

Avery Weigh-Tronix



WI-125 Indicator Series User's Manual

UNITED STATES

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CANADA

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la Class A prescrites dans le Reglement sur le brouillage radioelectrique que edicte par le ministere des Communications du Canada.



CAUTION

Risk of electrical shock. Do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

Weigh-Tronix reserves the right to change specifications at any time.

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WI-125 Specifications

Dimensions:	Super Saver/Full Feature (Metal case)	3.5"H x 7.5"W x 6"D (8.89 cm H x 19.1 cm W x 15.2 cm D)
	NEMA 4X (Lexan case)	9.37" W x 6.75" H x 3.75" D (without mounting bracket) (23.8 cm x 17.1 cm x 9.5 cm)
Power:	Super Saver/Full Feature (Metal case)	Standard - Wall-mount transformer, 12 to 20 volts @ 133 mA, 60 Hz Optional - AC Version: 115/230 volts AC @ 13 mA, 50-60 Hz single phase
	NEMA 4X (Lexan case)	115 volts AC @ 50 mA / 230 volts AC @ 25 mA, 50-60 Hz single phase Optional - 12 VDC
Display:	8 digits, 7-segment LCD, 0.6 inch high with annunciators and backlighting (not available on Super Saver model)	
Display Averaging:	1 to 10 display periods	
Display Rate:	One, two or five times per second	
Agencies:	NIST Handbook 44, Class III, IIL, 10,000 divisions Consumer and Corporate Affairs, Canada FCC Class A	
Accuracy :	Span: ± 5.0 ppm/C Span: ± 10 ppm/C	Zero: ± 0.066 uV/C (-10 to 40°C) Zero: ± 0.13 uV/C (-30 to 60°C)
Linearity:	$\pm 0.005\%$ of capacity, maximum	
Repeatability:	$\pm 0.005\%$ of capacity, maximum	
Hysteresis:	0.005% of capacity, maximum	
Weigh bar drive capacity:	Up to eight 350 ohm weigh bars	
Environment:	-10 to 40°C (14 to 104°F) for HB-44 specs 10 to 90% relative humidity	
Internal Resolution:	810,000 at 3 mV/V. 1 mV/V = 270,000 counts	
A to D conversion rate:	30 times per second	
Analog Range:	-0.14 to +3.5 mV/V	
Capacity:	0.1 to 999999, programmable to any number between these limits.	
Divisions:	.0001 to 20000, programmable to any division size between these limits.	
Push Button Zero Range:	0 to $\pm 100\%$ of capacity; programmable independent positive and negative limits; unit will not allow zeroing beyond capacity.	
Tare:	The unit may be configured to have pushbutton tare which can function as a scroll tare register (not applicable to Super Saver version). Pushbutton tare and scroll tare may tare only positive gross weights up to the capacity of the unit. Scroll tare allows numeric entry of a tare value using two keys to enter the value.	
Motion Detection Window:	Programmable from 0 to 999999 divisions, decimal entries are accepted.	
Automatic Zero Tracking:	Window: Programmable from 0 to 999999 divisions, decimal entries are accepted.	
	Net Mode	
	Tracking:	May be enabled or disabled
	Rate:	0.1 division per second
	Starting Delay:	2 seconds
Linearity Adjustment:	Second order correction provides smooth curve fit through three points--zero, linearity, span.	
VIBRATION COMPENSATION		
Analog Low Pass Filter:	Two section with .10 second time constant for low power analog and .06 second time constant for standard analog.	
Software Low Pass Filter:	One section with .05 second time constant.	

Introduction

The WI-125 Indicator comes in three versions: the Super Saver, Full Feature, and NEMA 4X. The WI-125 Super Saver is a simple weight indicator which includes push-button tare. The WI-125 Full Feature is a full-function weight indicator with backlight display, RS-232 serial output and scroll tare. The WI-125 NEMA 4X Indicator is a full feature model enclosed in a NEMA IV Lexan case.

This set of instructions is divided into the following sections:

- Introduction
- Operations Mode
- Keyboard
- Indicator Operation
- Indicator Diagnostics
- Wiring Connections
- Transmitting Data
- Specifications

Operations Mode

Operations mode contains all normal weighing operations. In this mode you can view or set the following parameters if the unit is so configured:

- pushbutton tare or scroll tare*
- identification entry*
- time*
- date*
- backlight*

Time, date and backlight can be secured behind a security code. Parameters secured by the code number can be viewed but not changed unless you enter the security code.

*Scroll tare, id, time, date and backlight are not available on the Super Saver model.

Keyboard

The keyboard consists of 7 keys. Five keys, or buttons, provide all the basic weighing functions:

- Tare
- Gross/Net
- Zero
- Print
- Units

The other keys are used to access the menus for purposes of accessing information, testing the indicator, and configuration. The keyboard is shown in Figure 1.

Key Functions

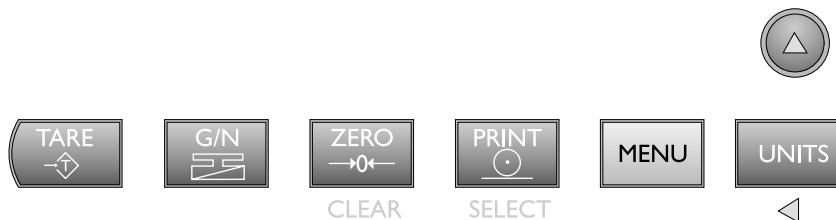


Figure 1
WI-125 Keyboard

TARE key	Enters a pushbutton tare in gross/net operation.
GROSS/NET key	Accesses the gross weighing mode from any other function and activates the net weighing mode if a tare is active.
ZERO key	Zeros the scale in gross or net weigh mode. This button also clears scrolled digits on the display before they are accepted.
PRINT key	Sends a print command and is used to select menu items.
MENU key	Used to access menus and move among choices in a menu.
UNITS key	Changes the unit of measure during operations mode. This key also moves one space to the left any digit that has been scrolled in with the ↑ key .
UP ARROW key	Lets you scroll through numerical values and the decimal point.

Entering Numbers with Arrow Keys

*If at any time you enter an incorrect number, press **CLEAR** to delete the number, then re-key.*

The arrow keys are used to enter numbers. Refer to this section when you need to enter a number or numbers.

Example: To key in the number 63.2

Press the ↑ key repeatedly until the 6 appears on the display.

Press the ← key once to move the 6 one space to the left.

Press the ↑ key until 3 appears.

Press the ← key once to move the 63 one space to the left.

Press the ↑ key until the decimal point appears. (The decimal appears after the 9 as you scroll through the numbers with ↑ key.)

Press the ← key once to move the 63. one space to the left.

Press the ↑ key until 2 appears.

(Continue with instructions or press **G/N** to return to normal weigh mode.)

Indicator Operation

The unit will power up in gross or net weighing mode, depending on what mode the unit was in when last turned off. All calibration, zero, gross, and tare values will be maintained during power loss.

The indicator display, Figure 2, tells you the status of the indicator through the appearance of annunciators. The annunciators are small black arrows pointing to the different labels around the display face.

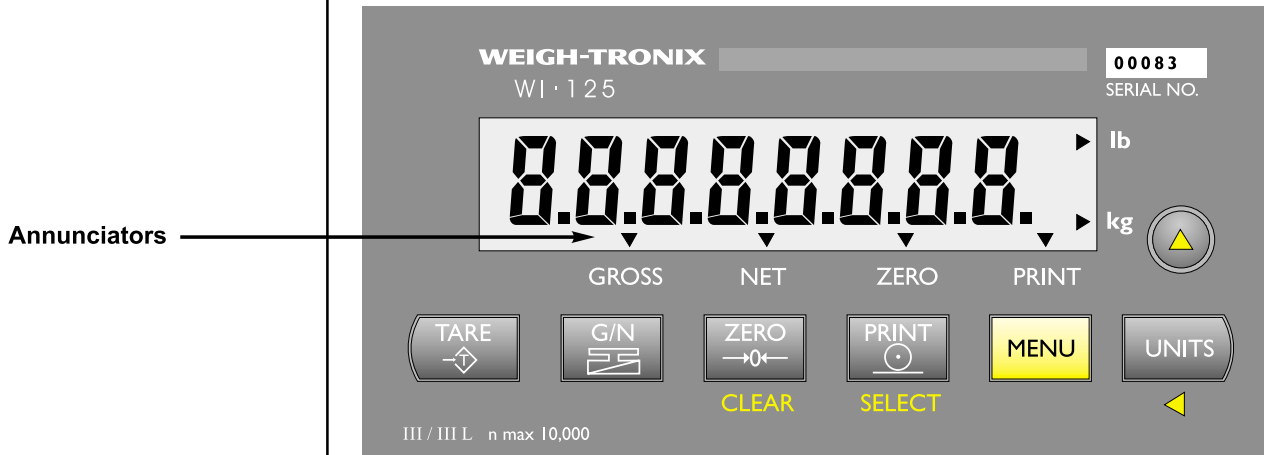


Figure 2
Indicator Display

Annunciators

No annunciators appear while motion is detected.

Gross - Appears when indicator is in gross weighing mode.

Net - Appears when a tare is in effect and the indicator is in net weighing mode.

Zero - Appears when the scale is within $\pm 1/4$ division of zero.

Print - Appears when the print key is pressed and while data is transmitted.

lb, kg - Points out the active unit of measure in weighing mode.

Operations Menu

Depending on your model of WI-125 and firmware revision level, your unit may be configured to display some or all of the following functions: pushbutton tare, time, date, accumulator, counter and backlight. These can be viewed and changed if allowed by the security code. **This manual assumes the unit is configured to allow full access to all functions.** You can disable unneeded options. Instructions are in the *Service Manual*. Below is a flowchart and general instructions for moving around the operations mode menu.

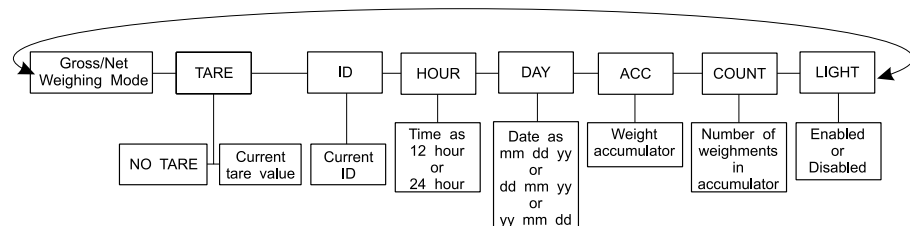


Figure 3
Operations Menu Diagram

Press **MENU** to go right in the diagram

Press and hold **MENU** to go left in the diagram

Press **SELECT** to go up and down in the diagram

Press **SELECT** to select new choice and go up in the diagram

Press **G/N** at any time to save changes and return to gross/net weighing mode

Gross / Tare / Net Weighing Operations

Gross Weighing

To perform gross/net weighing operations, follow these steps:

1. Power up the indicator. . . Indicator powers up in gross or net mode.
2. If the unit is not in gross mode, press the **G/N** key once to get to gross mode. . . The annunciator illuminates next to gross. See Figure 2.
3. Verify the scale is empty and zero the scale by pressing the **ZERO** key. . . No weight is displayed and the zero annunciator illuminates. See Figure 2.
4. Select unit of measure by pressing the **UNITS** button. . . The units annunciator will point to the chosen unit of measure.
5. Place weight on the scale. . . Gross weight is displayed.

Net Weighing

Pushbutton Tare

For net weighing operations a tare needs to be entered. A tare can be entered by two methods: pushbutton tare or entering a numerical value while in the operations menu.

1. With the scale empty, the indicator powered up in gross mode, zero the scale by pressing the **ZERO** key. . .
No weight is displayed and the zero annunciator illuminates.
2. Place the weight to be tared on the scale. . .
The weight of the object is displayed.
3. Press the **TARE** key on the indicator. . .
The weight is tared, the display reads zero and the net annunciator illuminates.
4. Add more weight to the scale. . .
Net weight is displayed.
5. View the gross weight by pressing the **G/N** button. . .
Gross weight is displayed and the gross annunciator illuminates.
6. Press the **G/N** key again to see net weight. . .
Net weight is displayed and the net annunciator illuminates.

Entering a Scroll Tare

Scroll tare is not available on the Super Saver model.

1. From gross/net weighing mode, press the **MENU** key. . .
tArE is displayed.
2. Briefly press the **SELECT** key. . .
no tArE or the current tare value is displayed. You can toggle between **no tArE** and the current tare value by pressing the **MENU** key.
NOTE: A tare value cannot be entered while **no tArE** is displayed. You must press **MENU** before entering a tare value.
3. With the current tare value displayed, enter a numerical value for your tare. Refer to the section *Entering Numbers with Arrow Keys*, then press the **SELECT** key. . .
New tare value is displayed, then **tArE** is displayed.
4. Press **G/N** to return to gross/net weighing mode. . .
Display returns to gross or net mode.

*You may view the current or active tare value at any time during a weighing process. From gross or net weighing mode, press **MENU** then **SELECT**. If a tare value is in use, it will be displayed. Press **G/N** to return to gross/net weighing mode. Refer to the Operations Menu on the previous page.*

Clearing the Active Tare

There are two ways to remove the current or active tare weight.

- A. Remove all weight from the scale and press **TARE**. . . Tare register is cleared, scale returns to gross mode and no weight is displayed.
- B. 1. With the gross or net annunciator illuminated, press **MENU**, then press **CLEAR**. . . **tArE** is displayed, then **no tArE** is displayed.
2. Press the **G/N** key. . . Gross weight is displayed and no tare is active.

Net Weighing Operation

1. After a tare is established, place the indicator in net mode by pressing the **G/N** key. . . Net annunciator illuminates. Zero weight will be displayed with the container on the scale.
2. Place material to be weighed in the tared container on the scale. . . Net weight of material is displayed.

ID Number Entry

You may enter an ID number of up to 8 digits in length. The ID number may include any combination of the numbers 0 through 9, a dash, and a decimal point.

1. From gross weighing mode, press **MENU** repeatedly. . . **id.** is displayed.
2. Press **SELECT**. . . The current ID number is displayed.
3. With the current ID number displayed, enter a numerical value for your ID number. Refer to the section *Entering Numbers with Arrow Keys*. . . The new ID number is displayed.
4. After your new ID number has been displayed, press **SELECT**. . . **id.** is displayed.
5. Press **G/N** to return to the weighing mode. . . Display returns to gross or net mode.

Viewing and Setting Time (Option)

*If you enter an incorrect digit, press **CLEAR** to clear the display one digit at a time.*

Setting A.M. & P.M.

Your indicator must have the appropriate circuitry and be configured to allow the following:

1. From gross/net weighing mode, press **MENU** repeatedly until. . . *Hour* is displayed.
2. Press **SELECT**. . .
In the 12 hour clock configuration you will see time displayed as hours, minutes and **A** for A.M. or **P** for P.M. (**09.40 A**). In the 24 hour clock you will see hours, minutes and seconds (**09.40.38**).
3. To set the 12 hour clock, press the **↑** key to delete the old time value.
0 A or **0 P** is displayed. The **A** is for A.M., **P** for P.M.
4. Key in the time as **hh mm ss**. Refer to the section *Entering Numbers with Arrow Keys*.
5. Press the **TARE** key to toggle between AM & PM after entering at least one digit and before pressing **SELECT**.
6. To set the 24 hour clock, key in time as **hh mm ss**.
7. After the clock is set, press **SELECT** to start the clock and return to operations mode menu. . . **Hour** is displayed and the clock begins at the new time setting.
or
press **G/N** to return to gross/net weighing mode. . .
Display returns to gross/net mode and the clock begins at the new time setting.

Viewing and Setting the Date (Option)

*If you enter an incorrect digit, press the **ZERO/CLEAR** key to clear the display one digit at a time.*

Your indicator must have the appropriate circuitry and be configured to allow the following:

1. From gross/net weighing mode, press **MENU** repeatedly until. . . **dAY** is displayed.

- | | |
|--|---|
| 2. Press SELECT . . . | Depending on the configuration of your indicator you will see the date displayed in one of three ways: <ul style="list-style-type: none"> • month-day-year, or • day-month-year, • year-month-day. |
| 3. To change the date, key in the new data. Refer to the section <i>Entering Numbers with Arrow Keys</i> . . . | The old date is replaced with the new date. |
| 4. Press SELECT to return to the operations mode menu. . . | The old date is replaced with the new date. |
| or
press G/N to return to gross/net weighing mode. . . | The date is accepted and the display returns to gross/net mode. |

Single Accumulator with Counter

Weighing and Printing

Printing the accumulated weight and count can be accomplished at any time during the weighing process; however, printing these values automatically clears them from memory! So take care to print the accumulated values only after you have made all the necessary weighments.

A print/add function will occur if you have autoprint enabled or if a remote Print command is received by the indicator.

There is a single channel accumulator in the indicator. The accumulator will add the displayed weights automatically and print individual weights and totals on command.

- | | |
|---|--|
| 1. Weigh load. . . | Indicator displays weight. |
| 2. Press PRINT . . . | Weight is printed. |
| 3. For each additional load weighed, press PRINT . . . | Each weight is printed individually and the weight is totalled automatically within the indicator. |
| 4. After the last load has been weighed and printed, press MENU , then TARE . . . | The total weight and count are printed and cleared from memory. |

G	210 lb
G	200 lb
G	200 lb
Count	3
Total	610 lb

Sample printout

Viewing Accumulated Weight and Count

GROSS may be pressed at any time during viewing to return to weighing mode.

1. With weight displayed, press **MENU** until. . . **ACC** is displayed.
2. Press **PRINT/SELECT**. . . Total weight of all loads is displayed.
3. Press **PRINT/SELECT** to toggle back to **ACC**. . . **ACC** is displayed.
4. Press **MENU** once. . . **count** is displayed.
5. Press **PRINT/SELECT**. . . Total number of loads is displayed.
6. Press **PRINT/SELECT** to toggle back to count. . . **count** is redisplayed.
7. Press **G/N** to return to weighing mode. . . Current weight is displayed. There is a single channel accumulator in the indicator. The accumulator will add the displayed weights automatically and print individual weights and totals on command.

Enabling or Disabling Display Backlight

The backlight is not available on the Super Saver model.

1. From gross/net weighing mode, press **MENU** repeatedly until. . . **Light** is displayed.
2. Press **SELECT**. . . **ENABLED** or **diSABLEd** is displayed
3. Press **MENU** to toggle between enabled or disabled. . . Configuration choices made during setup of this unit will determine if the backlight is on constantly or if it varies according to ambient light levels. Refer to the *Service Manual*.
4. Press **SELECT** to return to the operations mode menu. . . The light selection is accepted and **Light** is displayed.
or
press **G/N** to return to gross/net weighing mode. . . The light selection is accepted and the display returns to gross/net mode.

The test mode is used to test various functions of the WI-125. The test menu is shown in Figure 4. Instructions for using the test menu are found below.

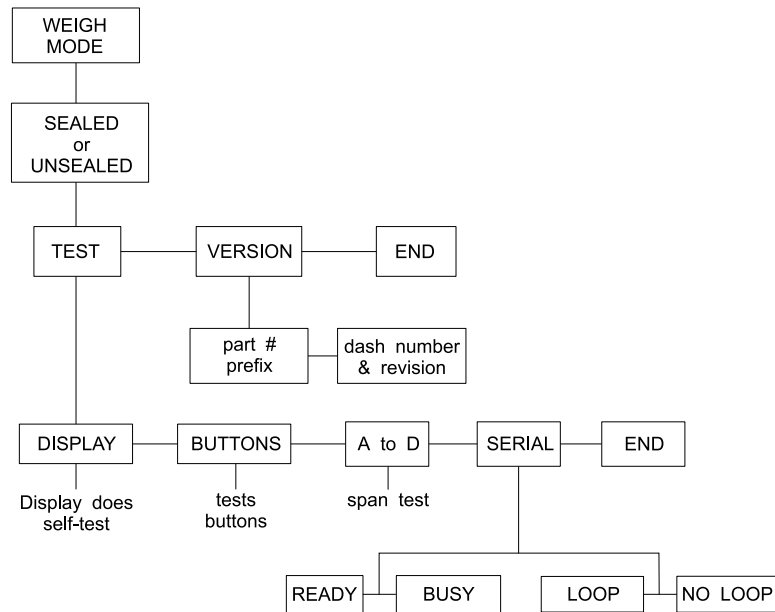


Figure 4
Test Menu

1. Enter the test mode from gross/net operation by pressing and holding the **MENU** key until *tES*t is displayed. *SEALED* or *unSEALED* is displayed briefly while you hold the key. If you release the **MENU** key too soon, press **G/N** to return to normal weigh mode and begin again.
2. Move to the right through the menu selections by pressing **MENU** briefly. Move to the left through the menu selections by pressing **MENU** for 1 second or hold down for continuous scrolling.
3. To move down a level in the hierarchy, press **SELECT**. Anytime you wish to get to the next higher level in the hierarchy, press and hold **SELECT** for approximately 1.5 seconds or press **SELECT** whenever *End* is displayed.
4. Press **MENU** to toggle between choices.
5. Press **G/N** to return to gross weighing operation at any time.

Below are the specific directions and explanations for the items you see in the test menu.

VERSION Under version are the Weigh-Tronix part number and revision number for the software found in your machine. Weigh-Tronix part numbers are divided into two parts: the prefix and the dash number.

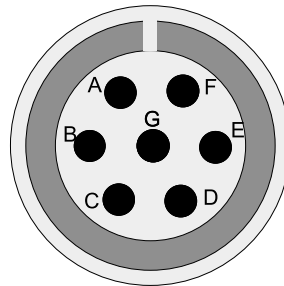
DISPLAY With *diSPLAY* displayed, press **SELECT** and the bottom row of annunciators turns on. Press **SELECT** again and a dynamic test is run. Press **MENU** to stop the dynamic test or consecutively press **MENU** to step through the display test routine. Press **SELECT** when the dynamic test is active to return the unit to *diSPLAY*.

- BUTTONS** With *buttonS* displayed, press **SELECT** and an underscore will appear on the screen. Press any key except **MENU** to check for proper key functioning. After testing the buttons, press **MENU** to return to the display.
- A to D** Displays the analog to digital counts. The span is normally 20000 counts per millivolt per volt. With a calibrator at zero millivolts per volt, the displayed value should be between -200 and +200.
- SERIAL** Tells you if the serial output is ready or busy. A jumper connecting pins DTR to CTS of the serial port will cause *buSY* to be displayed. Pressing the **MENU** key puts *no LOOP* on the display. With pins XMITT to RECV connected, *LOOP* is displayed. With them disconnected, *no LOOP* is displayed.

Wiring Connections

WI-125 Super Saver and Full Feature Pin Assignments (optional NEMA 4X)

The following pin-outs refer to the connector on the back of the WI-125 Super Saver and Full Feature. **The colors mentioned in the table below are Weigh-Tronix Weigh Bar colors only!**



B	Green	(+) Excitation
D	Black	(-) Excitation
F	Yellow	(+) Sense
E	Blue	(-) Sense
C	White	(+) Signal
A	Red	(-) Signal
G	Wht/Orn	Shield

WI-125 NEMA 4X Pin Assignments

Following are instructions for connecting the weight sensors and the RS-232 cables to the terminal boards on the WI-125 NEMA 4X Indicator. Refer to Figure 5 on the next page.

To access the terminal boards:

1. **Remove power from the scale.**
2. Remove display enclosure from the mounting bracket by removing the four 1/2" 10-32 capscrews securing the display case to the mounting bracket.
3. Remove the two 3/8" 10-32 capscrews securing the enclosure brackets and carefully pull the enclosure halves apart.

You may now access the two terminal blocks (TB1 and TB2) which are located in the back half of the enclosure on the left hand side. See Figure 6 on the next page.

To reassemble the WI-125, reverse the steps listed above, making sure to reinsert the shorter capscrews in the middle position of the enclosure bracket.

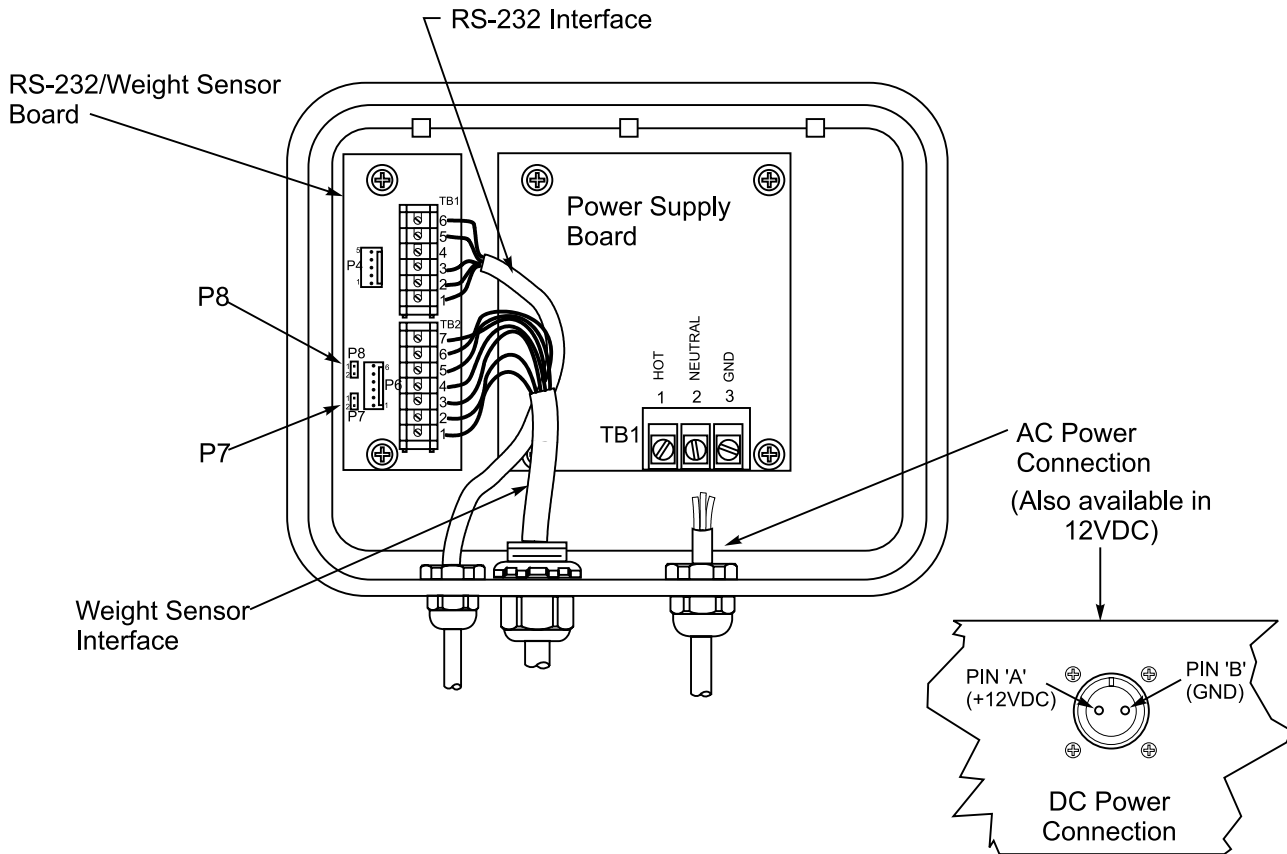


Figure 5
Internal connections

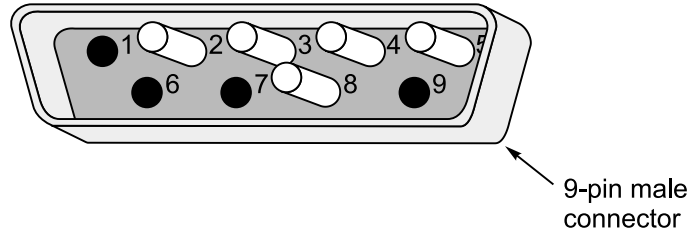
On systems using remote sense (7 wires), store jumper on a single pin of P7 and P8. On systems not using remote sense (5 wires), jumper P7-1 to P7-2 and P8-1 to P8-2 with jumper.

Signal Cable Connections		
Terminal Board	Description	WT Wire Color
TB201	+Excitation	Green
TB2-2	+Sense	Yellow
TB2-3	+Output	White
TB2-4	Shield (Gnd)	White/Orange
TB2-5	-Output	Red
TB2-6	-Sense	Blue
TB2-7	-Excitation	Black

Transmitting Data

WI-125 Super Saver and Full Feature

The WI-125 Full Feature Indicator provides an RS-232 output for data transmission. The RS-232 connector is located on the back of the indicator and is a male 9-pin connector. Connect a printer following the pin assignments listed in Figure 6.



Signal Name	Pin Number
Transmit to printer	#3
Receive from printer	#2
CTS (BUSY) from printer	#8
DTR (READY) to printer	#4
Logic Ground	#5
Shield	Shell

Figure 6
RS-232 Connector pin assignments

WI-125 NEMA 4X

The WI-125 NEMA 4X also provides an RS-232 output for data transmission to a peripheral device. Refer to the following interface connections for proper transmission. See Figure 5 for illustration.

RS-232 Connections	
Terminal Board	Description
TB1-1	Logic Ground
TB1-2	Transmit Data
TB1-3	Receive Data
TB1-4	Data Terminal Ready
TB1-5	Clear to Send
TB1-6	Shield

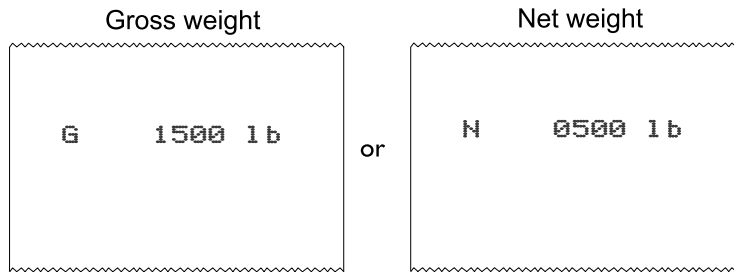
To transmit data, follow these instructions:

If your indicator has a peripheral device connected, from the gross/net weighing mode press the **PRINT** key to transmit the selected output(s).

The **PRINT** annunciator (See Figure 2) will illuminate while data is transmitted and the data configured to be printed will be output to the printer. See Figure 7 for a sample printout.

Communication protocol

Samples of the default printout for a WI-125 are shown in Figure 6. This is the displayed weight (Gross or Net) followed by a carriage return and line feed.



An enquire code can be sent to the WI-125. This will prompt the indicator to send a standard printout. The default enquire code number is an ASCII decimal 005. This number can be changed in configuration.

The default settings for serial output are:

Busy	Disabled
Baud	1200
Parity	Clear
Stops	1

Avery Weigh-Tronix

Declaration of Conformance to SMA Standard Year of Declaration 2002 Production Meets Type



We the manufacturer of

Model	Type	Certificate and Number	Issued by
WI-125	Electronic Indicator	NTEP CC 92-167A4	NCWM

Declare in our responsibility the conformance of the above listed models and types to the mentioned certificates and the requirements of the SMA standard.

This declaration becomes valid when the SMA Conformance Logo, having our name or trademark is applied to the device or its accompanying documentation.

* SMA PRODUCTION MEETS TYPE DEVICE MANUFACTURER Conformance Logo and Design are a registered trademark of the Scale Manufacturers Association

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