METTLER TOLEDO

Udrive-780
Application Software
Technical Manual

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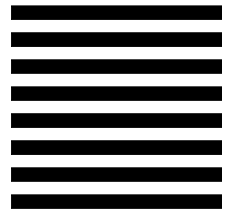
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PRECAUTIONS

- READ this manual BEFORE operating or servicing this equipment and FOLLOW these instructions carefully.

- SAVE this manual for future reference.

	⚡ **WARNING!**
	FOR CONTINUED PROTECTION AGAINST SHOCK HAZARD CONNECT TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.

⚡ **CAUTION**

BEFORE CONNECTING/DISCONNECTING ANY INTERNAL ELECTRONIC COMPONENTS OR INTERCONNECTING WIRING BETWEEN ELECTRONIC EQUIPMENT ALWAYS REMOVE POWER AND WAIT AT LEAST THIRTY (30) SECONDS BEFORE ANY CONNECTIONS OR DISCONNECTIONS ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT AND/OR BODILY HARM.

⚠ **CAUTION**

OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

	⚡ **WARNING!**
	WHEN THIS EQUIPMENT IS INCLUDED AS A COMPONENT PART OF A SYSTEM, THE RESULTING DESIGN MUST BE REVIEWED BY QUALIFIED PERSONNEL WHO ARE FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF ALL COMPONENTS IN THE SYSTEM AND THE POTENTIAL HAZARDS INVOLVED. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

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Chapter 1.0

Introduction

Overview

Figure 1-1: IND9US with Printer, Card Reader and Keyboard

The **Udrive-780** application is vehicle weighing software for use in an unattended IND780 scale terminal with a single scale platform. The **Udrive-780 Application Software**, enabled by the installation of a hardware key, augments the basic functionality of the IND780 with a variety of vehicle-specific capabilities. In this configuration, an IND780 with color display is packaged in an enclosure together with options including I/O and a variety of user interface devices, such as card readers and intercoms. This packaged version of the IND780 is known as an IND9US (Figure 1-1).

The IND780 industrial terminal is a single- or multi-range, high-performance weighing terminal for use with analog and/or METTLER TOLEDO POWERCELL®/ MTX® scale bases. The terminal has permanent and temporary memory locations for storing Permanent IDs and weights. These can be recalled to complete a transaction and print a ticket. User-definable database tables enable application and variable data to be stored permanently or temporarily and recalled on demand.

In general, the IND780 terminal with Udrive-780 functions, and is configured in the same way as, the IND780 with basic functionality. This document details only those aspects of function and configuration specific to the Udrive-780 application. Detailed information about common features of the terminal may be found in the IND780 **User's Guide** and **Technical Manual**. The IND9US **Installation** and **Technical Manuals** deal with the hardware configuration of the packaged system.

The Udrive-780's features include:

- Current gross weight displayed when vehicle is on the scale
- Manually assignable inbound ID or swipe proximity badge ID entry
- One-Step ID functionality to auto-assign ID for Temporary ID weighing
- Reprint last ticket with "Duplicate" printed on ticket
- Export reports via FTP (Transactions, Permanent IDs, Temporary IDs)
- Supports RFID proximity badge and AEI reader inputs
- Monitors loops and controls lights for either pre-zero or non-pre-zero operation
- User adjustable weight threshold for scale activation
- Comment field for inbound and outbound transactions
- Commodity Table with Totalization
- User adjustable Standard Table with Totalization
- User adjustable maximum weight threshold allowed for transaction/ticket
- Photoeye input for truck position verification
- Zero scale push button can be mounted remotely (separate from terminal)
- All exportable files in comma-delimited text format for easy import into spreadsheet or text application
- User adjustable scale zero tolerance, checked after each weighing to ensure the scale is at or near zero in readiness for the next transaction
- Assignable tare for each permanent Permanent ID allows for one pass weighing
- Net-sign correction functionality for Shipping and Receiving applications

This chapter provides an overview of Udrive780 functionality.

Basic Capabilities

The following functions are outlined in Chapter 2 and described in detail in Chapters 4 and 5. The Udrive-780 may be configured to enable any combination of one or more of these functions.

Temporary ID Weighing

Temporary ID weighing is also known as In-Out Weighing, where a truck is weighed upon entering and exiting a facility. This two-pass transaction uses the Temporary Permanent ID table to coordinate the Inbound and Outbound processes. In this application, vehicles are not permanently stored in the Permanent ID table. Supplemental Vehicle information can be stored in the Temporary ID table during the Inbound process. When the vehicle exits the facility, it is weighed again following the Outbound process, and the temporary entry is removed. Because the entry is temporary, vehicle totals are not accumulated – only totals in the Commodity and Standard tables are accumulated.

Permanent ID Weighing

In Permanent ID weighing, a permanent identifier – entered either by the driver, from an RFID card, or from an AEI tag – is used to recall the tare value of the vehicle. Based on the table value, the driver then follows the steps defined by the Inbound or Outbound process to complete the transaction. Permanent ID weighing enables the accumulation of totals based on Permanent ID. If the Commodity and/or Standard Table is enabled, totals are also accumulated for records used in each transaction.

Outbound and Inbound Processes

The two processes which may be involved in a transaction are Outbound and Inbound.

Outbound Process

The Outbound process completes a vehicle transaction. In the case of a permanently stored tare value (using the Permanent ID Table), the tare value is retrieved from memory. In the case of a temporarily stored tare, (using the Temporary ID Table), the inbound weight is used. In both cases, the gross, tare and net weight values are now known. Other transaction information may be collected using entries from the Standard and Commodity tables. The completed transaction information is stored and can be printed, with formatting determined by

the configuration of one of the Output Templates (refer to Configuration Options in Chapter 3).

Inbound Process

The Inbound process creates a temporary Permanent ID, or uses an existing Permanent ID. Other transaction information may be collected and saved as Commodity and/or Standard table data. Inbound transaction information is stored and can be printed, with formatting determined as for the Outbound process. The stored weight may be for either a full or an empty vehicle.

Net Sign Correction for Shipping and Receiving

Net Sign Correction allows the Udrive-780 to be used for both shipping (inbound empty) and receiving (inbound loaded) operations. With net sign correction enabled, the terminal will, if necessary, swap the inbound and outbound weight fields on the printed ticket, so that the larger weight is the gross weight, the smaller weight is the tare weight, and the difference is always a positive net weight.

Traffic Control

Traffic Control is effected:

- By lights, actuated by weight or loops

- By gates, actuated by loops

The presence of the vehicle is detected and a weighment taken once a no-motion state is achieved. A weight threshold value ensures that lights are actuated appropriately by a vehicle.

Vehicle Positioning

An optional input can be used to prevent a transaction from being completed if either an entrance or exit is blocked, indicating that the vehicle is not fully on the scale.

Chapter 2.0
Operational Overview

Introduction

This chapter provides an overview of operations that are specific to Udrive-780. Details on basic IND780 functionality may be found in the IND780 **User's Guide** and **Technical Manual**.

◄ In Udrive-780 operation, only one scale can be assigned to the IND780. However, this scale can comprise the sum of as many as four platforms.

◄ For proper Udrive-780 function, a print connection must be defined.

Home Screen

The default state of the Udrive-780 screen includes a weight display with units at the top, and a message **METTLER TOLEDO – Udrive-780 – Waiting for Truck** crawling across the lower display, and a row of softkeys as shown in Figure 2-1. The central area is used for messages (such as "Inbound Complete. Exit Scale"), and for data entry.
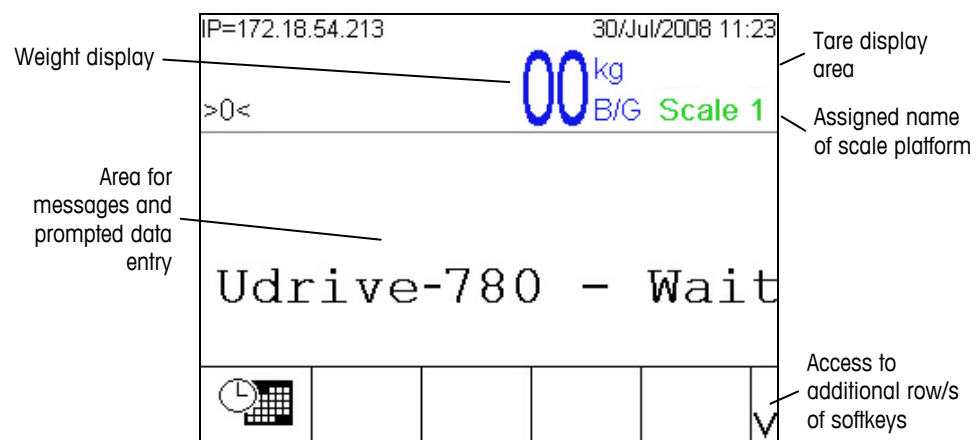

Figure 2-1: Elements of the Home Screen

◄ The softkey visible in the screen shown in Figure 2-1 is determined in setup. The selection of available softkeys will vary between terminals.

Security

Udrive-780 supports password protection for setup security. Operators have access only to the main screen, with prompting and table look-up options. Administrators can exit the Udrive-780 application to access all features of the setup menu.

Once a password is set up, be sure to remember it. If the password is changed or forgotten, access to the Udrive-780 setup screens will not be available. Be sure to protect the password from access by unauthorized personnel.

If a login fails, the user can re-enter the password, or press the EXIT ↖ softkey to return to the Udrive-780 home screen.

Softkeys and Icons

Because the Udrive-780 application is prompt-driven and substantially automated, no special softkeys are associated with it.

Inbound Process

The Inbound Process is performed when a Permanent ID record doesn't include a recorded tare value. The process includes the following steps:

- Entering an ID
- Entering a Description
- Entering an optional Comment
- Validating, printing and saving the transaction

Outbound Process

The Outbound Process is performed when either a Permanent or Temporary ID record includes either a pre-set tare, or a tare value recorded during an Inbound transaction. The process includes the following steps:

- Entering an ID
- Entering (or modifying) an optional comment
- Selecting optional Commodity and/or Standard Table records, if enabled
- Printing a ticket for the transaction

Basic Operation

Each of the following types of basic operation is accessed using a softkey. The location of the softkey in the home screen is determined during setup. If an operational mode is not applicable for a particular installation, the softkey does not need to appear.

Temporary ID

◄ Detailed Temporary ID weighing procedures may be found in Chapter 4.0.

Temporary ID functionality is used when vehicle tare weights are not stored for repeated use. The inbound weight is assigned a temporary ID and memory location. Storing the inbound weight, together with any additional data, is known as the Inbound Process. When the vehicle exits the facility, the original weight is recalled from memory and used to compute the net weight of the material being shipped or received. Again, additional data may be gathered during this Outbound Process. Once the outbound ticket is printed, the temporary memory location used to store the inbound weight is cleared from memory.

In the simplest sequence of operation, the Temporary ID is automatically assigned by the Udrive-780 software. After the inbound weight is stored, a ticket is automatically printed, in a format based on a specifically defined inbound template. Using the inbound ticket can simplify recalling the stored weight and processing the vehicle during the Outbound Process.

Shipping and Receiving

Udrive-780 can work with receiving operations where the inbound weight is larger than the outbound weight (coming in full), or with shipping applications where the inbound value is less than the outbound weight (coming in empty). Udrive-780 can be configured to automatically print the larger value in the gross weight position on the ticket, so that the net weight is printed as a positive value, whether material is being shipped or received. This capability is known as Net Sign Correction.

Permanent ID

◄ Detailed Permanent ID weighing procedures may be found in Chapter 5.0.

Udrive-780 can use permanently stored tare values. When the full vehicle is on the weighing platform, this stored information is recalled from memory. During this Outbound Process, additional data can also be gathered. The Permanent ID mode of operation is useful in applications where many of the trucks are part of a fleet that is often associated with the installation. Common examples of such installations include refuse or aggregate operations. When the Permanent ID table

is used, record totalization may be enabled. With this capability turned on, total weights for each Permanent ID will be maintained.

Shipping and Receiving

Permanent ID mode may also be used in conjunction with a shipping or receiving operation. The only limitation is that a permanently stored tare must be used. A zero (0) tare value stored in a Permanent ID forces the transaction to be an Inbound/Outbound sequence.

Advanced Capabilities

Two special database tables are include which, if enabled in setup (refer to Chapter 3.0), are presented to the driver during the Outbound transaction, permitting one of their records to be associated with the transaction.

Commodity Table

One database table is configured to perform a special function as a Commodity Table. If a record in the table is associated with a transaction, totals for the transaction will be recorded and reported.

Standard Table

A second database table is configured to store particular information about a transaction. An example of Standard Table use would be to associate a transaction with a particular contract. Totals accumulate for each Standard Table record.

Net Sign Correction for Shipping and Receiving

Net Sign Correction is configured in setup at Scale *n* > Tare > Types. It may be either disabled (the default) or enabled. When enabled, it allows the Udrive-780 to be used for both shipping (inbound empty) and receiving (inbound loaded) operations.

If net sign correction is disabled in setup, any stored weight value in the tare register is assumed to be a tare regardless of the gross weight present on the scale at the time of the final transaction. In this case, net values can be negative.

With net sign correction enabled, the terminal will swap the gross and tare weight fields on the printed ticket, if necessary, so that the larger weight is the gross weight, the smaller weight is the tare weight, and the difference is always a positive net weight.

Net sign correction affects the display, stored data, weight recall, and printed data, and will operate with pushbutton tare (T), preset tare (PT), or tare memories (M).

An example of weight values with and without net sign correction is shown in Table 2-2. In this example, the value in the tare register is 38,520 kg, and the current weight on the scale is 24,500 kg.

Table 2-2: Effect of Net Sign Correction on Weight Values

Printed and Displayed	Net Sign Correction	
	Disabled	**Enabled**
Gross	24,500 kg	38,520 kg
Tare	38,520 kg	24,500 kg
Net	−14,020 kg	14,020 kg

```
INBOUND
No: 13      Type: Temporary
T/D: 11:33:15      2006-08-08
ID: 456      Steel rolls
      38520 kg G
```

```
OUTBOUND
No: 14      Type: Temporary
T/D: 12:53:39      2006-08-08
ID: 456      Steel rolls
      38520 kg G
      24500 kg PT
      14020 kg N
```

Figure 2-2: Net Sign Correction in Temporary Vehicle Transaction

Transaction Tickets

Sample Inbound and Outbound Tickets

Figure 2-3 shows examples of tickets produced by an Inbound/Outbound transaction sequence. Note that the Inbound Gross weight becomes the Tare weight in the Outbound leg.

```
METTLER TOLEDO

INBOUND

03/Sep/2008
14:20:09

Truck ID:    7

Gross:     21880      lb

Comments:
MT Test Truck #1
```

```
METTLER TOLEDO

OUTBOUND

03/Sep/2008
14:21:47

Truck ID:    7

Gross:     71420      lb
Tare:      21880
Net:       49540

Comments:
MT Test Truck #1

Commodity:
Soybeans

Standard:
MTWT Contract
```

Figure 2-3: Sample Inbound and Outbound Tickets

Printing a Duplicate Ticket

The Repeat Print softkey ✎ may be assigned to one of the softkey locations. It permits additional tickets to be printed after a transaction is completed. Each repeated ticket is headed DUPLICATE. Additional tickets for a transaction may be printed at any time until another transaction is performed, or until terminal's power is cycled off and on.

Reports

Udrive-780 reports are accessible only by export via an ftp connection. Once an ftp connection has been established, navigate to the \Terminal\TABLES folder.

Note: Tables always appear as 0 bytes. However, they are populated with the data during the process of export to a PC.

Figure 2-4 shows an ftp window with the TABLES folder in view.
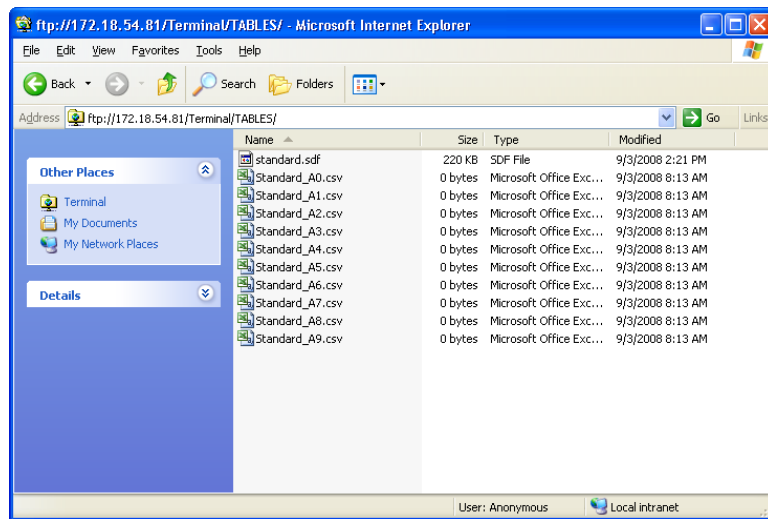

Figure 2-4: FTP Connection with Udrive-780 Terminal

Of the tables listed in the TABLES folder, the following relate to Udrive-780:

File name	Udrive-780 Table
Standard_A3.csv	Permanent ID Table
Standard_A4.csv	Temporary ID Table
Standard_A5.csv	Transaction Table
Standard_A6.csv	Commodity Table
Standard_A7.csv	Standard Table

Chapter 3.0
Configuration

Installing the Hardware Key

The hardware key use to enable Drive-780 functionality must be installed in a socket on IND780 Main PCB. Access to the Main PCB varies depending on whether the enclosure is the Panel Mount or Harsh model.

◀ When the IND780 terminal is restarted after the hardware key is installed or removed, all configuration settings and files except metrologically significant scale data are restored to their factory defaults. Any information stored in user-configured tables such as targets and tare weights will be lost. This information can be saved by performing a Backup to USB operation **before** installing the hardware key. Refer to the Chapter 4 (**Service and Maintenance**) of the IND780 **Technical Manual**, for the procedure to follow. Calibration data will not be affected.

To install the hardware key:

1. Remove power from the terminal.

2. Access the Main PCB:

   A. For a Panel Mount unit, remove the four screws that fasten the back cover to the enclosure.

   B. For a Harsh unit, remove the front panel using a flat blade screwdriver, as described in Appendix A (**Installation**) of the IND780 **Technical Manual**.

3. Identify the hardware key socket, adjacent to the Main PCB backup battery. The socket is indicated in Figure 3-1.
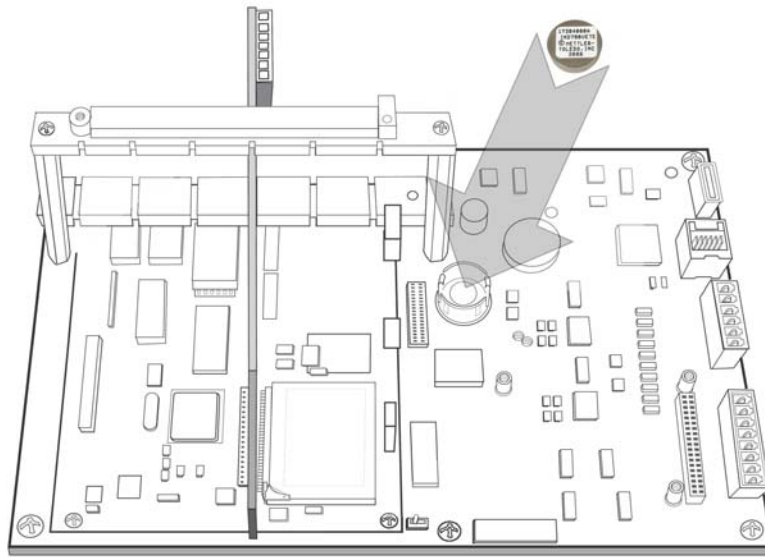

Figure 3-1: Hardware Key Socket

4. Position the hardware key in the socket, label-side up. Press it down into the socket until the two retaining clips snap into position, as seen in Figure 3-2.
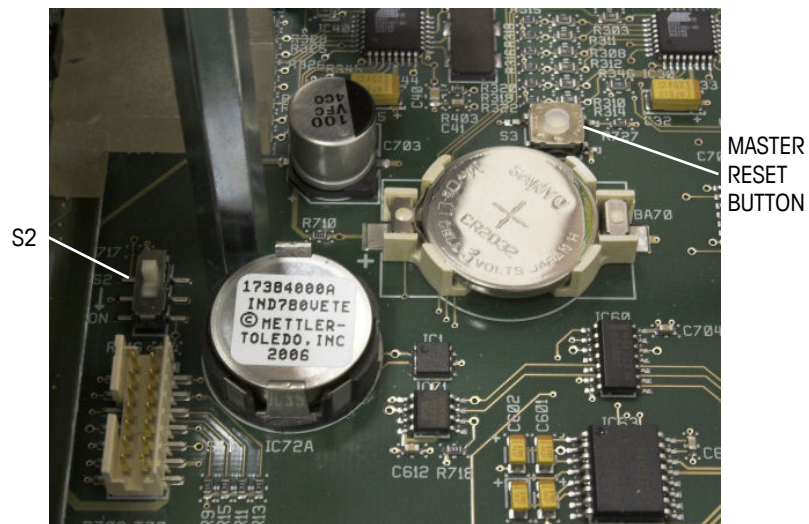

Figure 3-2: Hardware Key Installed

5. Note that when the terminal is restarted, a Master Reset must be performed by holding down the Master Reset button (indicated in Figure 3-2) when power is applied, until the terminal beeps.

◄ The Master Reset operation will not reset metrologically significant scale configuration data unless S2 (shown in its OFF position in Figure 3-2) is in its ON position when the reset is performed.

Setup Mode

Entering and Exiting Setup Mode

To access the setup menu tree, press the DOWN or UP key, if necessary to display the appropriate row of softkeys, then press the SETUP softkey ⟳.

The data-entry field shown in Figure 3-3 appears, requiring the entry of a valid password. The default password is **865336**.
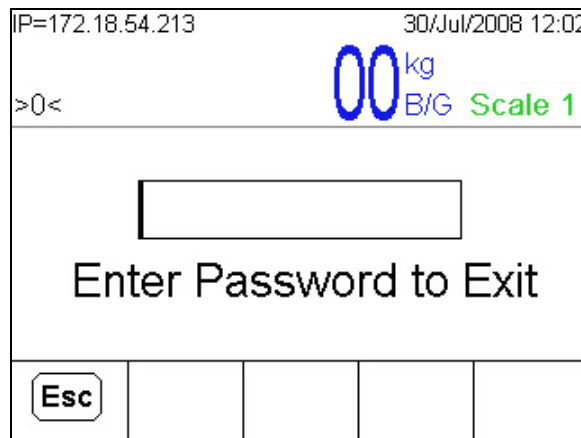

Figure 3-3: Access to Setup

To leave setup and return to the home screen, either press the first (left-most) softkey while the menu tree is showing, or use the UP key to move focus to the Home branch and then press ENTER.

Udrive-780 Configuration Screens

The setup menu of the Udrive-780 version of the IND780 includes all the elements and functionality of the default configuration (detailed in Chapter 3 [**Configuration**] of the IND780 **Technical Manual**), together with an additional set of screens specific to the application software. These are accessible at Application > TaskExpert > Udrive-780 Setup. Figure 3-4 shows the new portion of the menu tree. The functions and parameters of each of these screens are detailed in the Configuration Options section, immediately below.

◄ Because Udrive-780 is a TaskExpert application, access to its branch of the menu tree, and to the setup screens nested under it, differs from the rest of the IND780 menu. Once the Start or Udrive-780 Setup node is selected, press ENTER to expand its branches. When the setup menu appears (Figure 3-5), the <ENTER> key or the up and down arrow keys may be used to highlight menu items, and the OK softkey ᵒᵏ pressed to access the selected item.
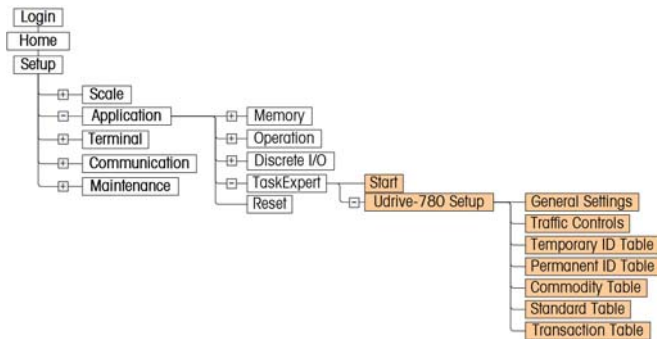
Figure 3-4: Udrive-780 Menu Tree
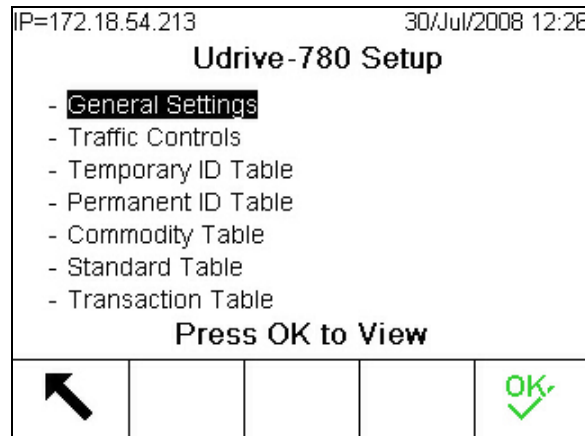
Figure 3-5: Udrive-780 Setup Menu

Tare Type Setup

The Scale n > Tare > Types branch of the menu tree is not shown expanded in Figure 3-4. However, for Udrive-780 operation Tare Type settings must be correctly configured, with Pushbutton Tare and Keyboard Tare both set to Enabled. This is the IND780 Terminal's default setting.

If Net Sign Correction is desired, it must be enabled for the active scale. This is configured in the same setup screen.

Configuration Options

◀ In the following sections, default values are indicated with an asterisk (*****).

General Settings

The General Settings screen shown in Figure 3-6 permits the configuration of the basic system setup parameters.

Figure 3-6: General Settings

Settings available in this screen are as follows:

Badge Reader	None*****, Standard, SmartPass This setting is configured according to the presence and type of card reader used in the system.
Auto-Print	Enabled*****, Disabled When enabled, the conclusion of a transaction automatically triggers a print command through the configured printer port.
Comments	None*****, Inbound, Outbound, Both This parameter determines whether and when a comments field will appear. [By default, comments are *not* included in either Inbound or Outbound transactions.]
Password	Sets the alphanumeric password that controls access to the setup menu tree.
Back ↖	Returns to the Udrive-780 Setup screen.

Traffic Controls

Traffic controls configure the system for use with or without truck-sensing loops, and also set the weight threshold and associated parameters that trigger the start of a transaction. Figure 3-7 shows the Traffic Controls configuration screen.

Figure 3-7: Traffic Controls

Traffic control settings are as follows:

Threshold	1000** Sets the scale weight value, in currently selected units, that must be exceeded to initiate a transaction.
Max. Wt. Threshold	80000** Sets the scale weight value, in currently selected units, above which a transaction will not continue. No ticket will be printed and no log will be made of the transaction. The driver will be prompted to exit the scale.
Zero Tolerance	100** If the scale stabilizes at this weight value or below, a new transaction can be triggered when a truck enters the scale, without further driver intervention. If the scale does not stabilize at a weight between zero and this value (but the weight is below the **Threshold** value defined above), the driver is prompted to press the scale zero button. The scale then zeroes and the transaction can begin.
Loops	Enabled, Disabled** When loops are included in the system, enabling this parameter disables the **Threshold** trigger, and integrates the loops' input into Udrive-780 transactions.
Back ⬉	Returns to the Udrive-780 Setup screen.

Temporary ID Table

The Temporary ID Table configuration screen (Figure 3-8) allows table parameters to be set, and also permits the table to be viewed and edited.

Figure 3-8: Temporary ID Table Configuration Screen

Settings and functions available in this screen are as follows:

	Disabled*****, Enabled
	If **enabled**, pressing <ENTER> at the **Enter ID** prompt during an Inbound transaction causes the system to assign a serial ID number to the truck, then move the transaction automatically to the next step.
One-Step ID	If **disabled**, the driver must enter an ID in the **Enter ID** field and then press <ENTER>. Udrive-780 will search the Temporary and Permanent ID tables and, if it does not find the ID, will store it in the Temporary ID table.
	In either case, entering the Temporary ID during the Outbound phase of the transaction will recall the weight value recorded during this sequence.
	Disabled*****, Enabled
Description	Determines whether or not a description is attached to the stored Temporary ID, and printed on the resulting ticket.
Back ◤	Returns to the Udrive-780 Setup screen.
Table View 📖	Opens the Temporary ID Table view screen (Figure 3-10).
Clear **C**	Displays a warning screen (Figure 3-9), permitting the user either to clear all values from the Temporary ID Table by pressing OK $\overset{OK}{\checkmark}$, or to abandon the action by pressing ESCAPE $\boxed{\text{Esc}}$. Note: Clearing the entire table also resets the automatically-assigned Temporary Vehicle serial IDs back to 1.

Figure 3-9 shows the warning screen that appears when the Clear softkey is pressed in the Temporary ID Table view screen. The action may be completed (OK) or abandoned (Esc).
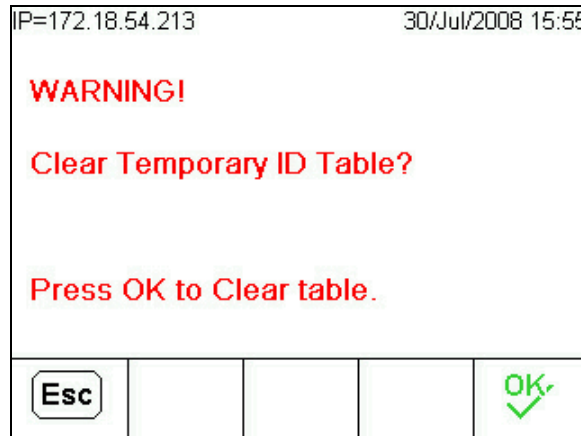

Figure 3-9: Temporary ID Table Clear Warning Screen

Temporary ID Table View

The Temporary ID Table view screen displays information about each stored Temporary ID.

◄ In all table views, it is possible to scroll through the records using the UP, DOWN, LEFT and RIGHT keys. In Figure 3-10, the view has been edited so that all columns are visible.

Figure 3-10: Temporary ID Table Views
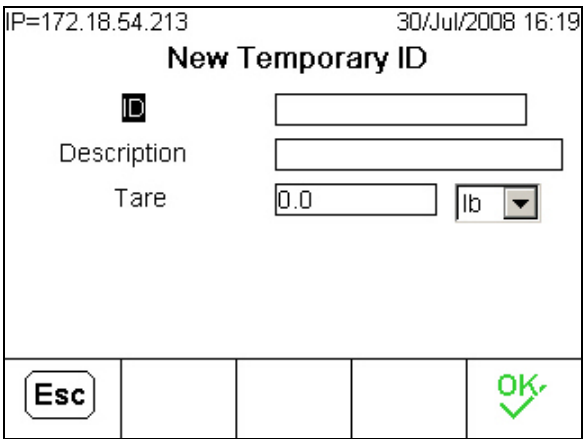
The elements of this table are as follows:

ID, Description	The ID (up to 16 alphanumeric characters) and Description (up to 40 alphanumeric characters) configured for this record.
Saved, Unit	Value and unit of the saved temporary truck weight – gross or tare, depending on whether it was loaded or unloaded when the Temporary ID was created.
Date, Time	Date and time when the temporary ID was stored.
Back ◤	Returns to the Temporary ID Table configuration screen (Figure 3-8).

Edit	✏️	Opens an editing screen where the selected record ID can be modified.
New	📄	Opens an editing screen in which a new Temporary ID can be defined.
Delete	🩹	Deletes – **without further warning** – the selected Temporary ID.

Creating and Editing Temporary IDs

To create a new Temporary ID, press the NEW softkey 📄. The screen shown in Figure 3-11 opens.

Figure 3-11: New Temporary ID Screen

Press <ENTER> to select the first (ID) field, and to step through the other elements of this screen.

ID	A unique alphanumeric identifier (maximum 16 characters) to be associated with this record.
Description	An optional alphanumeric description (maximum 40 characters) of the truck to which the ID refers.
Tare	The truck's unloaded weight.
[Unit]	lb*****, kg, t, ton The unit associated with the Tare value.
OK✓ Esc	Press OK to confirm the new ID, or ESCAPE to abandon it.

The Edit Temporary ID screen is identical to the New ID screen, except that the ID cannot be modified:

Figure 3-12: Edit Temporary ID Screen

Permanent ID Table

The Permanent ID Table configuration screen (Figure 3-13) allows table parameters to be set, and also permits the table to be viewed and edited.

Figure 3-13: Permanent ID Table Configuration Screen

Settings and functions available in this screen are as follows:

Totalization		Enabled, Disabled** When enabled, weight value totals are accumulated for each Permanent ID record.
Back	↖	Returns to the Udrive-780 Setup screen.
Table View	🔍	Opens the Permanent ID Table view screen (Figure 3-14).
Clear	**C**	Displays a warning screen (similar to the one shown in Figure 3-9), permitting the user either to clear all values from the Permanent ID Table by pressing OK OK, or to abandon the action by pressing ESCAPE [Esc].

Permanent ID Table View

Figure 3-14 shows a composite image of the Permanent ID Table view, with all columns visible.

IP=172.18.54.213		26/Aug/2008 15:34						
ID	Badge Number	Tare	Unit	Date	Time	Description	Count	Total
01	654198447	0.0	kg	2008-08-26	15:15:57	Mack 550	2	38240
02	3532901	0.0	kg	2008-08-26	15:11:42	Volvo 16	1	9510
03	687542568	0.0	kg	2008-08-26	15:12:17	MB 8AX	2	27370
04	6873671645	0.0	kg	2008-08-26	15:13:10	8SX 9YY2	1	24680
05	69955884	12000	kg	2008-08-26	15:15:35	Fleet 01	1	16450
06	98763544	15420	kg	2008-08-26	15:15:15	Fleet 02	1	21950
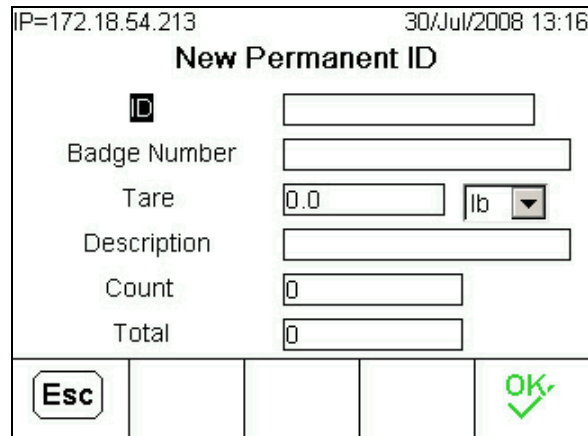
Figure 3-14: Permanent ID Table Views

The elements of this table are as follows:

ID	The record ID, generally a truck's license number or other unique identifier. An ID can consist of up to 16 alphanumeric characters.
Badge Number	A unique identifier recorded by swiping a badge, when using an RFID or AEI badge reader.
Tare, Unit	Tare weight and unit of the truck. **Note**: If a Tare value is entered here (i.e., a non-zero Tare), transactions performed using this ID will always be recorded as Outbound. A tare value of zero forces an Inbound-Outbound sequence.
Date, Time	Date and time when the tare value for this ID was entered.
Description	The description configured in the Permanent ID New or Edit screen; 40 character maximum length.
Count	The number of times the ID has been used since the last time the table was cleared.
Total	The total net weight carried to date by the truck referenced by the ID. Units are set by the Unit parameter, above.
Back	Returns to the Temporary ID Table configuration screen (Figure 3-8).
Edit	Opens an editing screen where the selected record ID can be modified.
New	Opens an editing screen in which a new Temporary ID can be defined.
Delete	Deletes – **without further warning** – the selected Temporary ID.

Creating and Editing Permanent IDs

To create a new Permanent ID, press the NEW softkey ⬜. The screen shown in Figure 3-15 opens.

Figure 3-15: New Permanent ID Screen, Badge Reader Disabled
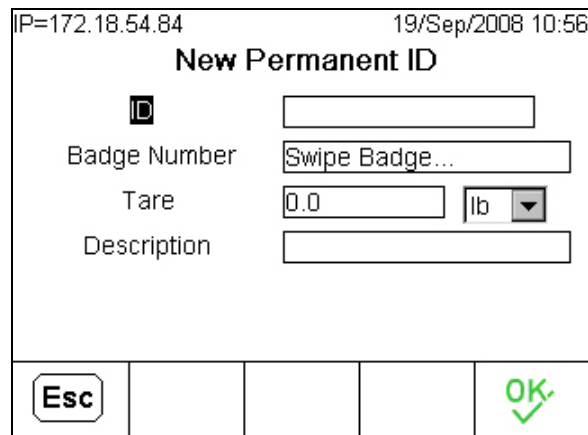
Press <ENTER> to select the first (ID) field, and to step through the other elements of this screen. These elements correspond to the Table View contents described immediately above.

The Edit Temporary ID screen is identical to the New ID screen, except that the ID cannot be modified.

Creating and Editing Permanent IDs with ID Entry by Badge

If the Badge Reader setting is enabled (in General Settings), then the Badge Number field in the New Permanent ID screen is populated by swiping the badge. The ID number entered for this record is then associated with that badge, so that a driver can start a transaction without any other data entry.

With Badge Reader enabled, the New Permanent ID screen appears with a **Swipe Badge…** prompt in the Badge Number field, as in Figure 3-16.

Figure 3-16: New Permanent ID Screen, Badge Reader Enabled

Figure 3-17 shows the a new Permanent ID record with the values entered, and after the badge has been swiped to record the Badge Number.

Figure 3-17: Permanent ID Record with Badge Number Recorded

Refer to Chapter 5.0, **Permanent ID Weighing**, for details on the use of the badge reader during a transaction.

Commodity Table

The Commodity Table configuration screen (Figure 3-18) allows table parameters to be set, and also permits the table to be viewed and edited. Up to 25 commodities can be defined in this table.

Figure 3-18: Commodity Table Configuration Screen

Settings and functions available in this screen are as follows:

Commodity Table	Disabled*****, Enabled When enabled, the Commodity Table appears during the Outbound phase of each transaction, allowing a Commodity to be selected and associated with the transaction.
Totalization	Disabled*****, Enabled When enabled, weight value totals are accumulated for each

Commodity, and the **Count** and **Total** fields appear in the New Commodity ID and Edit Commodity ID screens (Figure 3-20).

Back	↖	Returns to the Udrive-780 Setup screen.
Table View	🔍▤	Opens the Commodity Table view screen (Figure 3-14).
Clear	**C**	Displays a warning screen (similar to the one shown in Figure 3-9), permitting the user either to clear all values from the Temporary ID Table by pressing OK ✓, or to abandon the action by pressing ESCAPE [Esc].

Commodity Table View

Figure 3-19 shows the Commodity Table.

Figure 3-19: Commodity Table View

The elements of this table are as follows:

ID		A 2-digit numeric string associated with a specific Commodity.
Commodity		Up to 40 alphanumeric characters describing the custom Commodity.
Count		The number of times this Commodity has been used in a transaction since the last time the table was cleared.
Total		The total net weight that has accumulated for the Commodity since the last time the table was cleared.
Back	↖	Returns to the Commodity Table configuration screen (Figure 3-8).
Edit	✏	Opens an editing screen where the selected Commodity can be modified.
New	▢	Opens an editing screen in which a new Commodity can be defined.
Delete	▱	Deletes – **without further warning** – the selected Commodity.

Creating and Editing Commodities

To create a new custom Commodity, press the NEW softkey ☐. Depending on whether Totalization is enabled or disabled, one of the screens shown in Figure 3-20 opens.
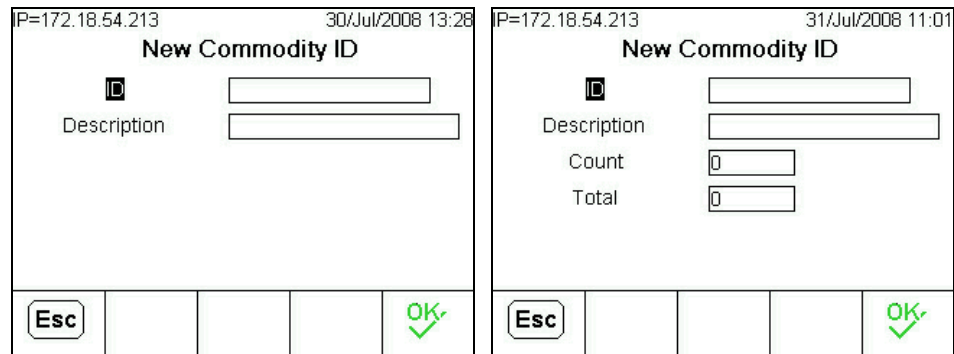
Figure 3-20: New Commodity Screen, Totalization Disabled (left) and Enabled (right)

Note that when the Description entry field is selected, two rows of special characters appear (Figure 3-21); press the down arrow to access a second set of rows. Each character is associated with a softkey (upper row) or an Application Key (A1 to A4, lower row).
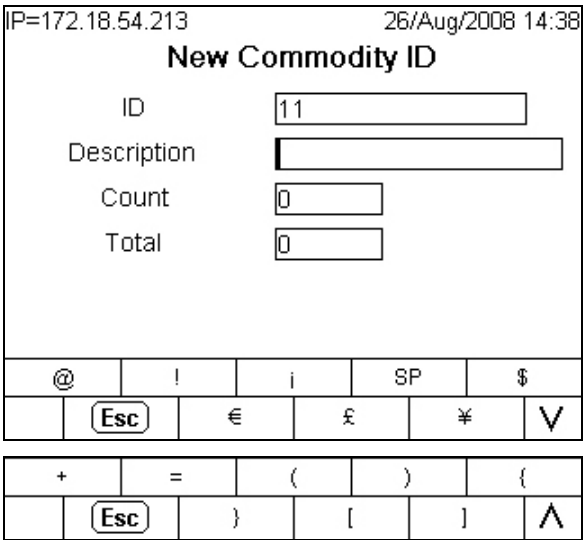
Figure 3-21: Special Characters Softkeys

Press <ENTER> to select the first (ID) field, and to step through the other elements of this screen. These elements correspond to the Table View contents described immediately above.

The Edit Commodity screen is identical to the New ID screen, except that the ID cannot be modified.

Standard Table

The Standard Table configuration screen (Figure 3-22) allows the table and its totalization function to be enabled or disabled, and also permits the table to be viewed and edited. Standard Table IDs are used to store additional, pre-defined information about a transaction.

Figure 3-22: Standard Table Configuration Screen

Settings and functions available in this screen are as follows:

Standard Table		Disabled*****, Enabled When enabled, the Standard Table opens during the Outbound phase of each transaction, permitting a Standard Table record to be associated with that transaction.
Totalization		Disabled*****, Enabled When enabled, weight value totals are accumulated for each Standard Table record based on the transactions with which the record is associated, and the **Count** and **Total** fields appear in the New ID and Edit ID screens (Figure 3-24).
Back	↖	Returns to the Udrive-780 Setup screen.
Table View	📇	Opens the Standard Table view screen (Figure 3-23).
Clear	**C**	Displays a warning screen (similar to the one shown in Figure 3-9), permitting the user either to clear all values from the Standard ID Table by pressing OK ✓, or to abandon the action by pressing ESCAPE Esc.

pdf

Press <ENTER> to select the first (ID) field, and to step through the other elements of this screen. These elements correspond to the Table View contents described immediately above.

Note that when a text data entry field (ID or Description) is selected, two rows of special characters appear (Figure 3-21); press the down arrow to access a second set of special characters. Each character is associated with a softkey (upper row) or an Application Key (A1 to A4, lower row).

The Edit ID screen is identical to the New ID screen, except that the ID cannot be modified.

Transaction Table

The Transaction Table configuration screen (Figure 3-25) allows the table to be enabled or disabled, and also permits the table to be viewed.

Figure 3-25: Transaction Table Configuration Screen

The settings and functions available in this screen are as follows:

Transaction Table		Enabled, Disabled*
		When enabled, the Transaction Table stores a variety of information about each transaction. This information can be exported via ftp or emailed to a PC.
Back	↖	Returns to the Udrive-780 Setup screen.
Table View	📑	Opens the Transaction Table configuration screen (Figure 3-25).
Clear	**C**	Displays a warning screen (similar to the one shown in Figure 3-9), permitting the user either to clear all values from the Transaction Table by pressing OK $\overset{OK}{\checkmark}$, or to abandon the action by pressing ESCAPE $\boxed{\text{Esc}}$.

Transaction Table View

Figure 3-26 shows two composite images of a Transaction Table view, showing all columns.

Trans	Description	ID	Date	Time	Type	Gross	Tare
37	Fleet 01	05	2008-08-26	15:19:26	Permanent	28450	12000
38	Mack 550	01	2008-08-26	15:22:27	Permanent	30010	14280
39	Volvo 16	02	2008-08-26	15:23:30	Permanent	35060	25550
40	MB 8AX	03	2008-08-26	15:26:19	Permanent	30330	34730
41	8SX 9YY2	04	2008-08-26	15:27:13	Permanent	42490	17810
42	MB 8AX	03	2008-08-26	15:28:46	Permanent	45870	14100
43	Fleet 02	06	2008-08-26	15:29:50	Permanent	37370	15420
44	Mack 550	01	2008-08-26	15:32:26	Permanent	31870	9360
45	Material transfer	100	2008-08-26	15:46:07	Temporary	26570	11750

IP=172.18.54.213   28/Aug/2008 12:40

Tare	Net	Unit	Commodity	Standard	Comments
12000	16450	kg			
14280	15730	kg			I-Beams
25550	9510	kg			Generator core
34730	-4400	kg			
17810	24680	kg			
14100	31770	kg			Tar blocks
15420	21950	kg			Asphalt
9360	22510	kg			Tractor parts
11750	14820	kg		Thorneycroft Ltd	Tractor parts

Figure 3-26: Transaction Table Views

The elements of this table are as follows:

Trans	A serial transaction identifier.
Description	Up to 40 alphanumeric characters describing the ID, from the Description field displayed during the transaction.
ID	Up to 16 alphanumeric characters, the unique identifier of the truck associated with the Permanent or Temporary record.
Date , Time	The date and time when the transaction record was created.
Type	Permanent, Temporary Distinguishes between trucks stored in the Permanent ID table and transactions for which a Temporary ID was created.
Gross	The gross measured weight of the truck.
Tare	The tare value either recalled from the Permanent ID Table (in the case of trucks with stored Permanent IDs) or saved temporarily in the Temporary ID Table.
Net	The Gross weight less the Net weight. Unless Net Sign Correction is enabled, this difference may be a negative value for Inbound/Loaded Temporary ID transactions.
Unit	The units used in the weight values.
Commodity	The Commodity Table record, if any, associated with the transaction.
Standard	The Standard Table record, if any, associated with the transaction.
Comments	Comments, if any, entered by the driver during the transaction.
Back	Returns to the Transaction Table configuration screen (Figure 3-25).

Photo Eye Input

This single input can be used with photo eye sensors at the ends of the scale to verify that the truck is completely on the scale. Several photo eye outputs can be used in parallel for position verification. If this input is true the display will indicate that a photo eye is blocked and the truck must be re-positioned to print a ticket or log the transaction. This input can be left unconnected without affecting the system.

Ticket Configuration

Creating Custom Tickets

Custom tickets can be generated by associating a connection (in Setup at Communication > Connections) with a port, a template, and a trigger.

Connections may be made via an available COM port, or an Ethernet connection, assigned to Demand Output.

A template can be configured to format information to be included on the ticket. If the ticket requires more information than one template can contain, additional templates can be called and included using their shared data name. Note that some templates are pre-configured for particular purposes:

Template 1	Default output of Gross, Tare and Net weights
Template 2	Inbound transaction
Template 3	Outbound transaction

The content of templates 1 through 3 is detailed in the next section. Templates 4 through 10 are not pre-configured. They can be set up to produce custom reports to meet customer requirements using the following shared data variables:

Data Field	SD Name	Max. Length	Values
Truck ID	ak0201	16	
Truck Description	ak0202	40	
Gross Weight	ak0203	13	
Tare Weight	ak0204	13	
Net Weight	ak0205	13	
Current Time	ak0206	8	
Current Date	ak0207	10	
Transaction Type	ak0208	9	Permanent or Temporary
Comments	ak0209	40	
Tare Type	ak0210	2	

Data Field	SD Name	Max. Length	Values
Weight Unit	ak0211	3	lb, kg, ton, t
Commodity Record Description	ak0212	40	
Commodity Record ID	ak0213	2	
Standard Record Description	ak0214	40	
Standard Record ID	ak0215	2	
Transaction Number	ak0216	7	
Badge ID	ak0217	40	

The **IND780 Terminal Shared Data Reference** gives further details on variables that can be included in templates. The InSite™ Template Editor software provides a simple, graphical way to set up templates.

User-configured Triggers are available and may be assigned either as a softkey or as an application key. This permits the custom report to be generated easily from the home screen. Note that in Udrive-780 two of the custom triggers are already assigned to Inbound (Trigger 1) and Outbound (Trigger 2) Transactions.

Output Templates

Output Templates 1 through 3 are set up for use in the Udrive-780 application. Templates 4 through 10 are not configured, and can be set up to produce custom reports – refer to Chapter 3.0, **Configuration** of the **IND780 Technical Manual** for details on template setup.

Output Template 1

Output Template 1 (Figure 3-27) is set up to produce a default record of gross, tare and net weights.

Figure 3-27: Output Template 1 – Default

The elements of this template are listed and described in Table 3-1.

Table 3-1: Output Template 1 Definition

Element	Data	Format	Description of Data
1	Gross:		
2	wt0101		Displayed gross weight
4	wt0103		Weight units
5	<CR><LF>	1	
6	Tare:		
7	ws0110		Displayed tare weight
9	wt0103		Weight units
11	ws0109		Tare source – PT (keyboard tare) or T
12	<CR><LF>	1	
13	Net:		
14	wt0102		Displayed net weight
16	wt0103		Weight units
17	<CR><LF>	3	
18	-End-		

Output Template 2

Output Template 2 (Figure 3-28) is set up to produce an inbound transaction record, and includes Commodity and Standard table record descriptions, if each table is enabled and the driver/operator selects a record during the outbound transaction.

Figure 3-28: Output Template 2 – Inbound Transaction

The elements of this template are listed and described in Table 3-2.

Table 3-2: Output Template 2 Definition

Element	Data	Format	Description of Data
1	<ESC>		Medium size type face, Hengstler C-56 printer*
2	!4		
3	<GS>		Darken text, Hengstler printer**

Element	Data	Format	Description of Data
4	E1		
5	METTLER TOLEDO		Header text
6	<CR><LF>	1	
7	<CR><LF>	1	
8	ak0216		Transaction number
9	<CR><LF>	2	
10	ak0207		Current date
11	<CR><LF>	1	
12	ak0206		Current time
13	<CR><LF>	1	
14	<CR><LF>	1	
15	Truck ID:		
16	ak0201	[16]	Truck ID, constrained to 16 left-aligned characters
17	<CR><LF>	1	
18	<CR><LF>	1	
19	Gross:		
20	ak0203	[10]	Truck gross weight, 10 left-aligned characters
21	wt0103	[03]	Weight units, 3 left-aligned characters
22	<CR><LF>	1	
23	<CR><LF>	1	
24	Comments:		
25	<CR><LF>	1	
26	ak0209		Comments entered by driver/operator
27	<CR><LF>	1	
28	<CR><LF>	15	Line returns to clear cutting edge of printer***
29	-End-		

* Codes for different typeface sizes, and alternative printers, are provided below.
** Omit for printers other than the Hengstler.
*** For printers with a cut command, the command should come before these carriage return/line feeds.

Output Template 3

Output Template 3 (the first lines of which appear exactly as in Figure 3-28) is set up to produce an outbound transaction record, and includes Commodity and Standard table record descriptions, if each table is enabled and the driver/operator selects a record during the outbound transaction.

The elements of this template are listed and described in Table 3-3.

Table 3-3: Output Template 3 Definition

Element	Data	Format	Description of Data
1	<ESC>		Medium size type face, Hengstler C-56 printer**
2	!4		
3	<GS>		Darken text, Hengstler printer****
4	E1		
5	METTLER TOLEDO		Header text
6	<CR><LF>	1	
7	<CR><LF>	1	
8	ak0216		Transaction number
9	<CR><LF>	2	
10	ak0207		Current date
11	<CR><LF>	1	
12	ak0206		Current time
13	<CR><LF>	1	
14	<CR><LF>	1	
15	Truck ID:		
16	ak0201	[16]	Truck ID, constrained to 16 left-aligned characters
17	<CR><LF>	1	
18	<CR><LF>	1	
19	Gross:		
20	ak0203	[10]	Truck gross weight, 10 left-aligned characters
21	wt0103	[03]	Weight units, 3 left-aligned characters
22	<CR><LF>	1	
23	Tare:		
24	ak0204	[10]	Tare weight, 10 left-aligned characters
25	<CR><LF>	1	
26	Net:		
27	ak0205	[10]	Net weight, 10 left-aligned characters
28	<CR><LF>	1	
29	<CR><LF>	1	

Element	Data	Format	Description of Data
30	Comments:		
31	<CR><LF>	1	
32	ak0209		Comments entered by driver/operator
33	<CR><LF>	1	
34	<CR><LF>	1	
35	Commodity:		
36	<CR><LF>	1	
37	ak0212		Commodity record description – appears only if a record is selected
38	<CR><LF>	1	
39	<CR><LF>	1	
40	Standard:		
41	<CR><LF>	1	
42	ak0214		Standard Record description – appears only if a record is selected
43	<CR><LF>	15	Line returns to clear cutting edge of printer*****
44	-End-		

*   Codes for different typeface sizes, and alternative printers, are provided below.
**   Omit for printers other than the Hengstler.
*** For printers with a cut command, the command should come before these carriage return/line feeds.

Printers

Using the Hengstler C-56 Printer

The C-56 does not have a cutter within the printer, so it is not necessary to issue a cut command. The paper is cut with a razor blade as the operator pulls on the ticket.

To make the text darker, the characters **GS E1** can be added to the header information of the template.

The following typeface sizes are available in the Hengstler printer:

Typeface Size	Command	Sample
Large	ESC !1	METTLER TOLEDO
Medium	ESC !4	METTLER TOLEDO
Small	None – default size	METTLER TOLEDO

Using the Epson EU-T432 Printer

A series of three characters must be added to the end of the template, to command the printer to cut the paper. These characters are **GS V SOH** (ASCII GS character, followed by upper letter "V", followed by ASCII SOH character). A sufficient number of line feeds should be added at the end of the ticket before and after the cutoff characters to make sure that the entire ticket has passed the cutter before the cut command is issued.

The following typeface sizes are available in the Epson printer:

Typeface Size	Command	Sample
Large	ESC !2	METTLER TOLEDO
Medium	ESC !1	METTLER TOLEDO
Small	None – default size	METTLER TOLEDO
Extra Small	ESC M SOH	METTLER TOLEDO

Chapter 4.0

Temporary ID Weighing

Temporary ID Weighing

Overview

Temporary ID weighing is a 2-pass mode that uses the Temporary ID Table to record tare weights for Inbound transactions, and to recall those weights when the Outbound transaction is performed. (Refer to the **Temporary ID Table** section of Chapter 3 for detailed information about the this table).

Once the Outbound phase is complete, the ID is removed from the Temporary ID table.

Performing Temporary ID Transactions

Inbound Process, One-Step ID Enabled

In this example, trucks are arriving at the facility full and leaving empty. Tare values for the trucks are not known ahead of time.

◀ If, at any point during a transaction, the scale weight falls below the Threshold value (i.e., the truck has left the scale), the transaction is abandoned.

The objective is the fastest possible processing of incoming trucks; therefore, One Step ID is enabled (in the Temporary ID Table configuration screen).

1. When a vehicle is detected on the scale (i.e. the measured weight exceeds the Threshold value), the system waits for the weight to stabilize, displaying a <MOTION> message until a stable weight is detected.

2. A screen like the one shown in Figure 4-1 appears, prompting the driver either to enter an ID, or to press <Enter> to have one assigned automatically. In this case, with One-Step ID enabled, the driver will press <Enter>.
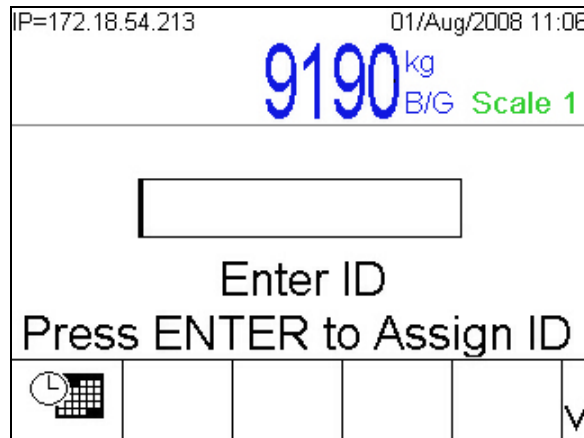
Figure 4-1: Temporary ID Transaction, ID Prompt

3. Pressing ENTER without entering an ID causes the system to assign an ID (in this example, 9).

4. The system displays a message indicating that transaction will be processed as Inbound.
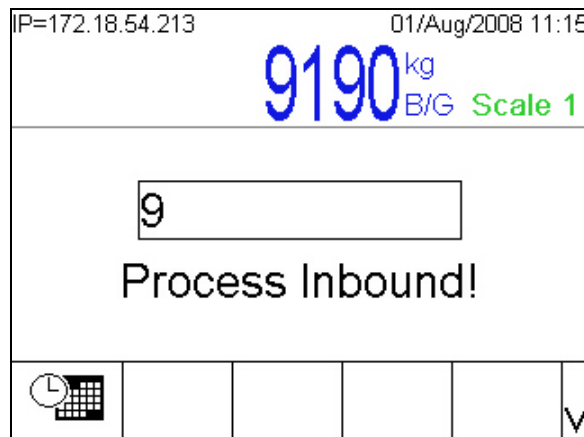
Figure 4-2: Temporary ID Transaction, Processing Inbound

5. The driver is then prompted to enter an optional Description and Comments, pressing <Enter> to confirm completion of each entry.

◀ Note: The transaction will continue when <Enter> is pressed, even if no entry is made in these fields.
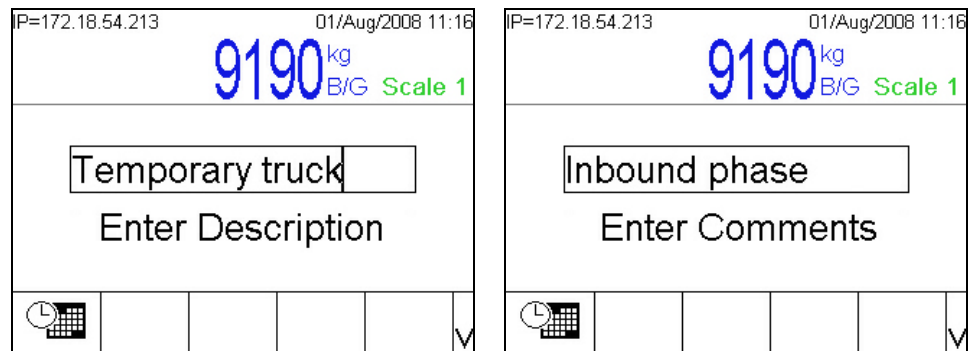
Figure 4-3: Temporary ID Transaction, Entering Description and Comment

6. The system then stores the Inbound transaction in the Temporary ID Table, displaying a "**Storing Inbound…**" message.
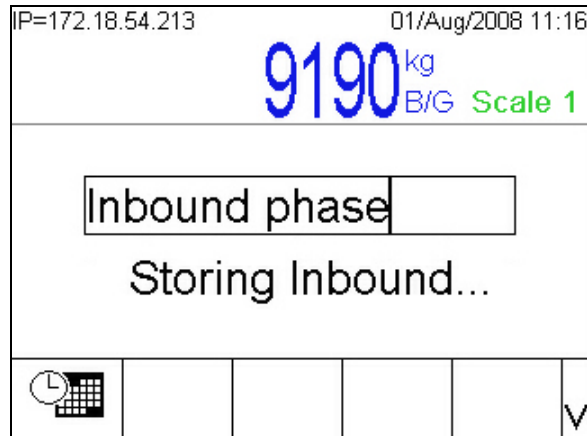
Figure 4-4: Temporary ID Transaction, Storing Inbound

7. If Auto-Print is enabled, the system then generates and prints a ticket, and displays a scrolling message "**Inbound Complete. Exit Scale…**"
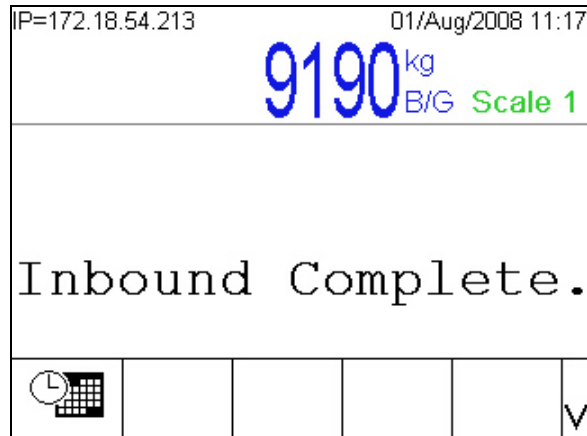
Figure 4-5: Temporary ID Transaction, Processing Inbound

8. When the truck exits the scale and the weight value stabilizes below the Zero Tolerance value, the original message appears – "**METTLER TOLEDO – Udrive-780 – Waiting for Truck…**"

Inbound Process, One-Step ID Disabled

In this case, an ID is entered by the driver during the Inbound process. The procedure is otherwise identical to that describe above, except that the Enter ID prompt screen appears as in Figure 4-6, without the option to press <Enter> to have an ID assigned automatically.
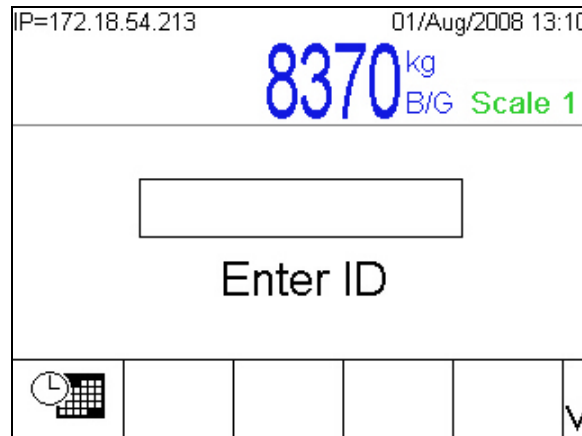
Figure 4-6: ID Prompt Screen, One-Step ID Disabled

If the ID exists in either the Temporary ID or Permanent ID Table, the transaction is processed as Outbound.

Outbound Process

Whether or not One-Step ID was used during the Inbound process, the Outbound process is as follows:

1. When the truck enters the scale and after the weight has stabilized, the Enter ID prompt screen (Figure 4-1) appears.

2. Enter the ID – in this example (Figure 4-7), 15 – and press <Enter>. First a **"SEARCHING PERM ID TBL"** message appears and then, when the ID is not found, a **"SEARCHING TEMP ID TBL"** message. When the ID is found in the Temporary ID Table, a Comment entry screen appears, this time displaying the Preset Tare (stored during the Inbound phase) and the resulting Net weight for the transaction. The screen also displays the comment, if any, entered during the Inbound phase. The comment can be accepted (by pressing <Enter>), deleted (by pressing the backspace key) or over-written with a new comment.

Figure 4-7: Temporary ID Transaction, Outbound Comments Screen

3. If the Commodity Table and/or Standard Table is enabled, they now appear in sequence, allowing Commodity and/or Standard Table records to be selected and associated with the transaction, by highlighting the record and pressing OK OK. Pressing ESCAPE (Esc) exits each table without making a selection.

Figure 4-8: Commodity and Standard Table Selection Screens

4. Finally, the system generates and prints a ticket (if auto-print is enabled), and displays a message "**Ticket Printed. Exit Scale…**", and the transaction is concluded.

Chapter 5.0

Permanent ID Weighing

Permanent ID Weighing

Overview

Permanent ID weighing uses the Permanent ID Table, where IDs, descriptions, and permanently stored tares are entered prior to operation. If totalization is enabled for the table, totals of vehicle weights are also maintained in the Permanent ID Table.

Performing Permanent ID Transactions

A Permanent ID transaction begins when a truck enters the scale and the driver enters an ID that is stored in the Permanent ID Table.

◀ If, at any point during a transaction, the scale weight falls below the Threshold value (i.e., the truck has left the scale), the transaction is abandoned.

Inbound and Outbound Transactions

If a Permanent ID includes a non-zero tare value, every transaction using that ID will be recorded as Outbound.

If the Permanent ID has a tare value of zero (to allow two-pass operation), then the type of transaction depends on whether a temporarily stored tare has been generated for the truck:

- If **no** stored tare value is found, the transaction is treated as Inbound and the measured weight is stored in the ID record.

- If a stored value **is** found, the value is recalled and used as the Tare weight, and the transaction is treated as Outbound.

- If the truck arrived loaded and is leaving empty, the Outbound Net will be a negative number (since the truck weighs less than when it arrived). Net Sign Correction can be used to correct this, ensuring that the Net value is always positive. Net Sign Correction is enabled in Setup at Scale n > Tare > Tare Types.

Inbound Transaction

Inbound Transactions are processed for Permanent ID records with a Tare value of zero, and no stored Tare weight.

1. When the weight stabilizes after a truck has entered the scale, the gross weight is displayed and an Enter ID prompt appears (Figure 5-1).
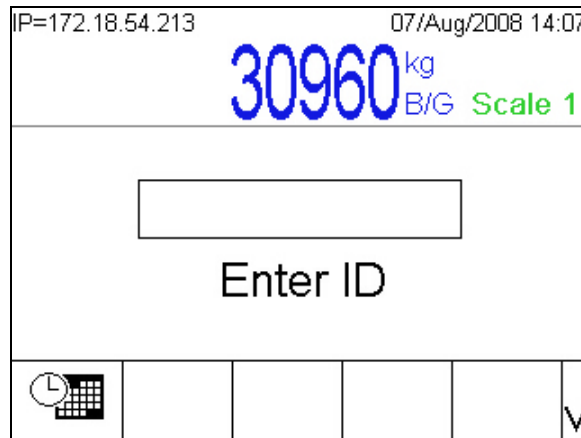

Figure 5-1: Permanent ID Mode, ID Entry Screen

2. The driver enters an ID that exists in the Permanent ID Table, and presses <Enter>.

3. The system displays a message **Searching PermID Table** and, when the ID is found, briefly displays the **Process Inbound!** message (Figure 5-2), indicating that the record has a Tare value of zero.
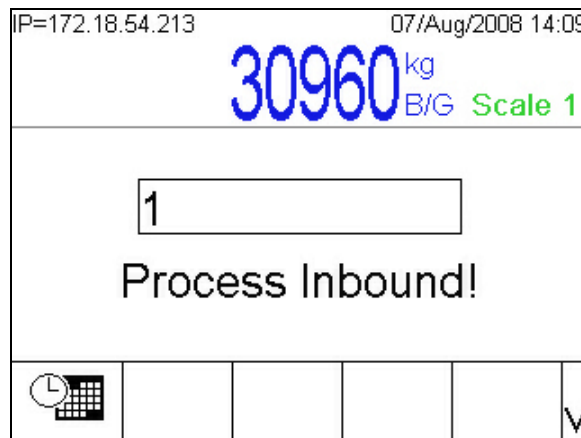

Figure 5-2: Process Inbound! Message

4. If Comments are enabled for Inbound transactions, the system then displays the Comments entry prompt (Figure 5-3).

Figure 5-3: Comments Entry Screen, Inbound Process

5. Having entered optional comments, the driver presses <Enter>, and the system displays a **Storing Inbound** message. At the same time, the transaction weight value is saved to the Permanent ID record.

6. The system prints the ticket, and then displays the message **Inbound Complete. Exit Scale**.

7. When the truck has cleared the scale and the weight has stabilized within the zero tolerance range, the system returns to its waiting state.

Outbound Transaction

1. When the weight stabilizes after a truck has entered the scale, the gross weight is displayed and an **Enter ID** prompt appears (Figure 5-1).

2. The driver enters an ID that exists in the Permanent ID Table, and presses <Enter>:

   A. If the Permanent ID includes a non-zero Tare value and Comments are **enabled** for Outbound transactions, the **Enter Comments** prompt appears with a blank field; the record's Tare value is displayed at top right, and the Net weight at top center. If Comments are **disabled**, the system moves straight to the ticket-printing phase (step 5, below).

   B. If the Permanent ID has a zero Tare value and a Tare was stored during an Inbound transaction, and Comments are **enabled** for Outbound transactions, then the **Enter Comments** prompt appears with the comment, if any, entered by the driver during the Inbound phase (Figure 5-4); the Tare weight saved from the Inbound phase appears at top right, and the resulting Net weight at top center. If Comments are **disabled**, the system moves straight to the ticket-printing phase (step 5, below).

**Figure 5-4: Comments Entry Screen, Outbound Process**

3. When the driver presses <Enter> to confirm the Comments entry:

    A. If **both** Commodity and Standard Tables are enabled, the system displays each Table in turn.

    B. If **either** the Standard or Commodity Table is enabled, the system displays the Table.

    C. If **neither** Standard nor Commodity Table is enabled, the process moves straight to the ticket-printing phase (step 5, below).

4. In the Commodity and Standard Tables (Figure 5-5), the driver can use arrow keys to select (highlight) the required record, then press OK $\overset{OK}{\vee}$ to confirm the choice and exit the table, or ESC $\boxed{\textbf{Esc}}$ to close the table and continue to the next step without making a selection.

Figure 5-5: Commodity (l) and Standard (r) Tables Displayed During Transaction

5. Once Table selections are complete, or when the driver presses <Enter> in the **Comments** screen, the system displays a **Ticket Printed. Exit Scale** message.

6. When the truck has cleared the scale and the weight has stabilized within the zero tolerance range, the system returns to its waiting state.

Inbound and Outbound Transactions Using Badge-Entered ID

When Badge Reader is enabled (either RFID or SmartPass, configured in setup at **Application > TaskExpert > Udrive-780 Setup > General Settings**), the initial transaction screen includes a prompt **Enter ID or Swipe Badge**, as seen in Figure 5-6.

Figure 5-6: Initial Transaction Screen, Badge Reader Enabled

If the driver swipes a badge, and that badge is associated with a Permanent ID record, the ID field is automatically filled in, the tables are searched as usual, and the transaction proceeds to the next step (Figure 5-7). No further input from the driver is required, unless the transaction is Outbound and either of the Commodity and Standard Tables is enabled.

Figure 5-7: ID Number Filled by Badge-Associated Record

Master/Slave Configuration

Note: If the IND780 is factory configured for Master/Slave operation, the following procedures are not needed. However, if a Master Reset is performed on the IND780, this procedure should be followed.

This chapter provides examples of Master/Slave configurations that take advantage of the IND780's clustering capability, which permits sharing of peripherals through a network connection.

Configuration 1

In this example, the Master terminal has a badge reader and printer, while the Slave terminal only has a badge reader, and must share the printer.

Master Setup

1. Configure the IND780 IP address and subnet mask for the network (located in setup at **Communication > Network > Ethernet**).

2. Configure the IND780 Cluster network (located in setup at the **Communication > Network > Cluster > This Terminal** – Figure 6-1) as follows:

   a. Network Server = Enabled.

   b. Multicast IP Address – setup according to network to avoid any conflicts. The default of 227.227.000.001 will typically work for most applications.

   c. Node Number = 1 (**Master** must be set to **Node 1**).

Figure 6-1: Cluster – This Terminal Screen

3. Configure Serial Connections:

By default, two connections exist (Inbound – Trigger 1, Outbound – Trigger 2). For this configuration, typically only an Outbound connection is needed. COM3 must be used as the output port for the printer. The Inbound connection can simply be deleted from the Connections list (located in setup at **Communication > Connections**).

4. Configure the application to AutoStart upon power-up and exiting Setup. Navigate to the Application > TaskExpert > Start branch. Add a new task name in the Task 1 slot called "Master.cpt" and set to AutoStart Enabled. Press OK to accept changes.

Figure 6-2: TaskExpert Start Edit Screen

Slave Setup

1. Configure the IND780 IP address and subnet mask for the network (located in setup at **Communication > Network > Ethernet**).

2. Configure IND780 Cluster network (located in setup at **Communcation > Network > Cluster > This Terminal**):

   a. Network Server = Disabled.

   b. Multicast IP Address – setup according to network to avoid any conflicts. The default of 227.227.000.001 will typically work for most applications.

   c. Node Number = 2 (**Slave** must be set to **Node 2**).

3. Configure Serial Connections:

Clear all connections in the Slave terminal (located in the Communication > Connections branch).

4. Configure the application to AutoStart upon power-up and exiting Setup. Navigate to the **Application > TaskExpert > Start** branch. Add a new task name in the Task 1 slot called "Slave.cpt" and set to AutoStart Enabled. Press OK to accept changes.

Configuration 2

In this example, the Master and Slave both have a badge reader and a printer. This example differs from the previous one mainly in the way the connections are configured.

Master Setup

1. Configure the IND780 IP address and subnet mask for the network (located in setup at **Communication > Network > Ethernet**).

2. Configure the IND780 Cluster network (located in setup at **Communcation > Network > Cluster > This Terminal**).

   a. Network Server = Enabled.

   b. Multicast IP Address – setup according to network to avoid any conflicts. The default of 227.227.000.001 will typically work for most applications.

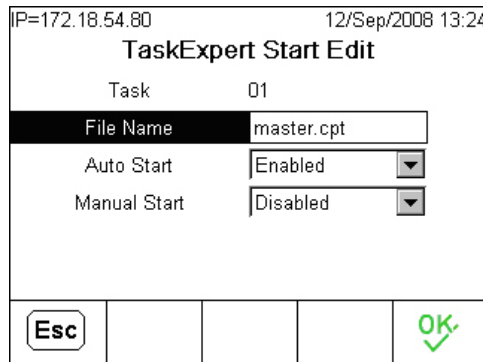   c. Node Number = 1 (**Master** must be set to **Node 1**).

3. Configure Serial Connections

   By default, two connections exist (Inbound – Trigger 1, Outbound – Trigger 2). For this configuration, each box contains a printer and will therefore need a connection. The Master will be used to print the Outbound ticket. The Inbound connection must be modified on the Master. This connection should become an Enet1, Demand, Trigger 1, Template 2 connection. (located in the Communication > Connections branch). This Enet1 connection sends the data to print locally at the Slave terminal.

Figure 6-3: Connection Edit Screen

4. Configure the application to AutoStart upon power-up and exiting Setup. Navigate to the Application > TaskExpert > Start branch. Add a new task name in the Task 1 slot called "Master.cpt" and set to AutoStart Enabled. Press OK to accept changes.

Slave Setup

1. Configure IND780 IP address and subnet mask for the network (located in the Communication > Network > Ethernet branch)

2. Configure IND780 Cluster network (located in the Communcation > Network > Cluster > This Terminal branch).

   a. Network Server = Disabled.

   b. Multicast IP Address – setup according to network to avoid any conflicts. The default of 227.227.000.001 will typically work for most applications.

   c. Node Number = 2 (**Slave** must be set to **Node 2**).

3. Configure Serial Connections

   a. Clear all connections in the Slave terminal (located in the **Communication > Connections** branch).

   b. Add a new Clustered Connection (located in setup at **Communication > Network > Cluster > Connections**).

      i. Local port for this connection to print should be **COM2.**

      ii. Source Terminal is the Master (**Node 1**).

      iii. Assignment is the **Demand-Enet1** print connection from the Master Terminal for Inbound.

Figure 6-4: Cluster Connection New Screen

4. Configure the application to AutoStart upon power-up and exiting Setup. Navigate to the **Application > TaskExpert > Start** branch (Figure 6-2). Add a new task name in the Task 1 slot called "Slave.cpt" and set to AutoStart Enabled. Press OK to accept changes.

Installation Notes

Loading Files at Start-up

The Udrive-780 software consists of three TaskExpert™ files:

- **Master.cpt** is the main application that processes the vehicles inbound and outbound.

- **Setup.cpt** is the setup application that is accessed through the IND780 setup menu to configure the Udrive-780 application.

- **Slave.cpt** is used when a Master/Slave configuration is necessary.

From the factory, all files will be pre-loaded. If a field installation is required, the three files can be located from the Udrive-780 documentation CD **6407557**. Via FTP, the three files should be placed into the following IND780 directory:

\storage card\Task Expert\Programs.

Note: A hardware key, called an iButton, must also be installed into the IND780 to run the Udrive-780 software. Refer to Chapter 3.0 of this manual, **Configuration,** for a detailed description of iButton installation.

Once the files are loaded, the application should be set with AutoStart Enabled to automatically start upon power-up and when coming out of IND780 setup. This can be configured in the **Application > TaskExpert > Start** branch. The main application (**master.cpt**) should be placed into the Task 1 slot.

Figure A-1: TaskExpert Start Edit Screen

I/O Setup

Overview

The loops and lights/gates are used to notify the driver when to pull on and off of the scale. The lights/gates are controlled through the remote I/O module (ARM100) and operate differently depending on whether or not the loops are enabled in the General page.

Loops and lights/gates must be wired to the following input and outputs. Disregard any unused loops or lights in your application.

Table A-1: Input and Output Wiring

Input 1 – Inbound Loop	Output 1 – Inbound Green Light
Input 2 – Outbound Loop	Output 2 – Inbound Red Light
Input 3 – Zero Scale Button	Output 3 – Outbound Green Light
Input 4 – Photo eye	Output 4 – Outbound Red Light

Note: Loops are required for pre-zeroing the scale and for bi-directional operation.

The following section gives a description of the various capabilities of loops and lights using the Udrive-780 software.

Loops Enabled

In this case (Figure A-2), the set up is single or bi-directional, the scale is pre-zeroed, and all lights are enabled.
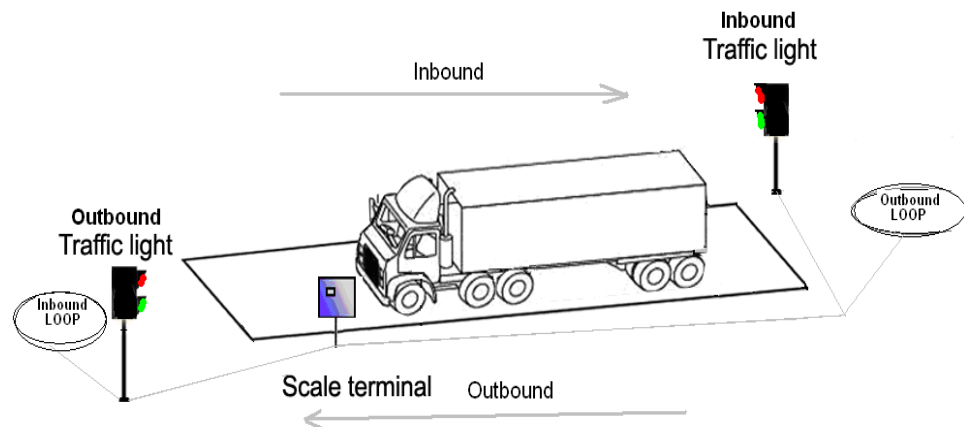
Figure A-2: Example of Traffic Control Setup

Inbound Sequence

1. Scale empty, inbound/outbound red lights on
2. Truck pulls on inbound loop, zero scale, inbound green light on, red off
3. Truck starts on scale, inbound green light off, inbound red on
4. Motion stops, weight is logged
5. After all vehicle data is processed, inbound red off, green on
6. Truck off scale, inbound red light on, green off.

Outbound Sequence

1. Scale empty, Lights set to red
2. Truck pulls on outbound loop, zero scale, outbound light turns green
3. Truck starts on scale, outbound light turns red
4. Motion stops, weight is logged.
5. Process vehicle, outbound light turns green
6. Truck off scale, outbound light turns red

Photo Eye Input

This single input (see Table A-1, above) can be used with photo eye sensors at the ends of the scale to verify that the truck is completely on the scale. Several photo eye outputs can be used in parallel for position verification. If this input is true the display will indicate that a photo eye is blocked and the truck must be re-positioned to print a ticket or log the transaction. This input can be left unconnected without affecting the system.

Appendix B
Default Settings

Table B-1 lists default values for all IND780 settings that are specific to Udrive-780. Default settings for IND780 basic functionality are listed in Appendix B, **Default Settings**, in the IND780 **Technical Manual**.

Table B-1: Udrive-780 Default Settings

Setup Feature	Default Value
General Settings	
Badge Reader	None
Auto-Print	Enabled
Comments	None
Password	865336
Traffic Controls	
Threshold	1000
Max. Wt. Threshold	80000
Zero Tolerance	100
Loops	Disabled
Temporary ID Table	
One-Step ID	Disabled
Description	Disabled
Permanent ID Table	
Totalization	Disabled
Commodity Table	
Commodity Table	Disabled
Totalization	Disabled
Standard Table	
Standard Table	Disabled
Totalization	Disabled

Setup Feature	Default Value
Transaction Table	
Transaction Table	Disabled
Communication – Connections	
COM3	Demand – Trigger 1 (Inbound) – Template 2
COM3	Demand – Trigger 2 (outbound) – Template 3

Glossary

Cross-referenced items are given in **bold** in the Glossary.

Alibi memory	Stores basic transaction information that is not user-definable.
Alpha keys	The **Softkeys** and **Application Keys** function as alpha keys on some setup and operational screens for entering alphabetic characters.
Application keys	"A" keys (A1–A4) located beneath the softkeys that can be assigned specific functions for different operations depending on configuration.
Commodity Table	A table that stores records that can be used to associate load type data with weighing transactions. The total weight value of all transactions for each Commodity can be stored, if Totalization is enabled.
Focus	Items on a screen that display in reverse video or highlighted text indicate where the current focus is located.
Hardware key	Removable key that unlocks access to application software such as **Udrive-780** and **Task Expert**.
Highlighted text	Items on a screen that display in reverse video to indicate where the current focus is located.
Keyboard tare	When keyboard tare is enabled, the known value for the empty weight of a vehicle (tare) can be entered manually. Use the numeric keypad to enter the known tare weight. The terminal will then display the net weight of the contents of the vehicle.
Navigation keys	Keys located below the **Numeric keypad** that include arrow keys for navigating in operation and setup screens, and an ENTER key for accepting data entries.

Net sign correction	Net sign correction enables **Udrive-780** to be used for both shipping (inbound empty) and receiving (inbound loaded) operations, and in **Two-pass weighing**. If net sign correction is enabled, the terminal will swap the gross and tare weight fields on the printed ticket, if necessary, so that the larger weight is the gross weight, the smaller weight is the tare weight, and the difference is always a positive net weight.
Numeric keypad	Keys located above the **Navigation keys** that permit the direct entry of numerical values – for example, a manual tare weight. These keys also include a clear button and a decimal point.
One-pass weighing	A mode where the user has a fleet of vehicles with known empty (tare) weight. The tare weight is recalled by ID when the loaded vehicle is on the scale. See also **Two-pass weighing**.
Permanent ID weighing	The weighing mode that involves the use of the **Permanent ID Table**, where vehicle IDs, descriptions, and permanent stored tares are entered prior to operation. This information is recalled during Permanent ID weighing transactions. Totals for vehicle weights are also maintained in the Permanent ID Table, if totalization is enabled in setup.
Pushbutton tare	When pushbutton tare is enabled, the user can press the TARE scale function key when an empty vehicle is on the scale to determine tare. The terminal displays a zero weight and net mode. When the vehicle is loaded and driven back onto the scale, the terminal displays the net weight of the contents. If the TARE key is pressed while the terminal is in the net mode, the current weight on the scale becomes the new tare value.
Pushbutton zero	Pushbutton Zero is a way for the operator to capture a new gross zero reference point. The weight on the scale must be stable and be within the pushbutton zero capture range, typically ±20% of full scale capacity. The zero of the scale can change because material builds up on the scale or because the temperature changes.
Scale function keys	Keys located to the right of the display screen that perform specific actions: • Select scale • Tare • Zero • Print
Standard Table	A table that stores records that can be used to associate particular data, such as contract details, with weighing transactions. The total weight value of all transactions using each Standard Table record can be stored, if Totalization is enabled.

TaskExpert™	Application software permitting users to program customized functions for use in the IND780.
Two-pass weighing	A mode where the vehicle empty weight (tare) is recorded on the inbound pass, stored in the Vehicle ID table, and used to calculate net weight on the outbound pass. See also **Net Sign Correction**.
Traffic Controls	Controls used to enable Udrive-780 to recognize when weighments begin and end, including the use of loops to actuate I/O for gates, lights, or some combination of these.
Softkeys	Keys located at the bottom of the display screen that can change position and/or function depending on operation setup and configuration.
Tare	Tare is the empty weight of a vehicle. Tare is normally used to determine the net weight of the contents of a vehicle. See also **Net Sign Correction**.
Temporary ID weighing	The weighing mode that involves the use of the **Temporary ID Table** to record tare weights for inbound transactions and to recall these weights on outbound transactions.
Traffic Control	Feature of **Drive-780** software that integrates traffic control with the transaction process. The IND780drive can control lights or gates, based on input from the scale or from embedded loops. See also **Vehicle Positioning**.
Transaction table	A table that, when enabled, stores all the vehicle weighing transactions that have been performed on the terminal. The table consists of records with data such as the transaction number, vehicle ID, date, time, description, gross, net, tare, weight units, and other user-entered data associated with each transaction.