Digi-Star®

The "*EZ 210*" Electronic Scale Indicator

Operation & Installation Manual

FEATURES: The "EZ 210" Model has enhanced features such as:

- Scrolling Help Messages for EZ operation.
- Large 1" display for greater readability.
- Front Panel Calibration without simulator or weights.
- Fiber-optic backlighting for extremely long life.
- Optional European Compliance (CE mark) for use in the European Community

OPERATING SPECIFICATIONS:

Accuracy	System ± .25% or ± .5% depending on load cell used
Temperature Range	-20 to 140 degrees F
Power Requirements	10½ - 16 VDC

DIGI-STAR
790 WEST ROCKWELL AVENUE
FORT ATKINSON, WISCONSIN 53538
PHONE (920) 563-1400
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F3288 Rev. C 9/96

Printed in U.S.A.

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Using the Help Key:

The [HELP] *key provides additional information about the weighing modes, set-up/calibration, and keypad entries.*

Step 1) Pressing [HELP] while displaying weight will display information about the last key pressed.

To Select Gross Mode:

GROSS mode displays the weight change since the unit was last ZERO/BALANCED.

Step 1) Press [NET/GROSS].

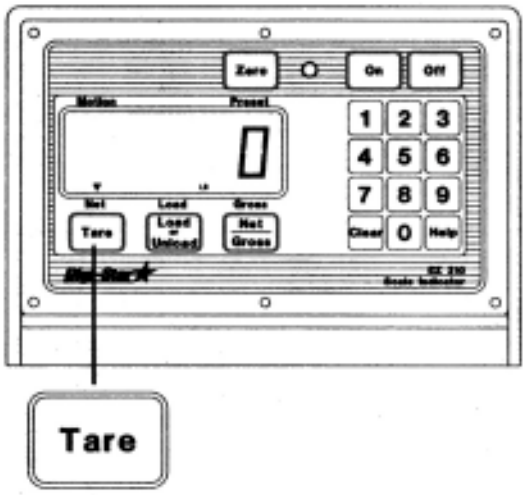
Press the [NET/GROSS] key if in the NET or LOAD/UNLOAD mode.

NOTE: The scale is in GROSS mode if there is a flashing arrow pointing toward the GROSS text above the [NET/GROSS] key.

To Select Net Mode:

NET mode displays the weight change after a TARE has been performed. TARE is a temporary "zero" point.

Step 1) If the scale "TARE" weight has not been entered, press [TARE] to acquire a "zero".



or

Step 2) If in GROSS mode, press [NET/GROSS]. The [NET/GROSS] key is an alternating action key. If the scale is in the GROSS mode, pressing the [NET/GROSS] key will place it in the NET mode. If the scale is in the NET mode, pressing the [NET/GROSS] key will place it in the GROSS mode. If in LOAD-UNLOAD mode, press [NET/GROSS] two (2) times.

If the "TARE" function has not been previously performed, the unit will stay in the GROSS mode and the message *"FOR NET MODE PRESS TARE"* will scroll across the display.

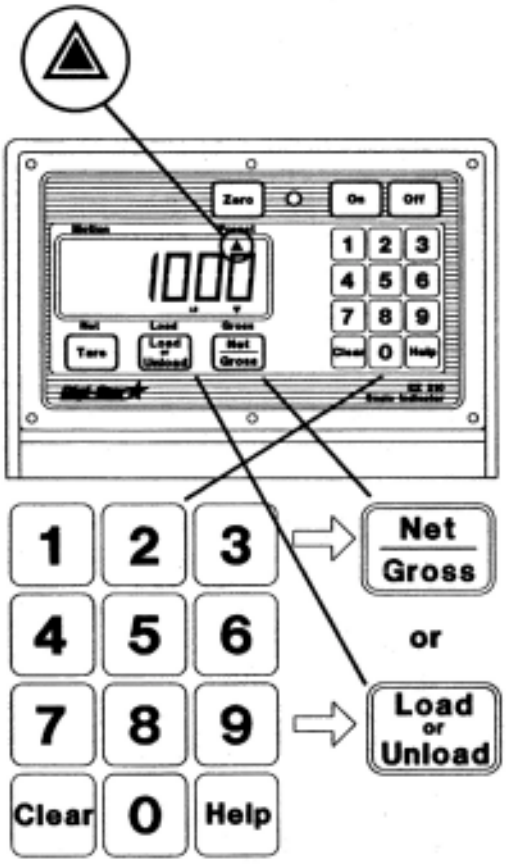
NOTE: The scale is in NET mode if there is a flashing arrow pointing toward the NET text just above the [TARE] key.

To Enter a Preset:

Step 1) Use the numeric keypad to enter the desired preset weight value.

Step 2) Press either [NET/GROSS] or [LOAD/UNLOAD] to enter the preset value and select the *"display mode"*.

The 'PRESET' annunciator outer triangle will turn ON when the preset amount is entered.



Once the preset has been entered, the display can show the weight data in three (3) different *"display modes"*.

The three display modes are:

"GROSS MODE"
The gross weight is displayed by pressing the [NET/GROSS] key. As ingredients are loaded, the weight display will count upward toward the preset value. As ingredients are unloaded the weight display will count down to the preset value.

"LOAD/UNLOAD MODE"
Press the [LOAD/UNLOAD] key to display the amount remaining to be loaded or unloaded. As ingredients are loaded OR unloaded, the display will count down from the entered preset weight until it reaches zero.

"NET MODE"
The weight added since the preset has been entered is displayed by pressing the [NET/GROSS] key two (2) times if in the PRESET LOAD/UNLOAD MODE, one (1) time if in the PRESET GROSS MODE. As ingredients are loaded, the weight display will count upward, as they are unloaded the weight display will count down.

Switching between these display modes is possible at any time by simply pushing the appropriate keys.

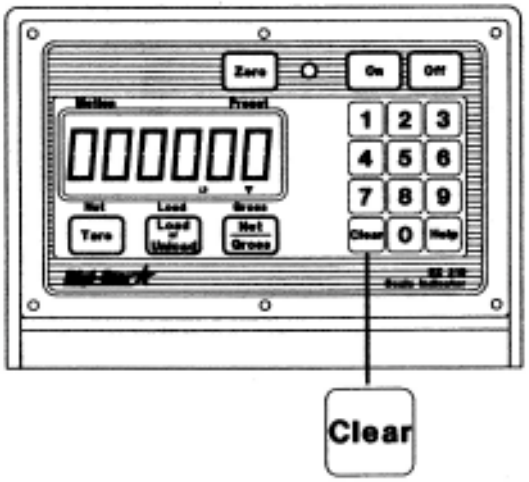
Before the preset weight is reached, the **pre-alarm** is activated. This causes the preset display annunciator, the front panel alarm light, the output relay, and the alarm horn all to pulse in sequence with the alarm light.

Set the pre-alarm value to *" 0"* to prevent the alarm output from pulsing.

When the preset weight is reached, the front panel alarm light, the output relay, the 'PRESET' annunciator, and the alarm horn will all be held ON.

To Clear the Preset & Alarm:

Step 1) Press the [CLEAR] key.



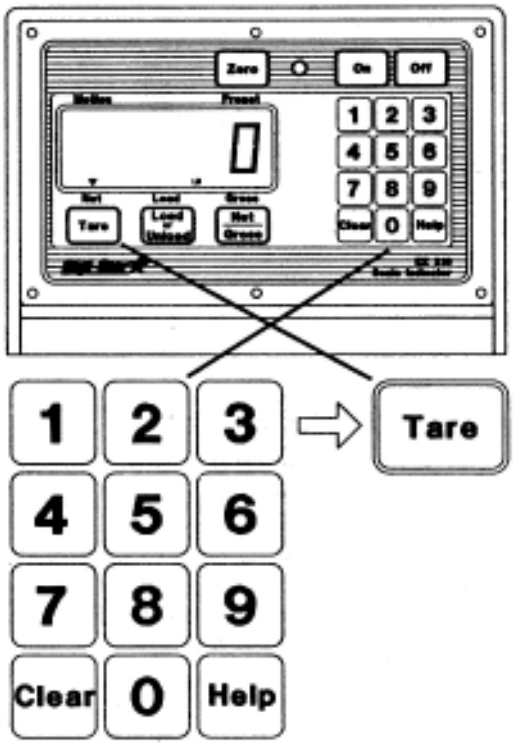
At this time, a new preset can be entered or by pressing the [CLEAR] key a second time (with a flashing zero " *0*" shown on the display) the scale will return to weighing.

Reloading a preset value with the "REMOTE ENTER PRESET" line of the power cord will also clear the previous preset condition.

Using the "REMOTE ZERO" feature of the 20R TR option also clears the previous preset condition.

To Preload a Tare Value:

The scale will also allow the "tare weight" to be entered via the numeric keypad. This is performed by entering the weight value on the keypad and then by pressing the [TARE] key.



The preload tare feature is useful for weighing containers after they have already been loaded. If the weight of the container is known, this *"tare weight"* could be preloaded into the scale and the net weight will be displayed. The *"tare weight"* is also sent to the printer.

An example could be demonstrated with a feed wagon on a platform scale:

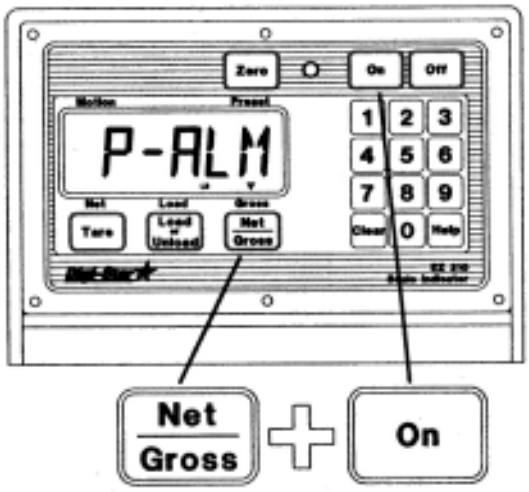
Step 1 - Balance the scale.
Step 2 - Weigh and record the weight of the unloaded wagon.
Step 3 - Pull the wagon off the scale and load.
Step 4 - Enter the wagon's tare weight.
Step 5 - Place loaded wagon back on the scale to see net weight.

Using the Pre-Alarm:

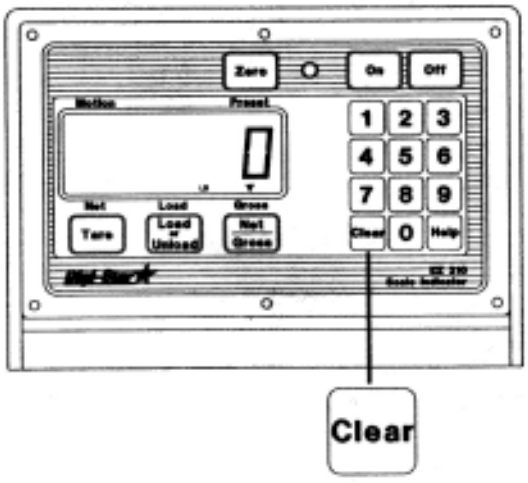
The Pre-Alarm feature is an *"early warning"* for the preset. For example, if the Pre-Alarm is set to 100 and the preset is 1000, the preset alarms will flash during the last 100 lbs/kgs of the preset. The alarms are continuous once the preset is active. This allows more accuracy in *reaching the preset.*

Change the Pre-Alarm Weight:

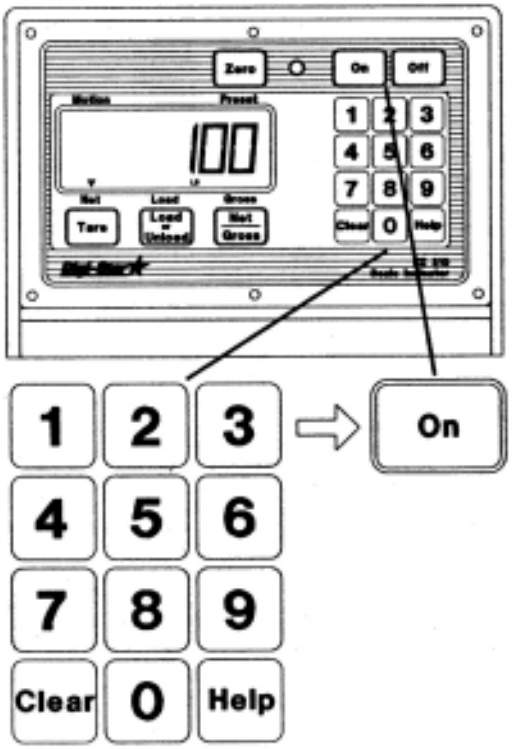
Step 1) Press and hold the [NET/GROSS] key, then press the [ON] key. Continue holding both keys until the indicator beeps and displays the message *" P-ALM"*. The 'CAL' annunciator will be flashing and the current pre-alarm weight is displayed.



Step 2) Press the [CLEAR] key to erase the current weight value.

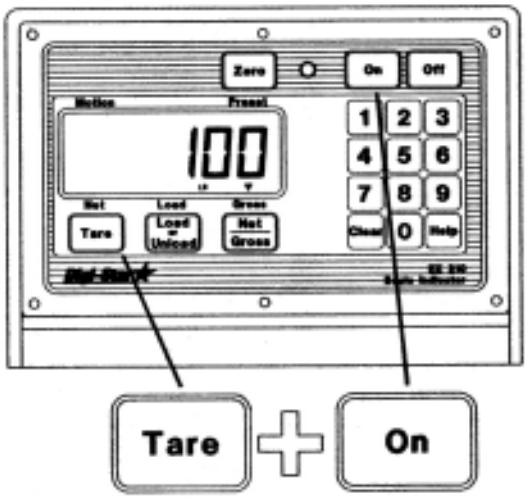


Step 3) Use the numeric keypad to select a pre-alarm weight.



Step 4) Press the [ON] key. The display will advance to the next setup value.

Step 5) To exit setup and return to weighing, press and hold the [TARE] key, then press the [ON] key.



MODEL 210 - *Installation Requirements:*

Indicator Mounting:
The indicator is easily attached to the Indicator Mounting Bracket by hooking the top over the plate and securing the bottom with two (2) bolts (size# 10 x 24 x 3/4") and nuts.

Power Connection:

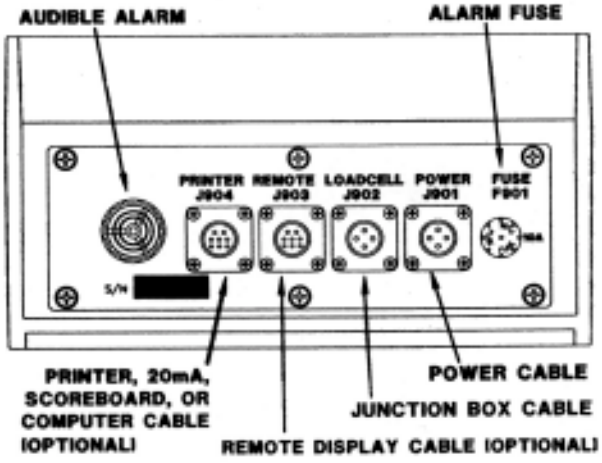
Warning!
Always disconnect the indicator power cord before "jump starting" or fast charging a battery. Disconnect all indicator leads before welding on equipment. Failure to do so can cause surges which will damage the scale.

The power cable should be connected directly to a vehicle battery or regulated power supply. The scale end of the power cable is attached to the **J901** connector located on the bottom panel of the scale. Connect the **RED** wire from the power cable to **+12 VDC** and the **BLACK** wire to **GROUND**. The indicator is fused internally at 4 amps.

POWER CABLE CONNECTIONS	
WIRE COLOR	WIRE FUNCTION
RED	BATTERY (+12 VDC)
BLACK	GROUND
ORANGE	REMOTE ALARM OUT +
BLUE	REMOTE INPUT

Remote Alarm Connection:
If a remote 12 VDC alarm is to be used, connect the +12 VDC side of the alarm to the power cable ORANGE wire and the GROUND side of the alarm to the frame. The alarm output is fused for a maximum drain of 10 amps. The remote alarm connection may also be used for motor control purposes when used with a relay.

INDICATOR BOTTOM PANEL CABLE CONNECTIONS:



Remote Input Connection:
If the remote input is to be used, connect one side of the normally open momentary switch or relay contact to the power cable BLUE wire, and the other side to the frame or other GROUND connection. If your power cable does not contain a blue wire and you desire to use this feature, contact your dealer for a special cable. A process control box is available for motor control and remote *enter preset* capability.

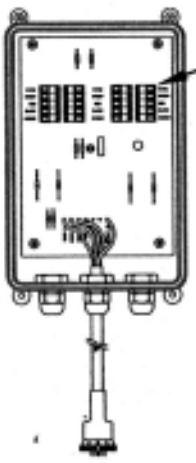
Load Cell Connection:
The indicator is designed to operate with strain gage load cells. The system will normally be supplied with a *"J-BOX"* cable going between the scale and the load cell junction box. Extension Kits are available from your dealer in various lengths.

To connect the load cells, attach the junction box cable to the **J902** connector on the bottom panel of the scale. Connect the load cell cables to the junction box as shown below.

Lightning Protection:
Additional protection can be achieved with the proper installation of grounding rods. Please call (920) 563-9700 and request Digi-Star Form F3050.

Technical Manual:
Technical Manual available upon request. Please call (920) 563-9700 and request Digi-Star Manual F3251.

JUNCTION BOX LOAD CELL CABLE CONNECTIONS:



TERMINAL COLOR	DESCRIPTION
WHITE	SIGNAL +
GREEN	SIGNAL -
RED	EXCITATION +
BLACK	EXCITATION -
SHIELD	SHIELD

NOTE: Follow color key on circuit board to insure proper connection of load cell wires.

MODEL 210 - *Optional Features:*

Options are installed in the indicator if the corresponding keys are on the front panel or if additional connectors are on the bottom panel.

Remote Display:

A Remote Display is available for viewing weights at convenient locations. The Remote Display includes a visual alarm light which can be used with the TR4 option listed below.

TR-TR4: Radio Control

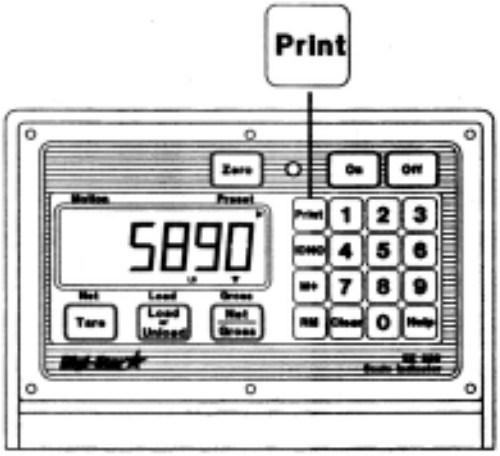
The TR and TR4 options allow the operator to remotely control the scale from a distance up to 100 feet away.

The **TR** option allows the operator to perform TARE and GROSS functions.

The **TR4** option allows remote operation of the RM (recall memory), M+ (memory plus), TARE, and either NET/GROSS or CM (clear memory).

To Print:

Scale data can be sent to a printer by pressing the [PRINT] key.



An auto-print feature is implemented on the TR and TR4 options.

Sample output format shown below:

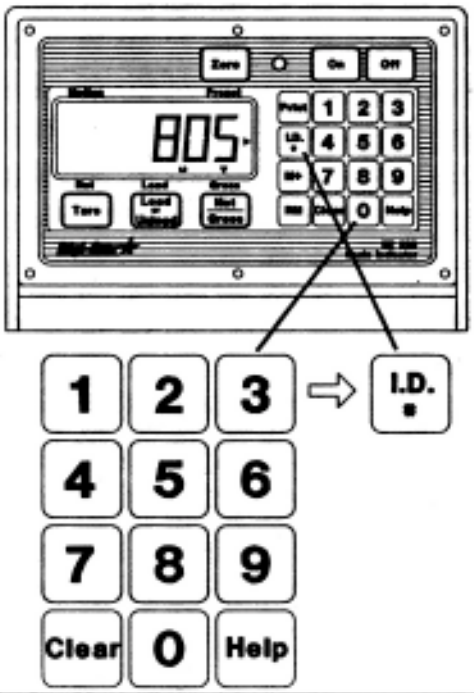
```
          10JA92   12:01P
  123456 ID   123456LB GR
```

"Clock" & "ID #" options also shown.

Enter Identification Number: ID#

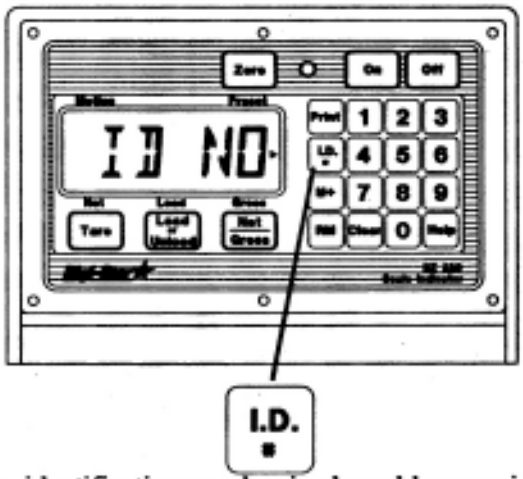
Step 1) Use the numeric keypad to select the identification number.

Step 2) Press the [ID #] key to enter the identification number.



Display Identification Number:

Step 1) Press the [ID #] key.

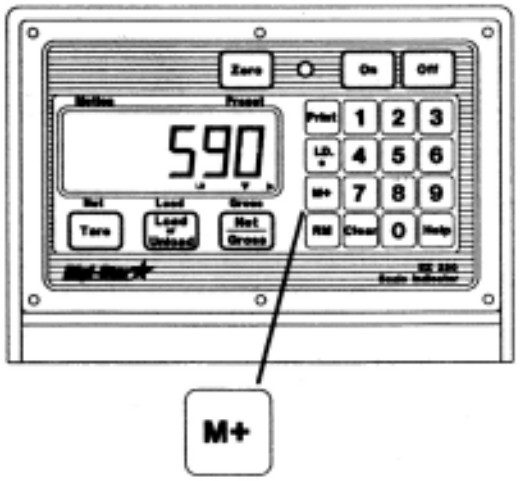


The identification number is cleared by pressing the [CLEAR] key followed by pressing the [ID #] key.

NOTE: Printing automatically clears the identification number.

Add Weight To Weigh Memory:

The displayed weight can be stored in memory by pressing the [M+] (memory plus) key.

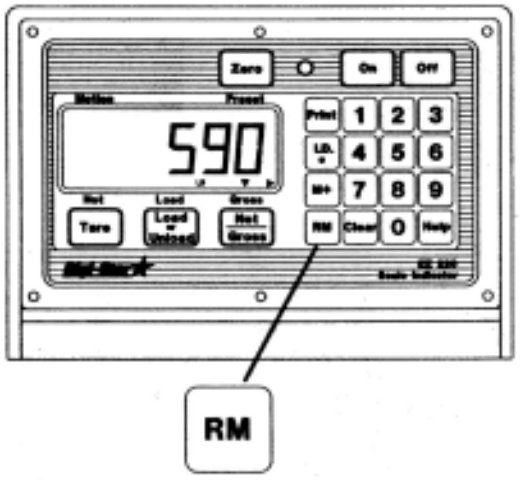


The weigh memory will be temporarily displayed.

If a weight was previously stored in memory, the displayed weight is added to weigh memory.

Recall Weigh Memory:

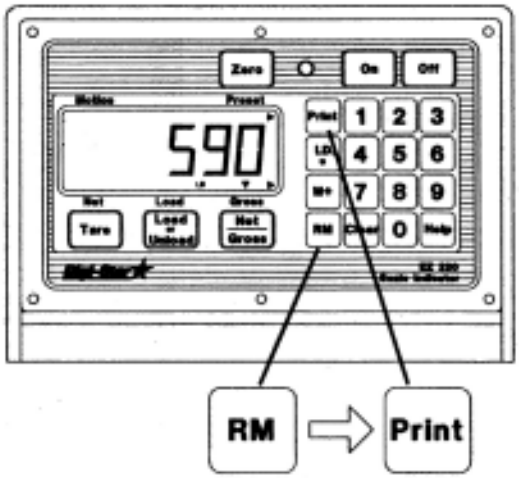
The value of total weight in memory can be displayed by pressing the [RM] (Recall Memory) key.



The weigh memory will be temporarily displayed.

Print Weigh Memory:

The value of total weight in memory can be printed by pressing the [RM] (recall memory) key and then the [PRINT] key ***while the weigh memory is still displayed***.



The [PRINT] key causes the unit to return to the normal weighing modes.

Weigh Averaging:

The Weigh Memory feature can also be used to determine the average weight of several loads. This is done by using the [M+} key to add multiple weight values to the weigh memory.

To display the average weight, press the [RM] key twice within three seconds.

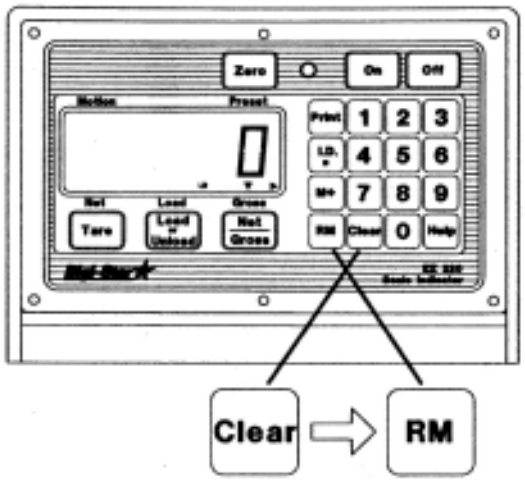
The *"COUNT"* or number of weight values added to the weigh memory will be displayed first. Then the message *"AVERAG"* is displayed, followed by the average weight value.

To print the average weight value, press the [PRINT] key while the average weight is displayed.

MODEL 210 - *Optional Features:*

Clear Weigh Memory:

The weigh memory is cleared by pressing the [CLEAR] key followed by pressing the [RM] key.



Black Out:

The Black Out option is a preset enhancement that maintains the ***"Preset amount left to go"*** in *non-volatile,* permanent memory. This insures that the correct weight can be delivered ***even*** after a power outage.

For example, a system loaded with 2000 Lbs was unloading a preset of 1000 Lbs. After unloading the first 500 Lbs, a power outage occurred. When the power returned and the scale was turned ON, the message *"POWER OUTAGE - PRESS START ON CONTROL BOX TO FINISH PRESET - CLEAR TO CANCEL MO/DA/YR 12:00A"* appeared.

Pressing START on the Control Box (or the [NET/GROSS] key on the scale) loads the preset amount remaining before the black out (500 Lbs in this case).

Pressing the [CLEAR] key cancels the preset and the scale displays the GROSS weight.

The *Clock* option is required as part of the *Black Out* option. The *Clock* records the time, date, and preset remaining before the power outage (blackout).

Animal Weighing:

The *Lock On* weigh method #4 has the ability to determine the actual weight of items *while in motion*, such as animals. Once the actual weight is displayed, the scale *"Locks On"* to the displayed weight and does not change, even if the motion never stops. A small 'L' appears on the left side of the display indicating the weight is *"Locked On"*. The animal's weight must be greater than 2.5% of the scales *"capacity"* weight before the system can *"Lock On."*

In order to *break the lock*, 50% of the displayed weight must be either added or removed from the scale. The *"Locked On"* weight can be *"rechecked"* by pressing the [ZERO] key on the front panel. This breaks the *"lock"* and the scale recalculates the weight.

For more information on selecting weigh method #4, please contact Digi-Star Technical Service at (920) 563-9700 and/or request Digi-Star Technical Manual F3251.

Pulsed Output:

The Pulsed Output option provides one (1) output line to indicate decreasing weight.

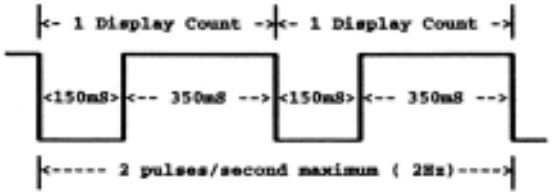
Pulsed Output pulls the connected signal line to ground through a 330 Ohm resistor for 150 milli-seconds every time the scale decreases one (1) display count.

1 Display Count = 1 Output Pulse

The scale will not pull the line to ground more than twice (2 times) a second - **2 Hz**. For example, if the weight decreased from 8000 lbs. to 7500 lbs. using a display count of 10 lb counts.

8000 - 7500 = 500 (Lbs weight change)
500 / 10 (Display Count) = 50 (Pulses)

There would be 50 output pulses taking about 25 seconds to output all 50 pulses.



In this example, 7500 Lbs represents the *"GROSS weight reference point"*. The scale *resets* the *"GROSS weight reference point"* if the weight increases more than 30 display counts (300 lbs. for this example) for at least one (1) minute. The scale starts pulsing outputs as weight decreases from the new *"GROSS weight reference point"*.

There are two (2) ways to "reset" or "abort" the internal pulse counter of the scale;

1 - ZERO/BALANCE the scale,

or 2 - Remove the Load Cell cable from the indicator. This allows the weight to decrease. Wait 15 seconds, then re-attach the Load Cell cable. After 1 minute, the indicator will reset the GROSS weight reference point as described above.

The *Clock* option is required as part of the *Pulsed Output* option. The *Clock* records the time, date, and *"GROSS weight reference point"* before the power outage (blackout).

When the scale power is returned and the scale is turned back *ON* after a power loss, the scale will display the messages:

1: *"POWER"*
2: *" LOSS "*
3: *" 12:00 "*

Followed by the normal weight display. The *"power - loss - time - weight"* will continue to be displayed until any key is pressed, [NET/GROSS] for instance.