Functions Sub-block 7.x

Parameter	Value	Description
P7.0 Animal Averaging Sampling Time	**OFF <** 1 sec 2 sec 3 sec 4 sec 5 sec 10 sec	Animal averaging time. When enabled, auto averaging will operate for the specified time by pressing the PRINT button in normal weigh mode. The weight is then locked on the display,
P7.1 Animal Averaging Display Time	**5 <** Range: 1 to 10	Locks the displayed average value for a certain period of time (in seconds).
***P7.2** Shrinkage	0 = Disabled 1 = Enabled	Sets shrinkage in percent

* Not Available in VER 4.50. Factory default values are **bold <**.

Scale Diagnostics Sub-block 9.x

Parameter	Value	Description
P9.0 AD Raw Counts	**'A'XXXXX**	Show AD converter raw counts for diagnostic purposes. The left most display will have a blinking "A" to indicate raw counts mode. Press **ENTER** to exit.
P9.1 SPAN Edit	**XXXXXX**	Displays the scale's calibration factor. Use the **ARROW** keys to edit the value, followed by the **ENTER** key.
P9.2 Display Test	N/A	Cycles through the display segments of the display.
P9.3 Password Display/Edit	-0001-	Display/change the calibration PASSWORD.
P9.4 Factory Reset		Reset all parameters back to factory values. Calibration password is required.
P9.5 Battery Status	**X.XX**	Displays the battery status in volts. Batteries must be replaced when lower than 6.00 Volts. Press **ENTER** to exit.
P9.6 Software Version	**X.XX**	Displays the indicator software version number.
P9.7 Start Up Display	0 1 **2 <**	0: Display test on Start Up 1: Display test + software ver. on Start Up 2: Direct to Weigh Mode
P9.8 Clock Mode	**OFF <** 12 Hr 24 Hr	Selects how the real time clock displays the time.
P9.9 Physical Seal	**OFF <** ON	

***** Not Available in VER 4.50. Factory default values are **bold <**.

SCALE CALIBRATION

This example covers the DEADLOAD & SPAN of a 5,000 lb x 0.5 lb floor scale.

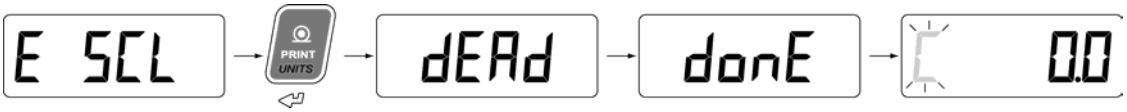
1. Enter Calibration Mode.

2. Set the following parameters:

   P1.0 – Grad Size = 5d
   P1.1 – Decimal Place = 0.0 (1)
   P1.4 – Capacity = 5000.0
   P1.6 – Calibrated Units = 2 (lb)

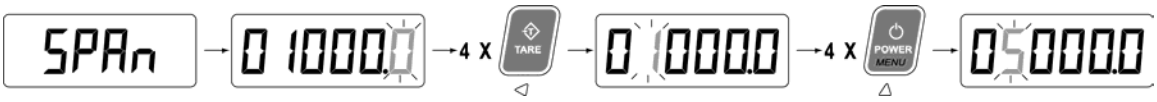
3. Remove any weight from the scale and go to **P1.2 – Deadload Scale** (Scale Zero Calibration). Press **ENTER** to select the parameter. "**E SCL**" is displayed.

4. Press **ENTER** to begin deadload. The scale weight should read "**0.0**".



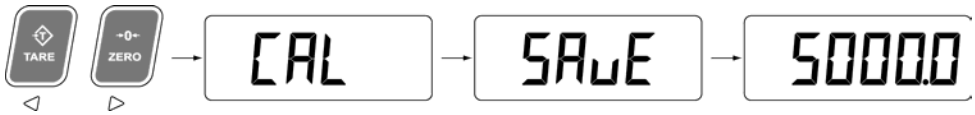
5. Verify the scale is at zero and add test weights. This example shows 5000 lbs (max. capacity). The MAX indicator can be calibrated to any test weight amount. Go to **P1.3 – Calibrate Scale**. Press **ENTER** to select the parameter.

6. "**SPAn**" is briefly displayed. Enter the test weight amount using the **ARROW** keys to select and alter digits.



7. Press the **ENTER** key to confirm the test weight value.

8. Press the **LEFT** and **RIGHT ARROW** keys together to exit Calibration Mode.



SEALING THE INDICATOR (LEGAL FOR TRADE)

Electronic Seal

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

> IMPORTANT! If the password is forgotten, Calibration Mode will be inaccessible. Record ALL password changes and alert the customer. If the password is lost, call the factory for assistance.

The MAX 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 increment for each Calibration Mode session where parameters are changed. Multiple changes may be made for each counter increase, but simply entering and exiting Calibration Mode does not increment the counters. The counters will count from 0 to 999 before rolling over to 0 again.

> **Important Note:** Because the Audit Trail becomes active during factory testing, the Calibration and Configuration Counters may not be **0** when the indicator is new out of the box.

The counters can be accessed at any time by pressing the **TARE** and **PRINT** keys together in Weighing Mode

The Calibration audit counter and Configuration audit count will alternate on the display until the **PRINT** key is pressed.

Physical Seal

If a jurisdiction only accepts a physical seal, the indicator must be set to use the Calibration Jumper to enter Calibration Mode (P9.9).

The back cover of the unit must be sealed by running a lead/wire seal through two sealing screws.

USER MENU

The MAX User Menu gives the Scale Operator access to indicator functions and features without having to access Calibration Mode or call a Scale Technician. Press the **MENU** key to cycle through the User Menu functions. When the desired menu item is displayed, press **ENTER**.

User Menu Keys

MENU / UP **DOWN** **LEFT** **RIGHT** **ENTER**

Shrinkage (Shnc)

1. Load the livestock on the scale. The actual weight is displayed.
2. Press the Menu key. "SHnC" is displayed. Press ENTER to confirm.
3. Select the percentage to be used for shrinkage (1 to 5%).
4. The display will show the shrinkage weight (actual weight minus the percentage) and the "***Shrink***" annunciator will be illuminated.
5. To return to actual weight, set "SHnC" to "OFF". The "***Shrink***" annunciator will be turned off.

The Shrinkage function must be enabled in Calibration Mode. If Shrinkage is enabled, it will be the first item in the User Menu. If Shrinkage is disabled, it will not appear in the User Menu at all.

Clock 

Time is displayed as HH:MM:SS. Press ENTER to return to Weighing Mode. To set the time:

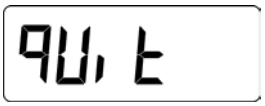
1. Press the MENU key.
2. Select AM or PM using the UP & DOWN ARROW keys (if necessary). Press ENTER to confirm.
3. Enter the time using the LEFT & RIGHT ARROW keys to select the appropriate digits and the UP & DOWN ARROW keys to alter those digits. Press ENTER to confirm.

Date 

Date is displayed as YY:MM:DD. Press ENTER to return to Weighing Mode. To set the date:

1. Press the MENU key.
2. Enter the date using the LEFT & RIGHT ARROW keys to select the appropriate digits and the UP & DOWN ARROW keys to alter those digits. Press ENTER to confirm.
3. Select the correct day of the week using the UP & DOWN ARROW keys. Press ENTER to confirm.

Time & Date must be enabled in Calibration Mode (P9.8). Parameter 9.8 also allows the selection 24 Hour or 12 Hour clock mode.

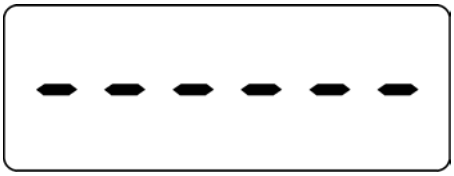
Quit 

Press the **ENTER** key to exit the User Menu and return to Weighing Mode.

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).
GREEN LED **ON**:	The Power Supply module is receiving AC power. • Check INT12VDCok LED on Mother board.
INT12VDCok LED **OFF**:	The Mother board is NOT receiving 12 VDC from the Power Supply module. • Check Power Supply module connection to Mother board. • Power Supply module may be damaged.
INT12VDCok LED **ON**:	The Mother board is receiving 12 VDC from the Power Supply module. • Check STS LED on Mother board.
STS LED **BLINKING**:	Processor running properly. • Display may be damaged.
STS LED **OFF**:	Processor NOT running. • Mother board may be damaged.
STS LED **ON**:	Processor LOCKED UP. • Cycle power to the unit. Mother board may be damaged.
EXT12VDCok LED **OFF**:	The Mother board is NOT receiving 12 VDC from the external power source (battery). • Verify battery voltage, strength, wiring, etc.
EXT12VDCok LED **ON**:	The Mother board is receiving 12 VDC from the external power source (battery). • Check STS LED on Mother board.

Unit won't power up:	When using C Cell batteries
No Display:	Verify battery strength. • Check STS LED on Mother board.
Blank Display with BLINKING battery symbol:	Battery power is too low for the indicator to function properly.

Error Messages	Condition
	ZERO / TARE Error: • Scale in motion during ZERO or TARE. • See Page XXX.
	Scale Overload Error: • Scale weight is over capacity: • Remove weight from scale
	Power Up Zero Error: • Scale weight exceeds 18% of scale capacity on power up.