Avery Weigh-Tronix

ZM605

Indicator

User Instructions

AWT35-501346
Issue AA

Table of Contents

1 General information and warnings

1.1 About this manual

This manual is divided into chapters by the chapter number and the large text at the top of a page. Subsections are labeled as shown by the 1.1 and 1.1.1 headings. The names of the chapter and the next subsection level appear at the top of alternating pages of the manual to remind you of where you are in the manual. The manual name and page numbers appear at the bottom of the pages.

1.1.1 Text conventions

Key names are shown in **bold** and reflect the case of the key being described. If a key has a dual function it may be referred to by its alternate function.

Displayed messages appear in ***bold italic*** type and reflect the case of the displayed message.

Annunciator names appear as *italic* text and reflect the case of the annunciator.

1.1.2 Special messages

Examples of special messages you will see in this manual are defined below. The signal words have specific meanings to alert you to additional information or the relative level of hazard.

CAUTION!
This is a Caution symbol.
Cautions give information about procedures that, if not observed, could result in damage to equipment or corruption to and loss of data.

NOTE: This is a Note symbol. Notes give additional and important information, hints and tips that help you to use your product.

1.2 Installation

NO USER SERVICEABLE PARTS. REFER TO QUALIFIED SERVICE PERSONNEL FOR SERVICE.

1.2.1 Safe handling of equipment with batteries

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

ATTENTION: Il y a danger d'explosion s'il y a remplacement incorrect de la batterie, remplacer uniquement avec une batterie du même type ou d'un type équivalent recommandé par le constructeur. Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

1.2.2 Wet conditions

Under wet conditions, the plug must be connected to the final branch circuit via an appropriate socket / receptacle designed for washdown use.

Installations within the USA should use a cover that meets NEMA 3R specifications as required by the National Electrical Code under section 410-57. This allows the unit to be plugged in with a rain tight cover fitted over the plug.

Installations within Europe must use a socket which provides a minimum of IP56 protection to the plug / cable assembly. Care must be taken to make sure that the degree of protection provided by the socket is suitable for the environment.

1.3 Routine maintenance

IMPORTANT: This equipment must be routinely checked for proper operation and calibration.
Application and usage will determine the frequency of calibration required for safe operation.

Always isolate the indicator from the power supply before starting any routine maintenance to avoid the possibility of electric shock.

1.4 Cleaning the machine

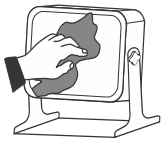


Table 1.1 Cleaning DOs and DON'Ts

DO	DO NOT
Wipe down the outside of standard products with a clean cloth, moistened with water and a small amount of mild detergent	Attempt to clean the inside of the machine
	Use harsh abrasives, solvents, scouring cleaners or alkaline cleaning solutions
Spray the cloth when using a proprietary cleaning fluid	Spray any liquid directly on to the display windows

1.5 Training

Do not attempt to operate or complete any procedure on a machine unless you have received the appropriate training or read the instruction books.

To avoid the risk of RSI (Repetitive Strain Injury), place the machine on a surface which is ergonomically satisfactory to the user. Take frequent breaks during prolonged usage.

1.6 Sharp objects

Do not use sharp objects such as screwdrivers or long fingernails to operate the keys.

1.7 FCC and EMC declarations of compliance

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 présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Classe A prescrites dans le Règlement sur le brouillage radioélectrique edicté par le ministère des Communications du Canada.

European Countries

WARNING: This is a Class A product. In a domestic environment, this product may cause radio interference in which the user may be required to take adequate measures.

2 Introduction

The ZM605 indicator is a powerful, programmable indicator with a default general weight accumulation application. This manual will explain operation of the indicator and the accumulation application.

This indicator is suitable for the office, dusty, wet or high pressure and heavy washdown environments. It comes in IP69K stainless steel desktop and IP66 panel mount housings. Both have a high contrast, graphic display for text and graphic messages appropriate to the function of the program.

The ZM605 indicator can support up to 24 - 350 ohm load cells. The indicator requires 90 VAC - 264 VAC, 50 or 60 Hz or 12-36VDC. The standard indicator connectivity includes two USB Host, three serial ports and an Ethernet port.

Available options include:

- Analog Output kit
- Current Loop kit: Current loop and RS485/RS422
- USB Device kit: Provides USB interface to PC
- DeviceNet™
- ProfiBus®
- Wireless 802.11g
- Internal 120 VAC relay
- 2nd Scale Input 5VDC Excitation w/o STVS
- 2nd Scale Input 10 VDC Excitation w/STVS
- External I/O Interface (for existing GSE or 1310 I/O cards)
- AC input, 4 Inputs (120-240VAC)
- DC input, 4 inputs(4-30VDC)
- AC output, 4 relays (20-240VAC, 1 amp max)
- DC output, 4 relays (3-60VDC, 2 amp max)

The indicator also has three logic level inputs with configurable functions and three setpoint outputs. See the Specification literature for a full list of specifications.

Figure 2.1 shows the front panel of the ZM605 indicator which consists of the keys and the graphic display.

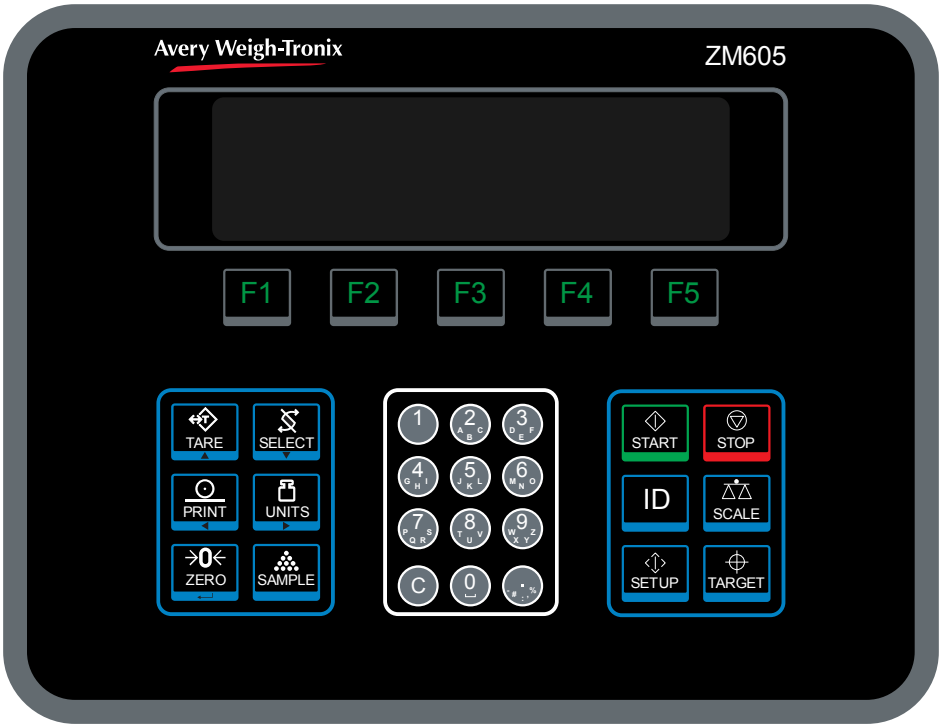


Figure 2.1 ZM605 front panel

Never press a key with anything but your finger. Damage to the overlay may result if sharp or rough objects are used.

2.1 Front Panel Keys

The key functions are listed below.

	Use the **F1** through **F5** keys as defined by the label above each one on the display. The functions change according to program need.
	Press the **TARE** key to perform a pushbutton tare function. Acts as an up arrow key for menu navigation.
	Press the **SELECT** key to toggle between the active display values. Acts as a down arrow key for menu navigation.
	Press the **PRINT** key to send information to a peripheral device through a configured communications port. Acts as a left arrow key for menu navigation.
	Press the **UNITS** key to scroll through the available units of measure while in normal operating mode. Acts as a right arrow key for menu navigation.
	Press the **ZERO** key to zero the display. Acts as an ENTER key to accept a displayed value or function in setup mode.
	The **SAMPLE** key can be used to perform custom application functions.
	Use the alphanumeric keypad for entering text or numbers.
	The **START** key can be used to perform custom application functions.
	The **STOP** key can be used to perform custom application functions.
	The **ID** key can be used to perform custom application functions.
	The **SCALE** key can be used to perform custom application functions. It can also be used to select the active scale when more than one scale is enabled.
	The **SETUP** key can be used to perform custom application functions. It can also be used to view the password entry screen for menu access.
	The **TARGET** key can be used to perform custom application functions.

2.2 Powering up a ZM605 indicator

The indicator is always active as long as power is received. Power must be 90-264 VAC with a frequency of 50 or 60 Hz, or 12-36 VDC.

2.3 Using the alphanumeric keypad

Use the alphanumeric keypad to enter numbers and words when prompted by the indicator. The action is similar to using a cell phone to select the number or letter. A rapid succession of presses will scroll through the number on the key and then the letters, starting with upper case and then lower case. The decimal key scrolls through the negative sign, pound sign, colon, comma and percent sign. The **0** key toggles between 0 and a space.

2.4 Entering negative numbers or decimal point

To enter a minus sign for a negative number or a decimal point (or comma), press the **C** key (or **PRINT** key) to clear the current value from the display.

Then to enter a negative number, with a single ***0*** displayed press the **Decimal** key. The first character will then change to a (-) negative sign. Enter the rest of the digits normally.

To enter a decimal point (or comma), on a ZM605 use the decimal point key. To enter a value less than 1 requires the entry of the leading 0 before a decimal point is allowed.

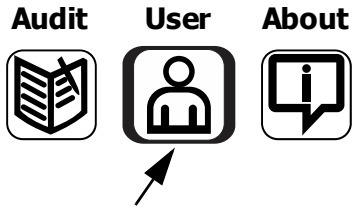
2.5 Menu access and navigation

The menus used to configure the ZM605 are accessed with passwords. Press and hold the **SELECT** key to access the password entry screen, shown below.

In general, a menu is made up of a group of top level items, sub levels under each of those and lists of items to view or configure. There are variations on this theme. Sometimes there may be no sub level or there maybe two sub levels before you get to a list of items to set.

You will see on-screen lists with instructions on how to choose and set an item in each menu list. On-screen prompts guide you as you move through the menus.

When icons are on screen the bold box around an icon means it is the highlighted icon. See the example below.



When a text list appears on screen the highlighted item is shown by a green bar over the text. See the example below.

The main menu is made up of the User, About and Audit menus. See Chapter 4 for complete information.

2.5.1 Escaping or exiting from a menu

In any menu you will have either **UP** or **ESC** keys listed on-screen.

If **ESC** is listed use it until it disappears then use the **UP** key until you are asked if you want to save any changes or not. Highlight your choice and press **ENTER** to accept.

The indicator will reboot and return to the startup screen.

2.6 Adjusting screen contrast

To decrease or increase the screen contrast press and hold the **UNITS** key and press the **TARE** (UP arrow) or **SELECT** (DOWN arrow) key repeatedly.

3 Operating Instructions

The ZM605 provides multiple tare memory, transaction counter and weight accumulator.

SELECT key default function: *You can view the gross, net, tare, gross total, net total, tare total and transaction total display values or other configured scale parameters by repeatedly pressing* ***SELECT****.*

3.1 Power Up

When the indicator is powered up, you will see the startup screen for the Accumulation application, shown below:

3.2 Accumulation weighing application

Gross and net weighing are covered first below followed by the instructions for the Accumulation app.

3.2.1 Gross weighing

To change unit of measure, press **UNITS***.*

To perform gross weighing, power up the unit and follow these steps:

1. Empty the scale and, if necessary, press **ZERO** to zero the display …

   0 is displayed and the *center-of-zero* annunciator lights.

2. Place item to be weighed on the scale …

   Weight is displayed.

3. Repeat steps 1 and 2.

3.2.2 Net weighing

Net weighing is available via three types of tare entry.

Pushbutton tare When enabled press **TARE** to tare the weight on the scale.

Entered tare	When enabled key in a tare weight and press **TARE** to set.
Preset tare	When enabled press **TARE** and then enter a stored Preset Tare number (1 - 10) and press **ZERO** to set.

Pushbutton and Entered Tares can be enabled simultaneously.

Auto Tare Clear

If auto tare clear is enabled, after a weighment, when the weight falls into the gross zero band, tare is cleared to zero.

Definition: Gross zero band - this is a configured value that defines a window around gross zero. This is used in several ways in different applications.

The three types of tare are explained below.

Using Pushbutton Tare

To perform a net weighment using pushbutton tare, power up the unit and follow these steps:

1. With no weight on the scale, if the display does not read ***0*** press **ZERO** …

   0 is displayed and the *center-of-zero* annunciator lights.

2. Place item to be tared on the scale …

   Weight is displayed.

3. Press **TARE** …

   0 is displayed and the *NET* weight is displayed.

4. Place material to be weighed into or on the tared item on the scale …

   Net weight of material is displayed.

5. Repeatedly press **SELECT** to view the gross, tare, and net values.

6. If repeated weighments use the same tared item, you do not need to establish a new tare value as described in step 2 and 3.

*Pressing **TARE** will perform the tare function but if you continue to press and hold **TARE** for 3 seconds the display will show **cLEArEd** and the Tare weight is cleared.*

*If gross weight is not at 0, press the **ZERO** key; then press the **TARE** key to clear the tare value.*

Using Entered Tare

To perform a net weighment using entered tare, the following steps describe a typical operation:

1. With no weight on the scale, if the display does not read ***0*** press **ZERO** …

   0 is displayed and the *center-of-zer*o annunciator lights.

2. Key in the tare value of the container or box that will be used to hold the material that requires a net weight value, and press **TARE** …

   Tare weight is displayed as a negative value and the *NET* weight is display and the PT annunciator lights.

3. Place the container or box and material to be weighed on the scale …

   Net weight of material is displayed.

4. If repeated weighments use the same tared item, you do not need to establish a new tare value as described in step 2.

5. To remove the tare weight from the scale, enter ***0***, then press **TARE** …

   The tare is cleared and the scale is in gross weigh mode.

*Press and hold **TARE** for 3 seconds and the display will show **cLEArEd** and the Tare weight is cleared.*

Using Preset Tare

Preset tares are entered in a password protected menu. Refer to details described in the *Supervisor menu on page 25*. There are 10 tare values stored in memory. To perform a net weighment using one of the preset tares, follow these steps:

1. With no weight on the scale, if the display does not read ***0*** press **ZERO** …

   0 is displayed and the *center-of-zero* annunciator lights.

2. Press **TARE** …

   EntEr is displayed.

3. Key in the desired preset tare number and press **ZERO** …

   Tare weight is displayed as a negative value and the net weight is displayed and the PT annunciator lights.

4. Place container or box and material to be weighed on the scale …

   Net weight of material is displayed.

Step 4 can be done prior to step 2 if desired.

*When the item is removed from the scale the Tare is cleared automatically if Auto Tare Clear is enabled. To remove the tare weight manually, select a preset tare that has a value of 0 for the tare or press and hold **TARE** for three seconds.*

If the active unit of measure is lb-oz then tare weights must be entered in the oz equivalent. To enter 2 lb 4.5 oz you would need to enter 36.5 oz (2 lb = 32 oz plus the 4.5)

3.2.3 Using the Accumulation function

In the accumulator application the following softkeys are displayed and have the functions described. Following that are in depth instructions for using them.

CHAN key (**F1**) Press this key to use the key pad and key in the desired accumulator channel number (7 characters max).

ID key (**F3**) Press this key and key in the desired ID number (7 digits max).

SETPT key (**F5**) Press this key to set the setpoint or output values.

PRINT key A brief key press, or triggering input #3, accumulates and transmits data out serial port #1 (See sample below).

Chan. #	1
Trans #	2
Gross	52 lb
Tare	25 lb
Net	27 lb

Press and hold the **PRINT** key to print the Total Format shown below (if enabled in the supervisor menu):

Chan. #	1
Trans #	2
Gross Total	1077 lb
Tare Total	50 lb
Net Total	1027 lb

CHAN key (F1)

1. Press this key and the alphanumeric entry screen appears.

2. Key in the Channel number and press the **ENTER** key.

*Remember to press the **Num Lock** key to enable the numeric keys.*

The main screen appears with your chosen channel number displayed.

ID key (F3)

1. Press the **ID** key to enter an ID number. The following screen appears.

2. Use the keypad on the ZM605 to enter up to seven digits for the ID. When you have entered the ID, press the **ENTER** key and the following is displayed …

SETPT key (F3)

1. Press and hold the **SELECT** key …

   out1 is displayed followed by the current weight value for set point 1.

2. Press **ENTER** to accept the displayed value or key in a new value and press **ENTER** to accept.

   out2 is displayed followed by the current weight value for set point 2.

3. Press **ENTER** to accept the displayed value or key in a new value and press **ENTER** to accept.

   out3 is displayed followed by the current weight value for set point 3.

4. Press **ENTER** to accept the displayed value or key in a new value and press **ENTER** to accept.

   The indicator returns to the normal weighing mode

3.2.4 Performing Accumulation weighments

The accumulator application can be used to record totals of individual weighments.

Follow these steps:

1. Press **ZERO** to zero the scale, if necessary …

   0 is displayed.

2. Place empty container on the scale and press **TARE** …

   Net weight is displayed.

3. Place item on the scale. Press **PRINT** to add this weight to the accumulator and to print the configured print format …

   The *PRINT* annunciator lights briefly and ***Acc*** is briefly displayed.

4. Remove weight from the scale. Weight must return to inside the gross zero band before another print and accumulation can be recorded.

5. Repeat steps 3 and 4 for each weight you want to accumulate.

   If enabled, press and hold the **PRINT** key to transmit current active total channel data out serial port #1. This will also clear the current active channel data if the clear feature is enabled under the Supervisor's Menu.

4 Menus

The ZM605 three user accessible menus:

- **User** menu - Use to set Time, Date, Site ID, check Seal status and check Archive information.
- **About** menu - Use to see information on the software, firmware, application, serial number, options, ethernet and downloads
- **Audit** menu - Use this to check and/or print the calibration and configuration counters.

The password for these menus is 111. Follow these steps to access and use these menus.

1. Press and hold the **SETUP** key until …

   the password entry screen appears.

2. Key in 111 and press the **ENTER** key …

   This screen is displayed:

   The bold box around the center image means that is the highlighted menu item.

3. Use the **Left** and **Right** keys to highlight the menu you want to enter and press the **ENTER** key. Below are the explanations for these menus.

4.1 User menu

When the User menu is selected, these choices appear:

Use the **Left** and **Right** keys to highlight the menu item you want to access and press the **ENTER** key.

Time **Set** - Use the numeric keys to enter the correct time in the style chosen below.
Style - Choose the style of time display from these choices:

- 12HR - Shows time in the 12 hour style
- 12HR-AP - Shows time in the 12 hour style with AM/PM
- 24HR - Shows time in the 24 hour style

Date **Set** - Use the numeric keys to enter the correct date in the style chosen below.
Style - Choose the style of date display from these choices:

- MMDD2Y
- MMDD4Y
- DDMM2Y
- DDMM4Y

The date format is how the date is stored internally. Printed dates will appear as programmed in the selected print format.

Site ID Use the alphanumeric keys to enter a Site ID, up to six characters.

Seal Shows the status of the physical seal jumper inside the indicator: ***SEAL*** or ***NO SEAL***. If the unit is sealed, no changes can be made to the configuration of the indicator.

Archive This item appears only if so configured in the ADMIN password protected menu. This stands for electronic archive. In other regions it is known as an alibi memory or tally roll. These will be transmitted via configured communications ports. These reports can be used to confirm a weighment if it is ever in dispute. Only records that are qualified as a LEGAL record, per site motion criteria, are considered as entries to this log.

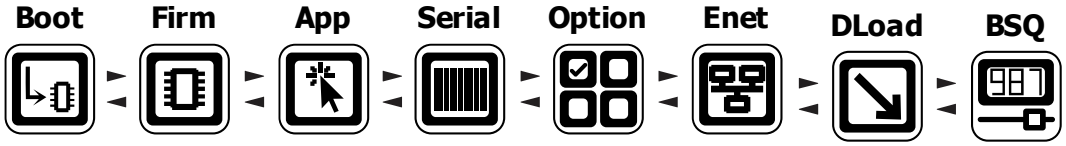
The indicator has memory capacity to store approximately 5,000 transactions.

The Archive report uses a rolling memory configuration (FIFO) so the oldest transaction will be written over first when all the memory slots are filled.

You can exit the menu by following the instructions in *Escaping or exiting from a menu on page 13*.

4.2 About menu

If you access the About menu you will see this menu:



Definitions:

Bootloader *Software that makes the electronics run.*

Firmware *Embedded system software that creates core functions of the product.*

App *Specific software that controls the behaviour for a given installation.*

Use the **Left** and **Right** keys to highlight the menu item you want to access and press the **ENTER** key.

Boot ***PartNo*** - See the bootloader part number.
Version - See the version of the bootloader.

Firm ***PartNo*** - See the firmware part number.
Version - See the version of the firmware.

App ***PartNo*** - See the application part number.
Version - See the version of the application.

Serial See the serial number of the indicator.

Option ***Bus 1 or 2*** - Choose the Bus of the option card.
Card 1 or 2 - Choose the Card you want to view.

- ***Type*** - View the type of card.
- ***Version*** - View the firmware version of the card.

Enet This stands for Ethernet. Use this to view the network addresses:

IP Addr - See the IP address.
Subnet - See the Subnet address.
Gateway - See the Gateway address.
MAC - See the MAC address.

DLoad This stands for download. Use this to view the following:

sSerial - View the license number that created the configuration file.
dSerial - View the license number that downloaded the configuration file.
dName - View the company name for the license shown for downloading.

This is used for security and licensing purposes.

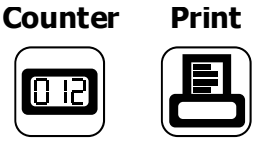
BSQ ***Scale X*** - Choose the scale.

- ***SW Part*** - View the firmware part number of the cell that is connected.
- ***Version*** - View the firmware version of the cell that is connected.
- ***Cur. Ser*** - View the serial number of the cell that is connected.
- ***Cal. Ser*** - View the serial number of the cell that WAS connected at the time of calibration.

You can exit the menu by following the instructions in *Escaping or exiting from a menu on page 13*.

4.3 Audit menu

If you access the Audit menu you will see this menu:



Counter ***Config*** - See the number of configurations the indicator has undergone.
Calib - See the number of calibrations the indicator has undergone.

Print Use this to select which port to print the audit report through. The audit report will contain both Config and Calib information. Choices are:

- ***Port 1*** Under ***Port 1*** choose to print to a column or ticket printer.
- ***Port 2*** Under ***Port 2*** choose to print to a column or ticket printer.
- ***USB*** Printing to USB requires that a USB flash drive is connected to the indicator host USB. Printing to USB will create a folder on the flash drive and a comma separated file with the data.

You can exit the menu by following the instructions in *Escaping or exiting from a menu on page 13*.

5 Error messages

In order to complete the weighing process, a number of conditions must be met. The following messages may appear which may prevent completion of the weighing sequence.

5.1 Printing errors

Timeout	Something interfered with the printing process. Check connections and retry.
Print Error	Something interfered with the printing process. Check connections and retry.
Print Aborted	Something interfered with the printing process. Check connections and retry.
Print Failed	Something interfered with the printing process. Check connections and retry.

5.2 ‘Copying to or from USB’ errors

Failed to Copy File	Something interfered with the copy process. Check USB device.
Can’t Close database	Software error. Restart indicator.
File Not Found	File doesn’t exist. Create the database.

5.3 BSQ errors

BSQ Error	Communications error
BSQ XCAL	BSQ Calibration Mismatch Error - cell that is connected to the scale is not the cell that was calibrated. ***X*** = scale number.

6 Supervisor menu

The supervisor menu allows access to the items related to the Accumulation application. Follow the steps below to access the menu items described.

Press and hold the **SETUP** key until the password entry screen appears. Enter the Supervisor password, 1793 and press the **ZERO** key and the screen below appears.

Press the **Enter** key and the next screen appears.

The *TARE* item appears only if Preset Tares are enabled.

Highlight the item you wish to set and press the **Enter** key. The definitions of each item in the Supervisor menu are described below.

SuPEr This is the top item in the Supervisor menu.

tArE This item appears only if Preset Tares are enabled. Use this to enter tare weights for up to 10 Preset Tares.

- ***Edit*** Use this to set the tare weight for Tare 1 through Tare 10.
- ***Print*** Use this to print the tare list to your desired port or to the USB port. See *Printed Preset Tare report example on page 26*.
- ***rESEt*** Use this to clear all tares in memory.

If the Preset Tare list has been reset and you print the Preset Tare report the 10 memory channels will be listed but all the weights will be 0.

AccuM Use this item to set the accumulation paramaters below.

Prt Tot This stands for Print Total. If enabled, during normal operation the user can press and hold **PRINT** for three seconds and the selected print format (see ***Tot Fmt*** section below) will be sent to any port that is configured. The display will flash ***Prn-tot***.

Tot Fmt This stands for Total Format. This is the designated print format number used for the accumulated totals of the current active channel. (Format 8 is the default).

Clr Tot This stands for Clear Total. If enabled, during normal operation the totals for the active channel will be cleared after you press and hold of the **PRINT** key for three seconds. The clearing will occur after printing of the Totals (if enabled). The message ***cLr-tot*** will flash on the display.

Print Select the destination the 200-channel report will be transmitted to. Choices are: ***Port 1***, ***Port 2*** or ***USB***. See a sample report below.

Channel	ID	Gross Total	Net Total	Tare	Total Transactions	Units
1	111	1077.000000	1027.000000	50.000000	2	lb
2	0	0.000000	0.000000	0.000000	0	lb
3	0	0.000000	0.000000	0.000000	0	lb
4	0	0.000000	0.000000	0.000000	0	lb
5	0	0.000000	0.000000	0.000000	0	lb
6	0	0.000000	0.000000	0.000000	0	lb
7	0	0.000000	0.000000	0.000000	0	lb
8	0	0.000000	0.000000	0.000000	0	lb
9	0	0.000000	0.000000	0.000000	0	lb
10	1010	2966.000000	2524.000000	442.000000	3	lb

rESEt This clears the entire 200-channel database.

This completes the Supervisor menu. To return to normal mode repeatedly press the **ESC** key to exit.

6.1 Printed Preset Tare report example

Tare Index	Preset Tare	
1	500	lb
2	0	lb
3	0	lb
4	0	lb
5	0	lb
6	0	lb
7	0	lb
8	0	lb
9	0	lb
10	0	lb

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