User's Guide

WeighSync DC

Communication Software

METTLER TOLEDO

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1 WeighSync DC User's Guide

1.1. System Requirements

This chapter covers
- System Requirements
- Starting the Application
- Configuration
- Collecting Data
- Detail View, Reports and Exporting Data
- Diagnostic View and Troubleshooting

WeighSync requires the following:

- An open USB port (for installation, and for license key)
- Microsoft® Windows 8 or later
- .NET version 4.5
- 512 MB RAM (2 GB recommended)
- 2.4 GB hard drive space

1.2. Installation

- When installing WeighSync, the PC user must be logged in and have administrative rights to install software for "all users."

1. Plug in the supplied USB memory drive. Either the computer will recognize the drive automatically (step a), or it must be configured manually (step b).
   a. Once detected, the drive will be mapped and a message will display, offering options. Select Open folder to view files.

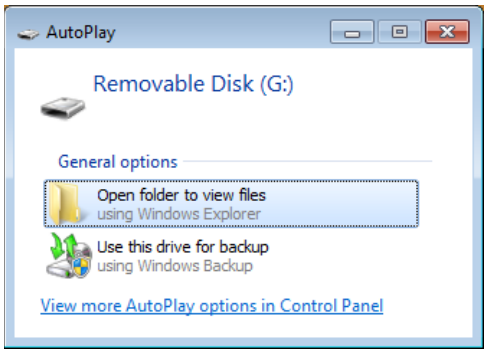

Figure 1-1: USB AutoPlay Options Dialog

   b. If the USB device is not automatically detected, follow the troubleshooting tips for mapping the device to a drive. Once the device is mapped, open Windows Explorer and navigate to the newly-mapped USB drive, then double click setup.exe to start the installation process.

2. The files on the memory drive will be shown in a Windows Explorer window (Figure 1-2). To start installation of WeighSync, double click setup.exe.

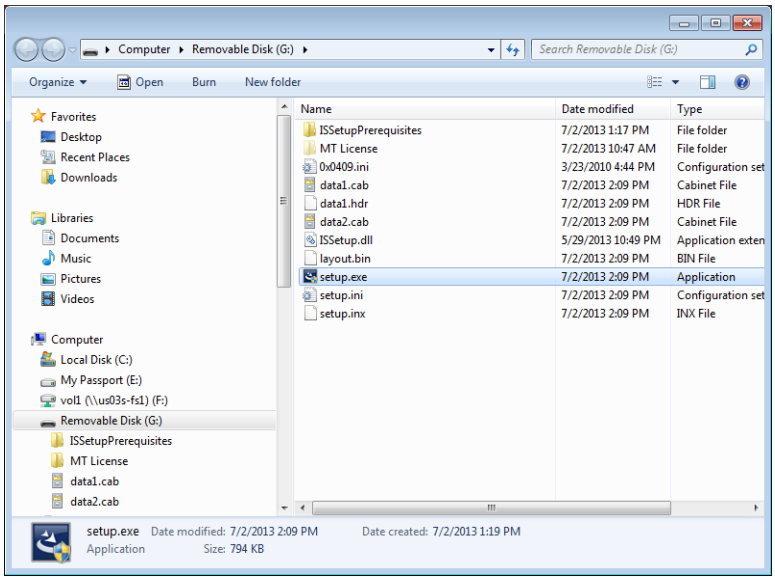

Figure 1-2: USB Contents Displayed in Explorer

3. The InstallShield Wizard will begin the installation process.

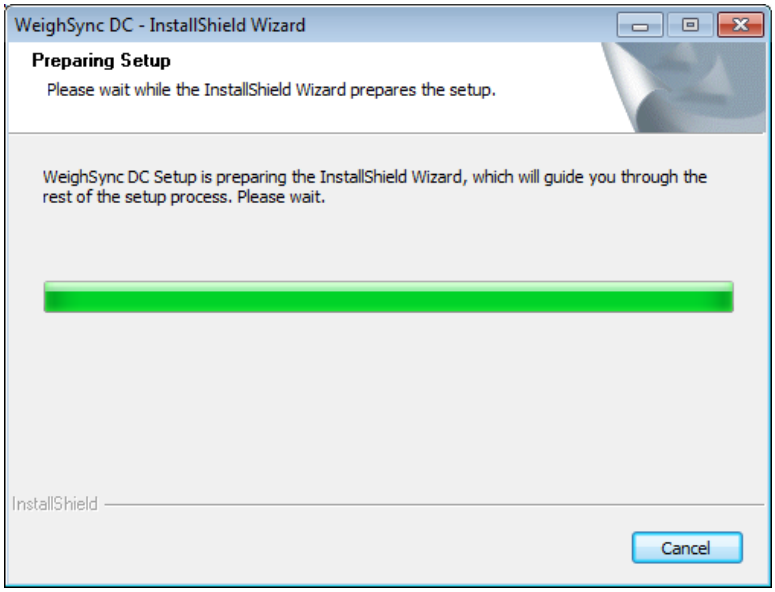

Figure 1-3: InstallShield Wizard Starting

4. Once the Wizard is running, click **Next** to begin the installation.

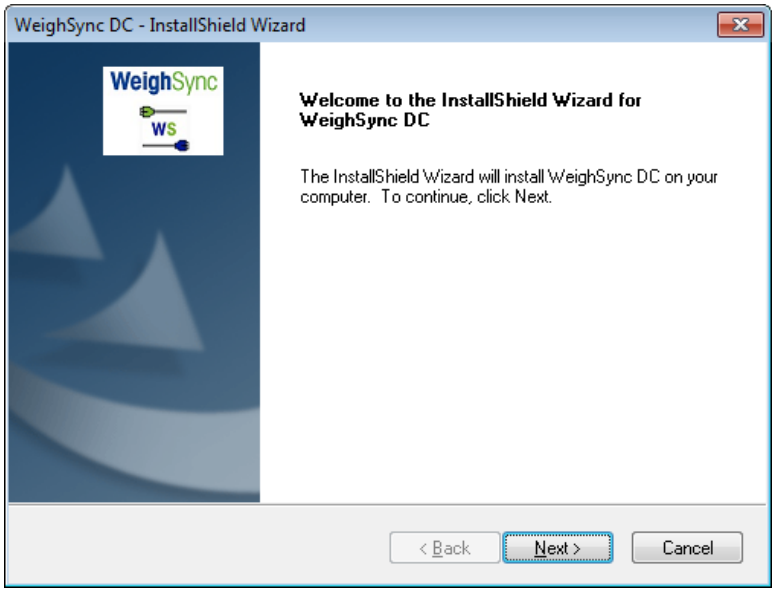

Figure 1-4: InstallShield Wizard Ready to Run

5. Before the software is installed on the PC, the EULA (End User License Agreement) must be acknowledged. If you do not agree with the licensing terms, you may cancel the installation or select **I do not accept the terms of the license agreement**. Either selection will cancel the installation process. To continue, you must agree to the licensing terms by selecting **I accept the terms of the license agreement** and clicking the **Next** button.

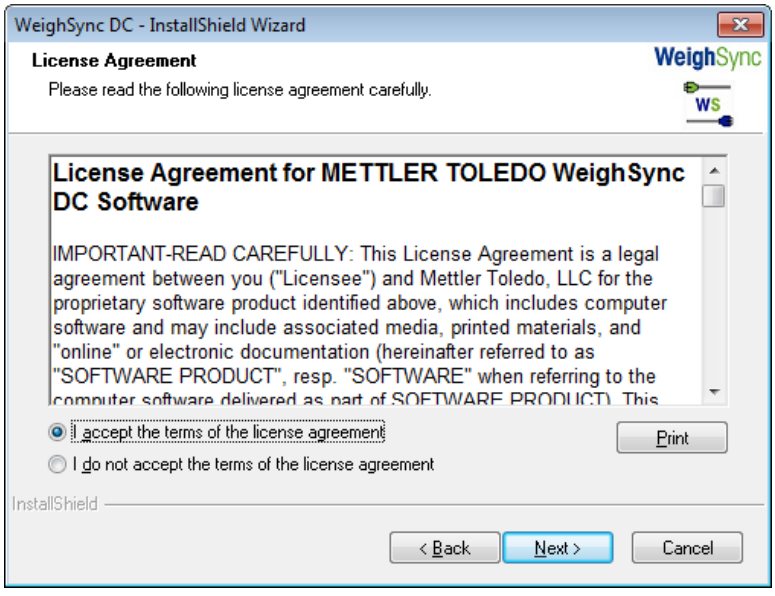

Figure 1-5: EULA Screen

6. In the screen that appears (Figure 1-6), click **Install**.

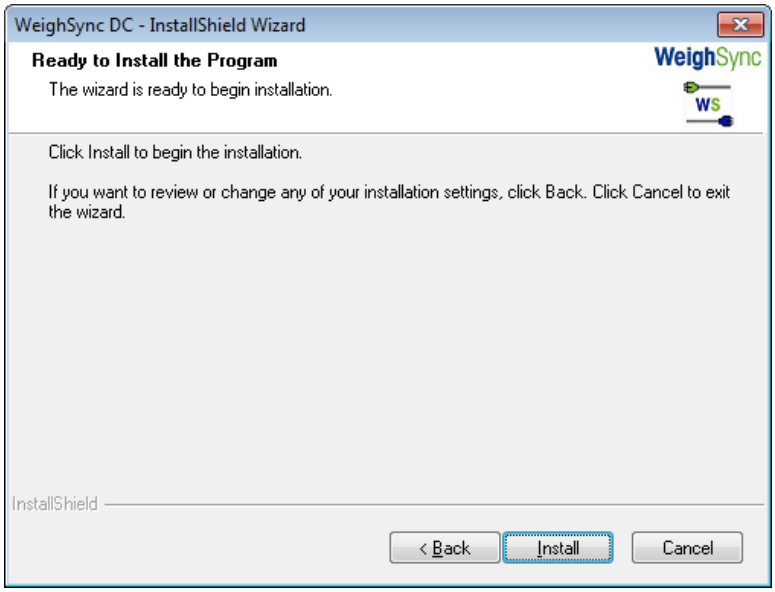

Figure 1-6: Ready To install

7. A screen appears indicating the progress of the setup process.

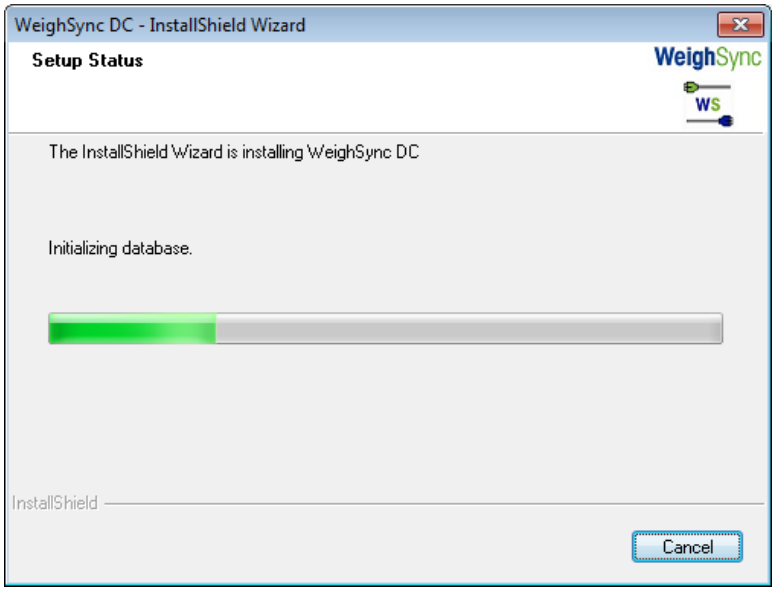

Figure 1-7: Setup Progress Screen

8. As the installation progresses, the message above the progress bar will change as components of the software are loaded. The progress bar will advance until the installation is complete. During this process, a named instance of SQL Server Express 2012 will be added (WeighSync), with one default table. Then the WeighSync application components will be installed – the communication service, its system tray component, and finally the WeighSync application itself.

9. Once the installation is complete, a final message will be presented (Figure 1-8).

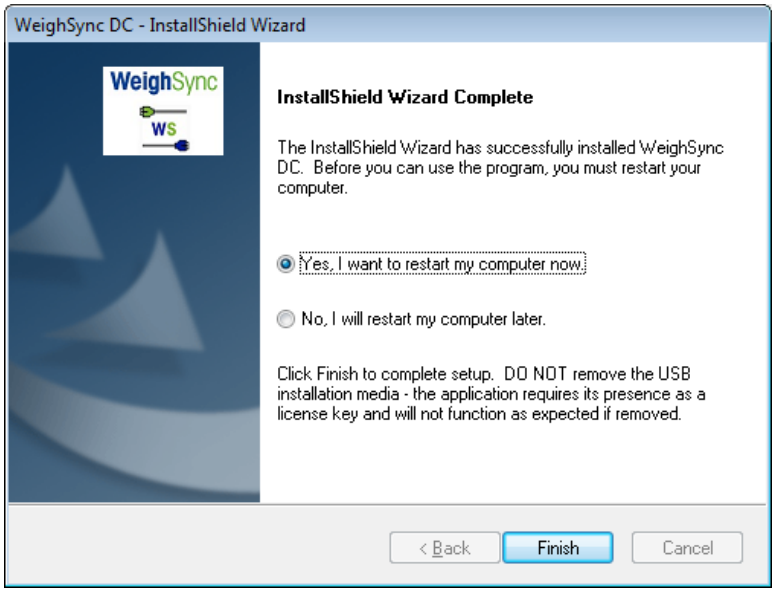

Figure 1-8: Installation Complete

- Restart the computer **before** running WeighSync for the first time.

10. Click **Finish** to complete the installation wizard. If the **restart my computer now** option is selected, the computer will reboot. Otherwise, the wizard will close and the desktop state before the installation began will display. The computer must be restarted **before** attempting to use WeighSync.

NOTICE
DO NOT REMOVE THE USB MEMORY DEVICE WHEN THE WEIGHSYNC APPLICATION IS RUNNING. IT CONTAINS THE LICENSE KEY, AND THE APPLICATION EXECUTING ON THE PC WILL CHECK TO SEE IF IT IS PRESENT IN ORDER TO OPERATE FULLY. IF IT IS REMOVED, THE SOFTWARE WILL OPERATE FOR A TRIAL PERIOD. ONCE THE TRIAL PERIOD HAS EXPIRED, THE SOFTWARE WILL NO LONGER COLLECT DATA. NORMAL OPERATION WILL RESUME ONCE THE USB MEMORY DEVICE IS CONNECTED AND THE APPLICATION FINDS A VALID LICENSE KEY.

1.3. Starting the WeighSync DC Application

Once a valid installation has been completed, the WeighSync communication service will run in the background. To configure the service, the WeighSync DC application should be started. This can be accomplished in any of three ways:

- By running the .exe file from the **Program Files\Mettler Toledo\WeighSync DC** subdirectory (Figure 1-9).

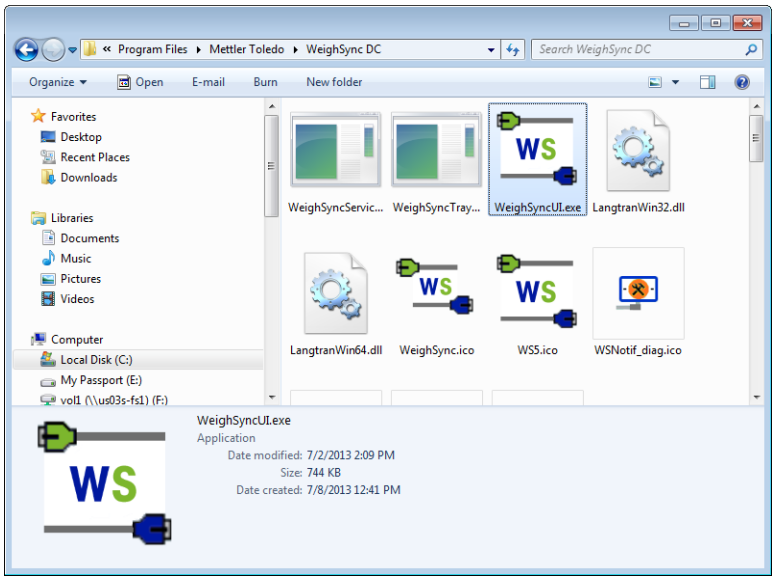

Figure 1-9: WeighSync Program File Folder

- By launching the application from the tray icon menu (Figure 1-10).

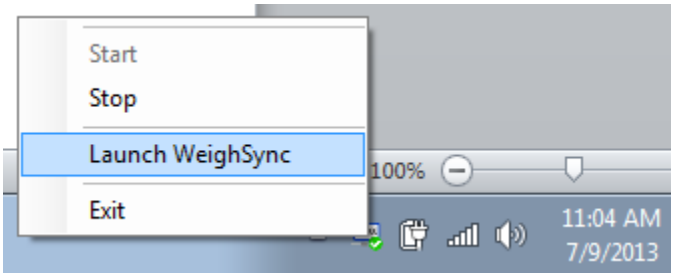

Figure 1-10: WeighSync in System Tray

- By double clicking the icon on the desktop (Figure 1-11).

Figure 1-11: WeighSync Desktop Icon

If the USB memory device is not found because it is not installed in a USB port, the application will start as a trial version and display the message shown in Figure 1-12 will display.

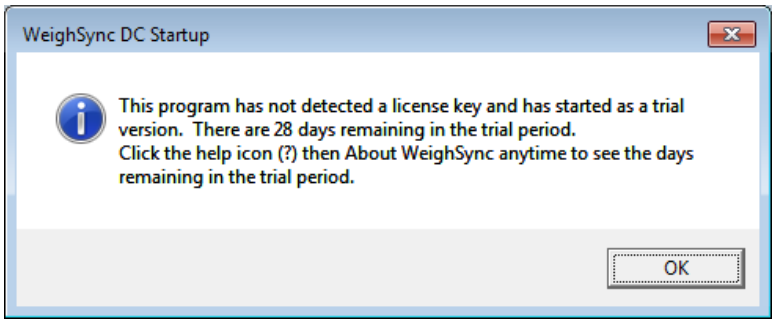

Figure 1-12: Trial Period Message

To insure proper operation of the full application, leave the USB device plugged into the PC so that the license file can be found and the application can run beyond the trial period.

1.4. Configuration

Once the software is installed and the application has been started, the next required step is configuration. At least one connected device must be added and configured in order for the communication service to start gathering data.

1.4.1. Pre-Configuration Tasks

Before WeighSync can be considered, application-specific decisions must be made:

- What type of **connection** will be used – Ethernet or serial? What connection parameter values will be used (IP address, baud rate, etc.)?

  Verify what the connected terminal's settings are for the planned connection. Refer to the terminal's documentation for instructions on viewing or changing its configuration settings.

- What type of **data** will be sent – what fields or pieces of information will be included? What is its structure?

  Verify the data connection setting of the terminal to determine what data will be sent. Demand Print data can be structured differently depending on specific terminal features. Most support single line or 3-line (or multi) formats of gross weight, tare weight, and net weight data. Some advanced terminals support field based print templates that allow the user to configure a custom structure and choose the application-specific data to be included.

  Terminal table data is based on their existing table structures.

- What **trigger** will cause the data to be sent – will the terminal send it automatically? Will it be collected when an operator chooses (button click)? Or will it be collected based on a timer or schedule?

  If the terminal automatically sends print data **or** an operator at the terminal will press its print button, then the communication service considers this an automatic trigger and does not need to send a command to the device to get data. If an operator wishes to request data from the

WeighSync application (through the use of a command button) or if a scheduled time should be used to collect data, either a manual or timed trigger should be used.

- Which **table** will be used to store the collected data – will the default table be used? If not, what will the new table name and structure need to be?

  The default table has been set up to contain the three required fields (PC time/date stamp, device ID, and a unique record ID) in addition to several data fields (gross weight, tare weight, net weight, weight unit, high target, low target, target, upper tolerance, lower tolerance, deviation, quantity, APW, and reference count). This table structure allows all default data from the provided templates to be stored in the default table. However not all devices use every field so using it may leave certain fields empty in some cases. If additional fields are needed or if a different table is desired, the table must be structured before creating a new connection that will use it. Not all fields sent need to be stored in the table – the communication service can parse out unwanted data.

Once the pre-configuration tasks are completed, configuration can start.

1.4.2. Step 1: Configure a Table to Store Data

To edit the default table or create a new table for the collected date, first navigate to the connection setup screen by clicking on the **Setup** button indicated in Figure 1-13.

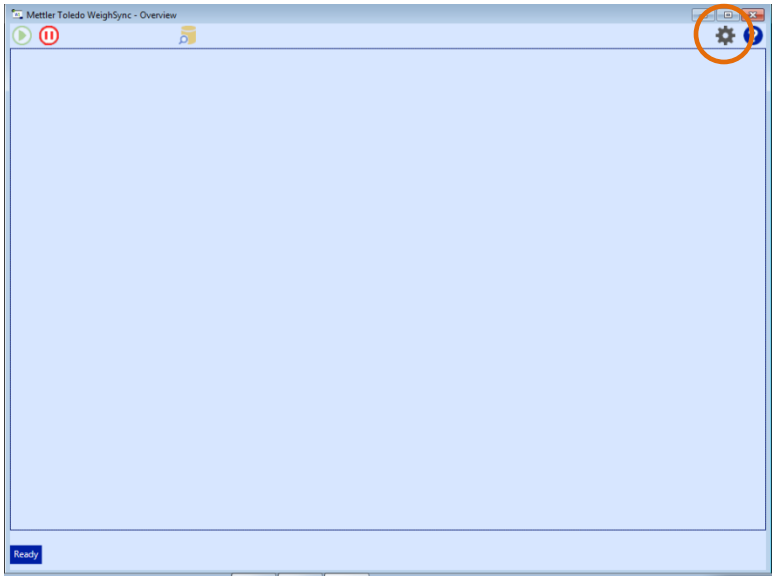

Figure 1-13: WeighSync Overview Screen, Setup Button Indicated

The application will display a dialog warning that data collection will stop when Setup is accessed.

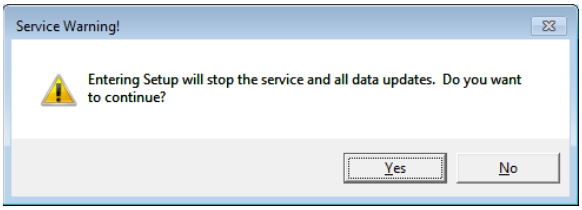

Figure 1-14: Service Warning Message

Click "Yes" to continue to the Setup screen.

From this screen, new connection can be added or removed. First, however, set up the table by clicking on the Table Configure button indicated in Figure 1-15.

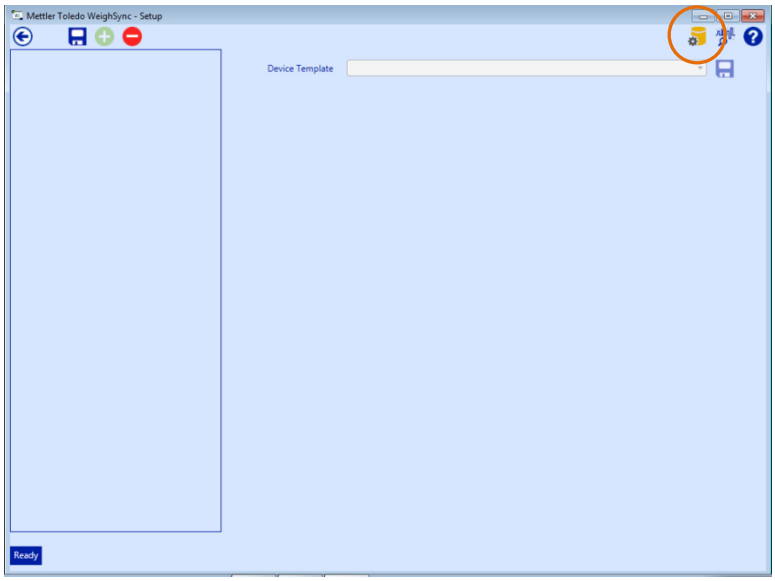

Figure 1-15: Setup Screen, Table Configure Button Indicated

From the Tables screen, existing tables can be edited or deleted and new tables created. SQL Server 2012 Express is used as the database, so all its rules for field and table names should be followed – no punctuation characters (such as /, ;) in names, no numeric start character, etc..

The default table – DefaultWS – has fields for all four pieces of data from a three-line print of gross, tare, and net weight data. It also includes fields for unit, high target, low target, target, upper tolerance, lower tolerance, deviation, quantity, APW, and reference count data.

- Do not delete the default table, as it is used by the default connection.

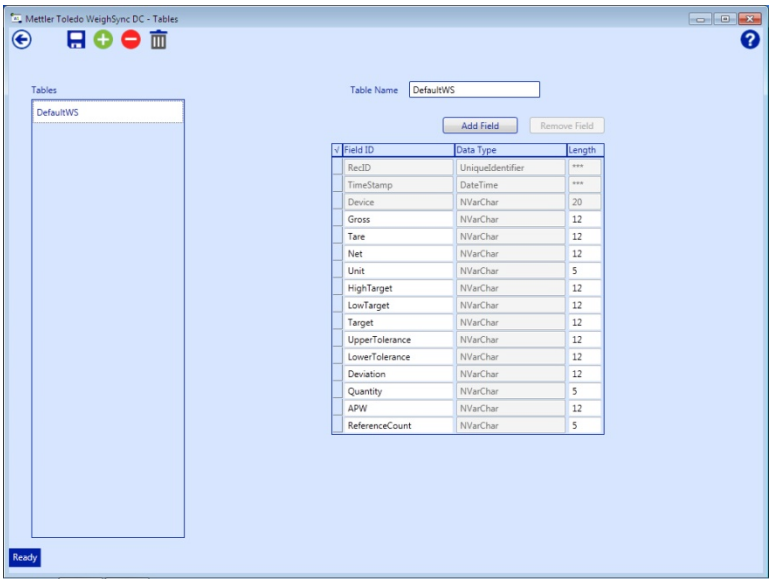

Figure 1-16: Table Configuration Screen, Default Table Displayed

1.4.2.1. Editing Tables

The structure of the table in focus will be shown to the right of the table list. It can be edited by using the **Add Field** and **Remove Field** buttons. **Add Field** will add another field after the last in the list. The **Remove Field** button will remove the selected field. Select a field by clicking on the small box to the left of the Field ID. Focus will be indicated when the selected field selection box is displayed in white (Figure 1-17).

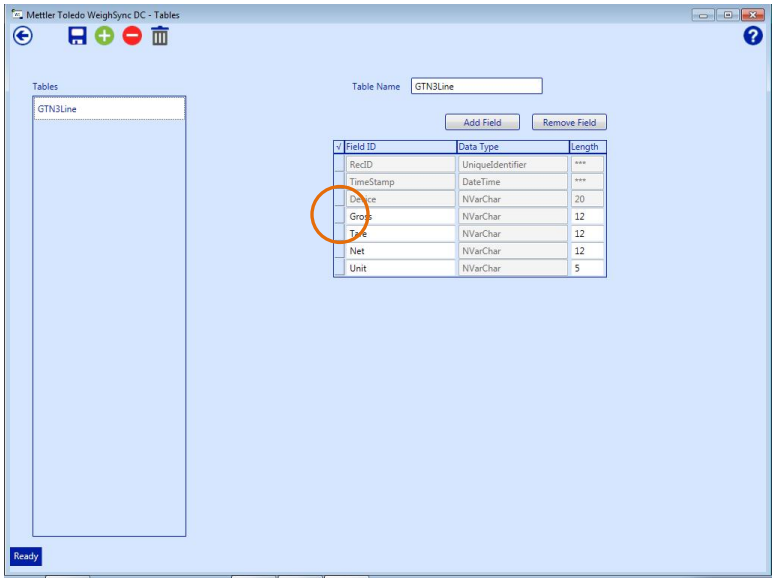

Figure 1-17: Table Field Selected

When a new field is added, the **Field ID** and **Length** must be provided. All user fields are stored as NVarChar (strings) and must conform to the length and format requirements of the SQL server.

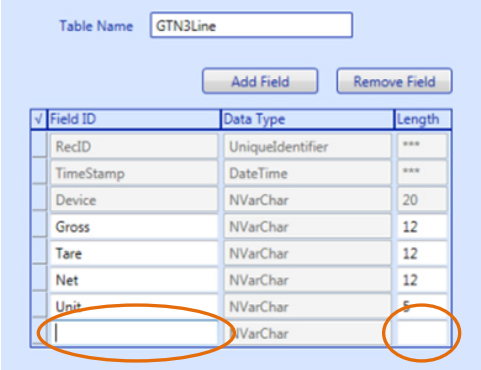

Figure 1-18: Required Entries for New Field

To save field changes (additions, deletions and modifications) to a table, use the Save button .

1.4.2.2. Deleting a Table

To remove a table, select it in the **Tables** list at left and click the **Remove Table** button to delete the selected table

- **WARNING**: Removing a table deletes any data it contains, and this data cannot be recovered.

1.4.2.3. Adding a Table

To add a new table, use the **Add Table** button .

For each new table, a table name must be entered and the required fields added. All tables are created with three default fields – RecID, TimeStamp, and Device. These fields are supplied by the communication service when it stores data from the connected device.

Once the database setup is completed, click the Back button to return to the connection setup screen.

The application will warn about any unsaved table edits. Click on "Yes" or "No" depending on whether or not the changes should be saved.

1.4.2.4. Clearing Data from a Table

To remove data from a table (for example, after it has been exported as .**csv** data), select the table from the Tables list and click on the **Delete table data** button . This will clear all existing records from the table, but it will **not** delete the table from the database.

1.4.3. Step 2: Create a New Connection

Once a table is configured, a connection can be created. When table edits are complete, the application returns to the **Setup** screen (Figure 1-15, accessible from the home screen by clicking the Setup button .)

From the Setup screen, device connections can be added and removed. It is important to remember that only limited edits can be done to saved connections. If major changes are required, the connection should be removed and added again.

- A connection configuration can be saved as a template for reuse when recreating a deleted connection or defining a similar, new one. Refer to Appendix A, **Using Templates**, for details.

To save connection changes (add, remove, edit), use the Save Connection button .

To remove a connection, use the **Remove Connection** button to delete the selected connection from the list .

To add a new connection, use the **Add Connection** button .

1.4.4. Step 3: Configure the New Connection

When the Add Connection button is clicked, a new connection instance is added to the connection list at the left of the screen.

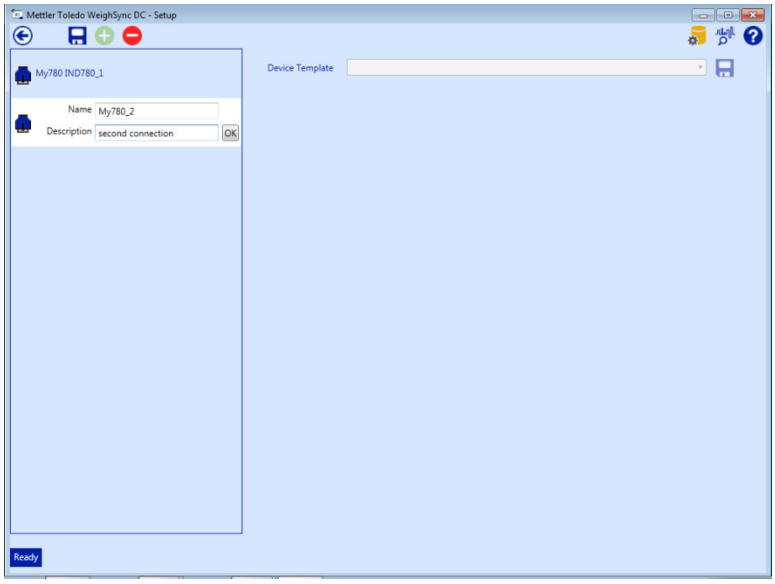

Figure 1-19: Connection Added to List

A name and description should be entered for the connection. The name is limited to 20 characters in length, and must conform to the length and format requirements of the SQL server. The name will be used for the device field in the stored data. The description is a longer field used as part of the device ID to provide additional information in the connection label.

Once a name and description are entered, a default configuration for three line print, serial data is used as a starting point for the new configuration. This configuration can be used, or it can be modified, or another existing configuration template can be selected using the **Device Template** drop-down.

- **WARNING**: once the connection is saved, only the port/baud rate/data bits/parity, IP Address/Port, or Data Map can be changed! **Connection Type**, **Protocol**, and **Trigger** parameters cannot be edited after the connection is saved, so do not save until **all** configuration data is set up. A template (refer to Appendix A, **Using Templates**) can be used to store a re-usable configuration. This simplifies re-creating a deleted connection.

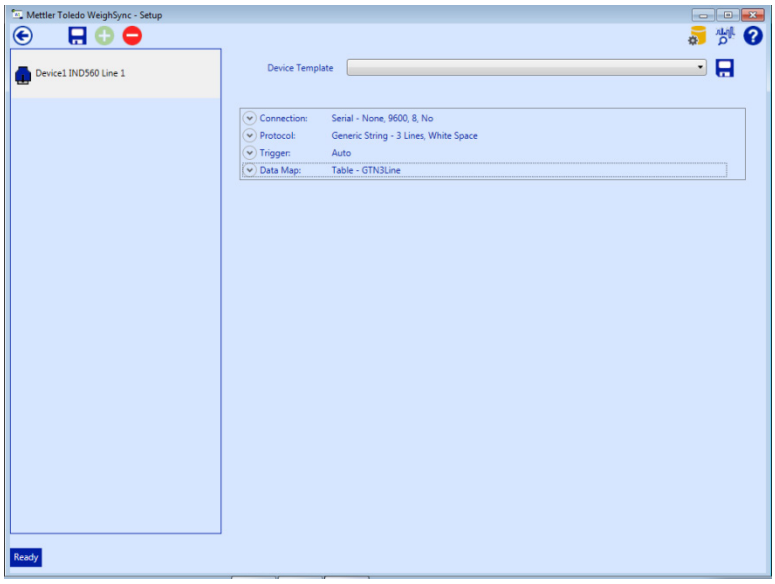

Figure 1-20: Connection Configuration

Each of the connection sections – **Connection**, **Protocol**, **Trigger**, and **Data Map** can be viewed and changed if necessary. Click on the expansion button to the left of the label to see details for each section. Collapse expanded sections by clicking on the button again when the section is expanded. Available selections may depend on prior selections – for example, the **Ethernet** selection shows **IP address** while **Serial** shows **Port**.

The information from the pre-configuration tasks will now be used to complete the connection configuration. If a pre-existing template is available for the data you plan to use, once it is selected most of the connection protocol, trigger and data mapping configuration steps may be skipped. If you are using your own configuration or modifying an existing template, your new configuration parameters can be saved as a unique template for re-use with duplicate device connections.

1.4.4.1. Step 4: Connection Type Configuration

Expand the **Connection** section and select the connection type to use.

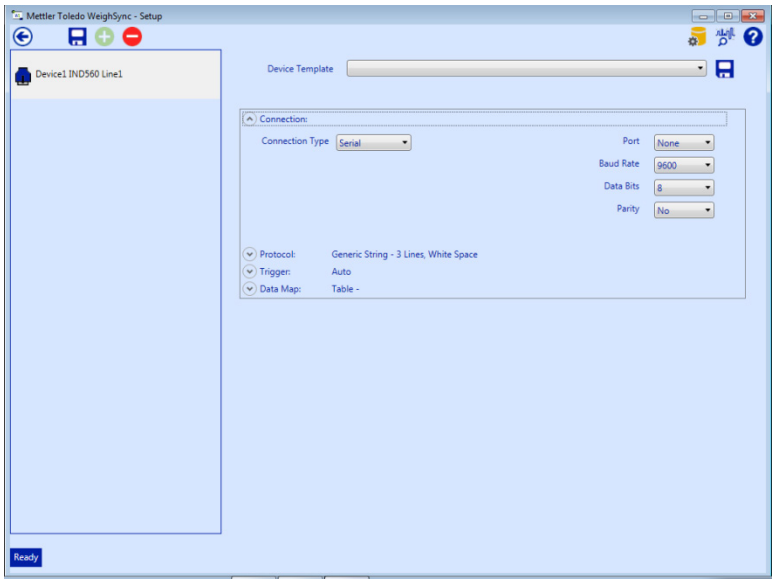

Figure 1-21: Connection Type Configuration – Serial

For serial connections, a PC Com Port must be selected (whether via USB or serial port), and Baud Rate, Data Bits, & Parity settings that match the serial port configuration of the terminal. Most METTLER TOLEDO terminals have a default setting of 9600, 8, None.

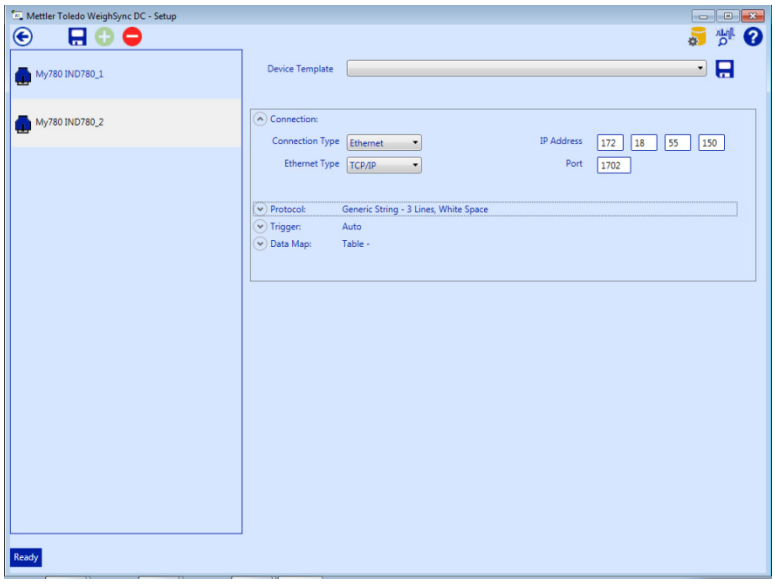

Figure 1-22: Connection Type Configuration – Ethernet

To establish a socket connection to the device, Ethernet connections require the entry of an **IP address** and terminal **Port** number, in addition to the Ethernet type (TCP/IP or UDP). Most METTLER TOLEDO weighing terminals use TCP/IP.

If all other configuration parameters match requirements, skip to **Step 8: Saving the Connection**.

1.4.4.2. Step 5: Connection Protocol Configuration

Three types of protocols are supported – **Generic String**, **Fixed String**, and **Table**.

Generic String can be used for single- or multi-line data that is separated by white space or a definable character. This could be fixed demand print data, template print data, or simple host protocols (SICS, etc.) The character set expected, the number of lines, the line termination character, and the delimeter type must be defined.

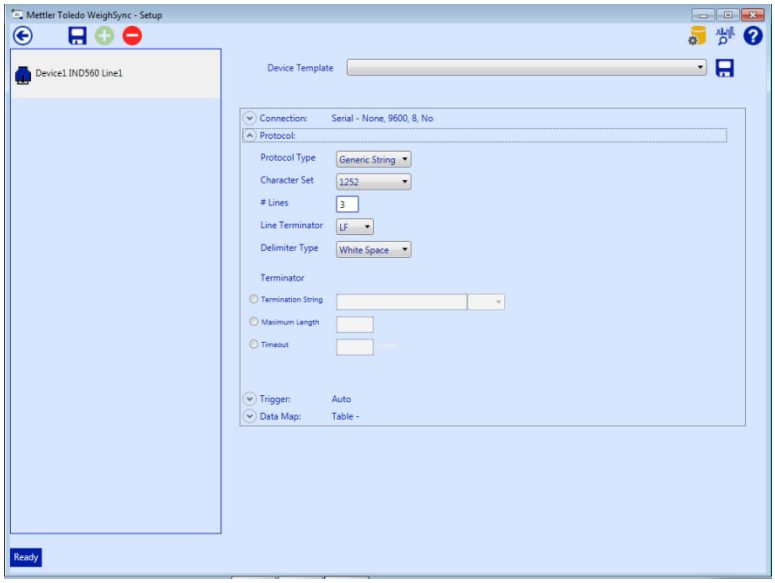

Figure 1-23: Connection Protocol Configuration – Generic String

Optional parameters (character string, length, or timeout) are supplied for string termination. Control characters can be added to the termination string by selection from the drop-down list.

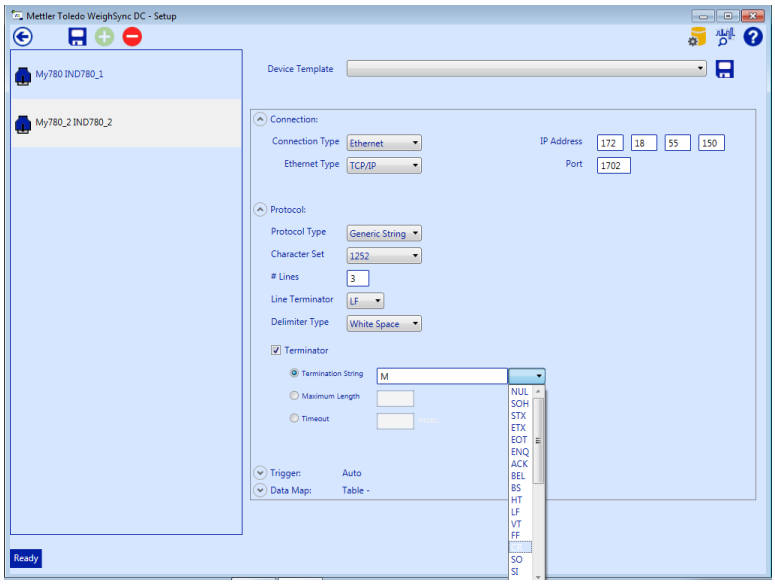

Figure 1-24: Connection Protocol Configuration – Ethernet

Character set selections allow the expected data from the device to be matched: 1251 – Russian, 1252 – All Latin languages, 437 – MS DOS US, 850 – MS DOS Latin 1, Chinese GBK – Simplified Chinese, UTF-7 – Unicode (older format), UTF-8 – Unicode (most widely used format).

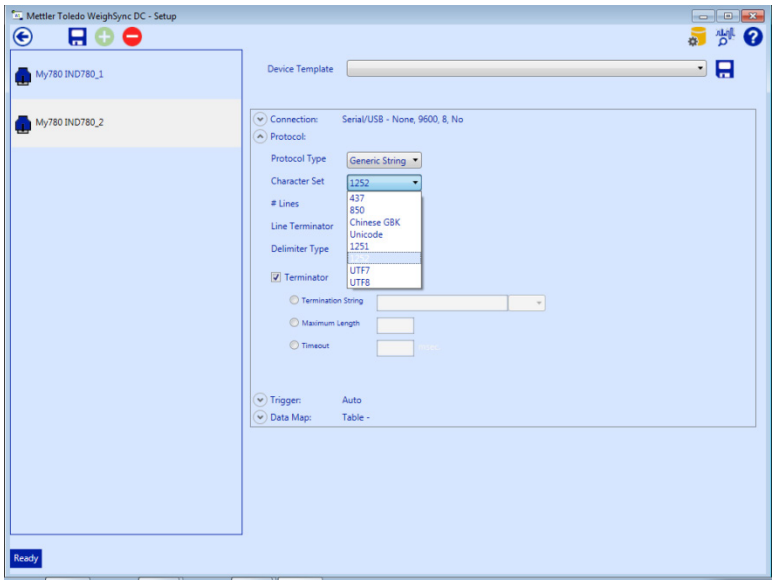

Figure 1-25: Protocol Configuration – Character Set Selections for Generic String

Fixed string is typically used for single line data, but multi-line data is supported. Fixed string data has a definable size for each data field within the data sent, so no delimiter is required. Instead, each field requires the offset from the start of the string and the string length to be defined – refer to **Step 7: Connection Data Map Definition**. This could be fixed demand print data, template print data, or simple host protocols (SICS, etc.), as long as the data never varies in size. The character set expected, number of lines, and the line termination character must be defined. Optional parameters (character string, length, or timeout) are supplied for string termination.

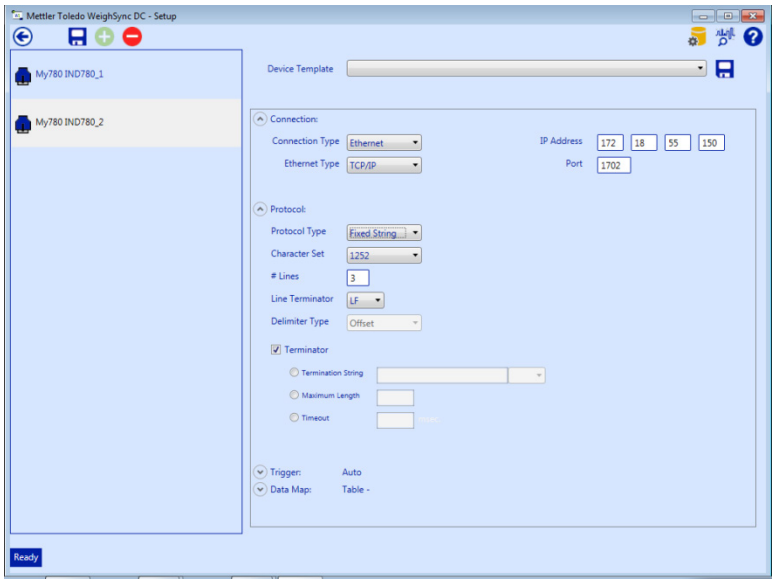

Figure 1-26: Protocol Configuration: Fixed String

Table protocols are pre-defined for specific terminals and tables: IND780 Tables A0-9, IND780 Alibi, IND560 Tables A0-9, IND560 Alibi, IND246 Transaction, and IND246 Alibi. Once the terminal is selected, an available table can be chosen. For terminals that support FTP transfer of the table (IND780 and IND560), an appropriate FTP username and password must be provided for access to the terminal.

Table protocols can only use **Manual**, **Timed** or **Scheduled** triggers, since the terminals cannot send tables automatically.

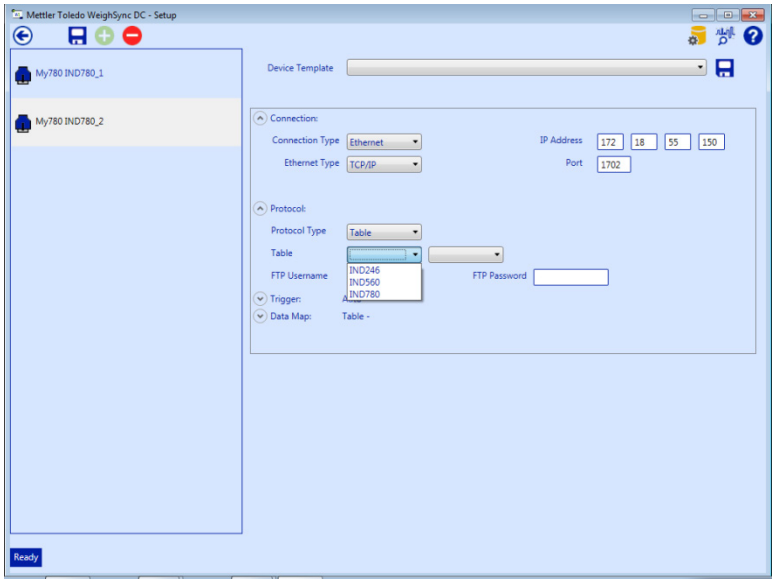

Figure 1-27: Protocol Configuration – Table Selection by Terminal

1.4.4.3. Step 6: Connection Trigger Type Configuration

Four trigger types are available – **Auto**, **Manual**, **Timed**, and **Scheduled**.

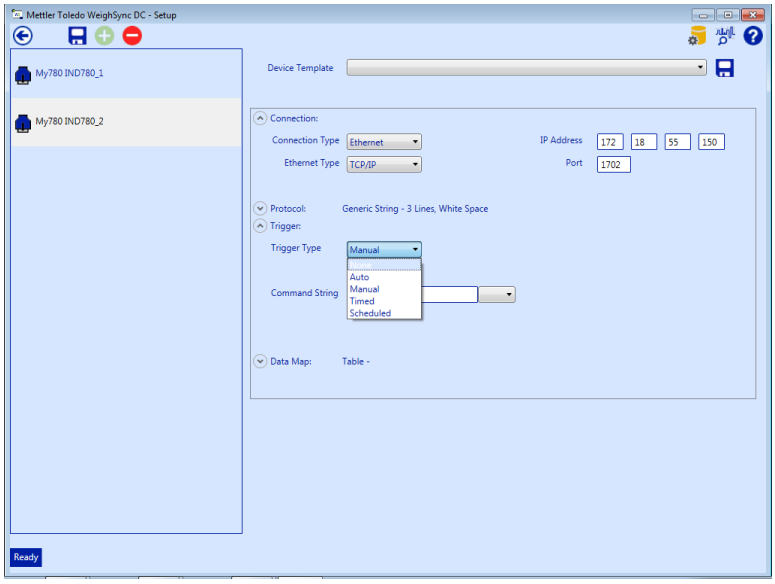

Figure 1-28: Trigger Configuration – Trigger Type Selection

Auto triggers require no command strings to request the data – the software expects the data to be sent automatically and waits for data to be sent. Once received, the data is parsed as defined by the **Protocol** configuration.

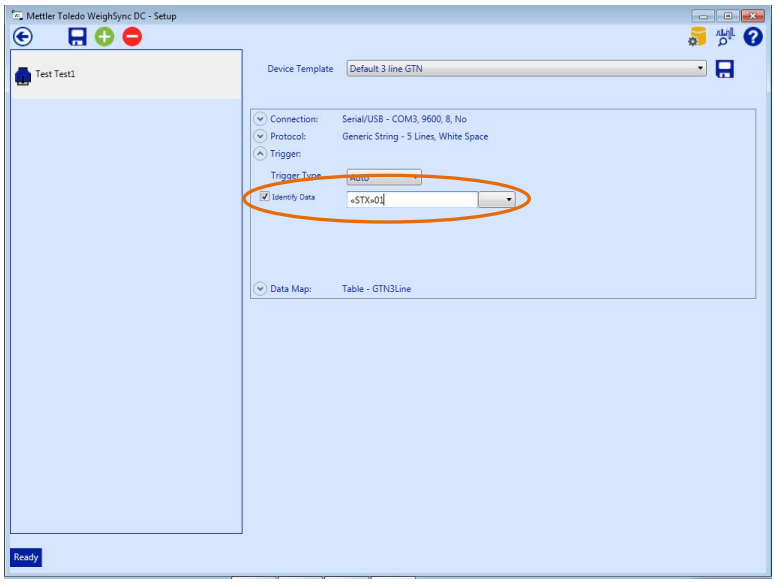

Figure 1-29: Trigger Configuration –Auto

The **Auto** trigger has an optional parameter used to distinguish the desired data string from unwanted data that might also be transmitted. To use this option, check the **Identify Data** box and add the characters found at the start of the data which distinguish good data from undesired data. The drop down box can be used to include control characters.

Manual, **Timed** and **Scheduled** all request data from the device.

Manual sends the command string defined in this setup and collects data when the device connection is selected (clicked). Control characters can be added to the command string by selection from the drop-down list.

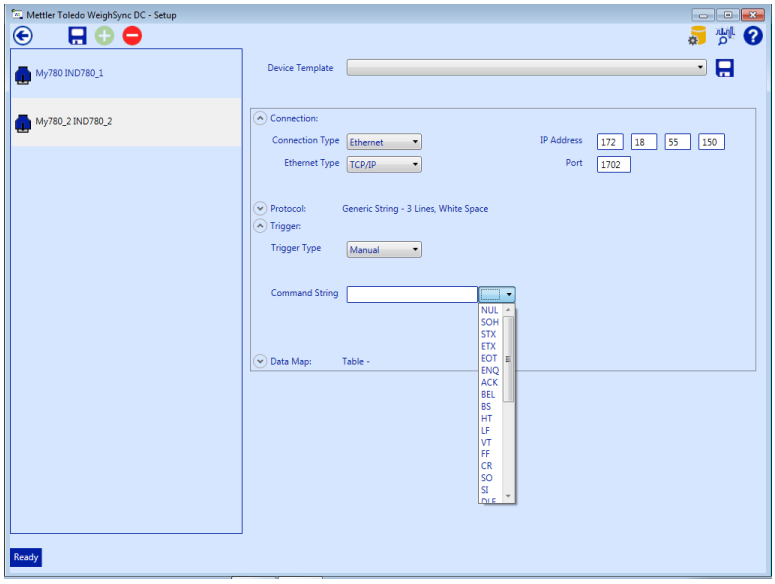

Figure 1-30: Trigger Configuration – Manual

Timed sends the command string defined in this setup and collects data after the specified time interval. The **Time Interval** value and period (in **Seconds**, **Minutes** or **Hours**) must be specified so that the communication service can determine how frequently to send the command. Control characters can be added to the command string through selection in the drop-down box.

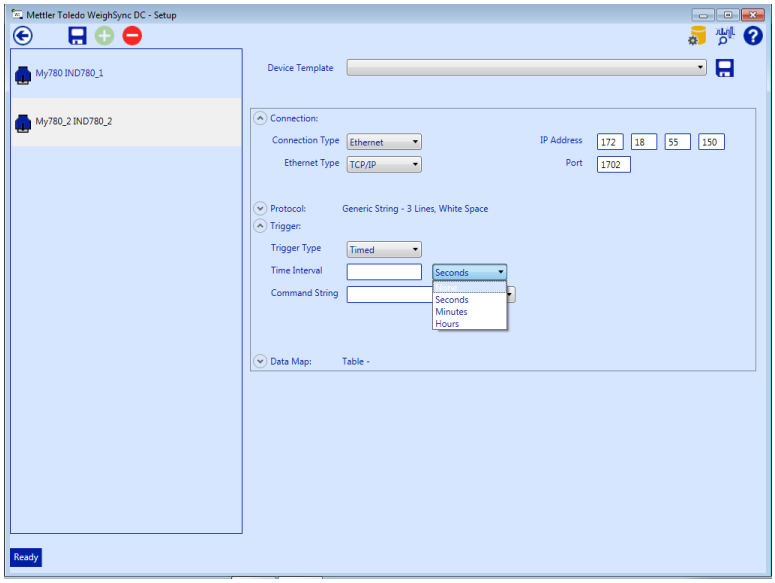

Figure 1-31: Trigger Configuration – Timed

Scheduled sends the command string defined in this setup and collects data on the specified time/day. Multiple scheduled data collection times can be specified. These can be either a single occurrence (specific date and time) or reoccurring days. Selections for **Recurrent** data collection include each week day and a daily selection, which causes data to be collected every day of the week. Control characters can be added to the command string by selection from the drop-down list.

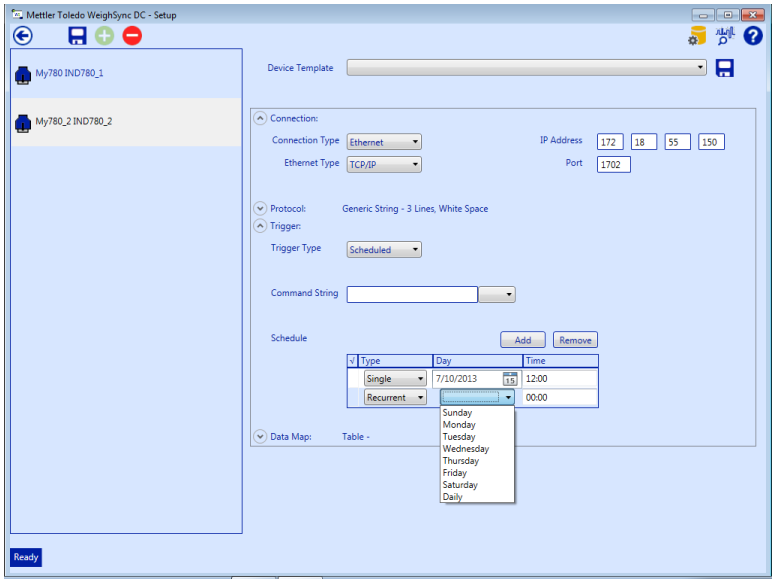

Figure 1-32: Trigger Configuration – Scheduled

1.4.4.4. Step 7: Connection Data Map Definition

Once the connection, protocol, and trigger have been defined, select the table used to store the data and map which data fields from the received data are to be used for each stored table field. The **Table** drop-down list shows all currently configured tables in the database.

If a new table is desired, it must first be configured through the table setup screen (refer to **Step 1: Configure a Table to Store Data**). Once a table is selected, its available fields will be shown.

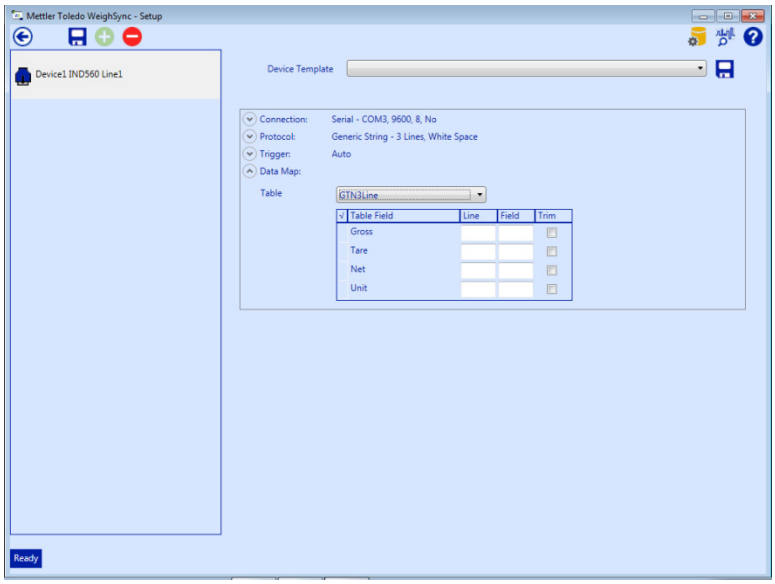

Figure 1-33: Data Mapping Configuration, Default Table Displayed

Data expected from the received communications should be assigned to the desired field.

- Not all fields in the table are required to be stored, but they will be blank if they are not assigned.

- Not all data from the string received must be mapped to storage fields in the table – the communication service will parse out unwanted data as specified in the protocol definition and the data mapping.

1.4.4.4.1. Generic String Protocols

Generic string protocols require a line and field value to determine what data is needed for each field. Field number values are determined by position in the line as defined by the specified delimiter.

For example, with white space used as delimiter, space characters will be used to separate the fields. For example:

Hello world your weight is 100.0 lb CRLF

In this case, there are 7 space-delimited fields:

field1= Hello
field2 = world
field3 = your
field4 = weight
field5 = is
field6 = 100.0
field7 = lb.

Note that multiple spaces count as a single delimiter. Thus, to save the weight, select line 1 field 6; to save the weight unit, select line 1 field 7.

1.4.4.4.2. Fixed String Protocols

Fixed string protocols require **Line**, **Offset**, and **Length** values in order to determine what data is stored in each field.

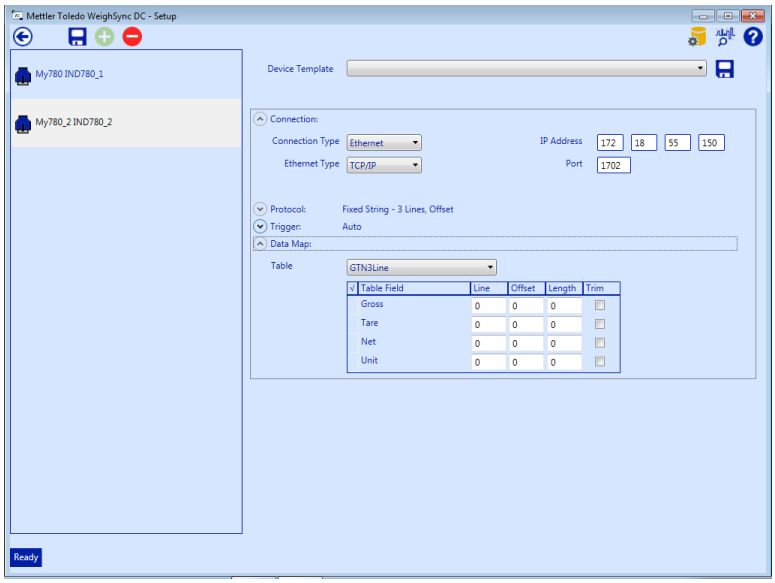

Figure 1-34: Data Mapping Configuration, Fixed String Protocol

For example, the following single line is sent:

AAABBBBB100.0XXXlbNNNN[CRLF]

To store the weight (100.0), enter **Line** 1, **Offset** 8, and **Length** 5. For the weight unit (lb), enter **Line** 1, **Offset** 16, and **Length** 2.

- The offset value should equal the character position minus one.
- Take care with weight units; they sometimes reserve 3 characters and pad shorter unit strings with spaces, in order to accommodate longer weight units (like ozt, ton, etc.) In the example above, this has not been done because a fixed string of "lb" is being sent.

1.4.4.4.3. Table Protocols

For **Table** protocols, a drop-down box of available fields from the table that was chosen in the protocol is shown.

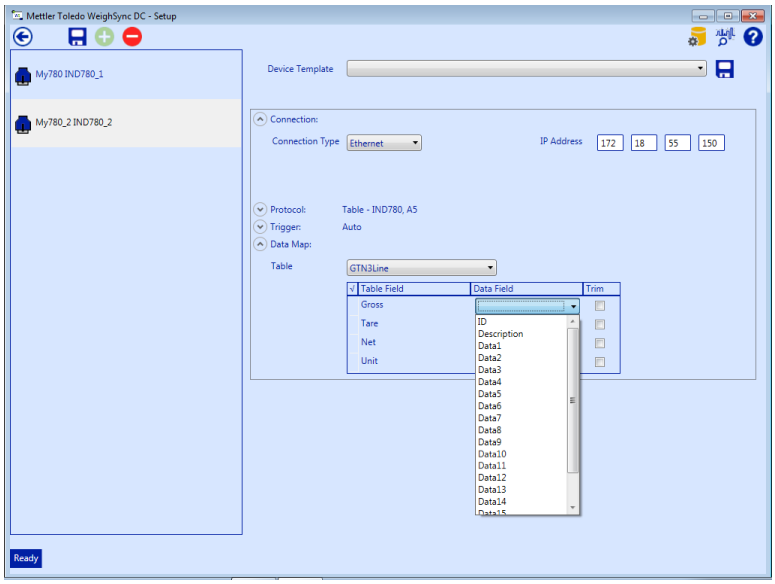

Figure 1-35: Data Mapping Configuration, Table Field Selection

1.4.4.5. Step 8: Saving the Connection

Click the **Save Connection** button to save all the connection configuration parameters

- **WARNING**: once the connection is saved, only the port/baud rate/data bits/parity, IP Address/Port, or Data Map can be changed! **Connection Type**, **Protocol**, and **Trigger** parameters cannot be edited after the connection is saved, so do not save until **all** configuration data is set up. A template (refer to Appendix A, **Using Templates**) can be used to store a re-usable configuration. This simplifies re-creating a deleted connection.
- The connection configuration "save" is separate from the configuration template "save". The application will warn when changes have not been saved to the configuration before exiting setup.

Once the configuration is saved, the communication service can be started and begin collecting data based on the saved configuration. To exit the setup screen and restart communications, use the Back button .

At this point the communication service can operate without the WeighSync UI application. It can receive data from connected devices and store this data based on the saved configuration in the background, with or without the application running.

1.5. Collecting Data

With a configuration saved and the setup screen closed, the overview screen will appear.

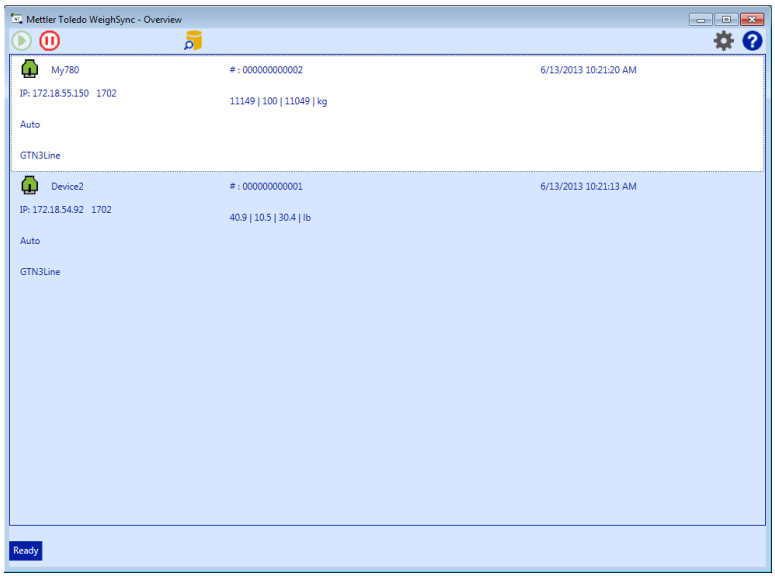

Figure 1-36: WeighSync Overview Screen

In this screen, the status of each connection is indicated by the color of graphic image at the left corner of each connection listing. The status indicator changes color based on the current connection status. The following colors are used:

- **Green** OK or good
- **Blue** Idle or unknown
- **Red** Disconnected or bad

Figure 1-37: Connection Status Indicator

The connection name is user defined in the connection setup. The simple configuration data consists of three parts:

The IP address for Ethernet connections or the COM port settings for serial connections

The selected protocol

The table used for data storage.

In addition, this view shows the number of times data has been received, the last time data was collected, and data from some of the most recent transmissions.

If a **Manual Trigger** has been defined for a connection, this is the screen that is used to issue the command to request data, by clicking on the connection's status icon. The icon will change color to indicate the status of the transfer of data.

Once a valid configuration has been made, this application can be exited and the data will continue to be collected in the background for any auto, timed or scheduled triggers. As long as the PC remains on and the service has not been stopped, data will be collected.

1.6. Detail View, Reports and Exporting Data

To view details about stored data, first select the device connection in the Overview screen, then click the details tool button .

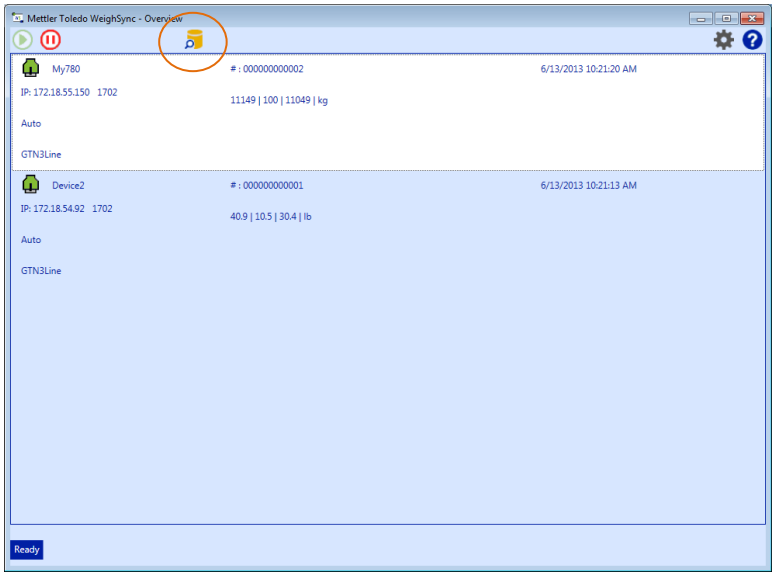

Figure 1-38: Device Connection Selected

The application will execute a query to the database in order to show all the stored transactions for this connection. Depending on the amount of data collected, this may take some time.

The results of this query are shown in a data grid (Figure 1-39). The data may be sorted by clicking on the column header desired for sorting. From this screen, the following actions are possible:

- Filter the data for specific results
- Search for specific data

- Export either the full table or the data in the view's current results as a CSV file
- Print simple fixed reports for either the full table or the data in the view's current results

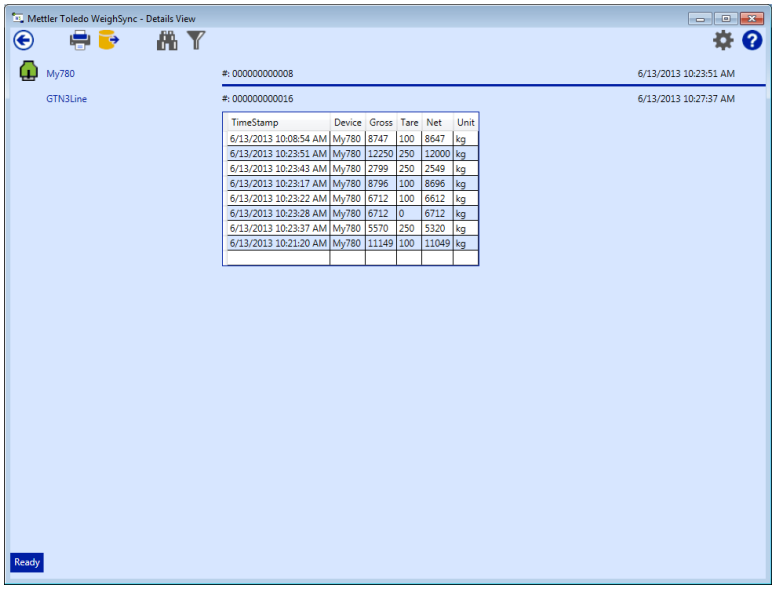

Figure 1-39: Detail View Data Grid

To filter the data, click on the **Filter** button to display the filtering dialog (Figure 1-40).

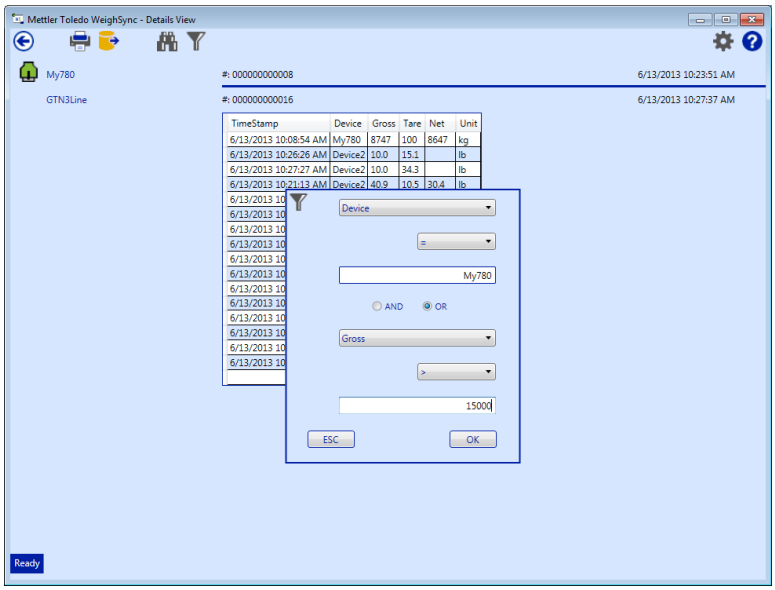

Figure 1-40: Detail View Filtering Dialog

Clicking on OK will execute a simple SQL query on the **full** current table, based on the filtering criteria selected. The data results may actually contain information from other devices if the query used does not exclude them, and this information will be displayed in the data grid, replacing any information that may have been there before the filtering query was run.

To search for specific data, click on the **Search** button to bring up the search dialog (Figure 1-41).

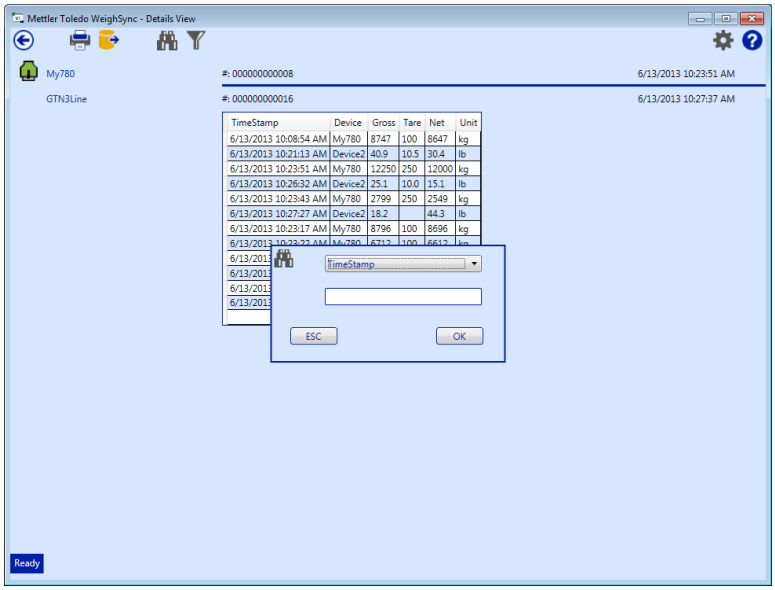

Figure 1-41: Data Search Dialog

Clicking on OK will execute a simple SQL query on the **full** current table, based on the search criteria selected. The data results may actually contain information from other devices if the query used does not exclude them, and this information will be displayed in the data grid, replacing any information that may have been there before the search was run.

To export data from the stored tables, click on the **Export** button to display the export dialog (Figure 1-42).

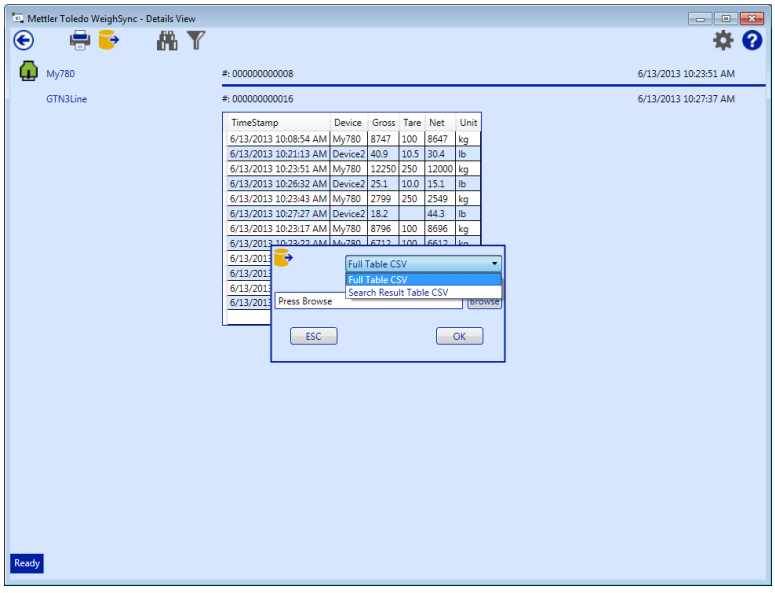

Figure 1-42: Data Export Dialog

This dialog allows the selection of either the full table or the current results for export. The exported data will be saved in a file and location selected using the Browse button.

To print simple reports of the table data, click on the **Print** button to display the print dialog (Figure 1-43).

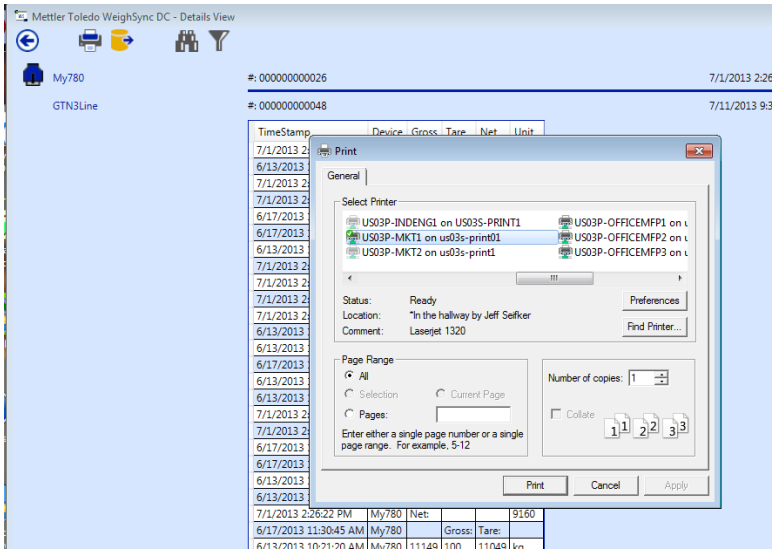

Figure 1-43: Table Data Print Dialog

Once a printer is selected, the data will be sent to it. The data can also be directed to a PDF file using common PDF print utilities. Figure 1-44 shows an example of data in PDF format, as it would appear in printed form.

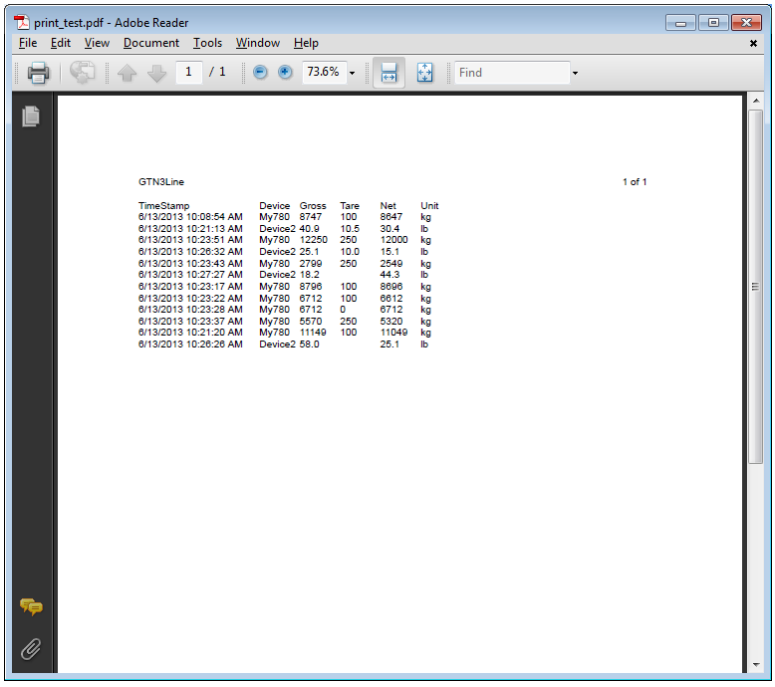

Figure 1-44: Example of Data in PDF Format

1.7. Diagnostic View and Troubleshooting

WeighSync includes a simple diagnostic view to help troubleshoot communication issues. This view allows the received data to be reviewed to make sure it is formatted as expected. The diagnostic view is accessed from the Setup screen by selecting the device connection to be used, then clicking on the **Diagnostics** button .

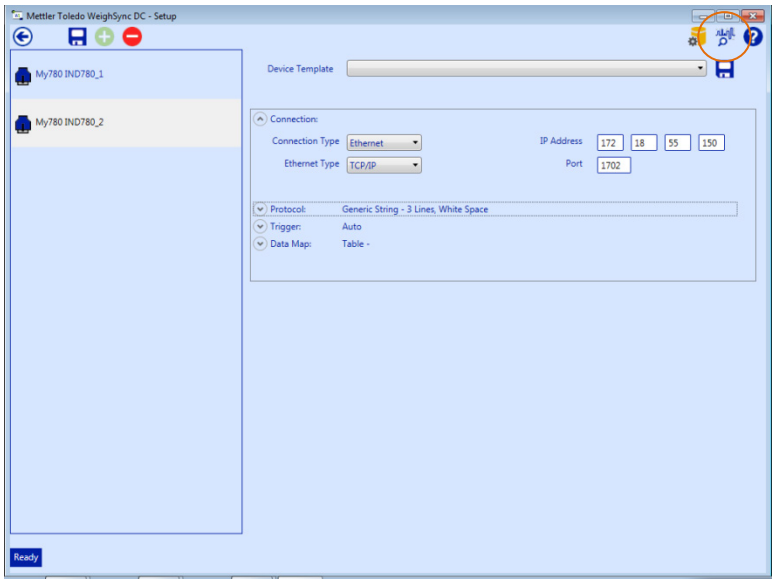

Figure 1-45: Setup Screen with Diagnostics Button

The diagnostics window (Figure 1-46) will display.

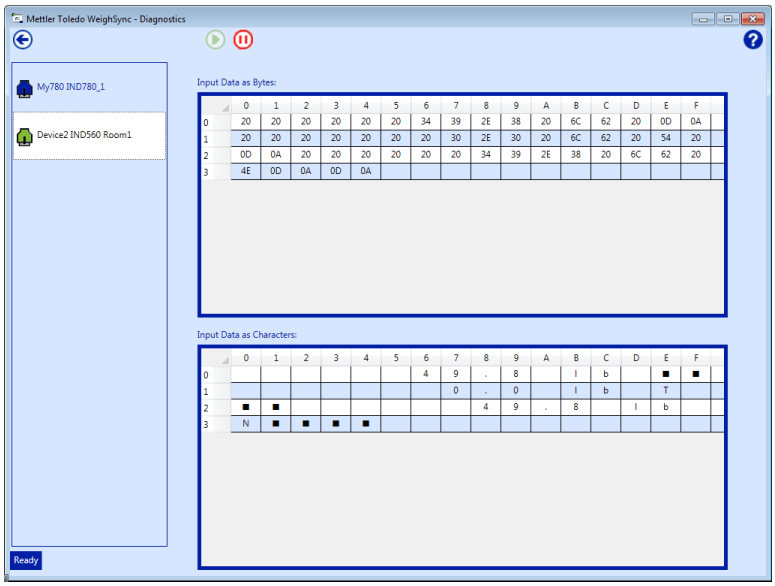

Figure 1-46: Diagnostics Window

From here, data communication can be started and stopped . The data received is shown in two formats: input data as bytes shown as hex values (upper pan) and input data as characters

shown as displayable characters (lower pane). The hex values allow non-printable characters to be evaluated while the character view presents the data in human-readable form.

A Using Templates

This appendix covers
- Selecting a Template
- Creating a New Template
- Template Definitions

Device Templates provide existing configurations as a starting point for devices that have default or duplicate setups. The WeighSync application has one default template – **Default 3 line GTN**. It also provides several others for device-specific defaults (for example, **IND780_eprint_template1**). The configuration of each template is provided in section A.3, Template Definitions, below. A template can be selected when a new connection is made. Once it is selected, although typically only the IP address or serial port configurations would change, any of the template's parameters can be modified as necessary, without changing the template.

A.1. Selecting a Template

Templates, including the defaults and those created by the user, can be selected from the **Device Template** drop-down box (Figure A-1).

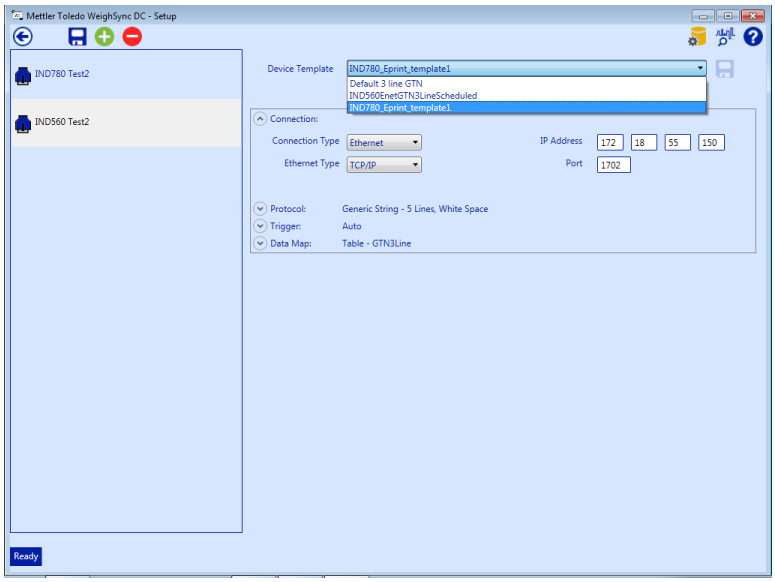

Figure A-1: Connection Definition: Device Template Drop-Down

Once the template is selected, the configuration can be modified as desired by clicking the expansion icons to display the **Connection**, **Protocol**, **Trigger**, and **Data Map** sections. Once all changes are made, save the connection by using the **Save Connection** button at upper left.

A.2. Creating a New Template

- New templates must be saved **before** the Connection is saved.

Any configuration created, or modified from another template, can be saved as a new template for later re-use. Once the configuration is setup as desired – but **before** saving the connection – click the **Save Template** button indicated in Figure A-2, to the right of the **Device Template** drop-down.

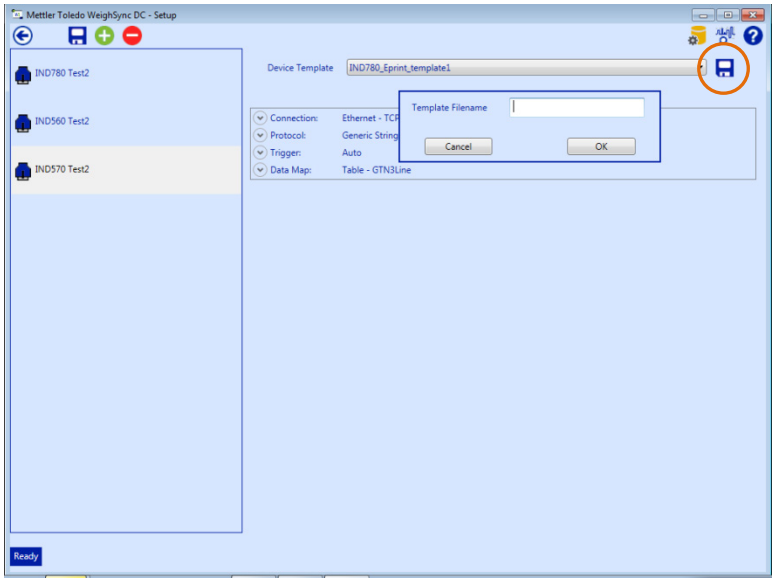

Figure A-2: Save Template Button

When the Save Template button is clicked, a dialog will appear prompting for a name for the new template. Once a name is assigned, the file will be saved in the **Templates** folder found in WeighSync's ProgramData path – for example, **C:\ProgramData\Mettler Toledo\WeighSync\Templates**). The next time a connection is added, the new template will be included in the **Device Template** drop-down list.

- Template file names should follow file name conventions with regard to use of punctuation or wildcard characters.

A.3. Template Definitions

A.3.1. Default 3-Line GTN

This template is the default and is used by the system when a new connection is created. Almost every METTLER TOLEDO indutrial terminal supports a demand print data output designed to supply the **G**ross, **T**are and **N**et weight values on three lines. Some may include extra line feeds or data such as time/date, but at a minimum the GTN fields are available. The WeighSync application includes this template, which can be used with these default print connections with little to no modification to the terminal's setup or the template parameters in WeighSync.

A.3.1.1. Template Structure

A.3.1.1.1. Port

The 3-line GTN template uses a serial/USB port connection type, since not every terminal has a standard Ethernet port. The connection type can be changed to Ethernet if the terminal in use supports an Eprint connection, or some other method to send demand print from its Ethernet port. The Generic protocol is set up to include two extra line feeds, and to separate the data using white space between the fields. For a device that sends more or fewer than 5 lines, the number of lines should be adjusted to match what is actually sent.

A.3.1.1.2. Trigger

The trigger can be changed to any desired type. The data mapping uses the default table and assumes that the data sent may include a label before each weight data field.

A.3.1.1.3. Data Example

Here is an example of data supported by this template:

```
Gross:    1000.0 lb      <CRLF>
Tare:       50.0 lb  PT  <CRLF>
Net:       950.0 lb      <CRLF>
                         <CRLF>
                         <CRLF>
```

A.3.1.2. Terminal Configuration

Most industrial terminals provide a default demand print connection that supports three-line GTN on their COM1 serial port. These serial ports are typically configured for 9600 baud with 8 data bits and no parity.

A.3.1.3. Data Mapping

Refer to each terminal's documentation to determine the exact demand print data structure sent, to determine the correct number of lines and/or the data mapping.

A.3.2. IND131_Serial_GTN

This template uses the IND131/IND331 terminal's default demand print output and its serial COM port.

A.3.2.1. Template Structure

A.3.2.1.1. Port

This template uses a serial/USB port connection type. The baud rate, parity and other serial selections should be changed to match the serial port settings in the terminal if they have been changed from their default values. The Generic protocol is used and has been set up to match the serial output of the terminal. The data mapping uses the default table and assumes that no label is present before each actual weight field.

A.3.2.1.2. Data Example

Here is an example of data supported by this template:

```
1000.0 lb       <CRLF>
  50.0 lb  PT   <CRLF>
 950.0 lb       <CRLF>
```

A.3.2.2. Terminal Configuration

The IND131/331 has a default demand print connection provided that supports three line GTN on its serial port. These serial ports are typically configured for 9600 baud, 8 data bits, no parity.

A.3.2.3. Data Mapping

The data map has been configured to save all three weight values and the weight unit in the default table. Changes can be made if less data is desired or a different table is used.

A.3.3. IND231_Serial_GTN

This template uses the IND231/IND236 terminal's default demand print output and its serial COM port.

A.3.3.1. Template Structure

This template uses a serial/USB port connection type. The baud rate, parity and other serial selections should be changed to match the serial port settings in the terminal if they have been changed from their default values. The Generic protocol is used and has been set up to match the serial output of the terminal (it sends 5 lines, the first two have date and time). The data mapping uses the default table and assumes that labels are present before each actual weight field.

A.3.3.1.1. Data Example

Here is an example of data supported by this template:

```
Date       YYYY.MM.DD   <CRLF>
Time        HH:MM:SS    <CRLF>
Gross      1000.0 lb    <CRLF>
Tare         50.0 lb  PT <CRLF>
Net         950.0 lb    <CRLF>
```

A.3.3.2. Terminal Configuration

The IND231/236 provides a default demand print connection that supports multi-line GTN on its serial port. These serial ports are typically configured for 9600 baud, 8 data bits, no parity.

A.3.3.3. Data Mapping

The data map has been configured to save all three weight values and the weight unit in the default table. Changes can be made if less data is desired, or if a different table is used.

A.3.4. IND246_Serial_Template1

This template uses the IND246 terminal's Template 1 with a serial connection.

A.3.4.1. Template structure

This template uses a serial/USB port connection type. The baud rate, parity and other serial selections should be changed to match the serial port settings in the terminal if they have been changed from their default values. The Generic protocol is used and has been set up to match the serial output of the terminal. The data mapping uses the default table and assumes that no label is present before each actual weight field.

Here is an example of data that this template would work with:

1000.0 lb <CRLF>
50.0 lb PT <CRLF>
950.0 lb <CRLF>

A.3.4.2. Terminal Configuration

the IND246 provides a default Template 1 connection that supports three-line GTN on its serial port. These serial ports are typically configured for 9600 baud, 8 data bits, no parity.

A.3.4.3. Data Mapping

The data map has been configured to save all three weight values and the weight unit in the default table. Changes can be made if less data is desired or a different table is used.

A.3.5. IND246_Ethernet_Template1

This template uses the IND246 terminal's Template 1 with an Ethernet connection.

A.3.5.1. Template Structure

This template uses an Ethernet connection type. The IP address has been set to the default address used in the terminal – however, since this will likely be changed to work in the network used, the ID address should be changed to match the one set in the temrinal. The port used has been set to the port available in the terminal for its Ethernet connection (1701). The Generic protocol is used and has been set up to match the serial output of the terminal's default data in template 1. The data mapping uses the default table and assumes that no label is present before each actual weight field.

A.3.5.1.1. Data Example

Here is an example of data that this template would work with:

1000.0 lb <CRLF>
50.0 lb PT <CRLF>
950.0 lb <CRLF>

A.3.5.2. Terminal Configuration

The IND246 should be configured to have an Ethernet connection that uses Template 1 (with its default data). In addtion, the IP address setting configured in the terminal should be used in the connection settings of WeighSync.

A.3.5.3. Data Mapping

The data map has been configured to save all three weight values and the weight unit in the default table based on the default template settings. Changes can be made if less data is desired, a different table is used, or a different template/structure is used.

A.3.6. IND560_Serial_Template1

This template uses the IND560 terminal's Template 1 with a serial connection.

A.3.6.1. Template structure

This template uses a serial/USB port connection type. The baud rate, parity and other serial selections should be changed to match the serial port settings in the terminal if they have been changed from their default values. The Generic protocol is used and has been set up to match the serial output of the terminal (one extra line feed). The data mapping uses the default table and assumes that no label is present before each actual weight field.

A.3.6.1.1. Data Example

Here is an example of data that this template would work with:

```
1000.0 lb      <CRLF>
  50.0 lb  PT  <CRLF>
 950.0 lb      <CRLF>
               <CRLF>
```

A.3.6.2. Terminal Configuration

The IND560 has a default template 1 connection provided that supports three line GTN on its serial port. These serial ports are typically configured for 9600, 8 data bits, no parity.

A.3.6.3. Data Mapping

The data map has been configured to save all three weight values and the weight unit in the default table. Changes can be made if less data is desired or a different table is used.

A.3.7. IND560_Eprint_Template1

This template uses the IND560 terminal's Template 1 with an Ethernet Eprint connection.

A.3.7.1. Template structure

This template uses an Ethernet connection type. The IP address has been set to the default address used in the terminal – however, since this will likely be changed to work in the network used, the ID address should be changed to match the one set in the temrinal. The port used should be set to mach the Secondary port setting in the terminal setup – this template has been configured to use

port 1702. The Generic protocol is used and has been set up to match the serial output of the terminal's default data in template 1 (one extra line feed). The data mapping uses the default table and assumes that no label is present before each actual weight field.

A.3.7.1.1. Data Example

Here is an example of data that this template would work with:

```
1000.0 lb      <CRLF>
  50.0 lb  PT  <CRLF>
 950.0 lb      <CRLF>
               <CRLF>
```

A.3.7.2. Terminal Configuration

The IND560 should be configured to have an Ethernet Eprint connection that uses Template 1 (with its default data). In addtion, the IP address and Secondary port settings configured in the terminal should be used in the connection settings of WeighSync.

A.3.7.3. Data Mapping

The data map has been configured to save all three weight values and the weight unit in the default table based on the default template settings. Changes can be made if less data is desired, a different table is used, or a different template/structure is used.

A.3.8. IND780_Serial_Template1

This template uses the IND780 terminal's Template 1 with a serial connection.

A.3.8.1. Template Structure

This template uses a serial/USB port connection type. The baud rate, parity and other serial selections should be changed to match the serial port settings in the terminal if they have been changed from their default values. The Generic protocol is used and has been set up to match the serial output of ther terminal. The data mapping uses the default table and assumes labels are present before each actual weight field.

A.3.8.1.1. Data Example

Here is an example of data that this template would work with:

```
Gross:  1000.0 lb      <CRLF>
Tare:     50.0 lb  PT  <CRLF>
Net:     950.0 lb      <CRLF>
                       <CRLF>
                       <CRLF>
```

A.3.8.2. Terminal Configuration

The IND780 should be configured to use a demand print template 1 connection for its serial port. These serial ports are typically configured for 9600 baud, 8 data bits, no parity.

A.3.8.3. Data Mapping

The data map has been configured to save all three weight values and the weight unit in the default table. Changes can be made if less data is desired or a different table is used.

A.3.9. IND780_Eprint_template1

This template is designed to work with the IND780 terminal. It specifically uses an Ethernet connection for the terminal's Eprint feature to collect GTN 3 line data. The terminal uses the secondary port with an Eprint Communication Connection for its Demand Print Template 1.

A.3.9.1. Template Structure

A.3.9.1.1. Port

The template uses an Ethernet connection. The port is user-defined, but should **not** be 1701, since that is the default for Shared Data, and should not be used for the Eprint output. The port number used here should match the **Secondary Port #** configuration found in the terminal's setup structure at **Communication > Network > Port**. The template's default setting is 1702. It also assumes that the demand print template 1 has been used in the Eprint connection, so it uses the Generic protocol with 5 lines, and maps the fields according to the expected data from this template.

A.3.9.1.2. Trigger

By default the trigger is set to **Auto** in the device template, but this can be changed to any other available setting.

When set to **Auto**, WeighSync assumes that the terminal will send the data automatically (when the operator presses **Print**, for example). For other trigger settings, a command string must be defined.

A.3.9.1.3. Data Example

Here is an example of data from the default template 1:

```
Gross:    1000.0 lb      <CRLF>
Tare:       50.0 lb  PT  <CRLF>
Net:       950.0 lb      <CRLF>
                         <CRLF>
                         <CRLF>
```

A.3.9.2. Terminal Configuration

The Ethernet IP address used in the Connection section must match the Ethernet IP address configured in the terminal. The port number used here should match the **Secondary Port #** configuration found in the terminal's setup structure at **Communication > Network > Port**. An Eprint connection must be configured in setup at **Communication > Connection**. To match this device template, the terminal should use a Demand Output assignment with the chosen scale (typically Sclae 1) as the trigger and **Template 1** as the Template.

If the Auto trigger is used, no other terminal configuration is necessary. In this case, the print button on the terminal will be used to send the data. If any other trigger is desired, a second **Communication > Connection** should be configured in the terminal with an EPrint CTPZ Input

assignment so that the P command can be used in the WeighSync connection's **Trigger – Command String** field to tell the terminal to send data.

A.3.9.3. Data Mapping

This device template uses the default table to map the terminal's default template 1 data. No changes are necessary unless the terminal's template has been changed.

A.3.10. IND890_Serial_Template1

This template uses the IND890 terminal's Template 1 with a serial connection.

A.3.10.1. Template Structure

This template uses a serial/USB port connection type. The baud rate, parity and other serial selections should be changed to match the serial port settings in the terminal if they have been changed from their default values. The Generic protocol is used and has been set up to match the serial output of the terminal for template 1. The data mapping uses the default table and assumes that no label is present before each actual weight field.

A.3.10.1.1. Data Example

Here is an example of data that this template would work with:

```
1000.0 lb      <CRLF>
  50.0 lb  PT  <CRLF>
 950.0 lb      <CRLF>
```

A.3.10.2. Terminal configuration

The IND890 should be configured to use a demand print, template 1 connection on its serial port. These serial ports are typically configured for 9600 baud, 8 data bits, no parity but the terminal settings should match the WeighSync connection settings.

A.3.10.3. Data Mapping

The data map has been configured to save all three weight values and the weight unit in the default table. Changes can be made if less data is desired or a different table is used.

A.3.11. IND890_Ethernet_Template1

This template uses the IND890 terminal's Template 1 with an Ethernet connection.

A.3.11.1. Template Structure

This template uses an Ethernet connection type. The IP address has been set to the default address used in the terminal – however, since this will likely be changed to work in the network used, the ID address should be changed to match the one set in the temrinal. The port used should be set to mach theport setting in the terminal setup – this template has been configured to use port 1702. The Generic protocol is used and has been set up to match the serial output of the terminal's default data in template. The data mapping uses the default table and assumes that no label is present before each actual weight field.

A.3.11.1.1. Data Example

Here is an example of data that this template would work with:

```
1000.0 lb      <CRLF>
  50.0 lb  PT  <CRLF>
 950.0 lb      <CRLF>
```

A.3.11.2. Terminal Configuration

The IND890 should be configured to have an Ethernet connection that uses Template 1 (with its default data). In addtion, the IP address and port settings configured in the terminal should be used in the connection settings of WeighSync.

A.3.11.3. Data Mapping

The data map has been configured to save all three weight values and the weight unit in the default table based on the default template settings. Changes can be made if less data is desired, a different table is used, or a different template/structure is used.

A.3.12. ICS Templates

Several templates are provided to support the ICS terminals. Both serial and Ethernet templates are provided for each type of connection. There are templates for standard weighing, over/under, and count applications.

Table A-1: ICS Templates

Template Name	Usage
ICS CountGTN_Ethernet	Ethernet template for Count w/ GTN
ICS CountGTN_Serial	Serial template for Count w/ GTN
ICS CountG_Ethernet	Ethernet template for Count w/ Gross only
ICS CountG_Serial	Serial template for Count w/ Gross only
ICS G3Line_Ethernet	Ethernet template for Gross only (3 line)
ICS G3Line_Serial	Serial template for Gross only (3 line)
ICS GTN3Line_Ethernet	Ethernet template for GTN (3 line)
ICS GTN5Line_Ethernet	Ethernet template for GTN (5 line)
ICS GTN5Line_Serial	Serial template for GTN (5 line)
ICS OverUnderAbsGTN_Ethernet	Ethernet template for Over Under (GTN, high target, low target)
ICS OverUnderAbsGTN_Serial	Serial template for Over Under (GTN, high target, low target)
ICS OverUnderAbsG_Ethernet	Ethernet template for Over Under (Gross only, high target, low target)
ICS OverUnderAbsG_Serial	Serial template for Over Under (Gross only, high target, low target)
ICS OverUnderDevGTN_Ethernet	Ethernet template for Over Under (GTN, target, upper tolerance, lower tolerance, deviation)

Template Name	Usage
ICS OverUnderDevGTN_Serial	Serial template for Over Under (GTN, target, upper tolerance, lower tolerance, deviation)
ICS OverUnderDevG_Ethernet	Ethernet template for Over Under (Gross only, target, upper tolerance, lower tolerance, deviation)
ICS OverUnderDevG_Serial	Serial template for Over Under (Gross only, target, upper tolerance, lower tolerance, deviation)

B Configuring the Protocol

This appendix covers
- Evaluating the data output
- Required configuration steps to match

In order to be able to collect the desired data, the connection settings must be carefully considered. In particular, the protocol settings must match the data received to insure that the correct amount of data is expected and that no data is eliminated incorrectly during the parsing.

The following steps are suggested to help analyze the data output and make the right decision about protocol configuration.

B.1. Collect and Review the Data Output

Information about the data that will be sent from the device is required in order to decide which protocol setting(s) should be used. To find this data, research the documentation for information on the data output, or use data collection utilities to examine the actual data being sent by the device.

Most METTLER TOLEDO industrial terminal data is defined by configuration settings found in the Communication section of the device. Look for demand print or print template settings and check for appendices describing print data output.

B.1.1. Example

A terminal sends gross/tare/net data automatically through its serial port (9600, 8 none) when the operator presses print. The data is fixed (allows no user-defined formatting) and includes time and date. The terminal offers only one configuration choice: multi-line or single line print. Multi-line is selected. The documentation shows a sample print:

Figure B-1: Fixed, Multi-Line Data

Capturing the actual data shows that the output includes the following characters:

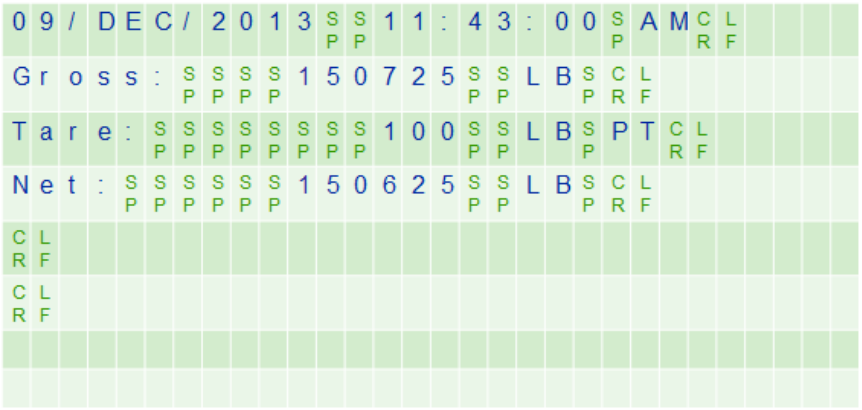

Figure B-2: Character Content of Data Output

B.2. Evaluate the Data for Table Requirements

Once the data output is known, pieces of this data can be separated into field information for storage in the desired table. The desired table structure for these fields can then be configured in the WeighSync Table setup. This structure must be created *prior* to protocol configuration to allow placeholders for data mapping.

The default table has fields for gross, tare, net weight, and weight unit values. It also stores system data for the connection name and the time/date stamp. The system fields are always provided, but all the other default fields can be removed if they are not needed. Additional fields can be added if additional data is available in the data output from the device.

B.2.1. Example

In addition to the GTN, the terminal sends time/date and the tare type (the "PT" found after the tare weight unit). The system automatically saves its own time/date stamp along with the device ID. In this example, the user will use the system time/date stamp as the transaction time/date. The user plans to use all the default fields and does not require the tare type.

- Note: Both time/date fields could be saved. However, the time and date saved from the terminal's data would be saved as separate nvarchar (string) fields, unlike a date stamp field from the system. This could make sorting and filtering the terminal's data more difficult.

B.3. Evaluate the Data for Protocol Settings

Next, examine the data output to determine how to configure the protocol. The Generis type uses several parameters to determine how to parse characters in the output data into table fields.

If you are collecting data output from the terminal, additional evaluation is needed:

- Look for characters or strings that separate one field from the next.
- Look for the number of lines of data that is being sent.

- Verify which character is used to indicate the end of a line.

- Be certain that data fields do not contain characters used as separators, as this would lead to a different, and unexpected, number of fields.
  - For example, an address might contain commas, so the field separator cannot be a comma

- If different data outputs can be sent (based on some condition or application phase), look for a string at the beginning that can be used to identify good data from undesired data

B.3.1. Example

It seems likely that spaces are replaced with number characters within the weight data fields. Multiple data transmissions would have to be sent and checked to confirm if this is true. However, it does appear (Figure B-2) that all of the current pieces of data are separated with spaces in this case. While it is not obvious from the documentation that there are extra line feeds after the data, examining the actual data shows that six lines are sent, each ending with the LF (line feed) character.

B.4. Configure the Required Table Settings

Using the data derived in section B.2, create the necessary table(s) & fields. It is important to do this step BEFORE attempting to create a device connection configuration so that the required table fields are available in the mapping section.

Instructions on how to modify tables and fields can be found in section 1.4.2.

B.4.1. Example

The default table will be used since no additional data is needed.

B.5. Configure the Required Protocol Settings

Using the information derived in section B.3. configure the required device protocol.

- Match the connection type to the terminal's physical hardware and parameter (Serial and COM port) settings.

- Configure the protocol based on the results of the analysis done in section B.3.

- Configure the data mapping to assign the available data to the fields available in the selected table.

Instructions on how to configure these settings can be found in section 1.4.4.

B.5.1. Example

The PC serial port used should be selected and its baud rate and parity should match those of the terminal – 9600 and 8 none.

The generic string protocol type will use 6 lines of data and use LF as the line terminator. Space padding will be used to determine field separation.

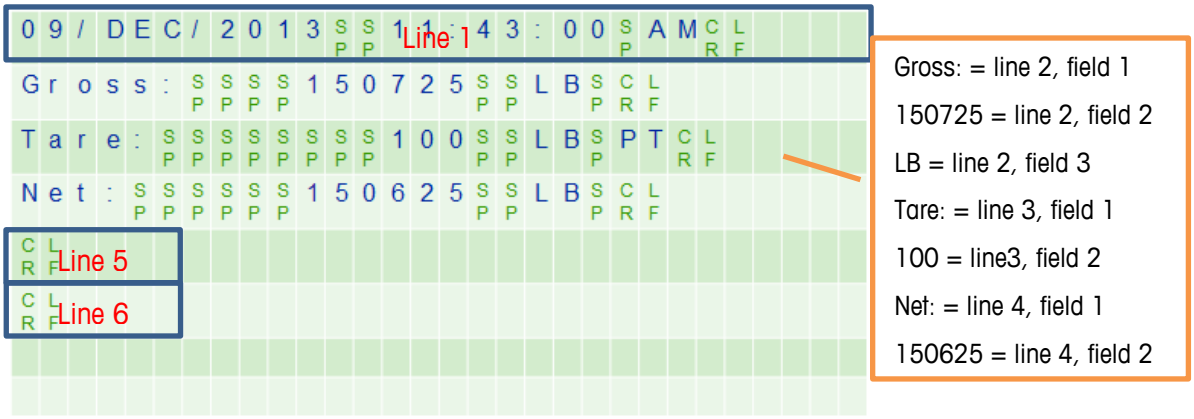

Figure B-3: Mapping Data to Fields

Based on this protocol, data mapping would be as follows:

Gross weight is from line 2 field 2 (line 1 is time/date and ignored, field 1 is the label "gross")

Tare weight is from line 3, field 2

Net weight is from line 4, field 2

Weight unit is from line 2, field 3.

B.6. Test the Device Configuration

Once the configuration is completed and saved, exit setup. When the application returns to its data overview screen, the communication service will attempt to communicate with the configured device based on the configuration criteria provided from setup. Test the data collection by issuing the "trigger" command, either by pressing print or by running the terminal application so that it reaches the point where data is sent.

The diagnostic screen (Figure B-4) can be used to help test device connection configurations.

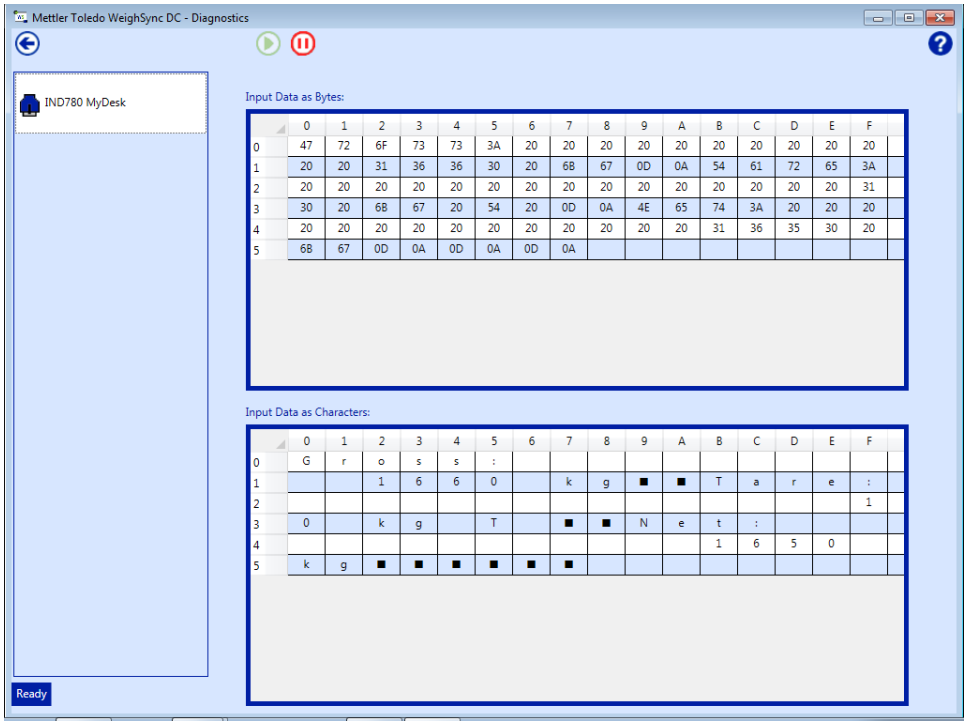

Figure B-4: WeighSync Diagnostic Screen

In addition, there are free and low-cost communication utilities (for example, HyperTerminal) that can provide more flexible testing options. Care should be taken to make sure that these types of applications are completely closed when testing is complete, so that the communication resources they use are not still reserved for their use, making it impossible for WeighSync to use them for its communication.

If wrong, missing, or no data appears to be sent, the following information can be used to troubleshoot issues:

Issue	Possible Cause	Solution
No Data	Auto trigger did not happen / data was not sent.	Press print and confirm data is actually being sent … use diagnostic screen and/or other utility such as HyperTerminal to confirm data is received by PC when this happens. If no data is seen by either of these, confirm terminal is configured and wired properly to send data.
	Manual trigger not sent or command is invalid.	Retry trigger and confirm data is being sent. Use diagnostic screen and/or other utility such as HyperTerminal to confirm data is received by PC when this happens. If no data is seen by either of these, first confirm terminal is configured and wired properly to send and receive data; then confirm the command string used is recognized by the terminal and causes it to send data.
	COM port in use by another application.	Make certain no other "communication" application is open/running.

Issue	Possible Cause	Solution
Strange or Incorrect Data	The wrong baud rate, parity, data bit settings have been used.	Make sure the com port setting in the PC matches the com port setting of the terminal
	The incorrect character set has been chosen.	Chose the character set used by the terminal
	Generic strings - the incorrect field/line number was used or the field separator occurred in an unexpected location.	Make sure the number of lines is correct, then verify the line and field number are right. Be sure that the field separator is not be seen by mistake as part of a field or the data is not always present.
	Fixed strings - the incorrect offset / number of characters were defined.	Make sure the correct starting position and number of characters are used. Also make sure that the number of characters does not change unexpectedly.
Missing Data	Not enough lines of data were received.	Make sure the number of lines configured matches the number of lines defined in the protocol. WeighSync must receive at least this many lines of data in order to begin parsing and storing **any** information.
	The identify data option was used **and** the data did not include a proper match to the expected string.	Make sure the string sent at the beginning matches the configured string **exactly**.
	The data was not actually sent.	Make sure the application or terminal does not have some sort of error condition preventing its "print".

C WeighSync DC Release Notes

This Appendix provides important release information, and documents the change history of the WeighSync™ DC Communication Software.

C.1. Release History

C.1.1. Version 1.0.18

March, 2016: Updated release to add ICS templates.

C.1.2. Version 1.0.17

March, 2015: Update to initial release for various fixes.

C.1.3. Version 1.0.xx

August, 2013: Initial release.

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METTLER TOLEDO Service

Congratulations on choosing the quality and precision of METTLER TOLEDO. Proper use according to these instructions and regular calibration and maintenance by our factory-trained service team ensure dependable and accurate operation, protecting your investment. Contact us about a METTLER TOLEDO agreement tailored to your needs and budget.

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www.mt.com/IND-WeighSync

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30097595 Rev. 03, 03/2016

30097595