THURMAN SCALE

Operator Manual

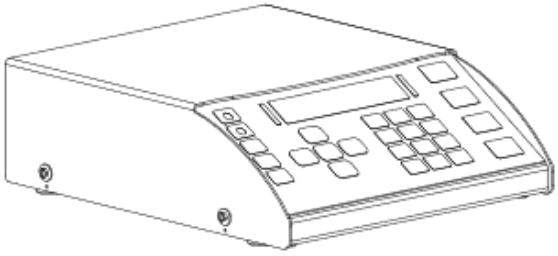
TS600 Series Instrumentation

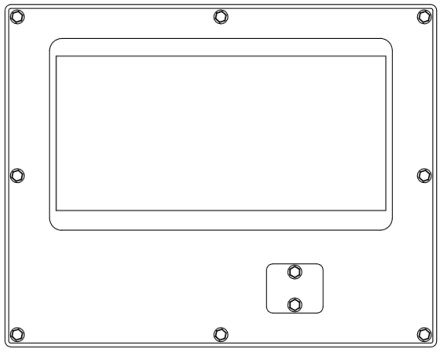
TS601 In/Out/ GTN Analog Desktop Instrument

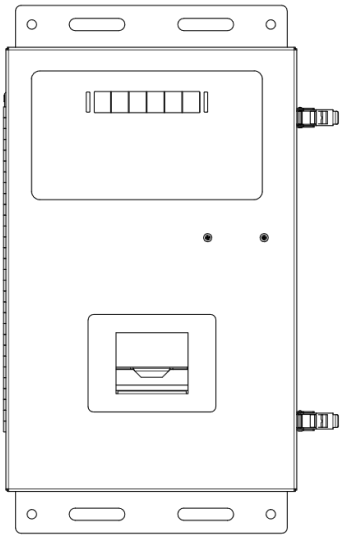
TS602 In/Out/ GTN Analog NEMA 4X Wall Mount Instrument

TS603 In/Out/GTN Analog Panel Mount Instrument

TS603 Analog Driver Assist Terminal







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Amendment Record

TS600 Series Instrumentation

TS601 **IN/OUT/ GTN Analog Desktop Instrument (31675)**

TS602 **IN/OUT/ GTN Analog NEMA 4X Wall Mount Instrument (32575)**

TS603 **IN/OUT/GTN Analog Panel Mount Instrument (32675)**

TS603 **Analog Driver Assist Terminal (37768)**

Operator Manual
Document 51421

Manufactured by

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Revision 2	08/2019	Updated Operator Menu; Configuration, Added Appendix III
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SECTION 1: GENERAL INFORMATION

1.1. Instrument Description

The **TS601/602/603 Instrument** has four Operating Modes a Basic, Inbound, Outbound, and GTN instrument.

- The Instrument may be enhanced by adding either a 4-20mA or a Relay Module to the unit.
- Only one (1) module may be added to provide either a 4-20mA output or a Relay Module interface to control traffic lights.

The **TS601/602/603 Instrument** is designed for a wide variety of truck, floor, hopper, and tank scale applications.

- The load cells interface with the Instrument through the **Scale Interface Card (SIC).**
- An RS-232 interface allows for the transfer of data from the Instrument to a computer and vice versa.

Noted below are the four TS600 Series instrument models.

- **Desktop – TS601 (36165)**
- **NEMA 4X Wall Mount – TS602 (36180)**
- **Panel Mount – TS603 (36181)**
- **Driver Assist Terminal – TS603 (37768)**

1.1.1. Standard Features

- **0.8" LED alphanumeric display**
- **One (1) Ethernet Port**
- **Three (3) USB Ports**
- **Choice of either One (1) 4-20mA port or one (1) Analog Relay Board.**
- **External Display COM Port 4**
- **Three (3) RS232 serial ports**
- **Capable of formatting tickets**
- **Keypad Buttons, including the following:**
- **0-9 keys, Enter, Red (stop), Green (go), Tare, In, Out, Units, B/G/Net, Zero and Print.**

1.1.2. Accessories

PART NO.	DESCRIPTION
30919	4-20mA Analog Kit *
30920	Relay PCB Assy Kit *
25498	Mini USB Keyboard (87 key)
31036	Standard USB Keyboard (104 key)
15892	SVP/ Uninterruptable Power Supply

** Only one or the other of these accessories may be used in the TS601/02/03 series instrument.*

1.2. Technical Specifications

PARAMETER	SPECIFICATION
Model	Desktop TS601; NEMA 4X Wall Mount TS602; Panel Mount TS603
Load Cell Interface	Up to 16 ~ 1000Ω load cells max, Or up to 8 ~ 350Ω load cells max
Cell Capacity	1 thru 999,999
Cell Units	lbs, kgs, tons, tonne
No. of Scales	One (1) only
Resolution	10000d commercial 20000d non-commercial
Scale Capacity	100-999,999
Division Size	0.0001 thru 50
Units	lbs, kgs, tons, tonne
Serial Input/ Output	Three (3) RS232 COM Ports, one (1) Console Port, three (3) USB Ports
Storage	Up to 100,000 transactions
Auto Zero Tracking	Selectable – Off, 0.5d, 1.0d, 3.0d
Motion Band	Selectable – Off, 0.5d, 1.0d, 3.0d
Zero Range	Selectable – 2%, 100%

ENVIRONMENTAL	SPECIFICATION
Enclosure	NEMA 12 desk mount and Panel mount; NEMA 4X wall mount
Operating Temperature	14°F to 104°F, (–10°C to 40°C).
Operating Humidity	NEMA 12 non-condensing, not suitable for wash-down conditions.

POWER REQUIREMENTS	SPECIFICATION
Incoming Voltage Requirement	Instrument has an Auto-switching power supply. 100 VAC to 130 VAC, 50Hz\ 60Hz 200 VAC to 260 VAC, 50Hz\ 60Hz It is recommended to install a separate circuit from the circuit panel to the outlet used. There must not be more than 0.2VAC between AC neutral and ground
Ground Requirements	For proper performance, the ground should have no more than 3.0 Ω resistance to true earth ground.
Power Consumption	Less than (<) 40 watts
ETL Listed	Conforms to UL STD 60950-1. CAN/CSA C 22.2 NO.60950-1-03.
Approvals	CC# 12-099 MC# AM-5878

1.3. Levels of Security

There are three security levels for accessing the TS601/2/3 programs.

- **Security Levels One thru Three (1 – 3)** configures the hierarchy of the management functions, and limits privilege accesses from unauthorized employees.
- When making the employee hierarchy, employee duties should determine their security level.
- Each access level includes all of the rights of any access level(s) below it.

FIRST LEVEL: OPERATOR ACCESS

- Accesses the Operator Menu and the Audit Trail Menu.
- **No Password** is necessary for this level of instrument access.

SECOND LEVEL: SUPERVISOR ACCESS

- All of the Operator Access privileges.
- **Supervisor Password** is required.
- The *default first time use* password for the **Supervisor Access** is **"1"**.
  - *It is strongly recommended to change this password.*
- Second Level Users can also access the **Configuration Menu**.

THIRD LEVEL: SERVICE TECHNICIAN ACCESS

- Service Technician privileges to install and program the Instrument.

1.4. Users' Responsibility

- ✓ **All electronic and mechanical calibrations and/or adjustments required for making this equipment perform to accuracy and operational specifications should be performed by trained service personnel.**
- ✓ **Absolutely no physical, electrical or program modifications other than selection of standard options and accessories are to be made to this equipment.**
- ✓ **Electrical connections other than those specified may not be performed, and physical alterations (holes, etc.) are not allowed.**

Please call your local

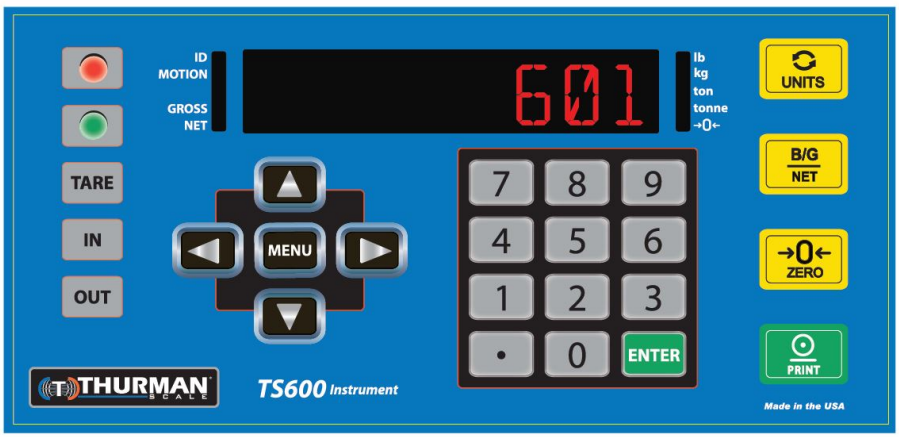
THURMAN SCALE REPRESENTATIVE

For any question, problems, or comments.

SECTION 2: USER OPERATIONS

2.1. Front Panel Key Functions

KEYS	FUNCTION
RED & GREEN LIGHT BUTTONS	• Activates the **Traffic Light function**, if one is installed. • When in the **Programming Mode**, pressing the **RED** button returns to the **Weight Display** (except when modifying an entry). • The **GREEN** button deletes the **Ticket Format,** when in the Ticket Format menu.
TARE	Performs an **AutoTare** function.
IN & OUT BUTTONS	• Manually selects the **INBOUND** or **OUTBOUND** mode. • The **OUT** button prints the current Ticket Format, when in the Ticket Format menu.
UP & DOWN Arrows	Navigates through the menu selections.
MENU	• The basic **HOME** button. • Initiates the programming process into the different menus. • Backs up one level on the Menu Tree. • If the actions are not saved, pressing the **MENU** button voids this input.
NUMERIC Keys	• Enters values for passwords, weight amounts, and configuration inputs. • These keys can shortcut to desired entries in a selection item • *See* **3.4. Short-cut Method for Menu Navigations**.
ENTER	Activates and saves data input.
UNITS	• Toggles and sets the unit types for the weight displayed. • When programming, it inserts data if additional items are needed. • Data-insert function happens before the item that is currently being viewed, while in the Format Menu.
B/G/NET	• Toggles active display between **GROSS** and **TARE**, in the **GTN** mode. • Deletes one character in text/number.
ZERO	• **ZERO**s the scale. • When editing numbers or text, this clears the data.
PRINT	• Initiates a **PRINT** cycle. • Toggles between editing and showing the name of the current menu choice. • Prints a sample ticket while in the **Layout Menu**.



2.2. Startup Procedure

1. Plug the unit in. The following sequence should occur:
   a. TS600 will scroll across the display, followed by the display driver and revision number.
   b. BOOT * will appear
   c. LOAD * will appear
   d. START * will appear
   e. The current weight on the scale will display.

2.3. Gross Weighing

The truck drives on the scale and the operator prints the result.

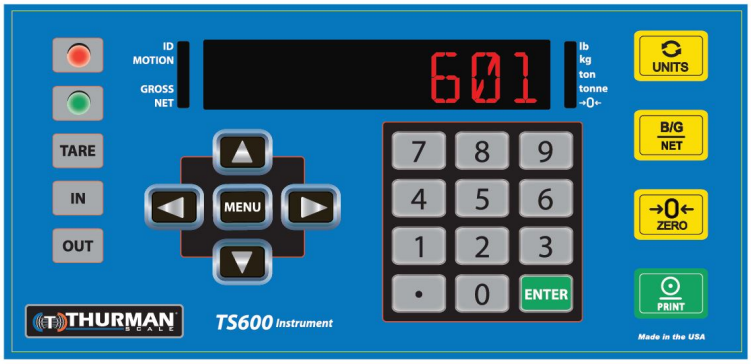
1. Press the **ZERO** key.
2. Drive the vehicle to be weighed on the platform.
3. Once the display stabilizes, press the **PRINT** key.
   – A **GTN** ticket prints with the **Gross Weight**.

2.4. Basic Weighing

BASIC MODE weighs the vehicle, then prints a ticket displaying the **Time, Date** and **Weight Amount** (either **Tare** or **Gross**). *This is its only function*.

– This mode ***does not*** have In/Out or Tare functions, (including storing Tares).
– This mode requires specialized **keypad overlay stickers.**

1. With a **loaded vehicle** on the scale, press the **GROSS / PRINT** key
   – This is the **IN key**, before the template sticker was added.
2. With an **empty vehicle** on the scale, press the **TARE / PRINT** key.
   – This is the **Out key**, before the template sticker was added.



This TS600 Front Panel has the **BASIC Mode** *stickers applied.*

2.5. Gross-Tare-Net Weighing

Option 1

1a. Press the **ZERO** key.

b. Drive the empty vehicle to be weighed on the platform.

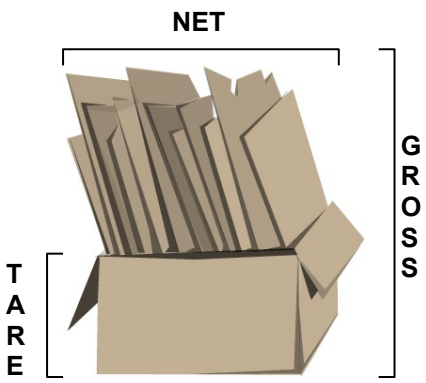
c. Press the **TARE** button.

– The weight is the captured **Tare Weight**.

d. Exit the scale and load the vehicle with product.

e. Drive back onto the scale.

f. Once the display stabilizes, press the **PRINT** key and a Gross-Tare-Net Ticket will be printed.



The **Net Weight** (*product only*) is the **Gross Weight** (*all*) minus the **TARE WEIGHT** (*container only*).

OR…

Option 2

1a. With the scale unloaded, press the **ZERO** key.

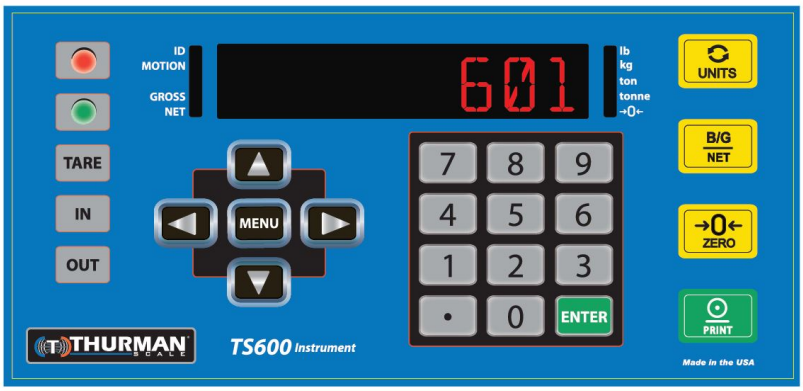
b. Drive the loaded vehicle to be weighed on the platform.

c. When the display stabilizes, press the **PRINT** key.

d. When KEY IN TARE AND PRESS ENTER displays, enter a known **TARE amount** from an earlier weighment using the numeric keypad, then press **ENTER**.

– A **GTN Ticket** will be printed.

NOTE: *For printing only* **Gross Weight**, *enter* **ZERO (0)** *when prompted to enter a Tare amount.*



2.6. Inbound/Outbound Weighing

Noted below are a few tips for the **Inbound/Outbound Weighing Mode.**

- The **Loop ID** input varies depending on the installed software:

  Revision 2.2.0 software and lower, Loop ID is **limited to 3 numeric characters**.

  Revision 2.4.2 software and higher, **supports up to 15 alphanumeric characters**

- The **Loop ID** is replaced by saving a new tare, or a saving a new keyboard tare ID.

There are 4 options when performing Inbound/Outbound Weighting.

Option 1

1a. Press the **ZERO** key.

b. Drive the vehicle onto the platform, whether it is either full or empty.

c. Once the display stabilizes, press the **IN** (**Inbound**) key.

d. When the **Loop ID** legend text displays, enter the **Loop ID number** using the QWERTY keyboard or keypad, then press **ENTER.**

Option 2

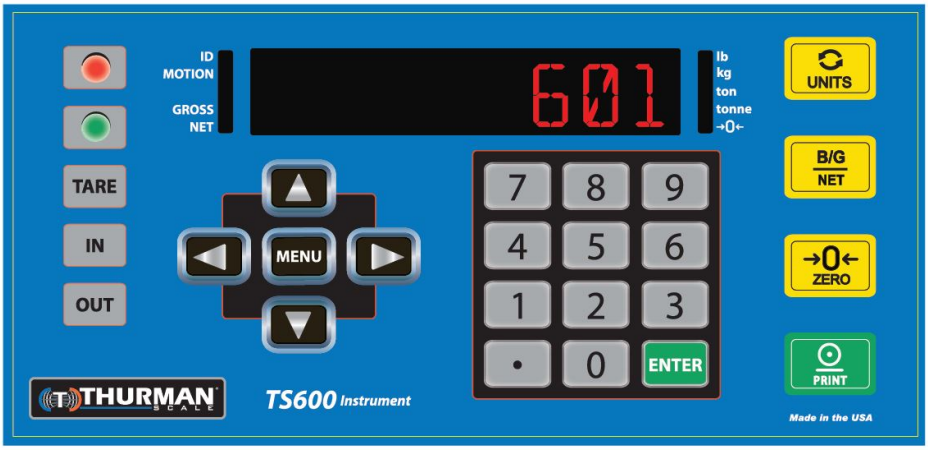
1a. Press **ENTER** to have the TS601 auto-assign a **Loop ID number**.

b. Drive off the scale and process the trailer, by either filling or emptying it.

c. The same vehicle returns to the scale, either full or empty.

d. Once the display stabilizes, press the **OUT** (**Outbound**) key.

e. When the **Loop ID legend text** displays, enter the **LOOP ID Number** from an Inbound Transaction or saved TARE ID number, then press **ENTER**.



2.5. Inbound/Outbound Weighing, Continued

Option 3

1a. With the scale unloaded, press the **ZERO** key.

b. Drive the loaded vehicle to be weighed on the platform.

c. When the display stabilizes, press the **PRINT** key.

d. When KEY IN TARE AND PRESS ENTER display, using the enter a known **TARE amount** from an earlier weighment, then press **ENTER.**

– A **GTN Ticket** will print.

NOTE: *For* **Gross Weight** *only to be printed, enter* **ZERO (0)** *when prompted to enter a Tare amount.*

Option 4

1a. With the scale unloaded, press the **ZERO** key.

b. Drive the loaded vehicle to be weighed on the platform.

c. When the display stabilizes, press the **IN** or **OUT** key.

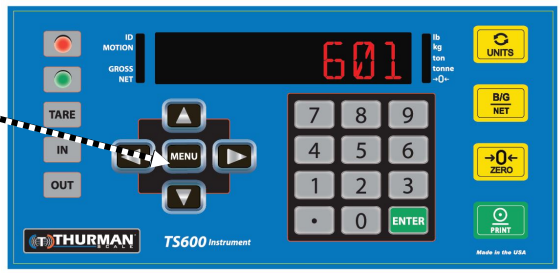
d. When the **Loop ID legend text** displays, enter a **Tare ID number** from a stored **NEW TARE** or stored **NEW KEYBOARD TARE**, then press **ENTER.**

The transaction is processed and an* Outbound *ticket prints

SECTION 3: PROGRAMMING OVERVIEW

3.1. Login

1. Press the **MENU** button to toggle between **Weight Display** and **Menu System**.



2. To enter the **MENU System**, when LOGIN displays, press the **ENTER** button.
   – The display will be blank.
3. Input the **Service Password**, then press **ENTER**.

   ✓ **Supervisor Password = 1**

OK displays first, then AUDIT TRAIL follows.

4. Press the **DOWN ARROW** to navigate through the following main menus.
   - **Audit Trail**
   - **Operator Menu**
   - **Configuration Menu**

5. Press **ENTER** to accept the option.

3.2. Defining the Programming Menus

The six (6) programming menus are briefly defined below.

AUDIT TRAIL	Identifies how many times and when changes have been made to the scale's Calibration or Configuration settings. **NO Password required**
OPERATOR MENU	Programs the Time/Date, Ticket Number, Load Cell Diagnostics, Tare Functions, Display Intensity and Keypad Sounds. **NO Password required**
CONFIGURATION MENU	Programs Customer Passwords, Communications Programming and Functions, Ticket Formats, Programmable Prompts and Legends, Device Input/Outputs, Weight Threshold, Report Configuration, Network Configuration, and Transaction Files Operations. **Default Password = 1**

3.3. Short-cut Method for Menu Navigations

Navigate through the different menu levels by entering a **Hot-key Number** and immediately access functions of the next higher level.

– The **Hot-key Number** displays in the flow charts to the **left** of the function.

Follow these steps to navigate using the **HOT-KEY NUMBERS.**

6. Press a **HOT-KEY NUMBER** to advance to the functions of the next menu level.
7. Continue pressing the next **HOT-KEY NUMBER,** moving forward in the menu tree, until the needed function is accessed.
8. Press **MENU** to move backward to the previous level.

SECTION 4: WEB INTERFACE

The configuration of all TS6XX series scales with **software version 2.0.1** or higher can now be performed through the instrument **OR** through the *Web Interface.*

NOTE: *At this time, scale calibration can **ONLY** be performed through the TS6XX instrument and **NOT** the* **Web Interface**.

The Web Interface can be accessed through most browsers (Internet Explorer, Firefox, Google Chrome) that is connected to a TCP/IP network **OR** by using an Ethernet crossover cable connected to a PC or tablet.

The first step in connecting remotely is to determine the connection address (IP address) of the instrument.

4.1. How to Connect Remotely to the TS6XX Series:

There are two (2) connection types used with the TS6XX.

- **DHCP (Dynamic Host Configuration Protocol)** – Automatically addresses each node the first time it connects to the company's Intranet. A **DHCP** connection may change every few weeks so if you are not able to connect, re-verify the IP address on the instrument (see **To obtain the current IP address of the TS6XX**)
- **STATIC –** Dedicated addresses assigned by the IT Department that are specific to each node, and do not change.

4.1.1. To obtain the current IP address of the TS6XX:

1. Login to the TS6XX
2. **Scroll *down* to** CONFIGURATION, press **ENTER**
3. Scroll *up* to NETWORK, press **ENTER**
4. **Scroll down to** DHCP OPTIONS, press **ENTER**
5. MY IP is displayed, press **ENTER**
6. **The** TS60X IP address **is displayed** (XXX .XXX .XXX .XXX)

   Write down the IP address
7. Press the RED Traffic light button twice to return to the weigh screen.

Follow these steps to display, or to enter the **Static addresses** *in the* **NETWORK option**.

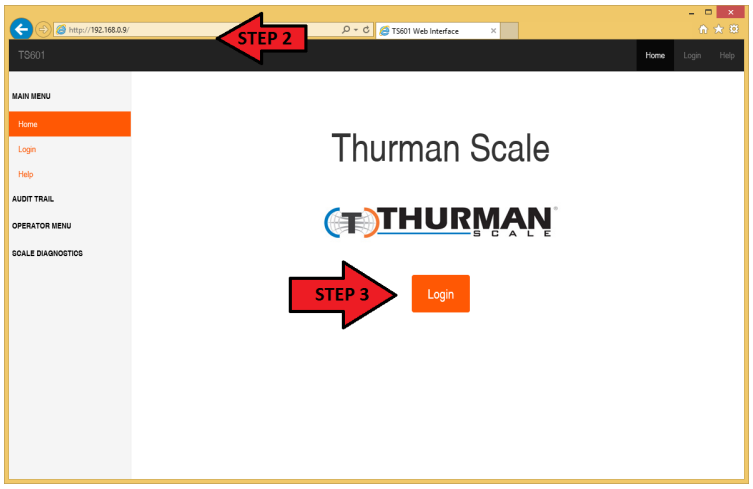
4.2. Logging in to the Web Interface

1. Locate the **IP Address** of the TS6XX Series Instrument

   (See also To obtain the current IP address of the TS6XX)

NOTE: *In order to login to the Web Interface, you **MUST** logout of the TS6XX instrument. If you are **NOT** logged out, you will receive the message "**Front Panel in Use**" until you log out.*

2. Input the correct **IP Address** of the TS6XX into the Address Bar of the web browser, then press **ENTER** on the remote computer.



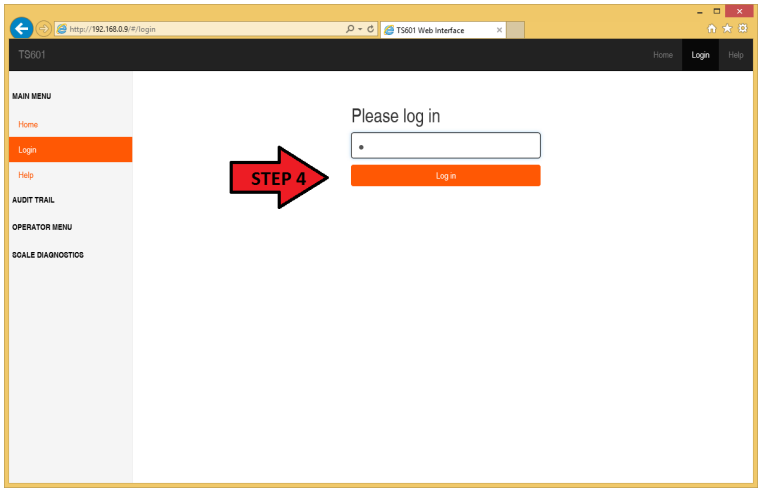
3. Click on the **LOGIN** link.

Input the Default **Operator Password**, then press the **LOG IN** button.

Operator Password = 1.

The **Web Interface Home** screen appears.

After you are logged in successfully, the message "***Remote Config in Process***" will appear on the screen of the instrument.



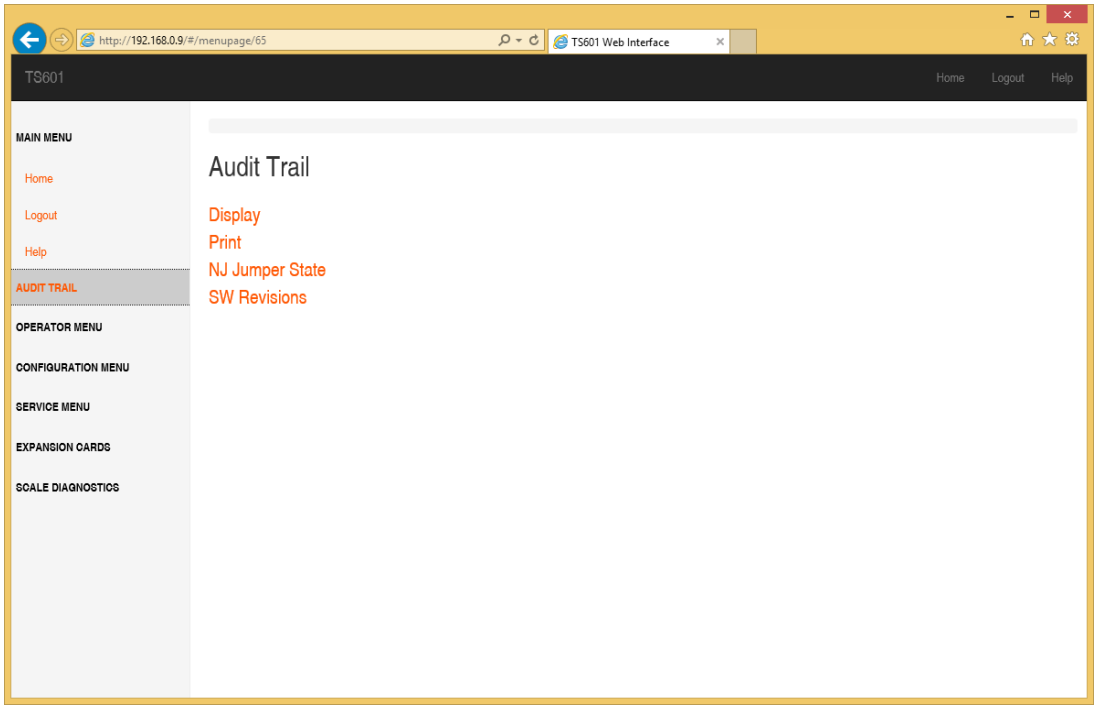
4.3. Navigating the Web Interface

After successfully logging into the TS6XX Web Interface, the additional options of **Configuration Menu**, **Service Menu** and **Expansion Cards** will appear in the left-hand navigation. Additional options also will appear under **Operator Menu** and **Power Supply**.

NOTE: *As stated previously, the Scale calibration can **NOT** be performed through the Web Interface but only through the instrument. All other settings are identical between the Web Interface and the instrument.*

4.3.1. Audit Trail

The following options will appear in the Web Interface under **Audit Trail**:



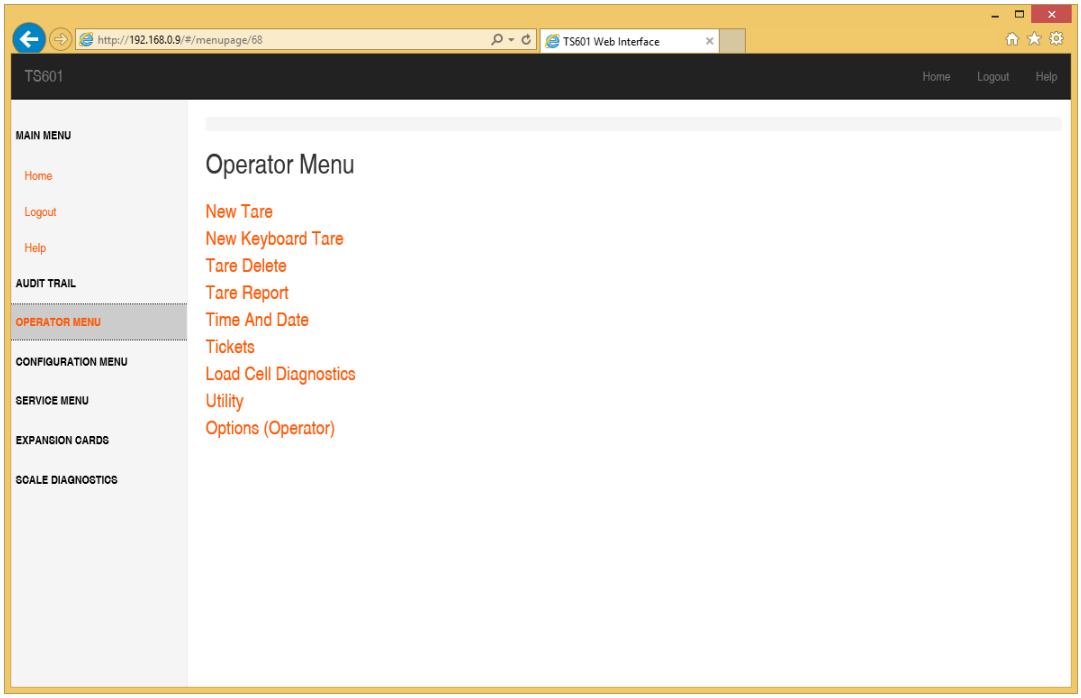
Display: Displays all configuration changes made to each scale with drop-down menus for **Audit Report**, **number of items per page** and an available **Search**.

Print: Print the records from the Audit Report with options for number of items to print and a drop-down menu of available printers.

NJ Jumper State: Lets you know if this feature is active or inactive. See section **5.3. NJ Jumper** for more information about this option.

SW Revisions: Provides **Image**, **Model**, **Main**, **Drivers**, **Interpreter**, **Webconfig** information.

4.3.2. Operator Menu



New Tare: Add a new tare from the scale.

New Keyboard Tare: Manually enter a new tare.

Tare Delete: Provides the same options of **New Tare**, **New Keyboard Tare** and deleting a tare. A drop-down menu of all the existing tares and a **Search** is available.

Tare Report: Provides the same options as **Tare Delete** and a **Print** option with a drop-down list of available printers.

Time And Date: Provides the options of **Format Time and Date** and **Set Time and Date.**

Tickets: Set the starting value of tickets under **Number,** print the last created ticket under **Print Last Ticket** or add the ticket number of a ticket you wish to re-print under **Print Duplicate Ticket**.

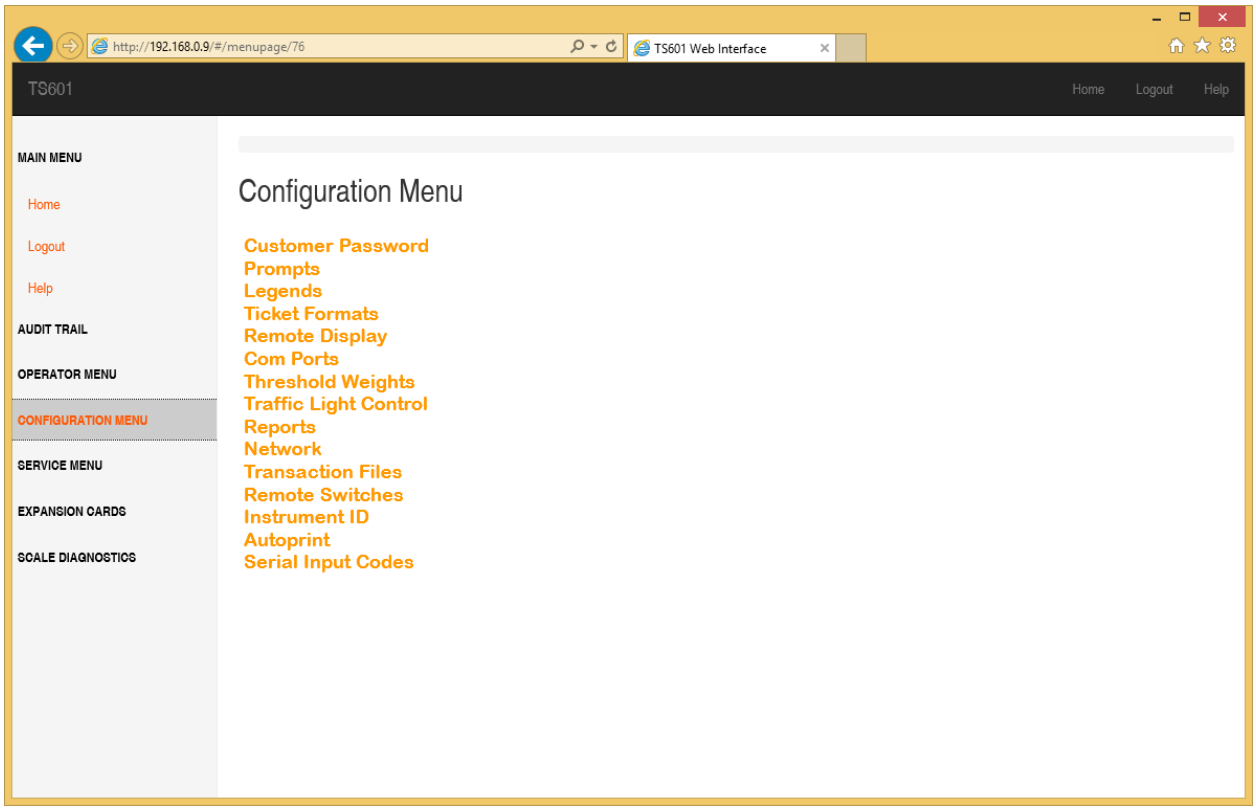
Load Cell Diagnostics: Provides a live count of the **Cell Outputs** and **Errors**.

Utility: Provides drop-down menus for **Display Intensity**, **Keypad Beep**, scale **Volume** ranging from 10% (lowest volume) to 100% (highest volume) and **Mute**.

Options (Operator): When processing Inbound Loops, **Outbound Auto Suggest** displays the next available. When processing Inbound Loops, **Auto Increment Inbound ID** automatically uses the next available (without displaying it). **Show Looping ID Text** displays *all* the stated information about the Loop, including the ID number, truck description, or any related text.

4.3.3. Configuration Menu

The following options will appear in the Web Interface under **Configuration Menu**:



Customer Password (Configuration Menu Password): Change the login password of the instrument. This is highly recommended.

Prompts: Messages to the Operator that ask a question, offer a choice, or relay an instruction. The **Name** field is a text entry field for naming a prompt. “Prompt 1” is the name used by the system to identify the prompt. **GTN**, **Inbound**, **Outbound**, **Basic In**, and **Basic Out** are all drop-down menu items that may be enabled or disabled.

Legends: The **Loop ID** field is a text entry field if you wish add a custom name.

Ticket Formats: The connected printer displays in the **Printer** field. The **Mode** drop-down menu lets tickets print in **GTN**, **Inbound**, **Outbound**, **BasicIn**, or **Basic Out** formats.

NOTE: *If a printer does not display in the **Printer** field, no printer has been added to a COM port. See 8.2. COM Ports to connect to an available printer.*

Remote Display: Provides a drop-down menu to adjust **Display Mode** to continuous or print, **Type (Output)** to display by ticket number, Active Gross or Net Wt. **Enable 218T** set to Yes or No.

Com Ports: Provides options for configuring the three input com ports and the single outgoing port. See section **8.2. COM Ports** for further details.

Threshold Weights: **Initial Weight** option provides up and down arrows to set the minimum amount the truck must weigh to initiate a weighment.

- **Initial Weight** is the minimum weight value to initial a transaction, trigger automatic traffic light control, initiate the Blind Counter functions.
- **Maximum Weight** is the maximum allowable weight for processing transactions.
- **Allow Over Weight Transactions** can be set to YES to warn of an overweight condition or NO to prevent overweight transactions.

Traffic Light Control: **Control (Traffic Light)** either Automatic or Manual. The **Event to Signal** option lets the operator add a time to delay between 1-10 seconds to the signal. “Scale ID 1” is the name used by the system to identify the setting.

Reports: Provides options for displaying a report. **Type** provides an option for choosing Completed or Incomplete transactions. **Media** only shows “Jump Drive” in the drop-down menu. Reports must be generated to an inserted jump drive. **Sort By** provides the option of the report being sorted by Loop ID or Date/Time. **Delimeter** provides the option of generating a report in CSV or Tab format. See section **7.9. Reports** for more details.

Network: **DHCP Options** shows the network connectivity details of the instrument, **IP**, **Netmask**, **Gateway** and **DNS**. The **Network Output** provides an option for the **Type** output, of either Off or PC Continuous. The **Format** provides a choice of scale company output data. See also **Appendix 1: Data String Outputs** The **Local Port** provides up and down arrows to choose the correct port number on the outgoing PC.

Network section under the **CONFIGURATION MENU** controls all network settings.

Options include DHCP or STATIC IP

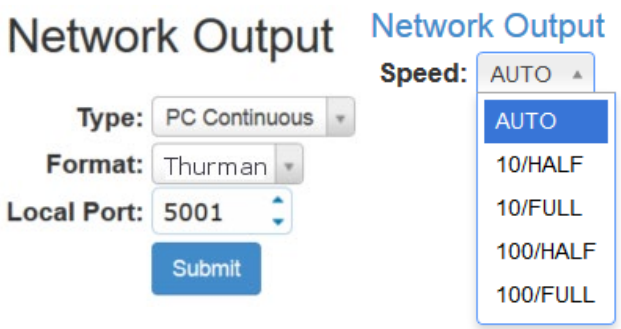
DHCP OPTIONS or* STATIC IP : Reports the IP address, Netmask, Gateway, Primary DNS

*Displayed value dependent on selected option of DHCP or STATIC.

Network Output: If configured will send **NETWORK** continuous **SCALE** output.

- **Type** is either OFF or PC Continuous
- **Format**: Select from 5 factory **DEFINED** formats:

  Thurman, Toledo, Cardinal, Weigh-Tronix, Condec
- **Local Port**: default 5001, change only if requested by site.



Speed:This controls the speed and if full or half duplex is used on the network device. Default is AUTO and in most cases is enough.

Transaction Files: This option allows for file deletion by five different options: **All Transactions**, **By Ticket Number**, **By Date Range**, **By Ticket Range** and **Incompletes**.

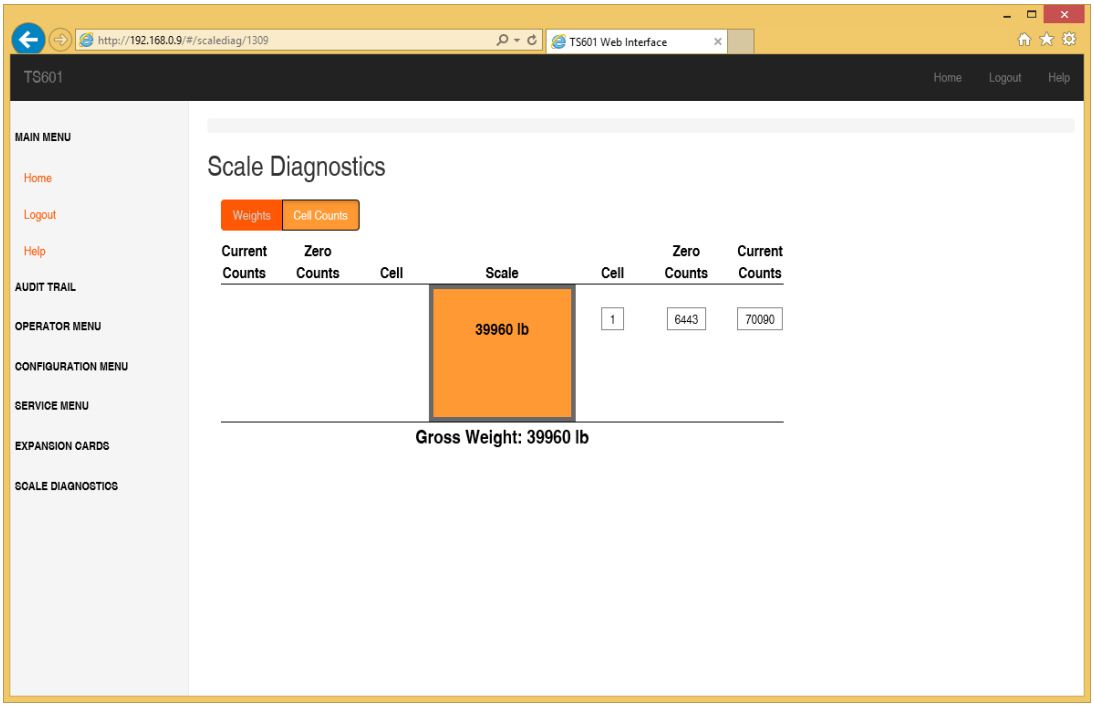
Remote Switches: **Initial Weight** option Used to configure/select the four (4) available remote Switch inputs.

Instrument ID: used to set the Instrument ID (1 – 255)

Serial Input Codes: **Initial Weight** option allows for entry of specific HEX codes to simulate a remote serial command.

4.3.4. Scale Diagnostics

Scale Diagnostics displays real-time data by **Weights** or **Cell Counts**. Click either Weights or Cell Counts to switch between options. The **Gross Weight** appears as well.



Weights: Displays **Weights** and **Zero Counts**.

Cell Counts: Displays **Current Counts** and **Zero Counts**.

SECTION 5: AUDIT TRAIL

The **AUDIT TRAIL** report displays all the configuration and calibration activities that were changed within the Instrument.

– Provided for **Weights and Measures Officials**.

5.1. Display

Filters the **Audit Trail Events** displayed, based on the selected option, after the **ENTER** button is pressed.

– This option is limited to ***view only access***.

The example below defines the **Audit Trail** *report message.*

- The unit is in the **INBOUND/OUTBOUND MODE** (Inbound/Outbound, GTN or Basic Mode).
- The UNIT is currently in the **INSTRUMENT MODE** (Instrument, Scale or Complete).
- There have been **28** "log-able" events performed on this instrument.
- The **DATE** and **TIME** of the last recorded event (#28, in this case).

5.2. Print

Sets up the print output for the **Audit Report**, then prints all Configuration and Calibration activities that were changed within the Instrument.

– Offers a choice of the available printers configured to a COM Port.

– Prints some or all of the records.

– The **PRINT OUT** function activates the printer according to the settings.

Follow these steps to print an **AUDIT TRAIL report**.

1. Prepare the printer.
2. Open the **AUDIT TRAIL** menu, then select the correct printer.

- **TM-U295**
- **IDP-2550**
- **DemandPC**
- **TM-U230**
- **TM-U590**
- **TM-U220**
- **SP-700**
- **SP-298**
- **SP-2000**
- **SP-2200**

NOTE: *The printer must be correctly configured before completing this option.*

3. Select the **NUMBER OR RECORDS** to include on the report.
   - **Last (record)**
   - **10**
   - **50**
   - **All (records)**
4. Select **PRINT OUT**, then press **ENTER**.

5.3. NJ Jumper State

This feature prevents unauthorized users from accessing certain programming menus.

1. In the **AUDIT TRAIL** menu, select the **NJ JUMPER STATE**.
2. Select either **NO JUMPER** or **JUMPER ON**.

5.4. SW Revision

This option displays all the current revision information, used for troubleshooting.

1. In the **AUDIT TRAIL** menu, select the **SW REVISION**.
2. Open any of the following options to view the revision number.

- **IMAGE –** Displays the Software Image revision number and software part number.
- **MODEL –** Displays which model is selected during the last software installation.
  - Either **TS601** or **TS601**.
- **MAIN –** Displays the current revision level of the Main Software Program..
- **DRIVERS –** Displays the current revision level of the software driver program.
- **INTERPRETER –** Displays the current revision level of the software interpreter.
- **WEBCONFIG** – Displays the current revision level of the **Web Configuration** software.

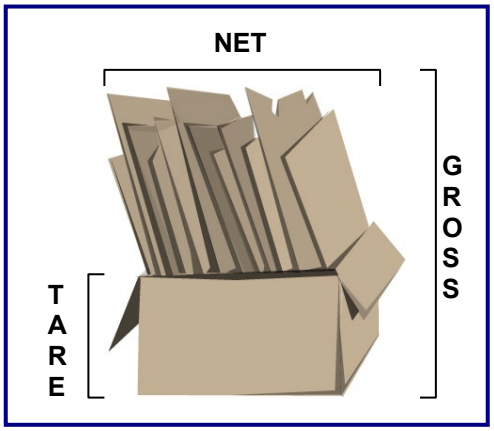
SECTION 6: OPERATOR MENU

6.1. New Tare

Follow these steps to store a **New Tare**, *using the scale platform, then recalled later as a saved* **Tare Weight**.

1. In the **Operator Menu,** press the **DOWN arrow** until NEW TARE displays, then press **ENTER**.
2. When ID (TARE) displays, Press **ENTER.**
3. When the last stored Tare ID number displays, input the new tare number, then press **ENTER**.
4. When WEIGHT (TARE) displays, press **ENTER.**
5. The current weight on the platform is displayed with annunciator on front panel lit to identify active units; press **ENTER** to capture the weight.
   – If there is motion on the platform at that time; MOTION _. PLEASE WAIT displays until the scale settles, and then the weight can be captured.
6. When VEHICLE DESCRIPTION displays, press ENTER.
7. When the current **Vehicle Description** displays. input the new **Vehicle Description** , then press **ENTER**.
   – This can be the truck drivers' plate number, the vendor ID, or another designated identifying number.

GROSS WEIGHT – TARE WEIGHT = NET WEIGHT



8. When SAVE displays, press **ENTER.**
9. Using the **DOWN ARROW,** select either YES or NO, then press **ENTER**.
   – **YES** *saves the captured* TARE Weight Value, ID, *and* Vehicle Description.
   – **NO** does not save the **Tare Data.**

NOTE: *If the* **Tare ID** *entered in* **Step 3** *is a duplicate of an existing Stored Tare, then* OVERWRITE? - NO *will display.*

6.1. New Tare, Continued

10. To abort saving the tare, press **ENTER.**
11. To overwrite the existing tare data with the new tare data, press the **DOWN arrow** until OVERWRITE? - YES displays, then press **ENTER**

    - NEW TARE displays.

6.2. New Keyboard Tare

Follow these steps to store a **New Tare,** *using the keyboard, to be recalled later as a saved tare weight.*

1. In the **Operator Menu**, press the **DOWN arrow** until NEW KEYBOARD TARE displays, then press **ENTER**.
2. When ID (TARE) displays, press **ENTER.**
3. The last stored Tare ID number is displayed, input the new tare number, then press **ENTER**.
4. When WEIGHT (TARE) displays, press **ENTER.**
5. The last tare entry weight is displayed; enter a new tare value via the keyboard, then press **ENTER**.
6. When UNITS displays, press **ENTER.**
7. When the current **Units** setting displays, use the **UP/DOWN arrows** to select the correct one, then press **ENTER**.
   – LB, KG, TON, **or** TONNE.
8. When VEHICLE DESCRIPTION displays, press **ENTER**.
9. When the current **Vehicle Description** displays; input the new **Vehicle Description**, then press **ENTER**.
   – This can be the truck drivers' plate number, the vendor ID, or another designated identifying number.
10. When SAVE displays, press **ENTER.**
11. Using the **DOWN arrow,** select either YES or NO, then press **ENTER**.
    – Selecting **YES** saves the **Tare.**
    – Selecting **NO** does not save the **Tare**.

NOTE: *If the* **Tare ID** *entered in* **Step 3** *is a duplicate of an existing Stored Tare, then* OVERWRITE? - NO *will display.*

---

12. To abort saving the tare, press **ENTER.**

13. To overwrite the existing tare, press the **DOWN ARROW** until OVERWRITE? displays, then press **ENTER** when YES displays.

6.3. Tare Delete

This option displays a list of all the stored **New Tare** and **New Keyboard Tare** entries.

Follow these steps to delete a stored Tare.

1. While in the **OPERATOR MENU**, press the **DOWN arrow** and select the TARE DELETE, then press **ENTER**.
2. Press the **DOWN/UP arrows** to scroll through the stored tares.
3. To delete a tare, press the **ZERO** key.

6.4. Tare Report

This option displays the stored New Tares and New Keyboard Tares, then prints a Report as selected by the operator.

Follow these steps to set the **Tare Report.**

1. While in the **OPERATOR MENU**, press the **DOWN** arrow and select the TARE REPORT, then press **ENTER**.

2a. When DISPLAY appears, press **ENTER**.

- This shows the **Stored Tares**, listing the **Tare ID Number, Weight, Date**, and the **Tare Description**.

b. Use the **UP/DOWN arrows** to scroll through the list.

c. Press M**ENU** to return to the **Tare Menu**.

OR…

2a.Use the **DOWN arrows** to select **PRINT**, then press **ENTER**.

b. Press **ENTER** when PRINTER displays.

c. Select an available **PRINTER**.

d. Press **ENTER** when PRINT OUT displays for the **Tare Report**.

e. Press **MENU** when PRINTING COMPLETE -- MENU TO CONTINUE displays.

6.5. Time & Date

6.5.1. Format Time & Date

Use the **UP/DOWN Arrows, Numeric keys, MENU** *and* **ENTER** ***buttons*** *to format the* **Time and Date**.

3. While in the OPERATOR MENU, select the TIME AND DATE option, then press **ENTER**.

4. TIME FORMAT displays, press **ENTER**.

Options are:

H_M

H_M_S

5. Using the **UP/DOWN** arrows, select the desired format, then press **ENTER**.

6. When AM/PM displays, press **ENTER**.

7. When DATE FORMAT displays, Press **ENTER**.

Options are:

MDYY

MDYY (this is for a 4 digit year date)

DMYY

DMYY (this is for a 4 digit year date)

YYMD

YYMD (this is for a 4 digit year date)

MMDDYY

MMDDYY (this is for a 4 digit year date)

DDMMYY

DDMMYY (this is for a 4 digit year date)

YYMMDD

YYMMDD (this is for a 4 digit year date)

8. Using the **UP/DOWN** arrows, select the desired format, then press **ENTER**.

9. When DATE SEPERATOR displays, press **ENTER**.

Options are:

/

-

(SPACE)

10. After the selection is made, the display returns to FORMAT TIME AND DATE

6.5.2. Set Time & Date

*Use the **Arrow**, **Numeric** and **ENTER Keys** to set the time and date.*

1. With theTS60X displaying FORMAT TIME AND DATE use the DOWN arrow to display SET TIME AND DATE option, then press **ENTER**.
2. YEAR will display. Press **ENTER**, key in the year, then press **ENTER**.
3. MONTH will display. Press **ENTER**, key in the month, then press **ENTER**.
4. DAY will display. Press **ENTER**, key in the day, then press **ENTER**.
5. HOUR will display. Press **ENTER**, key in the hour, then press **ENTER**.
6. MINUTE will display. Press **ENTER**, key in the minute, then press **ENTER**.
7. SAVE TIME AND DATE will display. Press **ENTER** to save the new Time & Date.
8. TIME SET - PRESS KEY TO CONTINUE will display.
9. The Time & Date currently configured in the TS60X will now scroll across the display. Press **ENTER**.
10. Display will now show SET TIME AND DATE

NOTE: *To set a PM time in the* **12 hour** *format, enter it using the* **24 hour** *format.*
- *i.e. 8 am is entered as 08. 2 pm entered as 14.*

6.5.3. To Display Time & Date

1. With the TS60X displaying FORMAT TIME AND DATE use the DOWN arrow to display SET TIME AND DATE option, then press **ENTER**.
2. YEAR will display. Use the UP arrow key to display SHOW TIME AND DATE
3. Press **ENTER** and the current configured Time & Date will scroll across the display.
4. Press **ENTER** to return to SET TIME AND DATE
5. Press the Red Traffic Light button to return to the weigh screen.

6.6. Ticket Number

Follow these steps to access a specific ticket by entering the **Ticket Number.**

1. While in the **OPERATOR MENU,** select the TICKET NUMBER option, then press **ENTER**.

2a. When NUMBER displays press **ENTER**.

b. Using the numeric keypad, in the **Ticket Number,** press **ENTER.**

- Allows a maximum entry of **six (6) digits**.
- This sets the value for the **Ticket Number** to be used in the next printing transaction.

c. Press the **DOWN arrow** until the LAST TICKET - PRINT option displays, then press **ENTER**.

- This prints a duplicate of the last ticket transaction.

OR…

2a. Press the **DOWN arrow** until the DUPLICATE - PRINT option displays, then press **ENTER**.

b. When ENTER TICKET NUMBER appears, enter the desired ticket number, then press **ENTER**.

- This option prints a duplicate ticket for the number as input by the operator.)

6.7. Load Cell Diagnostics

Load Cell Diagnostics gives a quick snapshot of how each load cell is performing, used for easier troubleshooting capabilities.

1. While in the **OPERATOR MENU,** select the LOAD CELL DIAGNOSTICS option, then press **ENTER**.

2. When ID displays, press **ENTER**.

3. When CELL OUTPUTS displays, press **ENTER**.

Step 4 (Option 1)

4a. When DISPLAY appears, press **ENTER**.

b. When COUNTS displays, press **ENTER**.

c. Using the **DOWN/UP arrows,** select the desired load cell (**CELL1** thru **CELL 16**), then press **ENTER**.

- The counts for the selected load cell will be displayed.

d. Press **ENTER** to return to **Cell Selection**.

e. Press **MENU** to return to DISPLAY MENU.

f. Press **DOWN** arrow until ERRORS displays, then press **ENTER**.

– If NONE appears, then there are no errors to display.

e. If errors do occur, use the **DOWN arrow** to select one of the listed Cell numbers that have recorded an error, then press **ENTER**.

– The ERROR TYPE, DATE, and GHOST STATUS for the recorded error will be displayed.

– Press **ENTER** three times to return to **Cell Outputs Menu**.

STEP 4 (Option 2)

4a. Press the **DOWN arrow** until PRINT displays, then press **ENTER**.

b. When PRINTER displays, press **ENTER**.

c. Press the **DOWN arrow** to select a printer if multiple printers are configured, then press **ENTER**.

d. When COUNTS displays, press **ENTER** to print the **Cell Counts**.

The following categories are noted on the **COUNTS** *print-out.*

CELL NUM – Identifies the load cell in the scale platform.

CAL COUNTS – the zero load cell count stored at calibration.

CURRENT – the current load cell counts.

WEIGHT – the current weight value.

6.8. Utility

6.8.1. Set Display Intensity

1. While in the **OPERATOR MENU,** press the **DOWN arrow** and select the UTILITY option, then press **ENTER**.

2. Press **ENTER** when SET DISPLAY INTENSITY appears.

3. Select LOW, MEDIUM or HIGH, then press **ENTER**.

6.8.2. Key Pad Beep, Set Volume, Mute

KEY PAD BEEP

1. In the **UTILITY MENU,** press the **DOWN arrow** and select the KEY PAD BEEP option, then press **ENTER**.
2. Select ON or OFF, then press **ENTER**.

SET VOLUME

3. In the **UTILITY MENU,** press the **DOWN arrow** and select the SET VOLUME option, then press **ENTER**.
4. Adjust the **BEEP volume** to the desired level.

MUTE

5. In the **UTILITY MENU,** press the **DOWN arrow** and select the MUTE option, then press **ENTER**.
   – This silences the **Key Pad Beep** until it is reversed.

6.9. Options (Operator)

1. While in the **OPERATOR MENU**, press the DOWN arrow and select OPTIONS (OPERATOR), then press **ENTER**.
2. Press the **DOWN arrow** and press **ENTER** to select one of these options.

- **OUTBOUND AUTO SUGGEST –** When processing Inbound Loops, this selection displays the next available one.
- **AUTO INCREMENT INBOUND ID –** If enabled, the instrument will suggest a Loop ID one value higher than the last Inbound ID used. Otherwise, it will use the lowest available ID.
- **SHOW LOOPING ID TEXT –** This selection displays *all* the stated information about the Loop, including the ID number, truck description, or any related text.
- **VIEW BLIND COUNT** – Track number of blind count events.
- **WEB TIMEOUT** – Select web timeout value.

SECTION 7: CONFIGURATION MENU

7.1. Change Customer PW

1. In the Configuration Menu, press **ENTER**.
2. When CHANGE CUSTOMER PASSWORD displays, press **ENTER**.
3. When ENTER PASSWORD displays, **ENTER**.
4. Present **Customer Password** displays.
5. Input the new **Customer Password**, then press **ENTER**.
6. When CONFIRM PW displays, press **ENTER** again.
   - If the password in entered incorrectly, ERROR displays, then the instrument returns to the previous step.

7.2. Prompts – Programmable

PROMPTS *are messages to the Operator that ask a question, offer a choice, or relay an instruction.*

1. In the Configuration Menu, press the DOWN arrow until PROMPTS PROGRAMMABLE displays.
2. Press **ENTER** when PROMPT 1 displays.
3. When NAME displays, press **ENTER** to prompt the required text.
4. Enter the desired **Entry Prompt 1** text heading.
   - The operator can enter alphanumeric text by either using the **UP** and **DOWN** arrows of the **keypad**, or using the **external keyboard**.
   - When **ENABLED**, this feature displays a **Programmable Prompt** text box.
   - Some examples for this field include **"Truck type", "Driver's last name"**, "**Special Notes**", etc.
5. Press **ENTER** to save the **Prompt 1** text, which then can be printed on the ticket.
   - This print command is activated with **<write (Prompt 1 Text)>.**

7.2. Prompts – Programmable, Continued

6. Press the DOWN arrow and choose **GTN**, **INBOUND**, **OUTBOUND**, **BASICIN** or **BASICOUT**, then press **ENTER**.
7. Press the **DOWN arrow** to select either **DISABLED** or **ENABLED**, then press **ENTER** to confirm this selection.
   – Selecting **ENABLED** initiates the prompt during the weighment transaction when that operating mode is used.

7.3. Legends – Programmable

Activating this option displays a **LOOP ID** *for the operator to enter.*

1. In the Configuration Menu, press the DOWN arrow until LEGENDS - PROGRAMMABLE displays.
2. Press **ENTER** when LOOP ID displays to edit this **LEGENDS text.**
3. Enter the desired **LOOP ID text,** then press **ENTER** to save it.
   – The Operator can enter alphanumeric text using the up/down arrows on the keypad, or using an external Keyboard..
   – This print command is activated with **<write (Loop ID Text)>.**

7.4. Ticket Formats

For complete descriptions and procedures, see **SECTION 9: FORMATTING TICKETS**.

IMPORTANT NOTE: *Always configure the* **COM Ports** *first before formatting tickets*

7.5. COM Ports

For complete descriptions and procedures, see **8.2. COM PORTS**.

7.6. Threshold Weights

THRESHOLD WEIGHT sets the minimum amount the truck must weigh to initiate a weighment.

– This feature is not used when the **Traffic Light Control** is set to **MANUAL**.

- ✓ **Valid values = 0 to 99,999**
- ✓ **Default setting = 1000**

Follow these steps to set the **THRESHOLD WEIGHT**.

1. In the CONFIGURATION MENU, press the DOWN arrow until THRESHHOLD WEIGHTS displays.
2. Press **ENTER**.
3. When INITIAL WEIGHT displays, press **ENTER**.
4. Enter the desired Threshold Weights value, then press **ENTER**.
5. When MAXIMUM WEIGHT displays, press **ENTER**.
6. When THRESHOLD displays, press **ENTER**.
7. Enter the desired Maximum Threshold Weight value, **then press ENTER**.
8. ALLOW OVERWEIGHT TRANSACTION **displays, press ENTER**.
9. Select YES or NO
   - NO = The TS60X will NOT allow the transaction to continue.
     - The TS60X will display WEIGHT EXCEEDS MAX THRESHOLD-- UNABLE TO CONTINUE

NOTE – ***THERE IS NO MEANS TO OVERRIDE THIS SETTING AT THE WEIGH SCREEN. The load on the overweight vehicle must be adjusted before a weighment can be completed.***

   - YES = The TS60X will prompt the Operator with options.
     - The TS60X will display WEIGHT EXCEEDS MAX THRESHOLD - MENU TO ABORT / ENTER TO CONTINUE
   - The TS60X will continue to display this message until the Operator makes a choice.

7.7. Traffic Light Control

NOTE: *See* **SECTION 8.4. TRAFFIC LIGHT CONTROL** *for complete instructions on programming the traffic light.*

7.8. Reports

Follow these steps to setup and generate the **TRANSACTION REPORTS**.

1. In the **CONFIGURATION MENU**, press the **DOWN arrow** until REPORTS displays, then press **ENTER.**
2. When TYPE displays, press **ENTER**.
3. Using the DOWN arrow, select either COMPLETED TRANSACTIONS or INCOMPLETE TRANSACTIONS, then press ENTER.
4. When MEDIA TYPE displays, press **ENTER**.
5. When JUMP DRIVE displays, press **ENTER**.
   - A **Jump Drive** must be inserted into a **USB port** for a report to be generated.
   - The **Jump Drive** must then be inserted into a printer or PC to print the document or process it further.
6. When SORT BY displays, use the **UP**/**DOWN** arrows to select the **LOOP ID, DATE/TIME** or the **TICKET#** for the desired method of sorting the data, then press **ENTER**.
7. When DELIMTER displays, using the **DOWN arrow,** select one of these options, then press **ENTER**.
   - **CSV** (**C**omma **S**eparated **V**alue) – Commas separate data items in the Transaction Report.
   - **TAB** – Tabs are used to separate data items in the Transaction Report.
8. When GENERATE displays, press **ENTER** to store the **Report** to the **Jump Drive**.
   - SUCCESS TYPE_YYYY-M-DDTHM.XSV SAVED - MENU TO EXIT displays with the data file name information when the report is stored.
     - *Where* TYPE *is either* **Completed** *or* **Incomplete.**
     - YYYY *is the* **year;** M *is the* **month;** H *is the* ***hour;*** M *is the* **minute;** *and* X *is either* C *for* **CSV** *or* T *for* **TAB.**
   - NO USB DRIVE FOUND - MENU TO EXIT will display if the USB drive is not installed.
9. Press **MENU** to exit.

7.9. Network IP Settings

The **NETWORK option** displays and provides access to configures the ethernet TCP/IP network connection addresses.

There are two (2) connection options available with the TS60X.

DHCP (Dynamic **H**ost **C**onfiguration **P**rotocol**)** – The customers DHCP network automatically assigns the IP address for the TS60X attached to the network. When using DHCP, the IP address of the TS60X **can change** each time the customers network reissues the leases for the IP addresses on the network. This is why this type of network is known as **Dynamic**.

STATIC – Dedicated, specific IP address. This IP address will be provided by the **customers** IT Department. To use a Static IP address the customers IT staff must provide you the following information:

- IP address
- Netmask
- Gateway
- Primary DNS

To enter a **Static address:**

1. In the **CONFIGURATION MENU**, press the **DOWN** arrow until NETWORK displays, then press **ENTER**.
2. When USE DHCP? displays, press **ENTER**.
3. When DHCP displays, press the **DOWN arrow** until STATIC displays, press **ENTER.**
4. USE DHCP? will display again. Press the **DOWN arrow** until STATIC IP displays. Press **ENTER.**
5. IP ADDRESS displays. Key in the IP Address and press **ENTER**.
6. NETMASK displays. Key in the Netmask and press **ENTER**.
7. GATEWAY displays. Key in the Gateway and press **ENTER**.
8. PRIMARY DNS displays. Key in the DNS and press **ENTER**.
9. Press the **DOWN arrow** until APPLY CHANGES displays. Press **ENTER.**
10. NO displays. Press the **DOWN arrow** until YES displays. Press **ENTER**.

NOTE – If you do not APPLY after entering the settings described above, the settings will **NOT** be saved.

NOTE – The instrument **MUST** be connected to a network or you will get an INTERN error when you apply changes.

– Press the RED traffic light button to return to the weight screen.

– ** Static IP settings are now complete.**

To configure the TS60X for a **DHCP address:**

1. In the **CONFIGURATION MENU**, press the **DOWN** arrow until NETWORK displays, then press ENTER.
2. When USE DHCP? displays, press **ENTER**.
3. Either DHCP or STATIC will display, press the **DOWN arrow** until DHCP displays, press **ENTER.**
4. USE DHCP? will display again. Press the RED traffic light button to return to the weight screen.

   Reboot the TS60X.

   ***** DHCP settings are now complete. *****

7.10. Transaction Files

Follow these steps to delete **TRANSACTION FILES**.

5. In the CONFI**GURATION MENU**, press the DOWN arrow until TRANSACTION FILES displays, then press ENTER.
6. Press the **DOWN** arrow to select one of the following options, then press ENTER.

- **DELETE ALL TRANSACTIONS** removes all transactions.
- **DELETE BY TICKET** removes one specific transaction based on the ticket number entered.
- **DELETE BY DATE RANGE** removes all transactions within the entered date range.
- **DELETE BY TICKET RANGE** removes all transactions within the entered ticket range.
- **DELETE INCOMPLETE** removes all the Inbound transactions.

C A U T I O N

Performing any of these TRANSACTION FILES functions will erase some or all the current transaction data records.

7.11. Remote Switches

1. In the **CONFIGURATION MENU**, press the **DOWN arrow** until REMOTE SWITCHES displays, press **ENTER.**
2. Press the **DOWN arrow** to view switches 1-4 and press **ENTER** on any switch.
3. Press the **UP/DOWN arrows** to view the available options and press **ENTER** to assign one function.
4. **(Optional)** Repeat steps 2-3 to assign up to 3 other remote switches.
5. Use the RED LIGHT button to return to the weigh screen.

7.12. Instrument ID

Use this setting to assign a numeric ID to the instrument.

7.13. Serial Input Codes

1. In the configuration menu, scroll to **SERIAL INPUT CODES** and press **ENTER**. RED will appear.
2. Use the arrow keys to scroll through the available inputs and press **ENTER** to select the desired input.
3. Assign the input code a hexadecimal value and press **ENTER**.
4. Repeat steps 3 and 4 for any remaining codes you wish to change.
5. Press the **RED LIGHT** button to return to the weigh screen.

SECTION 8: SERIAL INPUT / OUTPUT

8.1. Printers

8.1.1. Printer Switch Settings

ROLL TAPE PRINTER	SW 1 ON	SW 2 ON	SW 3 ON	SWITCH SETTINGS
iDP3550 (28810)	2, 3, 4, 8	1, 2, 3, 5, 6	—	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit.

TICKET PRINTER	SW 1 ON	SW 2 ON	SW 3 ON	SWITCH SETTINGS
TM-U590 (24740)	1, 3, 7	All OFF	—	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit.
TM-U295 (24741)	1, 3	All OFF	—	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit.
SP298	All OFF	3	1, 5	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit.
SP700	1 thru 7	1 thru 6	1, 5	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit.
SP2000	All OFF	3	1, 5	**2400** Baud, **Even** Parity, **7** Data and **2** Stop Bit.
SP2200	2, 3, 8	All OFF	All OFF	**2400** Baud, **No** Parity, **7** Data and **2** Stop Bit.
TM-U230 (30954)	All OFF	2, 5, 8	—	**9600** Baud, **No** Parity, **8** Data and **1** Stop Bit.

— *No switch bank present inside the printer.*

NOTE: *The Thurman Scale standard default COM Port settings for all the printers is* **9600 Baud, No Parity, 8 Bits**, *and* **1 Stop Bit.**

8.1.2. Printer Cabling

The chart below shows the connections for the two cable types used with the printers.

14807 CABLE KIT

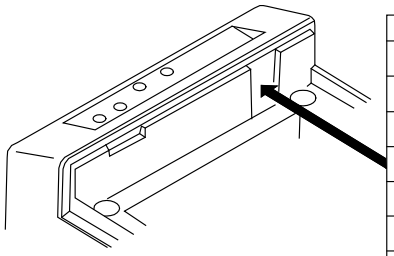
WIRE	DB-9 INSTRUMENT	COLOR	DB-25 PRINTER	DESC.
1	**P1-2**	R	**P2-2**	RX
2	**P1-3**	W	**P2-3**	TX
3	**P1-5**	G	**P2-7**	GROUND
4	**P1-7**	O	**P2-8**	JUMPERED

14809 CABLE KIT

✓ *Used only with the* **3550 Printer**.

WIRE	DB-9 INSTRUMENT	COLOR	DB-25 PRINTER	DESC.
1	**P1-3**	R	**P2-3**	TX to PRINTER
2	**P1-8**	W	**P2-20**	BUSY
3	**P1-5**	G	**P2-7**	GROUND

8.1.3. iDP3550 Tape Printer Settings



DS2	ON	OFF
1	X	
2	X	
3	X	
4		X
5	X	
6	X	
7		X
8		X

DS1	ON	OFF
1		X
2	X	
3	X	
4	X	
5		X
6		X
7		X
8	X	
9		X
10		X

BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	**1**

8.1.4. TM-U590 Ticket Printer Settings

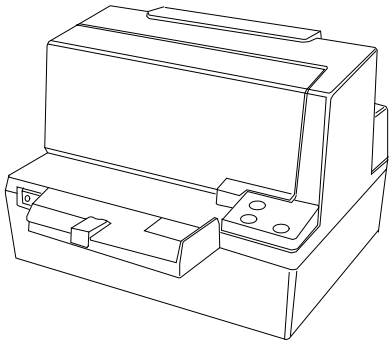
- For TS601/2/3 Instrument **Desktop** and **NEMA 4X SERIAL** communications, use cable **14807.**

BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	**1**

Set the printer **dip switche**s as listed below.

DSW 1: 1, 3, and 7 = **ON** only.

DSW 2: All Switches = **OFF**



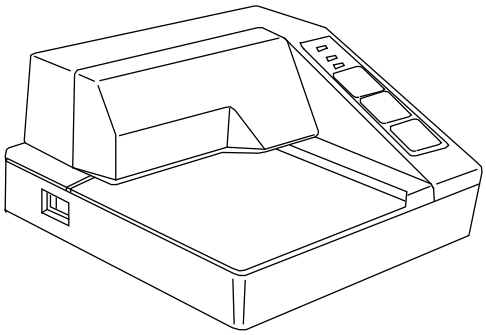
8.1.5. TM-U295 Ticket Printer Settings

- For TS601/2/3 Instrument **Desktop** and **NEMA 4X SERIAL** communications, use cable **14807**.

Set the printer **dip switche**s as listed below.

SW1: 1 and 3 = **ON**

Remainder = **OFF**



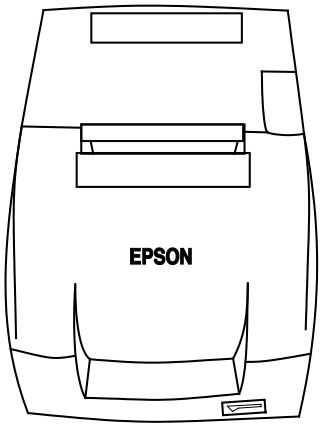
BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	**1**

8.1.6. TM-U220 Tape Printer

– Uses **SERIAL** communication.

– Use cable **25932**.

BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	**1**



WIRING

Cable 25932 Wiring for COM 1-3

DB-9 INSTRUMENT	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
2	RxD	BR	2	TxD
3	TxD	R	3	RxD
4	DRT	O	6	DSR
5	SG	Y	7	SG
6	DSR	G	20	DTR
7	RTS	BL	5	CTS
8	CTS	BK	4	RTS

Cable 25932 Wiring for Serial Expansion Module*

RS232 PORT 1: COM7 XX	DESCRIPTION	WIRE COLOR	DB-25 PRINTER	DESCRIPTION
TB1**a**-2	RxD	BR	2	TxD
TB1**a**-3	TxD	R	3	RxD
TB1**a**-4	DRT	O	6	DSR
TB1**a**-5	SG	Y	7	SG
TB1**b**-6	DSR	G	20	DTR
TB1**b**-7	RTS	BL	5	CTS
TB1**b**-8	CTS	BK	4	RTS

* *Must remove the* **9-pin connector**.

8.1.6. TM-U220 Tape Printer, Continued

DIP SWITCH 1 (Serial Interface)

SWITCH	FUNCTION	ON	OFF
1	Data receive error	Ignored	**Prints "?"**
2	Receive buffer capacity	40 byes	**4KB**
3	Handshaking	XON/XOFF	**DTR/DSR**
4	Work length	7 bits	**8 bits**
5	Parity check	Yes	**No**
6	Parity selection	Even	**Odd**
7	Transmission speed	4800 bps	**9600 bps**
8	BUSY condition	Receive buffer full	**Receive buffer full or Offline**

Default settings are in bold.

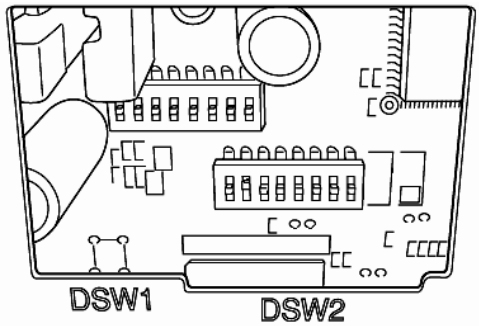
DIP SWITCH 2 (Serial Interface)

SWITCH	FUNCTION	ON	OFF
1	Print Column	42/35	**40/33**
* 2	For internal use only (auto-cutter) (do not change)	**Enabled**	**Disabled**
3	Pin 6 reset signal	Used	**Not used**
4	Pin 25 reset signal	Used	**Not used**
5	Undefined	**--**	**--**
6	Internal use only (flash memory rewriting) (Do not change)	Enabled	**Disabled**
7	Undefined	--	**--**
8	Serial Interface section	Memory Switch	**Dip Switch**

Default settings are in bold.

** The TM-U220 Tape Printer DAT (dk gray case, w/cutter) will have DSW2 switch #2 set to ON. TM-U220 Tape Printer (white case, no cutter) will have DSW2 switch #2 set to OFF. All other switch settings are identical between printers.*

Access the **Dip Switches** by unfastening the screw and removing the cover plate, found on the bottom of the printer.



For standard use, dip switches are factory-set correctly

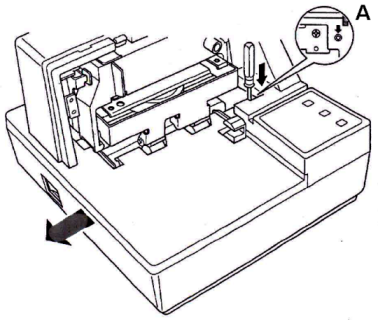
8.1.7. SP298 Printer Settings

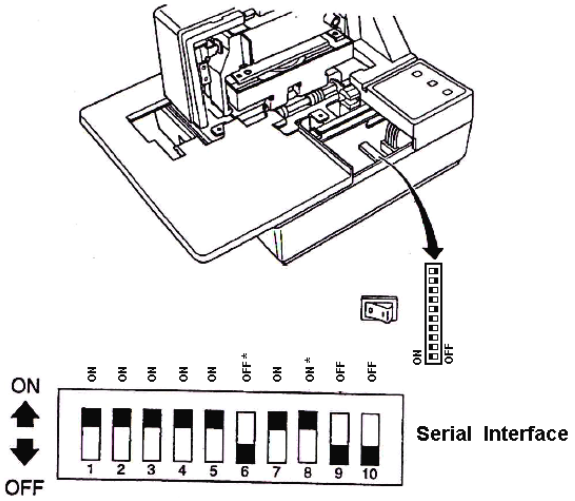
- For TS601/2/3 Instrument **Desktop** and **NEMA 4X SERIAL** communications, use cable **14807**.

BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	**1**

ACCESSING THE DIP SWITCHES

1. Remove all power from the printer, as well as all Network cables from between the printer and the Instrument.
2. Remove the Printer Cover.
3. Press down with a screwdriver at **Location "A"** marked in the illustration below, and carefully slide the **Document Table** in the direction indicated by the arrow until it is out of the way.
   – It is not necessary to remove the document table completely. Just move it enough to access the DIP Switches inside.
4. Set the **DIP Switches** into their correct positions.
5. Slide the Document Table back into place while pressing down at **Location "A"**.
6. Replace the **Print Cover**.





8.1.7. SP298 Printer Settings, Continued

DIP Switch Settings (SERIAL INTERFACE)

SWITCH	FUNCTION	ON	OFF
1	Baud Rate	See table below.	
2			
3	Data Length	**8 bits**	7 bits
4	Parity Check	**Disabled**	Enabled
5	Parity	**Odd**	Even
6	Handshake	DTR/DSR	**XON/XOFF**
7	Command Emulation	See table below	
8			
9	Pin #6 (DSR) reset signal	Enabled	**Disabled**
10	Pin #25 (INIT) reset signal	Enabled	**Disabled**

Baud Rate Settings Table

BAUD RATE	SWITCH 1	SWITCH 2-2
4800 bps	OFF	ON
9600 bps	**ON**	**ON**
1920 bps	ON	OFF
3840 bps	OFF	OFF

Command Emulation Table

COMMAND EMULATION	SWITCH 7	SWITCH 8
Star Mode	**ON**	**ON**
ESC/POS (TM-295)	ON	OFF
ESC/POS (TM-290)	OFF	OFF
Not used (*)	OFF	ON

* *Never set* **Switch 7** *to* **OFF** *at the same time that* **Switch 8 is** *set to* **ON**.

8.1.8. SP700 Printer Settings

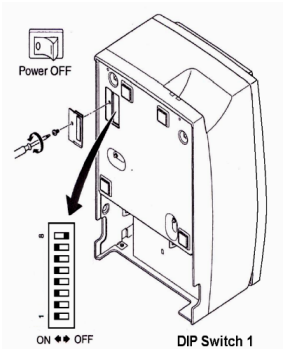
BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	1

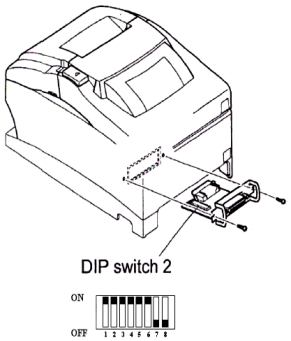
- For TS601/2/3 Instrument **Desktop** and **NEMA 4X SERIAL** communications, use cable **14807**.

There are **two (2) dip switch** locations on the Star SP700 Printer.

– Underneath the printer, behind a protective cover is **DIP Switch 1**.

– **DIP Switch 2** is on the Serial Interface Board.





SWITCH	FUNCTION	ON	OFF
1-1	Always ON	**Should be set ON**	
1-2	Auto Cutter *	**Invalid**	Valid
1-3	Always ON	**Should be set ON**	
1-4	Command Emulation	**Star**	ESC/POS
1-5	USB mode **	**Printer Class**	Vendor Class
1-6	2 Colors Printing	**Valid**	Invalid
1-7	Reserved		
1-8	Print head model ***	18-pin wire	**9-pin wire**

* The factory settings for enabling/disabling the Auto Cutter are as listed below.

– Models without Auto Cutter: Invalid (**Switch 1-2 = ON**).

– Models with Auto Cutter: Valid (**Switch 1-2 = OFF**).

NOTE: *Only program the* **Auto Cutter** *function with models that have the* **Auto Cutter Accessory** *installed.*

– *This is models with a tear bar.*

– *A mechanical error will* occur.

** **USB Interface** model only.

*** Do not change the default setting (**Switch 1-8** = **OFF**).

8.1.8. SP700 Printer Settings, Continued

DIP Switch 2

SWITCH	FUNCTION	ON	OFF
2-1	Baud Rate	See table below.	
2-2			
2-3	Data Length	**8 bits**	7 bits
2-4	Parity Check	**Disabled**	Enabled
2-5	Parity	**Odd**	Even
2-6	Handshake	DTR/DSR	**XON/XOFF**
2-7	Pin #6 (DSR) reset signal	Valid	**Invalid**
2-8	Pin #25 (INIT) reset signal	Valid	**Invalid**

Baud Rate Settings Table

BAUD RATE	SWITCH 2-1	SWITCH 2-2
4800 bps	OFF	**ON**
9600 bps	**ON**	**ON**
1920 bps	**ON**	OFF
3840 bps	OFF	OFF

8.1.9. SP2000 Printer Settings

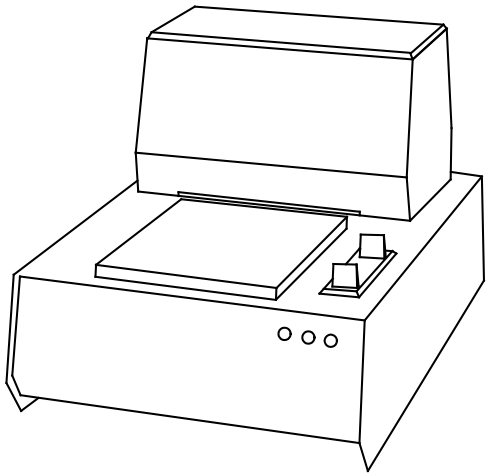
The SP2000 is a Dot Matrix ticket printer. The following switch settings and cable requirements will work with the default format.

- For TS601/2/3 Instrument **Desktop** and **NEMA 4X SERIAL** communications, use cable **14807**.

BAUD	**2400**
PARITY	**EVEN**
DATA BITS	**7**
STOP BIT	**1**

Set the printer's **dip switche**s according to the following:

- **DSW 1:** All **OFF.**
- **DSW 2:** **Three (3) ON** only.
- **DSW 3:** **One (1)** and **five (5) ON** only.



8.1.10. SP2200 Printer Settings

The SP2200 is a Dot Matrix ticket printer. The following switch settings and cable requirements will work with the default format.

- **TS601/2/3 Desktop** and **NEMA 4X** use cable **14807**.

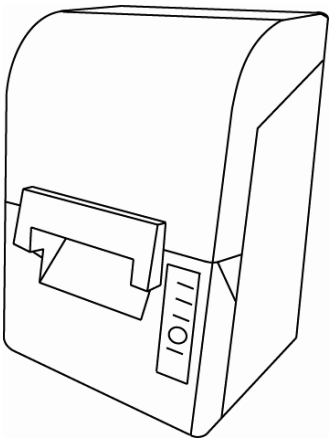
BAUD	**2400**
PARITY	**NO**
DATA BITS	**7**
STOP BIT	**2**

Set the printer's **dip switche**s according to the following:

- **DSW 1:** **Two (2), three (3),** and **eight (8) ON** only.
- **DSW 2** and **3:** All **OFF.**

8.1.11. TM-U230 Printer Settings

- For TS601/2/3 Instrument **Desktop** and **NEMA 4X SERIAL** communications, use cable **14807**.



BAUD	**9600**
PARITY	**No**
DATA BITS	**8**
STOP BIT	**1**

DIP Switch 1 Settings (SERIAL INTERFACE)

SWITCH	FUNCTION	ON	OFF
1	Data receive error	Ignored	**Prints "?"**
2	Receive buffer capacity	1KB	**16KB**
3	Handshaking	XON/XOFF	**DTR/DSR**
4	Work length	7 bits	**8 bits**
5	Parity check	Yes	**No**
6	Parity selection	Even	**Odd**
7	Transmission speed	4800 bps	**9600 bps**
8	BUSY condition	Receive buffer full	**Receive buffer full or Offline**

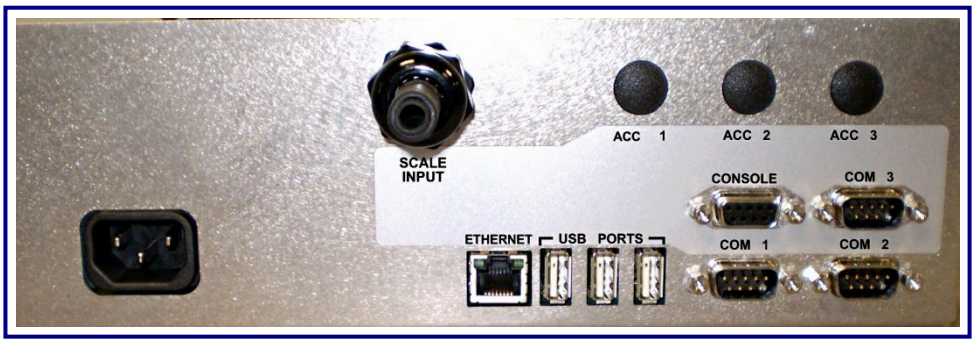
DIP Switch 2 Settings (SERIAL INTERFACE)

SWITCH	FUNCTION	ON	OFF
1	Sections number of characters per line (cpl) 7 x 9 font/ 9 x 9 font	42/35	**40/33**
2	For internal use only (Auto-cutter) (do not change)	**Enabled**	Disabled
3	Pin 6 reset signal	Used	Not used
4	Pin 25 reset signal	Used	Not used
5	PAPER OUT LED flashing pattern	**Flashes**	Lights on
6	For internal use only (flash memory rewriting) (Do not change)	Enabled	**Disabled**
7	For internal use only (Internal synchronization) (Do not change)	Asynchronous	**Synchronous with clock**
8	Internal buzzer	**Disabled**	Enabled

8.2. COM Ports

The TS601/2/3 Instrument has numerous ports and outlets allowing different Input/ Output devices to be utilized.

- The back of the Instrument has a 120V outlet, but the unit also supports 220V Scale Input.
- The TS601/2/3 instrument has three (3) standard **Serial Output COM Ports**.
  - These are configured for **RS-232** communications.
  - Serial Outputs can be customized to provide specific configured data string protocols, configuration parameters, using output modes such as **PC Polled, PC Continuous, Demand PC, Off, Remote Display**, and **all printers.**
- The **Console Port** is a RS232 Connection.
- There are three (3) **USB Ports** used for different external components, such as a keyboard, USB Flash Drive, etc.
- The three (3) **ACC holes** are used when wiring external component accessories, such as a remote display, traffic lights, etc.
- The **Ethernet Port** is used ***only*** for Web Ticket Formatting**.**



8.2.1. Programming COM PORTS

NOTE: *Always configure the Printer before formatting the tickets.*

Follow these steps to program the **FOUR (4) COM PORTS**.

1. In the **CONFIGURATION MENU**, press the **DOWN** arrow until COM PORTS displays.
2. Press **ENTER**.
3. Using the **DOWN arrow,** select the desired COM PORT to configure, then press **ENTER**.
   - **COM Ports** one thru three (1-3) are standard **Serial ports**.
   - COM Port four (4) is dedicated to **20 mA Output**, currently used only for the Remote Display.

8.2.2. Configuring the Remote Display Output

Follow these steps to program the REMOTE DISPLAY

1. In the CONFIGURATION MENU, press the DOWN arrow until COM PORTS displays, press **ENTER**.
2. Using the **UP/DOWN** arrows, select COM 4 (20 MA), then press **ENTER**.
3. DEVICE ATTACHED is displayed. Press **ENTER**.
4. Use the **UP/DOWN** arrows to display REMOTE DISPLAY, then press **ENTER**.
5. LOAD DEFAULT SETTINGS? **Is displayed, press ENTER.**
6. Use the **UP/DOWN** arrow to display YES, the press **ENTER**.
   - This will load the default settings for Thurman 218 remote displays.
     - SETTINGS is displayed. If using a non-Thurman remote display or if the settings otherwise require changes, press **ENTER** to enter the settings menu.
     - The available settings include BAUD RATE, PARITY, STOP BITS, DATA BITS, and CHECKSUM.
7. Using the DOWN/UP arrow, select the proper communication settings for your remote display, then press **ENTER**.
8. Select the correct setting for your remote display, then press **ENTER**.
9. After CHECKSUM is displayed, SETTINGS is displayed again. Press the RED traffic light button once to return to the weigh screen.

NOTE: *Reference section* **10.4 PROGRAMMING THE REMOTE DISPLAY** *for additional information.*

8.2.3. Selecting the Printer

1. When DEVICE ATTACHED displays, press **ENTER**.
2. Using the **DOWN/UP arrows,** select the desired printer, then press **ENTER**.

OFF *	TM-U230	SP-2000
TM-U295	TM-U590	SP-22000
IDP-3550	SP-700	SP-298
TM-U220	TM-L90	EU-T432
OKI-420	GC-420d	

* *Does not transmit weight amount*.

3. When LOAD DEFAULTS display, press **ENTER**.
4. Using the **UP/DOWN arrows**, select **YES** or **NO**, then press **ENTER**.
5. When SETTINGS displays, press **ENTER**.
6. Using the **DOWN/UP arrow,** select the proper RS-232 Communication settings, then press **ENTER**.
   – The settings include BAUD RATE, PARITY, STOP BITS, DATA BITS, and CHECKSUM.
7. Input the correct setting, then press **ENTER**.

NOTE: *The Thurman Scale standard default COM Port settings for all the printers is* **9600 Baud, No Parity, 8 Bits**, *and* **1 Stop Bit**.

- *The* **FORMAT option** *does not appear when programming the printers.*

8.2.4. PC Data String Output

1. When DEVICE ATTACHED displays, press **ENTER**.
2. Pressing the **DOWN arrow**, select PC CONTINUOUS or PC POLLED, then press **ENTER**.
   – PC CONTINUOUS – Sends displayed weight continuously.

– PC POLLED – The external device sends out a polling request (i.e. CR, "W", etc.), and the instrument responds with return data.

- *Data sent is configured in the* **GTN format** *as the* **DEMAND OUTPUT**..

3. Press **ENTER** when FORMAT displays.
4. Press the **DOWN-arrow** to select the correct standardized data string format.
   - THURMAN .
   - TOLEDO
   - CARDINAL
   - WEIGHTRONIX
   - CONDEC
5. Press **ENTER** to confirm this selection.
6. When LOAD DEFAULTS displays, press **ENTER**.
7. Using the **DOWN/UP arrow**, select **YES** or **NO**, then press **ENTER**.
8. When SETTINGS displays, press **ENTER**.
9. Using the DOWN/UP arrow, select the proper RS-232 communication settings, then press **ENTER**.
   – The settings include BAUD, RATE, PARITY, STOP, BITS, DATA BITS, and CHECKSUM.
10. When the current setting is displayed, either press **ENTER,**

    OR

    Using the **Numeric Keypad** or **DOWN arrow** input the desired setting, then press **ENTER**.

8.2.5. Configuring Network Output

1. Press **MENU** and LOGIN will show on screen. Press **ENTER** , (Login in with appropriate login) OK appears. Press **ENTER** and AUDIT TRAIL appears.
2. Press **DOWN/UP** arrows until CONFIGURATION appears. Press **ENTER** and CHANGE CUSTOMER PASSWORD appears.
3. Press **DOWN/UP** arrows until COM PORTS appears. Press **ENTER**. UCOM= 1 appears**.**
4. Press **DOWN/UP** arrows to select the appropriate COM= 1,2,3 or 4. Press **ENTER**. The selected comport, 1,2,3 or 4, is dedicated to the ethernet output only. COM with the comport number you are using. (RS232) will show on the screen. Press **ENTER**.
5. Press **DOWN/UP** arrows until DEVICE ATTACHED. appears. Press **ENTER.** OFF appears**.**
6. Press **DOWN/UP** arrows until NETWORK appears. Press **ENTER,** LOCAL PORT appears. Add the correct port number as determined by the customer. 5001 is the default. Press **ENTER**, OK appears and then CONFIGURE.

7. Press **ENTER,** LOAD appears. Press **ENTER,** FAIRBANKS appears. Press **UP/DOWN** arrows on keypad to view a list of formats. Choose the one the customer's IT department wants the TS601 to stream to the PC. Press **ENTER,** OK appears and then LOAD.

8.2.6. DemandPC

This option transmits the weight data in the **GTN format** whenever a carriage return is received.

- All data strings which have a **NON-ZERO VALUE** in the coordinates will be transmitted.
- The order the data strings appear in the data transmission follows the order in which the data is listed in the ticket format.

NOTE: DemandPC has a separate ticket format that must be enabled in the Ticket Formats menu.

Follow these steps to format the **DemandPC** *option.*

1. When DEVICE ATTACHED displays, press **ENTER**.
2. Pressing the **DOWN** arrow, select the DEMANDPC OUTPUT then press **ENTER**.
3. When LOAD DEFAULTS displays, press **ENTER**.
4. Using the **DOWN/UP** arrow, select **YES** or **NO**, then press **ENTER**.
5. When SETTINGS displays, press **ENTER**.
6. Using the **DOWN/UP** arrow, select the proper RS-232 communication settings, then press **ENTER**.
   - These settings include BAUD, RATE, PARITY, STOP, BITS, DATA BITS, and CHECKSUM.
7. When the current setting is displayed, either press **ENTER.**

OR…

Using the **numeric keypad** or **DOWN** arrow input the desired setting, then press **ENTER**.

8.3. 4-20mA Analog Card (30919)

The **4-20 mA ANALOG CARD (30920)** is an **Passive Current Loop Device** with **16 Bit High Resolution Output.**

4-20mA Specifications	– 16 bit resolution +/- .01 integral linearity
Current Loop Voltage Compliance	• The 4-20 Analog Card is a **PASSIVE DEVICE**, and *does* supply any current loop voltage. • Customer's external source must furnish 7 to 40 VDC power (typical voltage 24 VDC). • The negative (-) power of the supply *MUST* be isolated from chassis ground • See important **CAUTION** box below. • A separate Power Supply must be furnished for each output.
Full Scale Setting Time	• 8msecs.
Output Impedance	• 25 Meg Ohms.
Alarm Current	• 3.5 to 24mA (underload/overload conditions), Offset at 25°C; +/- .1% of full scale. Offset drift; +/- 25 ppm of full scale per degree Celsius.
Total Output Error	• (20mA) at 25°C: +/- .2% of full scale max.
Total Output Drift	• +/- 50 ppm of full scale per degree Celsius max.

C A U T I O N

Failure to use an **ISOLATED POWER SUPPLY**
WILL CAUSE
CATASTROPHIC DAMAGE!

8.4. Traffic Light Control

The **Traffic Light Control** sets the operational modes of the traffic light. It is typically controlled automatically by the instrument weighment cycle.

- Each **I/O RELAY CARD** supports **two (2)** sets of lights operated in parallel.

8.4.1. Control (Traffic Light)

Follow these steps to setup the **TRAFFIC LIGHT CONTROL**.

1. In the CONFIGURATION MENU, press the DOWN arrow until TRAFFIC LIGHT CONTROL displays. Press **ENTER.**
2. When SCALE ID 1 displays, press **ENTER.**
3. When CONTROL TRAFFIC LIGHT displays, press **ENTER**.
4. When AUTOMATIC displays, either press **ENTER** to select it,

Or…

Press the **DOWN arrow** to enter the MANUAL option, then press **ENTER.**

8.4.2. Event to Signal

Follow these steps to setup the **EVENT TO SIGNAL OPTION**.

1. In the **Configuration Menu**, press the **DOWN** arrow until TRAFFIC LIGHT CONTROL displays. Press **ENTER**
2. When SCALE ID 1 displays, press **ENTER.**
3. Press the **DOWN arrow** until CONTROL TRAFFIC LIGHT displays, then press **ENTER**.
4. Press the **DOWN arrow** until EVENT TO SIGNAL displays, then press **ENTER.**
5. When X SECOND TIME DELAY displays, where "X" is the delay setting, input a value from **2** to **10** (seconds), then press **ENTER.**

✓ **Default = 6 Seconds**

8.5. Programming the Remote Display

8.5.1. Display Mode

Follow these steps to setup the **DISPLAY MODE**.

1. In the CONFIGURATION MENU, press the DOWN arrow until REMOTE DISPLAY appears. Press **ENTER**.
2. When DISPLAY MODE appears, press **ENTER**.
3. When CONTINUOUS displays, either press **ENTER** to select it, or press the **DOWN arrow** to enter ON PRINT.
4. Press **ENTER.**

8.5.2. Type (Output)

This option formats what will appear on the **REMOTE DISPLAY**.

1. In the REMOTE DISPLAY menu, press the **DOWN arrow** until TYPE OUTPUT displays, then press **ENTER**
2. Press the **DOWN arrow** to select **Gross Wt**, **Net Wt**, **Ticket Number**, **Active Gross** or **Net Wt**.
3. Press **ENTER.**

IMPORTANT PROGRAMMING CONSIDERATIONS

- When **Display mode** is set to **CONTINUOUS**, and the **Active Gross or NetWt** is also set, the remote display follows what appears on the instrument display.
  - The operator can toggle between **Gross Wt** and **Net Wt** by pressing the **B/G NET** button.
  - If the output type is set to **Gross Wt**, the instrument will only display the Gross Weight, regardless of what appears on the instrument.
  - This is the same for **Net Wt**. The remote display indicates the Net Weight.
- When display **Type (Output)** is set to **TICKET NUMBER**, the next **Ticket Number** displays until a print occurs and the printed vehicle leaves the scale.
  - The weight drops below a threshold, either the **Initial Weight** threshold entry or **25 divisions of zero**, whichever is higher.
  - At that point, the next new ticket number displays.
- If display **Type (Output)** is set to **TICKET NUMBER**; the 218/218T Remote Display must be configured first.
  - Set the Annunciator (**ANNUN**) to **SCALE 1**.
  - Set the Annunciator to **NO**.

8.5.3. Enable 218T

I M P O R T A N T

✓ **Failure to complete these steps correctly constitutes a NTEP violation.**

Follow these steps to enable the **218T Display Instrument**.

1. In the **CONFIGURATION MENU**, press the **DOWN arrow** until REMOTE DISPLAY appears, then press **ENTER**.
2. Press the **DOWN arrow** until ENABLE TRAFFIC LIGHT displays, then press **ENTER**.
3. Select YES or NO, then press **ENTER**.

NOTE: *For the* **Traffic Light** *function on the 218T to work, the* **Display Mode** *must be set to* **CONTINUOUS.**

8.6. Basic Troubleshooting

ERROR CONDITION(S)	SOLUTION(S)
Check that scale is empty. **If Scale is empty, Call for Service.** **Load Cell(s) bad.**	**A large amount of weight is zeroed.** –This is normal. –Press **OK** and continue weighing. –Possible load cell damage. –Call for Service.
LOAD CELL FAILURE(S) **Flashing and displays** "- - - -"	**Possible load cell damage.** –Access the **Load Cell Diagnostics Menu** to verify the load cell status. –Count stability or change of counts. –Contact the local service for further trouble-shooting. –Call for Service.
SC CELLS FOUND NONE	**Possible damaged load cell cable.** –Load cell shortened. –Defective Pit Power Supply. –Defective Smart Sectional Controller(s). –Defective SIC Module.
Displays " - - - - " M LB GROSS	**Communication error to load Cells.** –Check settings by pressing **F10**. –Settings should be COM2, Even.
INTERR	**System Error.** –Restore Backup, if possible to recover. –Otherwise, replace the PCB Assembly Base Board (33143).
POWER SUPPLY ERROR: AC OUTPUT OPEN	**Check main interface cable to be cut.**
AC OUTPUT SHORTENED	**Cable problems, usually repairable.**
COMMUNICATION ERROR	**Can be caused by numerous transmission problems, including bad Load Cell, faulty cable, conflicting programming, etc.**
POWER SUPPLY NEEDS TO BE CONFIGURED: GO TO MENU	**First-time opening message to configure the Instrument to the Power Supply.**

SECTION 9: FORMATTING TICKETS

9.1. Standard Ticket Formatting Steps

Listed below are the standard steps for formatting a ticket.

1. Configure the **Service Menu** to the correct **OPERATING MODE.**
   - This setup determines how the ticket prints.
   - The **GTN format** configures only the **GTN tickets**.
   - The **In/Out format** configures In/Out tickets.
   - The **Basic format** configures BasicIn and BasicOut tickets.

   - Each **Operating Mode** formats the weighment data in different positions on the ticket, printing only the needed data for that ticket.
   - The ticket format can also vary due to the printer type that is used.
   - Each ticket format can be adjusted to best suit the customer's needs.

IMPORTANT NOTE: *Always configure the* **COM Ports** *before formatting tickets.*

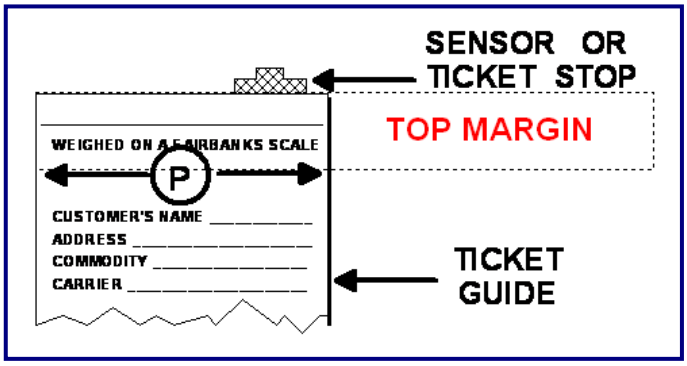
2. Set up the **COM Ports** in the **Configuration Menu** to a specific attached device.
3. Install, wire and configure the printer.
4. Access the TICKET FORMAT menu.
5. Insert a blank ticket, then press the **PRINT** key for a ticket self-test.
   - This identifies its current margin setup.
6. Press the **OUT** button to print out the complete **Mode of Operation** format structure.
7. Using this self-test ticket, plan where to format the ticket margins and available print spaces.
   - Determine how the current ticket format might differ from the customer's needs.
   - Plan the needed changes according to their **SPACE** (*horizontal*) and **FEED** (*vertical*) coordinates of the ticket.
   - Mark up this ticket with a ruler and pencil as needed, using it as a guide.

9.2. Printer and Ticket Differences

Consider these factors for placement of data when formatting a ticket.

A. TOP MARGIN

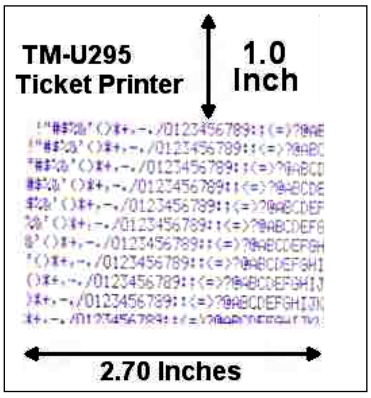
The area between the ticket sensor, stop, tear-off and the first line of print is called the **Top Margin**. Printing is not possible in this part of the ticket.



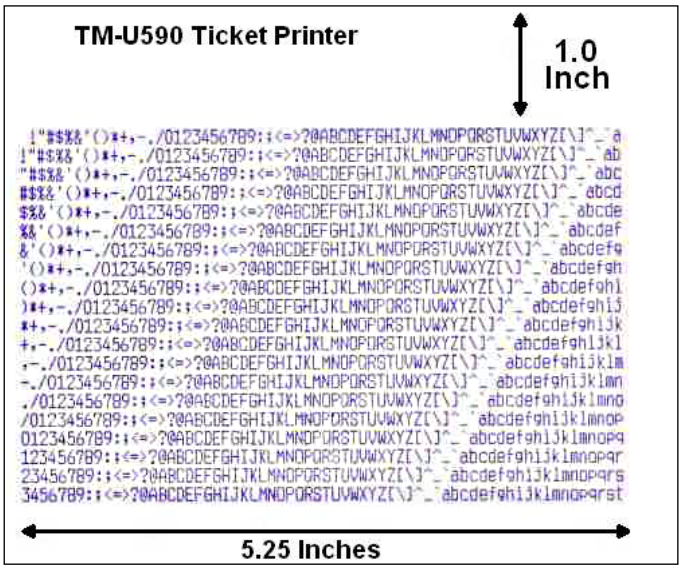
B. PRINTING AREA

There is a wide variation of printing area used between the different types of printers. This is determined by the physical characteristics of each particular one.

- To find the available space on a ticket, run a printer self-test.



The print head size is different between these two models, so their print area is different also.



C. ENHANCED PRINT SIZE

Another factor that regulates how many lines can be placed on a ticket is the font size of the characters. This varies depending on the printer.

- Typically, the **Enhanced Print** feature doubles the standard default font size, making it bolded and emphasized on the page.
- It is recommended using Enhanced Print for only the most important characters on the ticket, such as **Truck ID, Net Weight**, etc.
- It also enhances the character size of **FEEDS** and **SPACES**.

9.3. Ticket Formatting

Follow these guidelines when programming a **TICKET FORMAT***.*

- All commands are written in the specific order to the ticket. They flow downward, starting from the top-left of the printer-assigned margin.
- Each command first describes the action, then in brackets, it defines how many, the type of action, or exactly what text to print.
- To remove a printed item on the ticket, display the command, then press the **ZERO key.**

9.3.1. Write Commands

WRITE(____) commands offer a standard list of **System Data Fields** to use when programming.

Follow these steps to alter how a WRITE *field appears.*

1. Use the **UP/DOWN arrows** to navigate thru the **WRITE commands**, then press **ENTER** to open one.
2. Using the **UP/DOWN arrows**, select the option that best suits the programming need, then press **ENTER**.
   - The WRITE(____) option selected wil l display next on the ticket.
   - Certain commands offer two choices, followed by a printed response for one.

Example:

HIDEWRITEONZERO (TARE/TARE)

This example means the following:

- **Hide** (do not print) **the Tare amount if it equals ZERO (0).**
- **Write** (print) **the Tare amount if it is greater than ZERO (0).**

Keypad Formatting Buttons

UNITS: Inserts new format line ***before***.
B/G/NET: Inserts new format line ***after.***
ZERO: Deletes the current format line.
OUT: Prints entire Format Script.
MENU: Saves ticket format.
- Steps back one level.

ENTER: Saves all data input..
PRINT: Prints a sample ticket.
RED Button: Exits to **Weigh Screen**.
GREEN Button: Deletes Format Script.

9.3.1. Write Commands, Continued

Listed below are the WRITE (____) *commands.*

- GROSS
- TARE
- NET
- DATEIN
- DATEOUT
- TIMEIN
- TIMEOUT
- UNITSGROSS UNITSTARENET
- TICKET NUMBER
- LOOPIDTEXT
- LOOPIDPROMPT1TEXT
- PROMPT1
- INBOUND
- MANUAL TARE
- DUPLICATE
- DUALGROSS
- DUALTARE
- DUAL NET
- DUALINBOUND
- DUALUNITSGROSS
- DUTANTUNITS
- VEHDESC

WRITE (TEXT) commands are programmable text fields, allowing legends or prompts to be altered to suit the application needs.

– These text fields can be any character(s) required to suit the customer's need.

– All data items are **left justified**, with a maximum of **fifteen (15) characters**.

NOTE: *When inverting tickets, the* **Invert "On"** *command should be the first one in the format.*

Turn the option **"Off"** *as the last command before the ticket release, or the reports will invert when they print.*

9.3.2. Quick Formatting Buttons

KEYPAD	EXT. KEYBOARD	PROGRAMMING FUNCTION	NORMAL FUNCTION
ZERO	**DEL**	Deletes current formatting line.	**ZERO**
UNITS	**PgUp**	Inserts a new line ***before*** the current line.	**UNITS**
PRINT	**INSERT**	Prints a sample ticket	**PRINTS**
B/G NET	**END**	Inserts a new line ***after*** the current line.	**B/G NET Select**
MENU	**HOME**	• Saves ticket format (**YES/NO**). • Backs up one menu level.	**MENU**
RED LIGHT	**F1**	Exits without saving.	**Red Light ON**
GREEN LIGHT	**F2**	Deletes the entire Ticket Format Script.	**Green Light ON**
IN	**F4**	N/A	**INBOUND**
OUT	**F5**	Prints the entire Ticket Format Script.	**OUTBOUND**
TARE	**"."**	N/A	**Auto Tare**

9.3.3. Ticket Format Commands

The **TICKET FORMAT commands** *are defined below.*

SPACE (__)	One (1) movement across (horizontal).
FEED (__)	One (1) movement downward (vertical).
INVERT ON/OFF	Prints the ticket from the bottom-to-the-top, placing data where it belongs according to the programmed coordinates.
WRITE TEXT ("___")	Programmable fields that allow **Legends** or **Prompts** to be altered to suit the application needs. Appears exactly as written within the quotation marks. • *When programming (WRITE) fields, a **System Data** list displays.*
HIDEWRITEONZERO (TARE, NET)	If the Tare is **ZERO**, this prevents the **Net Weight** figure from being printed.
HIDEWRITETEXTONZERO (___/"___")	**HIDE** the message if the amount is **ZERO (0).** **WRITE** the quoted word if there is a different amount. • *Quotation marks within the command display the exact words.*
WRITE(____)	Without quotation marks, the printer writes out requested data of the command. • *A command is sometimes blended with others together to print all the correct elements. WRITE (UNITSTARENET) is an example.*
WRITE(DUPLICATE)	**"Duplicate Copy"** appears on the ticket for a **TICKET REPRINT**. • *This specialized command has one purpose, and cannot be altered.*
ENHANCE ("on")	Enlarges the font characters, and prints them in bold text.
ENHANCE ("oFF")	Reduces the font size, and prints them in standard text.
WRITE (GROSS)	Prints the **Gross Weight**.
WRITE (TARE)	Prints the **Tare Weight**.
WRITE (NET)	Prints the **Net Weight**.
WRITE (DATE IN)	Prints the **date** of the **first weighment**.
WRITE (DATE OUT)	Prints the **date** of the **final weighment**.
WRITE (TIME IN)	Prints the **time** of the **first weighment**.
WRITE (TIME OUT)	Prints the **time** of the **final weighment**.
WRITE (UNITS)	Prints the **Unit** choice.
WRITE (TICKET NUMBER)	Prints the current **ticket number**.
WRITE (LOOP ID TEXT)	Prints the legend in the **Loop ID** field, determined by the technician. • ***Truck Number, Rail Car Number, etc.***
WRITE (LOOP ID)	Prints the **Loop ID**.
WRITE (PROMPT 1 TEXT)	Prints the **Legend** that prompts the user to enter an answer or to add data. • ***BOL Number, License, etc.***
WRITE (PROMPT 1)	Prints the data from the **Prompt 1 Text** field.
INBOUND	Prints the **Inbound weight**.
WRITE (MANUAL TARE)	Prints an asterisk (*) next to the **TARE value** when it is a **MANUAL TARE**..
RELEASE ( )	End of the ticket, this command **releases the ticket** from the printer.
CLAMP ( )	Clamps the printer paper.
CUTPAPER ( )	Cuts the printer paper.

9.3.4. Ticket Formats

Follow these steps to set up and configure the **TICKET FORMATS**.

1. In the **CONFIGURATION MENU**, press the **DOWN arrow** until TICKET FORMATS displays, then press **ENTER**.
2. When PRINTER displays, select the desired available printer.
   - If the printer is already selected**,** then press **ENTER**,

     OR…

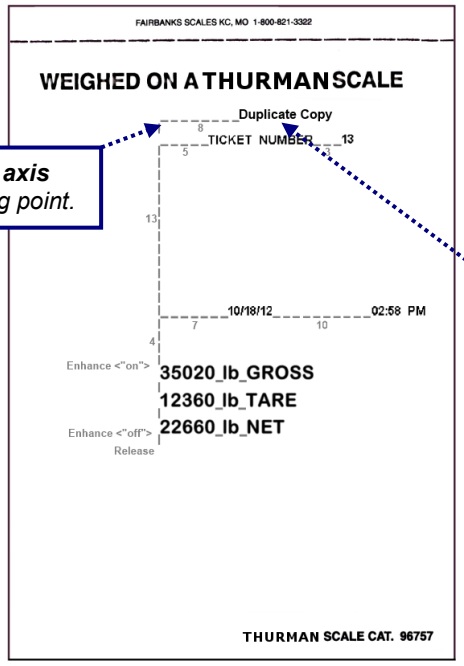
   - Press the **DOWN arrow** to select the correct printer, then press **ENTER**.
3. When SELECT FORMAT displays, press the **DOWN arrow** to select one of the five (5) default **Ticket Formats,** then press **ENTER**.
   - GTN
   - INBOUND
   - OUTBOUND
   - BASICIN
   - BASICOUT
4. Press the **DOWN arrow** to enter either **DISABLED** or **ENABLED,** then press **ENTER** to confirm this selection.
5. When FORMAT displays, press **ENTER**.
6. Press the **UP/DOWN arrows** to navigate and format these ticket commands.
   - Press the **PRINT key** while in the **TICKET FORMAT mode** to print a test ticket.
   - Adjust the parameters for **FEED** and **SPACE** to align the information as required to fit the ticket.
   - Align and fit all the needed information on it. Repeat this process as needed, until all the data prints correctly on the ticket.
   - Remove a printed item from the ticket by pressing the **ZERO** key.

Keypad Formatting Buttons

UNITS: Inserts new format line ***before***.
B/G/NET: Inserts new format line ***after.***
ZERO: Deletes the current format line.
OUT: Prints entire Format Script.
MENU: Saves ticket format.
  – Steps back one level.
ENTER: Saves all data input..
PRINT: Prints a sample ticket.
RED Button: Exits to **Weigh Screen**.
GREEN Button: Deletes Format Script.

9.3.5. G/T/N Ticket Formatting

Defined below is the structure and appearance of a **GROSS/TARE/NET** ticket.



X/Y axis *starting point.*

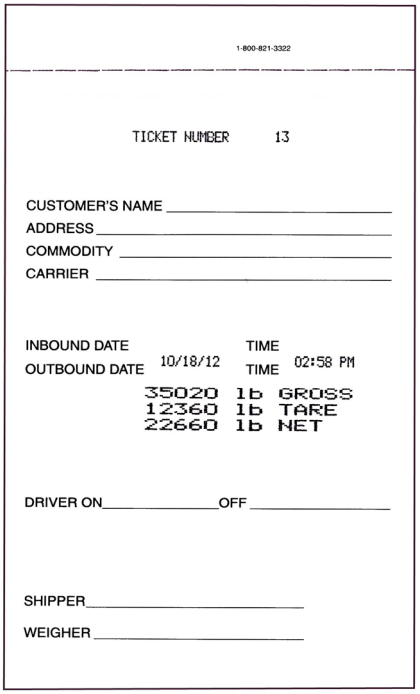
1-Space <8> *moves the ticket text* ***horizontally.***

3-Feed <1> *moves the ticket text* ***vertically****.*

"Duplicate Copy" *appears* ***only*** *when a* **TICKET REPRINT** *is performed.*

This image shows the printed areas and other defined elements of a **G/T/N Ticket.**

– *All grey markings are for illustration purposes only.*



Example of an actual ***G/T/N Ticket****.*

14-Enhance <"on" > *is the command for* **enlarged** *and* **bolded print.**

32-Enhance <"off" > *restores print style to standard.*

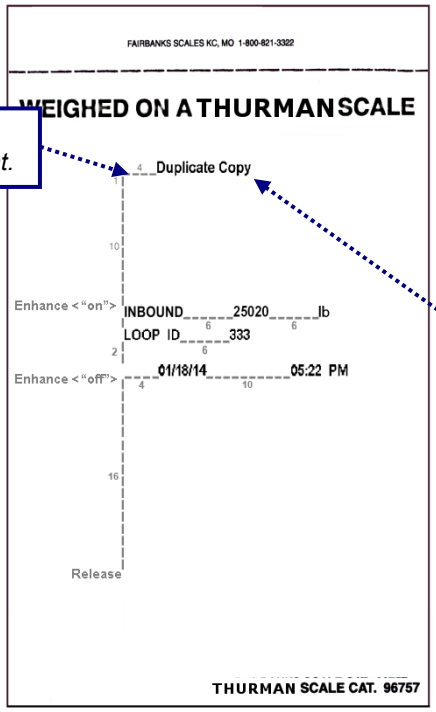
GTN

1-Space <4>
2-Write <Duplicate >
3-Feed <1>
4-WriteText <"TICKET NUMBER" >
5-Space <6>
6-Write <TicketNumber >
7-Feed <14>
8-Space <4>
9-Write <DateOut >
10-Space <10>
11-Write <TimeOut >
12-Feed <2>
13-Enhance <"on" >
14-Write <GroSS >
15-Space <1>
16-Write <UnitSGroSS >
17-Space <1>
18-WriteText <"GROSS" >
19-Feed <1>
20-Write <Tare >
21-Space <1>
22-Write <UnitSTareNet >
23-Write <ManualTare >
24-HideWriteTextOnZero <Tare, "TARE" >
25-Feed <1>
26-Write <Net >
27- Space <1>
28-Write <UnitSTareNet >
29-Space <1>
30-HideWriteTextOnZero <Tare, "NET" >
31-Feed <2>
32-Enhance <"off" >
33-Feed <10>
34-ReleaSe < >

The flow chart above outlines the coordinates for each element of the **G/T/N Ticket**.

9.3.6. Inbound Ticket Formatting

Defined below is the structure and appearance of an **INBOUND** ticket example.

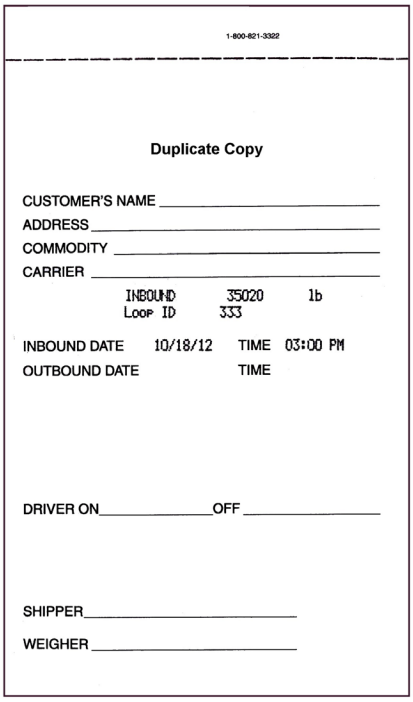


X/Y *axis*
starting point.

"Duplicate Copy" *appears* ***only*** *when a* **TICKET REPRINT** *is performed.*

The image above shows the printed areas and other defined elements of the ticket.

– *All grey markings are for illustration purposes only, and not printed.*



Example of an ***Inbound Ticket****.*

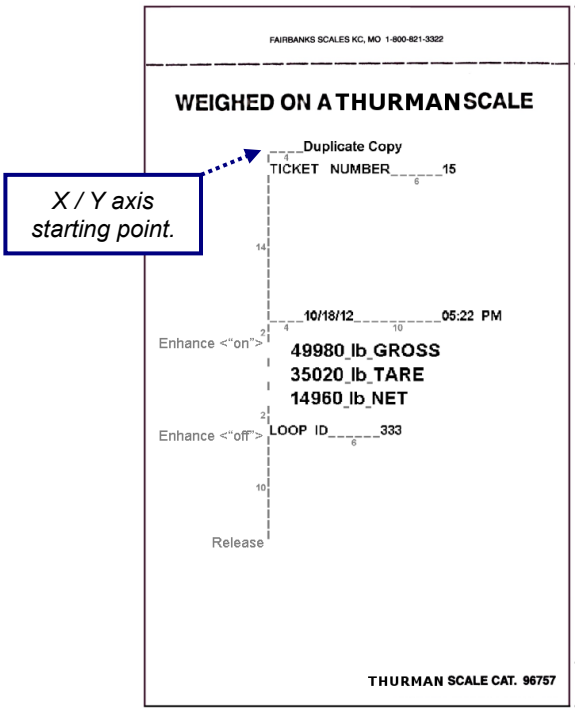
INBOUND

1-Space <4>
2-Write <Duplicate >
3-Feed <1>
4-Feed <10>
5-WriteText <"INBOUND" >
6-Space <6>
7-Write <Inbound >
8-Space <6>
9-Write <UnitSGroSS >
10-Feed <1>
11-Write <LoopIDText >
12-Space <6>
13-Write <LoopID >
14-Feed <2>
15-Space <4>
16-Write <DateIn >
17-Space <10>
18-Write <TimeIn >
19-Feed <16>
20-ReleaSe < >

The flow chart above outlines each element of the **Inbound Ticket**.

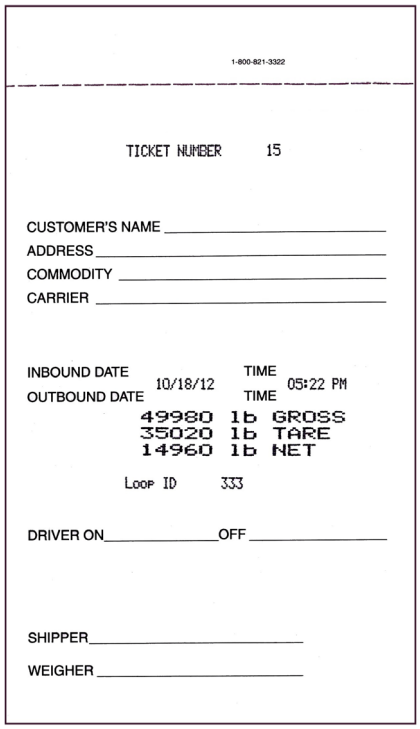
9.3.7. Outbound Ticket Formatting

Defined below is the structure and appearance of an **OUTBOUND** ticket example.



This image shows the printed areas and other defined elements of the ***Outbound Ticket****.*

– *All grey markings are for illustration purposes only.*



Actual image of an ***Outbound Ticket*** *(without any Inbound Ticket information).*

OUTBOUND

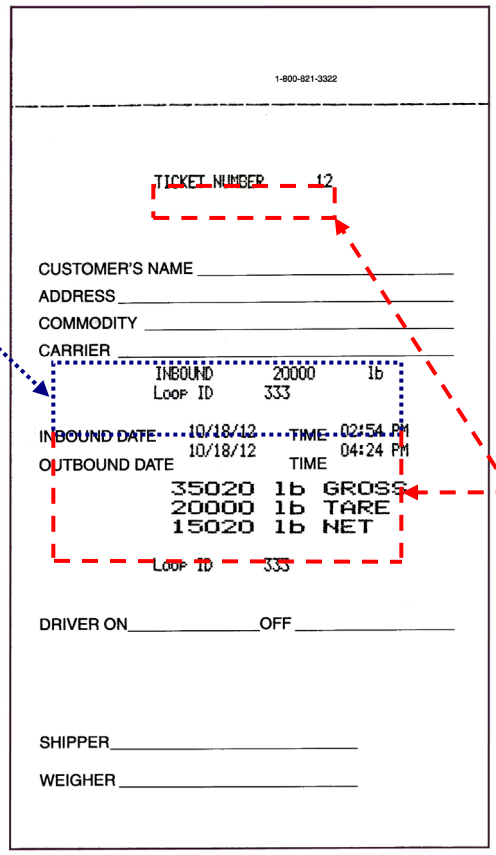
- 1-Space <4>
- 2-Write <Duplicate >
- 3-Feed <1>
- 4-WriteText <"TICKET NUMBER" >
- 5-Space <6>
- 6-Write <TicketNumber >
- 7-Feed <14>
- 8-Space <4>
- 9-Write <DateOut >
- 10-Space <10>
- 11-Write <TimeOut >
- 12-Feed <2>
- 13-Enhance <"on" >
- 14-Write <GroSS >
- 15-Space <1>
- 16-Write <UnitSGroSS >
- 17-Space <1>
- 18-WriteText <"GROSS" >
- 19-Feed <1>
- 20-Write <Tare >
- 21-Space <1>
- 22-Write <UnitSTareNet >
- 23-Write <ManualTare>
- 24-HideWriteTextOnZero <Tare, "TARE" >
- 25-Feed <1>
- 26-Write <Net >
- 27-Space <1>
- 28-Write <UnitsTareNet >
- 29-Space <1>
- 30-HideWriteTextOnZero <Tare, "NET" >
- 31-Feed <2>
- 32-Enhance <"off" >
- 33-Write <LoopIDText >
- 34-Space <6>
- 35-Write <LoopID >
- 36-Feed <10>
- 37-ReleaSe < >

This flow chart outlines coordinates for each element of the ***Outbound Ticket****.*

9.3.8. Completed Transaction Ticket Example

Shown below is a ticket example of a completed **INBOUND / OUTBOUND** *transaction.*

INBOUND TICKET *includes the* **LOOP ID, DATE, TIME, and Initial Weight**.

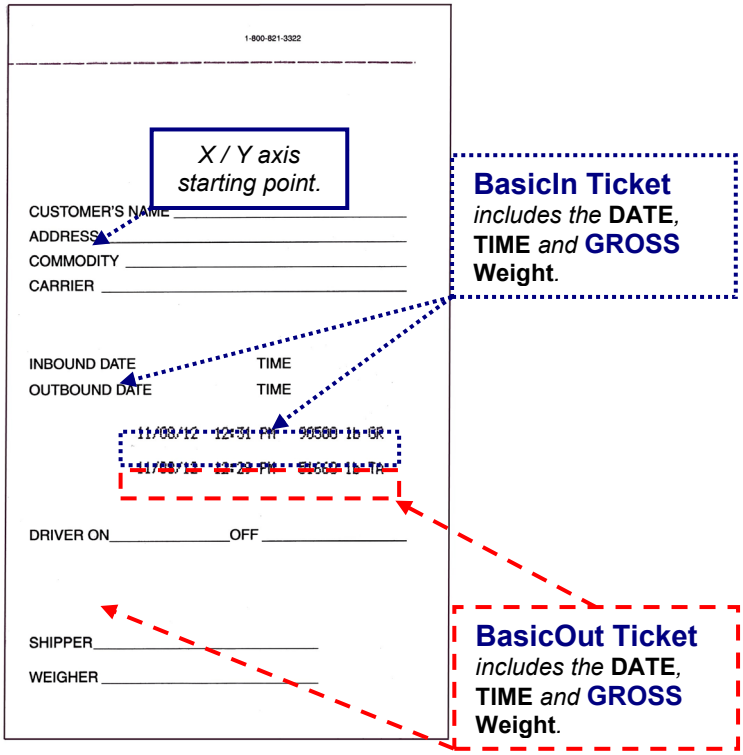


OUTBOUND TICKET *includes the* **DATE, TIME, GROSS, TARE and NET Weights**. *Also includes the* **TICKET NUMBER and LOOP ID NUMBER.**

Keypad Formatting Buttons

UNITS: Inserts new format line ***before***.
B/G/NET: Inserts new format line ***after.***
ZERO: Deletes the current format line.
OUT: Prints entire Format Script.
MENU: Saves ticket format.
– Steps back one level.
ENTER: Saves all data input..
PRINT: Prints a sample ticket.
RED Button: Exits to **Weigh Screen**.
GREEN Button: Deletes Format Script.

9.3.9. BasicIn and BasicOut Ticket Formatting



*This image shows the printed areas and other defined elements of the **BasicIn** and **BasicOut Tickets**.*

BASICIN

1-Write <TimeIn >
2-Space <1>
3-Write <DateIn >
4-Space <1>
5-Write <GroSS >
6-Space <1>
7-Write <UnitSGroSS >
8-Space <1>
9-WriteText <"GROSS" >
10-Feed <1>
11-ReleaSe < >

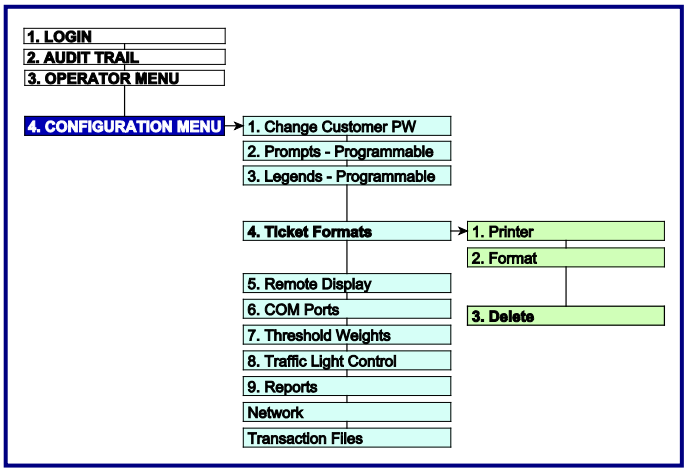
BASICOUT

1-Feed <2>
2-Space <1>
3-Write <TimeOut >
4-Space <1>
5-Write <DateOut >
6-Space <1>
7-Write <GroSS >
8-Space <1>
9-Write <UnitSGroSS >
10-Space <1>
11-WriteText <"TARE" >
12-Feed <1>
13-ReleaSe < >

NOTE: *Tickets programmed in the **BasicIn** and **BasicOut** formats can be set up as the customer requests, within the boundaries of the ticket size.*

– *The one displayed above is shown as an **example only**.*

9.3.10. Deleting a Ticket Format



Follow these steps to **DELETE** *a ticket format, and then reset to the* **factory default.**

1. In the **CONFIGURATION MENU**, press the **DOWN arrow** until TICKET FORMATS displays, then press **ENTER.**
2. When PRINTER displays, press **ENTER**.
3. Press the **DOWN arrow** until the desired printer displays, then press **ENTER**.
4. Press the **DOWN arrow** until SELECT FORMAT displays, then press **ENTER.**
5. Press the **DOWN arrow** the **Ticket Format** to be deleted displays, then press **ENTER**.
6. When ENABLED or DISABLED displays, press **ENTER**.
7. Press the **DOWN arrow** until DELETE displays, then press **ENTER**.
8. Press the **DOWN arrow** until YES displays, then press **ENTER** to delete the current ticket format and replace with the default format.

APPENDIX I: DATA STRING OUTPUTS

A. Remote Display Output

DATA FORMAT

<STX><A><0><SP/–><XXXXXX><ETX>

NOTES:

1. Characters denoted by X are characters 0-9.
2. Leading zeroes are suppressed.
3. Polarity indication for a positive value is a space (SP).
   - Negative values are not transmitted.
4. Identifier code <4><0> = Gross weight.
   - Transmission is Gross Only.
5. Transmission for the DEMAND Mode occurs when a carriage return (CR) HEX 0D is received.
6. See **APPENDIX V** for more ID Codes.

B. Configure Output

The Continuous Computer Output is an uninitiated, unrequested output that gets transmitted at a fixed time interval.

THURMAN/TOLEDO DATA FORMAT

<STX><A><B><C><GGGGGG><TTTTTT><CR>

Character String Description:

STX - Start of Text character (02 Hex)
A - Status Word A
B - Status Word B
C - Status Word C
G (gross weight data) - xxxxxx Displayed Weight : x = Weight
- 6 characters if the graduation size does not have a decimal point.
- 5 characters if the graduation size does have a decimal point.
  The decimal point is not sent as part of the character string.

T (tare weight data) - xxxxxx Tare Value : x = Tare
- (6 characters if the graduation size does not have a decimal point.)
- (5 characters if the graduation size does have a decimal point.
  The decimal point is not sent as part of the character string.

CR - Carriage Return Character: (0D hex)
CS - CheckSum Character: If enabled, this character consists of the last eight bits of the binary sum of all characters transmitted up to this checksum character.

B. Configure Output, Continued

STATUS CODE (WORD) A

Bit #	X00	X0	X	X.X	X.XX	X.XXX	X.XXXX	X.XXXXX
0	0	1	0	1	0	1	0	1
1	0	0	1	1	0	0	1	1
2	0	0	0	0	1	1	1	1

THURMAN/TOLEDO DATA FORMAT

INCREMENT SIZE

Bit #		Count By 1		Count by 2		Count by 5
3		1		0		1
4		0		1		1
5				Always Logic 1		
6				Always Logic 0		
7				Parity Bit		

STATUS CODE (WORD) B

Bit #	Description			
0		Gross = 0		Net = 1
1		Positive = 0		Negative = 1
2		In Range = 0		Overcapacity = 1
3		No Motion = 0		Motion = 1
4		Lb = 0		Kg = 1
5		Always Logic 1		
6		Normal = 0		Power Up = 1
7		Parity Bit		

B. Configure Output, Continued

STATUS CODE (WORD) C

Bit #	Description			
0		Always Logic = 0		
1		Always Logic = 0		
2		Always Logic = 0		
3		Normal = 0		Print Switch Pushed = 1
4		Always Logic = 0		
5		Always Logic = 0		
6		Normal = 0		Keyboard Tare = 1
7		Parity Bit		

CARDINAL 738 CONTINUOUS SCOREBOARD DATA FORMAT

<CR><P><WWWWWW>Period (.)<m><SP><u><SP><g><SP><SP><ETX>

Character String Description:

CR – Carriage return
P – Polarity (**+** = Positive weight, **-** = Negative weight)
W – Displayed weight
- 6 characters if the graduation size does not have a decimal point.
- 5 characters if the graduation size does have a decimal point.

m – Motion or o = Overload
SP – Space
U - Units (lb = pounds, kg = kilograms)
g – Gross or **n** = Net
ETX - End of text

- Leading zeros are not suppressed
- If division size has no decimal point, set the decimal to "trailing".
- If division size has a decimal point, set the decimal to "floating".

B. Configure Output, Continued

WEIGHTRONIX DATA FORMAT

<SP><G><WWWWWW><SP><U><U><CR><LF>

Character String Description:

SP – Space
g – Gross or **n** = Net
W – Displayed weight
- 6 characters if the graduation size does not have a decimal point.
- 5 characters if the graduation size does have a decimal point.

SP – Space
U – Units (lb = pounds, kg = kilograms)
M – Motion
CR – Carriage return
LF – Line feed

- Leading zeros are not suppressed.
- There is no motion character.

CONDEC CONTINUOUS DATA FORMAT

<STX><SP><SP><WWWWWW><U><G><M><CR>

Character String Description:

STX – Start of Text character (02 Hex)
SP – Space
SP – Space
W – Displayed weight
- 6 characters if the graduation size does not have a decimal point.
- 5 characters if the graduation size does have a decimal point.

U – Units (L = pounds, K = kilograms)
G – Gross; N = Net
M – Motion
CR – Carriage return.

- Leading zeros are suppressed.

APPENDIX II: REMOTE SERIAL COMMANDS

COMMAND	DESCRIPTION
A	Sets the Auto Tare Weight on scale.
G	Turns the traffic light Green. — Used in Manual Mode only.
LA	Changes Traffic Light to **Automatic Mode**.
LM	Changes Traffic Light to **Manual Mode**.
R	Turns Traffic Light Red. — Used in the **Manual Mode** only.
Txxxxx	Sets Tare on scale — Where **xxxxx** equals the tare weight value required.
U	Toggles Units on scale.
Z	Zeroes the scale.
P	Prints a ticket for the active scale.
W	**Demand Request** for a Weight output using **PC Polled**.

APPENDIX III: CONNECTING TO THE TS60X VIA ETHERNET

Connecting via the Web Utility using an ethernet crossover cable

NOTE: *If you are not using a keyboard and mouse on your PC or if you are using a Tablet, touch and hold will act as a 'Right Click'.*

To access the current IP address of the TS60X:

1. Login to the TS60X
2. Scroll *down* to CONFIGURATION.
   Press ENTER
3. Scroll *up* to NETWORK
   Press ENTER
4. Use DHCP? is displayed.
   Press ENTER
   Depending on how the TS60X has been configured DHCP or STATIC will display. Follow the instructions below for DHCP or STATIC:

If DHCP is displayed…

5. Scroll down to STATIC and press **ENTER**:
6. Use DHCP? is displayed.
   Scroll down to STATIC IP and press **ENTER**
7. IP ADDRESS is displayed
   Enter the IP ADDRESS as:
   192.168.100.XXX and press **ENTER**
   XXX must be **greater** than 001
8. IP ADDRESS is displayed and press **ENTER**
9. Scroll *down* to NETMASK and press **ENTER**
   Enter the NETMASK as:
   255.255.255.000 and press **ENTER**
10. Scroll *down* to GATEWAY and press **ENTER**
    Enter the GATEWAY as:
    192.168.100.001 and press **ENTER**

11. Scroll down to PRIMARY DNS and press **ENTER**

    Enter the PRIMARY DNS as:

    008.008.008.008 and press **ENTER**

12. Scroll *down* to APPLY CHANGES

    Scroll *down* to YES and press **ENTER**

13. Press the RED Traffic light button twice to return to the weigh screen

If STATIC is displayed…(continued from Step 4 on previous page)

5. Press **ENTER**
6. IP ADDRESS is displayed and press **ENTER**
7. The TS60X IP address is displayed

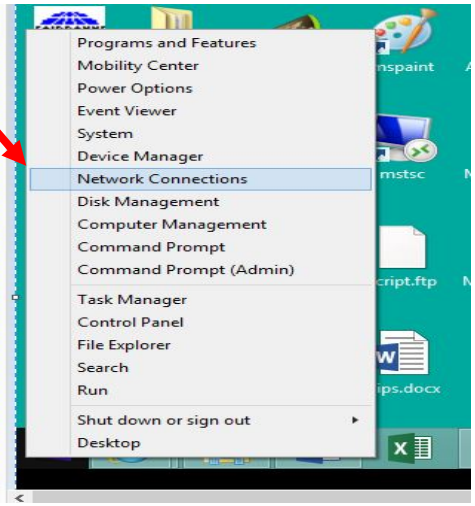
   XXX.XXX.XXX.XXX
8. Use the right arrow to scroll to see the whole IP address
9. Write down the IP address

Procedure:

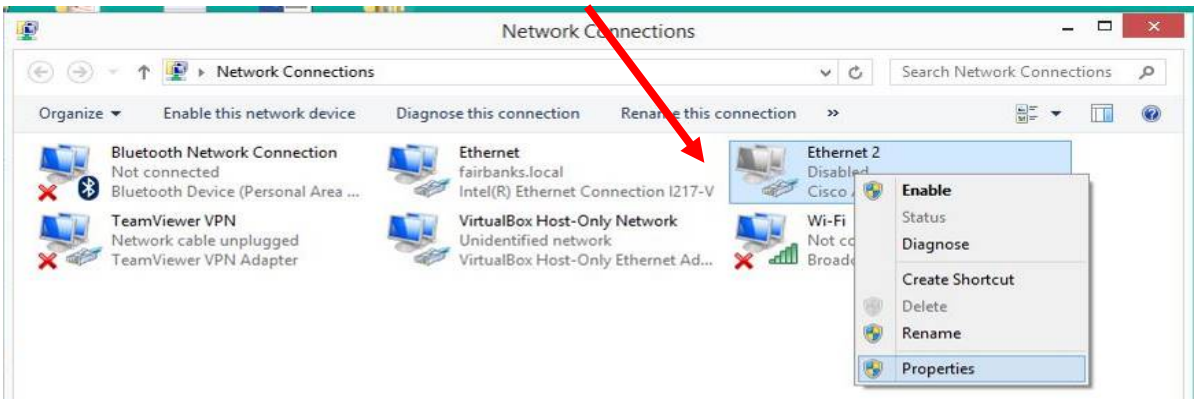
1. **FOR TABLET USERS ONLY** - Plug in your USB to ethernet adaptor
   a. If you are using a PC with **Windows 8**, proceed directly to step 2

2. Right click on the **Start menu** (Windows Logo)

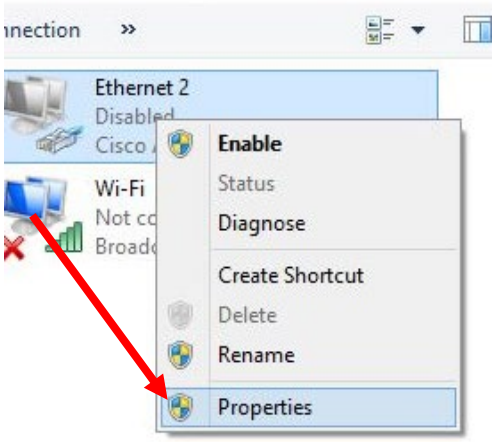
3. Click on **Network Connections**



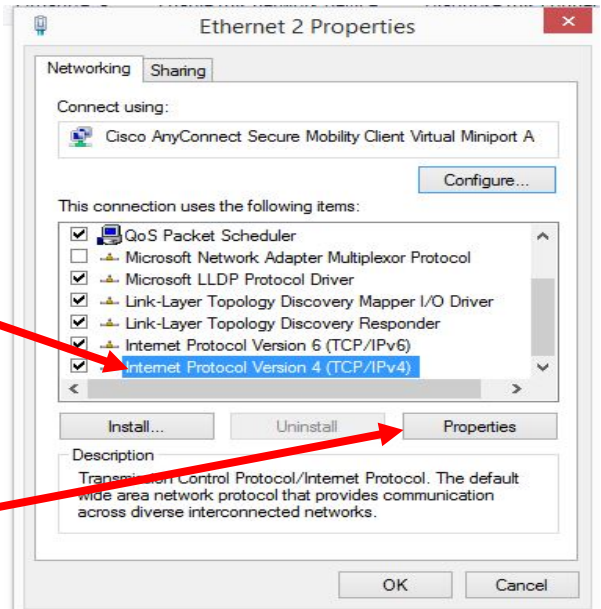
4. Right click on **Ethernet Connection** for the adapter (it may state **ETHERNET 2**)



5. Click on **Properties**

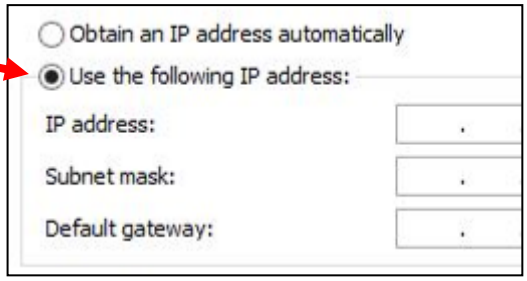


6. Click on internet protocol **Ver. 4 TCP/IP 4**

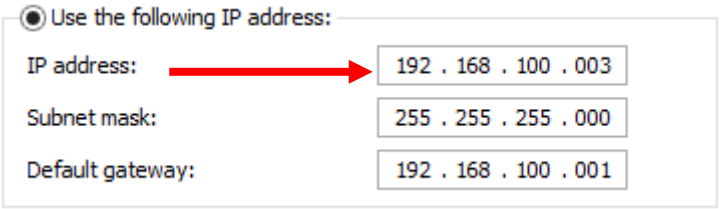


7. Then click on **Properties**

8. Click **Use the following IP address:**



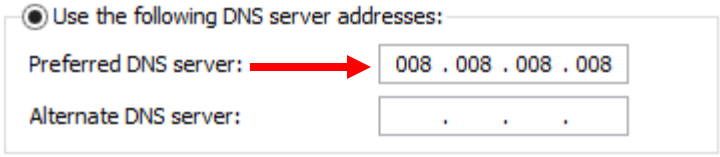
9. Enter the IP address of the instrument here, but make the last number in the IP address **at least 1 number higher** than the instrument.



10. Click in the Subnet Mask box and enter 255.255.255.0 as shown.

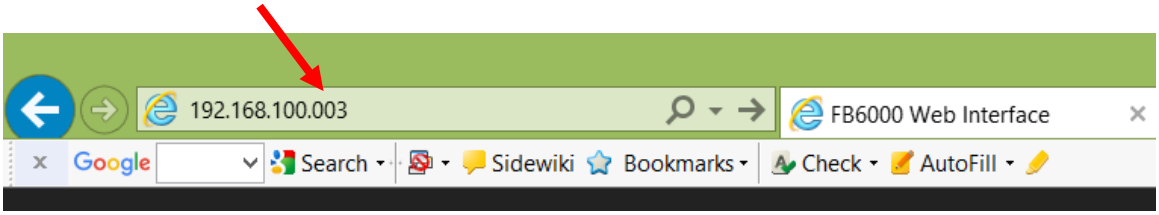
11. Click in the Default Gateway box and enter 192.168.100.001 as shown.

12. Click in the Preferred DNS server box and enter 008.008.008.008 as shown.



13. Click **OK** close this window.
14. Connect your PC or Tablet to the instrument using the ethernet cable.
15. Open your browser (Internet Explorer, Chrome or FireFox)

16. Enter the IP address of the instrument in the browser address bar



WHEN USING CERTAIN BROWSERS, YOU MADE NEED TO INCLUDE LEADING ZEROS WHEN ENTERING THE IP ADDRESS.

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Groveport, Ohio 43215
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