IND310drive

Terminal
Technical Manual

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.

⚠ **WARNING!**

TO AVOID DAMAGE TO THE PCB OR LOAD CELL, REMOVE POWER FROM THE IND310drive TERMINAL AND WAIT AT LEAST 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESS.

⚡ **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!**

THE IND310drive TERMINAL IS NOT INTRINSICALLY SAFE! DO NOT USE WITHIN AREAS CLASSIFIED AS HAZARDOUS DIVISION 1 OR ZONE 0/1 BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES.

⚡ **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.

Contents

For your notes

Chapter 1.0
Introduction

This chapter covers

- Model Identification
- Physical Dimensions
- Specifications
- Operating Environment

Click on any of the above topics to link to the sections where they are located.

The IND310drive industrial terminal is a single- or multi-range, high-performance weighing terminal for use with METTLER TOLEDO® analog and/or POWERCELL®/MTX® scale platforms.

The terminal has permanent and temporary memory locations for storing vehicle weights that 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. Printed report formats include:

- Transactions
- Vehicle ID table
- Temporary ID table
- User-definable application tables

For information about IND310drive terminal operation, refer to the IND310drive User Manual.

Model Identification

Please refer to Table 1-1 to identify the IND310drive that was ordered. The IND310drive model number is located on the back of the terminal along with the serial number.

Table 1-1: IND310drive Model Identification Numbers

IND310drive Model Identification					
Model Type	**Scale 1 Option**	**Scale 2 Option**	**Other Options**	**Line Cord Option**	**Region/ Language**
Always 31L	0 = None 1 = Single ALC* 2 = Dual ALC 3 = POWERCELL	0 = None 1 = Single ALC 3 = POWERCELL	Always 00000V0	A = US B = Schuko C = UK D = Australian E = Swiss F = Danish	Always 00

*Analog Load Cell

Examples of model configuration identification numbers are as follows:

Standard IND310 desk/wall model with a single ALC and a US line cord.
The unit is multi-lingual.

31L1000000V0A00

31L	=	IND310 desk/wall
10	=	Single ALC
00000V0	=	drive application
A	=	US line cord
00	=	multi-lingual

Standard IND310 desk/wall model with a dual ALC with an Australian line cord. The unit is multi-lingual.

31L2000000V0D00

31L	=	IND310 desk/wall
20	=	Dual ALC
00000V0	=	drive application
D	=	Australian line cod
00	=	multi-lingual

Standard IND310 desk/wall model with a POWERCELL, single ALC on Scale 2, and a Schuko line cord. The unit is multi-lingual.

313100000V0B00

31L	=	IND310 desk/wall
31	=	POWERCELL and Single ALC
00000V0	=	drive application
B	=	Schuko line cord
00	=	multi-lingual

Physical Dimensions

See Appendix A, Installation for detailed instructions on mounting the terminal and connecting peripheral components.

The IND310drive terminal physical dimensions are shown in Figure 1-1 through Figure 1-4.

Figure 1-1: Overall View of IND310drive
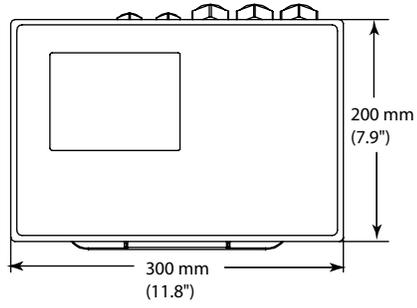
Figure 1-2: Top View of IND310drive
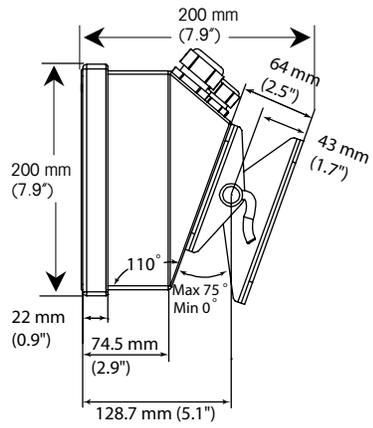
Figure 1-3: Side View of IND310drive
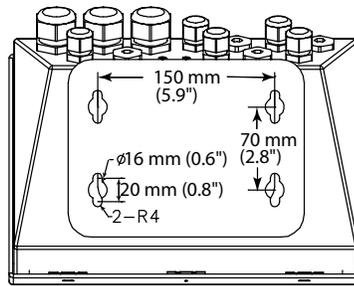
Figure 1-4: Bottom View and Mounting Hole Locations for the IND310drive

Specifications

The IND310drive terminal conforms to the specifications listed in Table 1-2.

Table 1-2: IND310drive Specifications

IND310drive Specifications	
Enclosure Type	Stainless Steel Desk with adjustable angle stand
Environmental Protection	Washdown, IP69K
Power	Universal Internal AC Power Supply 87 - 264 VAC, 49 - 61 Hz Fused at 1.6 amp, 250 volt
Display	Monochrome, graphic LCD, 1/4 VGA (320 x 240 pixels)
Weight Display	Variable size Default: 24 mm (0.9 in)
Scale Types	Analog, POWERCELL®, MTX®
Number of Cells	8 - 350Ω Analog load cells per channel, maximum of two channels 10 POWERCELLs or MTX load cells 24 POWERCELLs with Optional External Power Supply
Number of Scales	Up to 2 platforms
Keypad	0 – 9 Numeric, Decimal 10 Functional/Navigational keys 4 Application Specific and 5 Softkeys
External Keyboard	Supports Optional External Keyboard via PS/2 connector

Communications	(2) Serial Ports:
	  COM1–RS232, 20mA CL
	  COM2–RS232, RS485/422
	TCP/IP 10Base-T Ethernet
	ISO8859-15 Character Table[1]

Dimensions w x d x h	300 x 270 x 190 mm 11.8 x 10.6 x 7.5 in
Net Weight Shipping Weight	5.5 kg / 8.0 kg 12 lb / 17 lb
Operating Environment	-10 °C to 40 °C (14 °F to 104 °F) 10 to 95% humidity, non-condensing

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[1] Customer printer must support the ISO8859-15 character table to be compatible.

IND310drive Specifications	
Approvals	CE Conformity
	90/384/EU – Non-automatic Balances and Scales
	EN45501: 1992 – Adopted European Standard
	89/336/EU – EMC Directive
	EN55022, 1998, Class A
	Weights and Measures (US) Class III or IIIL devices NTEP Certificate of Conformance No. (Pending)
	Weights and Measures (Canada) 10,000 division rating and approval (Pending)
	Weights and Measures (Australia) Class III non-automatic weighing instruments as defined in the National Standards Commission, Document R76
	Conforms to OIML R76
	Conforms to IP69K

Controller PCB

The IND310drive terminal's controller printed circuit board (PCB) supports scale function interface boards, including single analog, dual analog, POWERCELL, or single analog and POWERCELL interfaces. Supply voltage for the POWERCELL is 12 volts. The external POWERCELL power supply voltage is 24 volts.

Communications ports (COM1 and COM2) are RS-232/20 mA CL and RS485/422 compatible. Both serial ports are available simultaneously for transmitting; however, only one can receive data at any given time. A PS/2 and an Ethernet port are also available. Connections to the controller PCB are made using removable terminal strips with wire sizes ranging from 24 to 16 AWG.

Display and Keyboard

The IND310drive terminal has an LCD display that shows the terminal's status, including the active scale, date, and time across the top, the current application in the middle, and enabled softkey functions across the bottom.

The display includes five softkeys and four application keys, each measuring 19.05 mm (0.75 in.) high. Four scale function keys, each measuring 12.7 mm (0.5 in.) are positioned to the right-side of the display.

Up to ten additional softkeys are available depending on the weighing options and terminal functions enabled. The softkey setup and key mapping capabilities of the terminal determine the positioning of the softkeys and locations where they display.

DOWN ⌄ or UP ⌃ arrow icons that display on the lower-right corner of the screen (to the far right of the softkey icons) indicate that additional softkey selections are available.

The terminal's 12-key numeric keypad is used to enter data and commands. Numeric keys each measure 12.7 mm (0.5 in.), and are located on the upper-right side of the terminal front panel. Scale operation may also be controlled using an optional external PS/2 keyboard.

Five navigational keys are located below the numeric keypad. These keys enable the operator to navigate through setup options in the menu tree and within setup and application screens.

Operating Environment

Consider the following environmental factors when selecting a location for operation of the IND310drive

- Temperature and humidity
- Environmental protection
- Hazardous areas

Temperature and Humidity

The IND310drive operating environment temperature and relative humidity are listed in Table 1-2. The terminal can be stored at temperatures ranging from −20° to 60° C (−4° to 140° F) at 10 to 95% relative humidity, non-condensing.

Environmental Protection

The IND310drive meets IP69K requirements.

Hazardous Areas

The IND310drive is not intrinsically safe and must not be operated in areas classified as Hazardous by the National Electrical Code (NEC) because of the combustible or explosive atmospheres in those areas. Contact an authorized METTLER TOLEDO representative for information about hazardous applications.

	⚠ WARNING!
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Chapter 2.0

Operation

This chapter covers

- Overview
- Default Screen
- Application Operation
- Report Generation

Click on any of the above topics to link to the sections where they are located.

This chapter provides information about general operation and setup of the IND310drive terminal.

Overview

See for more information about setup.

Operation of the terminal depends on enabled functions and setup parameters. Functionality and configuration parameters are programmed in Setup mode and can be modified as necessary by users with appropriate access levels.

Security

The IND310drive supports a single user/password for setup security. The terminal is pre-configured at the factory with a user name of "ADMIN". The factory default password is null (no password). The unit as configured at the factory requires no login or password entry to enter the setup mode. All functions of the terminal are available to all users until a password is set up.

The pre-configured user (ADMIN) cannot be changed; the password can only be added or modified. Be sure to remember the password. If the password is changed or forgotten, access to the setup menu will not be available. Be sure to protect the password from access by unauthorized personnel. The password provides access to the entire setup menu, unless the metrology switch is placed in the approved position.

Metrology Switch

If the metrology switch is placed in the approved position, access to the scale and other metrologically significant areas is not permitted. Access to the metrology switch may be sealed in conformity with local regulations.

Keystroke Functions

Key names and commands are identified in this manual by upper- and lower-case letters. Key names, such as ENTER, are in all upper-case letters, and commands, such as "select," are in lower-case (unless they begin a sentence, in which case the first initial is upper-case). For example:

- "Press INDEX…" means to press the INDEX softkey.

- "Select an option…" means to use the UP or DOWN arrow navigation keys to select a setting, then press ENTER.

Softkeys and application displays use graphic images for identification. Table 2-1 shows graphic images and their functions.

Table 2-1: Graphic Images and Functions

Graphic Image	Function
→|▼|←	Capture Span
→0←	Capture Zero
C	Clear
◑	Contrast
[1]	Current "Var1" Value
[2]	Current "Var2" Value
A 1	Current A1 Value
A 2	Current A2 Value
A 3	Current A3 Value
A 4	Current A4 Value
ID:	Current Vehicle ID
DESC:	Current Vehicle Description
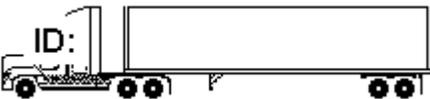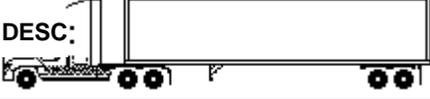
Graphic Image	Function
	Custom Report
	Darker
	Database Files
	Database Query (search)
	Delete
	Edit
ESC	Escape (exit without storing)
	Exit (return to previous screen)
x10	Expanded Weight
ID	Vehicle ID Weighing
INDEX	Index Weighing
i	Information
	Information/Recall
	Lighter
v ∧ ∧	More Softkey Selections
	New/Insert
	Report
	Reset
000	Reset Counter

Graphic Image	Function
	Return to A1-A4 File Entry
	Return to Var1-2 Entry
	Setup Menu
	Start
	Start Search
	Stop
	Temporary ID Weighing
	Time & Date
	Transient Vehicle Weighing
	Unit Switching
	Validate Entry/Transaction
	Metrology (Weight) Information
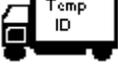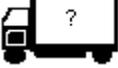
General Navigation

Navigate in the applications and configure the IND310drive using

- Softkeys
- Application keys
- Scale function keys
- Navigation keys
- Numeric keys
- Alpha keys
- External Keyboard

The locations of the above listed keys and the default weighing operation screen are shown in Figure 2-1.

Softkeys

The softkey setup page is used to

- Change softkey positions

- Enable softkey functions

- Disable softkey functions

For example, a contrast softkey can be enabled for making quick adjustments to the terminal screen's contrast setting.

Five softkeys are located along the bottom of the display screen (see Figure 2-1). Some screens might have up to three pages of softkeys for a total of 15 possible functions. A DOWN ARROW icon ⍦ displayed on the lower-right corner of the screen (to the far right of the softkey icons) indicates that more softkey selections are available. Press the DOWN arrow navigation key to display additional softkey screens. Press the UP arrow navigation key to display the previous softkey screen.
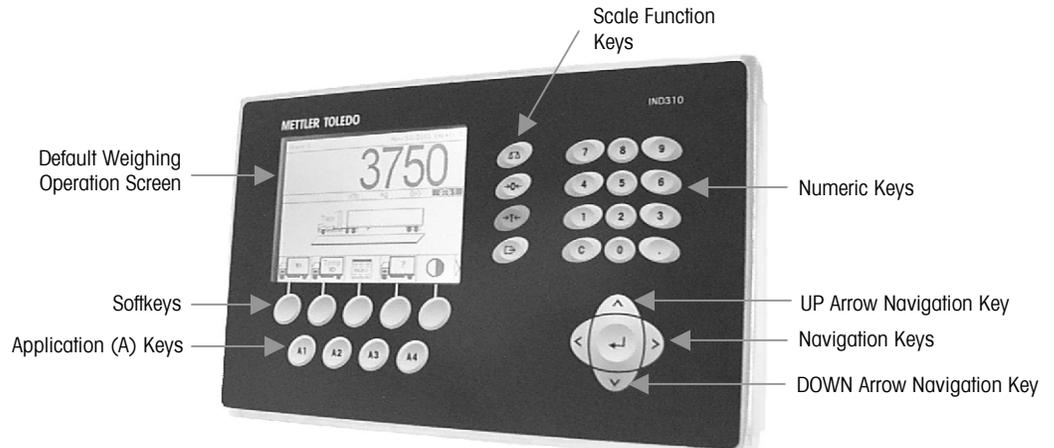
Figure 2-1: Key Locations and Default Weighing Operation Screen

Application Keys

Application keys (A keys) are located below the softkeys (see Figure 2-1) and are labeled

- A1

- A2

- A3

- A4

The application key setup screen is used to assign specific functions to the application keys. For example, application keys could be configured to magnify the display ten times, adjust contrast, or select user-defined table information.

Scale Function Keys

Scale function keys (see Figure 2-1) are:

△ △ **Select Scale**—Enables the operator to select a specific scale. Press the SELECT SCALE key to switch between available scales.

→0← **Zero**—Zero is the weight of the scale platform or weighbridge when it is empty. The gross zero reference is recorded during calibration. Press the ZERO scale function key to capture a new gross zero reference point if pushbutton zero is enabled in configuration and the weight is within the zero range.

→T← **Tare**—Tare is the weight of a vehicle when it is empty. Tare is normally used to determine the net weight of the contents of a vehicle. Press the TARE scale function key when an empty vehicle is on the scale. The terminal then displays a zero weight. The vehicle is loaded and driven back onto the scale. The terminal then displays the net weight of the contents. Pushbutton tare must be enabled to use this key in this manner.

When the empty weight of the vehicle is a known value, enter the tare weight using the numeric keys and then press the TARE scale function key. The terminal will display the net weight of the contents of the vehicle. Keyboard tare must be enabled in order to use this key in this manner.

↳ **Print**—Press the PRINT scale function key to generate a hard-copy printout of a report or of information displayed on the screen or to initiate a demand print of an assigned print template. A printer must be connected to a serial port and the terminal must be configured to match its serial port settings to the printer's. Communication connection and configuration is necessary to connect a template or report to the selected serial port, and to define the selected template or report in configuration.

Navigation Keys

Navigation keys (see Figure 2-1) enable navigation within the setup menu tree, setup screens, and application screens. Navigation keys include:

- ∧ **Up and** ∨ **down arrows**—move the focus up or down to different setup options within the menu tree or to different fields within setup pages. Focus is indicated by highlighted text. These keys are also used to switch to another page of softkeys.

- < **Left and** > **right arrows**—expand (right arrow) or collapse (left arrow) the setup options in the menu tree. These arrows also move the cursor position to a specific character in text areas, and enable left and right scrolling to view all information available on a screen.

- ↵ **Enter**—opens the setup page for viewing and editing setup parameters. The Enter key moves the focus from a field label to a setup value for that field. After entering a value, the enter key is used to accept new values and the focus moves to the next field label.

Numeric Keys

Use the terminal's 12-key numeric keypad (see Figure 2-1) to enter data and commands.

To use numeric keys, position the cursor in the field (see Navigation Keys) and press the numeric keys to enter the appropriate data. Press the DECIMAL key (. key) to enter decimal points where necessary.

The CLEAR key (C key) functions like a backspace key. Position the cursor at the end of data to be deleted and press the C key. Press the C key once for each character to be deleted.

Alpha Keys

On some setup pages, softkeys and application keys function as alpha keys (see Figure 2-2) that are used to enter alphabetic characters for setup parameters such as passwords.
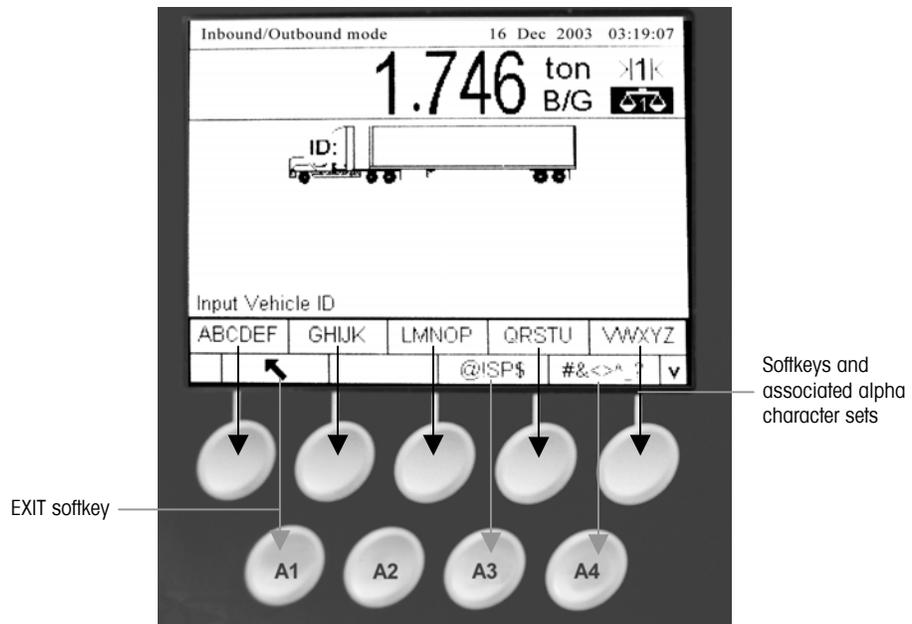
Figure 2-2: Alpha Keys

To use alpha keys, position the cursor in the data entry location (see Navigation Keys), press the softkey or application key associated with the desired set of alpha characters as shown in Figure 2-2. The softkeys change to display each alpha character included in the selected set of alpha characters. Use the UP and DOWN arrow navigation keys (see Figure 2-1) to switch between upper-case and lower-case characters. Press the key associated with the specific alpha character

desired for data entry. Use the EXIT softkey ↖ to return to the main alpha key menu. Repeat this process until all alpha characters have been entered.

From the main alpha key menu, press the EXIT softkey to escape from alpha entry without saving data. Use the CLEAR (C) key (see Numeric Keys, Figure 2-1) to delete unwanted alpha characters.

Use the CLEAR (C) key (see Numeric Keys) to delete unwanted alpha characters.

External Keyboard

See [Appendix A, Installation](#) for more information on connecting an external keyboard.

An external keyboard can be connected to the IND310drive at the PS/2 port. The keys on an external keyboard perform the following functions

- **F1 through F5**—Perform the same functions as the softkeys, with F1 being the softkey on the left and F5 being the softkey on the right.

- **Alt F1 through Alt F4**—Perform the same functions as the A1 through A4 application keys.

- **F6 through F9**—Perform the same functions as the SELECT (F6), ZERO (F7), TARE (F8), and PRINT (F9) scale function keys.

- **Keyboard numeric and alphabetic keys**—Function independently of the softkeys and can be used to enter alphabetic letters and numerals. The Enter key on the keyboard functions the same as the ENTER navigation key. The Backspace key functions the same as the CLEAR (C) key. The arrow keys function the same as the navigation keys.

- **Number keys**—Function the same as the keys on the terminal's numeric keypad when the number lock function is engaged.

Default Screen

The default weighing operation screen displays when the application is idle (see Figure 2-3).
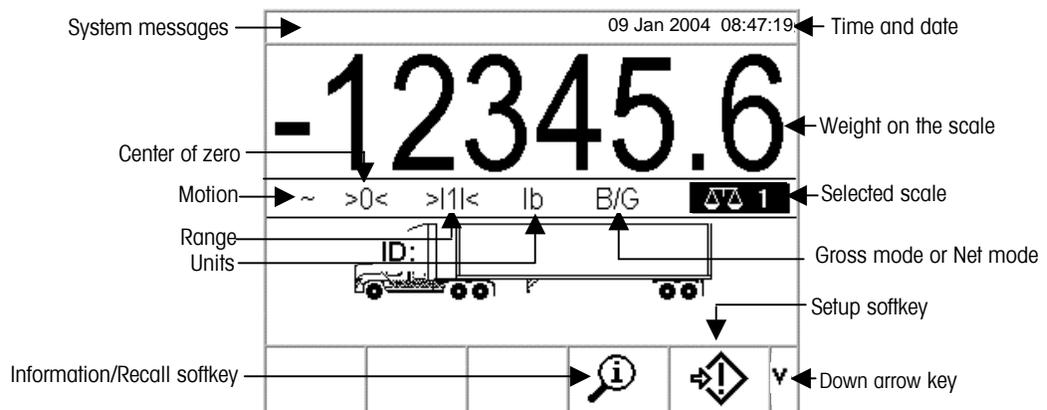
Figure 2-3: Default Weighing Operation Screen

Application Operation

Routine operations with all vehicle features enabled in setup include four modes of terminal operation:

- **Vehicle ID Weighing**—Uses a permanent stored Vehicle ID table to identify the tare value of the vehicle, and then follows the steps defined by the outbound process to complete the procedure, which is also called a transaction. Vehicle ID Weighing enables the accumulation of totals based on vehicle ID.

- **Temporary ID Weighing**—Coordinates the inbound and outbound processes for vehicles that are not permanently stored in the Vehicle ID table through the use of a Temporary ID table. Temporary ID Weighing stores the vehicle information in the Temporary ID table and follows the inbound process. It also removes this temporary entry when the vehicle returns and follows the outbound process. The entry is temporary, so accumulation of totals does not occur.

- **Index Weighing**—Enables the Vehicle ID Weighing mode and Outbound process to be condensed through the use of a special Index table that provides a single ID reference for quick multiple ID look-ups.

- **Transient Weighing**—This mode enables weighing of vehicles that are not part of normal operation in a manner similar to the Vehicle ID Weighing mode. Transient Weighing does not use the Vehicle ID table, so the operator must enter vehicle data. Transient Weighing transactions are not included in totals.

There are two weighing processes:

- **Outbound**—Completes the vehicle transaction. The gross, tare, and net weight values are now known. Other transaction information may be collected (A1–A4 table data, Variable 1, and/or Variable 2 data). The completed transaction information is stored and can be printed.

- **Inbound**—Enables the vehicle identification information and a stored weight value to be collected. Other transaction information may be collected (A1–A4 table data). The inbound transaction information is stored and can be printed.

Direct Entry Option

See [Appendix C, Database Structure and Use](#) for more information about how to use Quick IDs and Short A/N IDs.

An alternative method to initiate a transaction is direct entry of known data. To use this option, enter any type of known data, such as a Quick ID or a tare weight, on the main weighing screen to initiate a transaction. Press a softkey or scale function key to select how the terminal uses the information.

Examples include:

- Enter a Quick ID and press the VEHICLE ID or TEMPORARY ID softkey. The data entered becomes the Quick ID reference (look-up key) for the table that corresponds with the selected softkey.

- Enter a tare weight and press the TARE scale function key. The data entered becomes a manually-entered tare.

Vehicle ID Weighing

Vehicle ID Weighing uses the Vehicle ID Table, where vehicle IDs, descriptions, and permanent stored tares are entered prior to operation. Totals of vehicle weights are also maintained in the Vehicle ID Table (if enabled in setup).

To use Vehicle ID Weighing:

1. From the default weight screen (Figure 2-3), press the DOWN arrow key to display all available softkeys (see Figure 2-4).
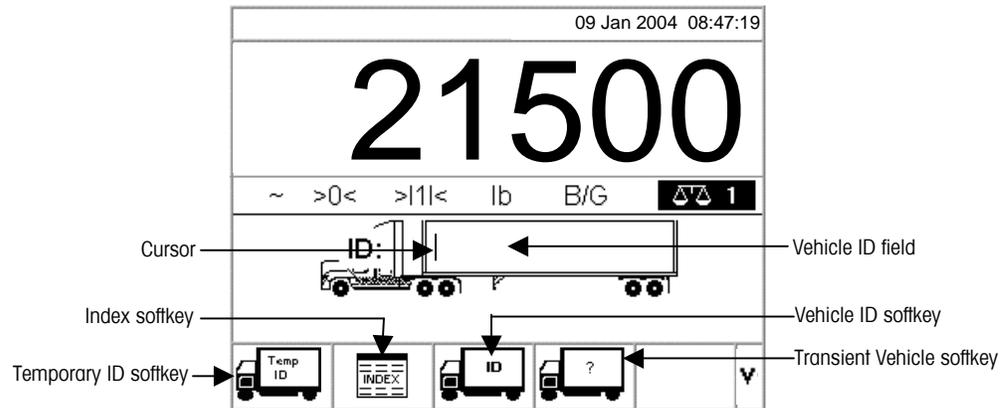
Figure 2-4: Default Weight Screen

◄ This screen may appear differently depending on setup configuration. If the VEHICLE ID softkey does not appear, see Appendix E, Softkey and Application Key Mapping.

2. Once the vehicle is on the scale, press the VEHICLE ID softkey. A vehicle ID prompt displays with a cursor in the Vehicle ID field. The softkeys and application keys become alpha keys (see Figure 2-2).

3. Use the alpha keys and the numeric keypad to enter the vehicle ID. Press the ENTER key to complete the entry. The ID value entered is the look-up key for the vehicle in the Vehicle ID table and then in the Temporary ID table.

◄ If an external keyboard is connected, it can be used to enter information.

4. If the vehicle's ID is located in the Vehicle ID or Temporary ID tables, the terminal uses the stored data (including tare weight) and continues with the outbound process. To continue the transaction, see Outbound Process.

If the vehicle's ID is not located, the display will read ID NOT FOUND (see Figure 2-5).
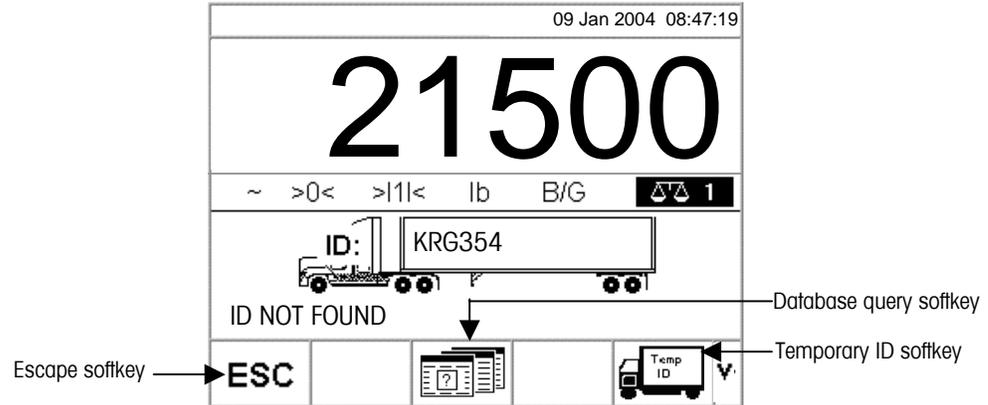
Figure 2-5: Default Weight Screen

See [Appendix C, Database Structure and Use, Table Searches](#) for more information about how to search for a vehicle ID.

When a vehicle ID is not located, the user has three options:

- **Escape**—Press the ESCAPE softkey (see Figure 2-5) to return to the main Default Weight Screen.

- **Search for the vehicle ID**—Press the DATABASE QUERY softkey (see Figure 2-5) to search for the vehicle ID. Once the correct ID is located, continue with the outbound process (see Outbound Process).

- **Create a temporary ID**—Press the TEMPORARY ID softkey (see Figure 2-5) to store the ID in the temporary ID table (see Temporary ID Weighing).

Temporary ID Weighing

Temporary ID Weighing involves the use of the Temporary ID Table to record tare weights for inbound transactions and to recall these weights on outbound transactions. Manually-entered tare weights can also be used for Temporary ID Weighing.

Following an outbound transaction, the vehicle ID is removed from the Temporary ID Table. The totals for these types of transactions are not recorded in the Temporary ID Table, but are recorded in the A1, A2, A3, and A4 Tables if enabled.

To use Temporary ID Weighing:

1. Once the vehicle is on the scale, press the TEMPORARY ID softkey (see Figure 2-4). A vehicle ID prompt displays with a cursor in the ID field. The softkeys and application keys become alpha keys (see Figure 2-2).

2. Use the alpha keys and the numeric keypad to enter the vehicle ID. Press the ENTER key to complete the entry.

3. If the vehicle ID is found in the Temporary ID Table, the terminal uses the stored data and continues with the outbound process. To continue the transaction, see Outbound Process.

When a vehicle ID is not located, the user has three options:

- **Escape**—Press the ESCAPE softkey (see Figure 2-5) to return to the main Default Weight Screen.

- **Search for the vehicle ID**—Press the DATABASE QUERY softkey (see Figure 2-5) to search for the vehicle ID. Once the correct ID is located, continue with the outbound process (see Outbound Process).

- **Insert an ID in the Temporary ID Table**—Press the INSERT softkey   . The vehicle ID is inserted into the Temporary ID Table. To continue the transaction, see Inbound Process.

Using Manually-Entered Tare Weights for Temporary ID Weighing

Operators can use manually-entered tare weights rather than stored tare weights in the Temporary ID Weighing mode (if enabled in setup).

To manually enter a tare weight:

1. From the default weight screen (Figure 2-6), use the numeric keypad to enter the tare value in the tare field **BEFORE** pressing the TEMPORARY ID softkey.
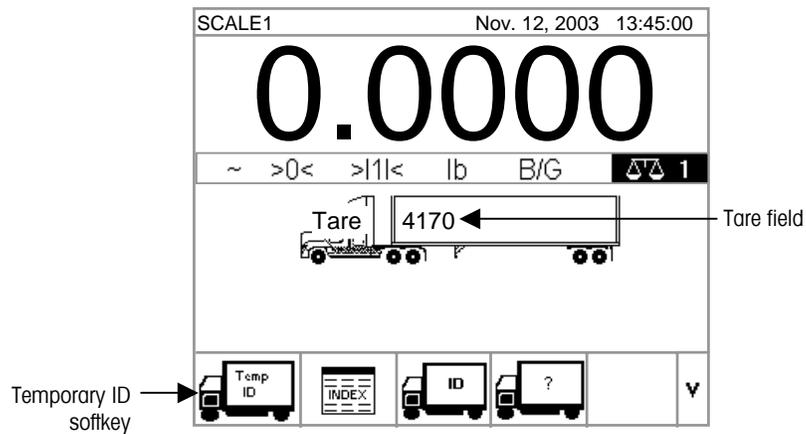
Figure 2-6: Default Weight Screen

2. Press the TEMPORARY ID softkey and then enter the Vehicle Description using the alpha keys. To continue the transaction, see Outbound Process.

Index Weighing

Index Weighing uses the Index Table, which enables a relational ID to be used to locate values for enabled table information, including the Vehicle ID and A1–A3 Tables (if configured in setup). Index Weighing requires the use of the A4 Table as the Index Table, which is configured in the application memory setup.

To use index Weighing

1. Once the vehicle is on the scale, press the INDEX softkey (Figure 2-7).
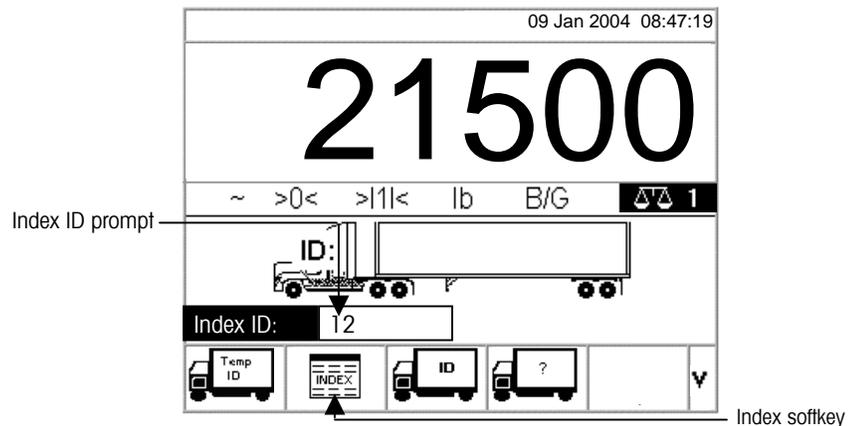
Figure 2-7: Weight Screen With Index ID Prompt

2. An Index ID prompt displays with a cursor in the ID field (see Figure 2-7).

3. Use the numeric keypad to enter the Index ID. Press the ENTER key to complete the entry.

4. If the ID is found in the Index Table, the terminal uses the relational ID data to locate corresponding data in the vehicle ID and A1–A3 tables. To continue the transaction, see Outbound Process.

   When an Index ID is not located, the user has two options:

   - **Escape**—Press the ESCAPE softkey ![ESC] to return to the main Default Weight Screen.

   - **Search for the Index ID**—Press the DATABASE QUERY softkey ![icon] to search for the index ID. Once the correct ID is located, continue with the outbound process (see Outbound Process).

See Appendix C, Database Structure and Use, Table Searches for more information about how to search for an Index ID.

Transient Vehicle Weighing

Use Transient Vehicle Weighing for vehicles that should not be included in totals or in the terminal's memory.

To use Transient Vehicle Weighing:

1. Once the vehicle is on the scale, press the TRANSIENT VEHICLE WEIGHING softkey (see Figure 2-8).
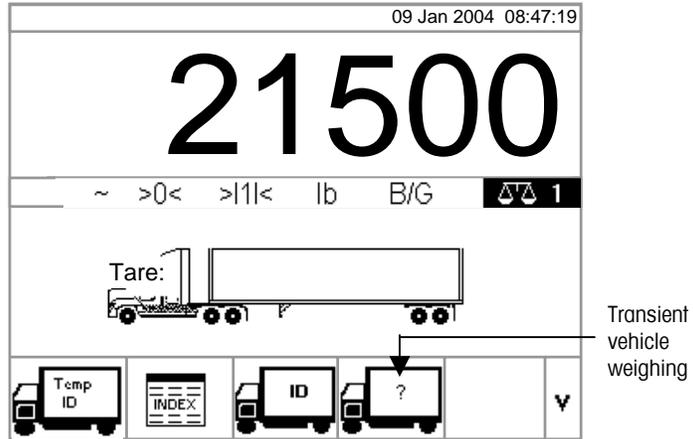
Figure 2-8: Default Weight Screen

2. A prompt displays with a cursor in the description field. The softkeys and application keys become alpha keys (see Figure 2-9).
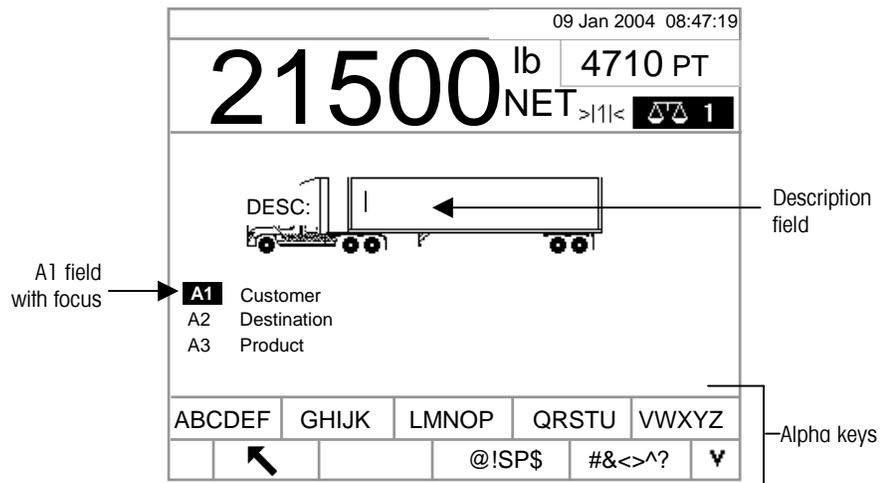
Figure 2-9: Transient Weighing ID Prompt

3. Use the alpha keys and the numeric keypad to enter the description. Press the ENTER key to complete the entry. To continue the transaction, see Outbound Process.

Outbound Process

Completing the Outbound Process involves:

- Entering Database Information
- Validating the Transaction
- Printing and Storing

Entering Database Information

Database files must be enabled in the setup menu for the different types of weighing operations in order to enable the collection of database information during transactions. If enabled, totals are maintained for the database information.

◀ Entry of database information is not obligatory. Press the OK softkey ✓ to continue a transaction without entering data.

To enter database information:

1. The A1 field has focus (is highlighted) when the screen displays. Press the ENTER key to access the A1 field. The softkeys and the application keys become alpha keys

2. Use the alpha keys and the numeric keypad to enter the Quick ID or Short A/N (alpha/numeric) ID of the desired database information in the text boxes that correspond to the A1, A2, A3, and A4 (if enabled) tables (see Figure 2-10).

◀ If the A4 Table is not enabled as the index table, it can be a user-defined entry field that functions like the A1–A3 Tables.
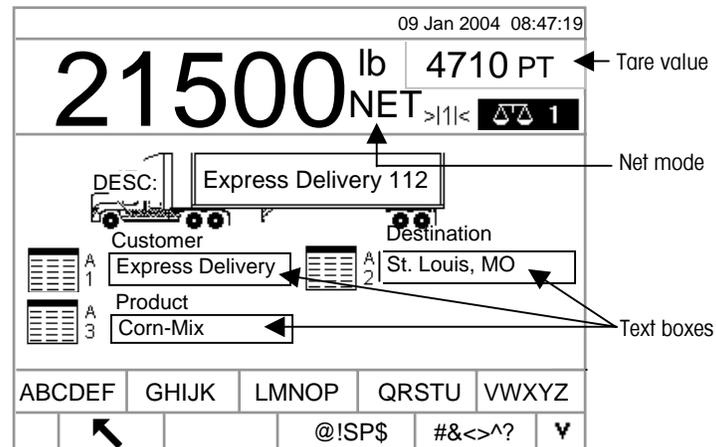
Figure 2-10: A1–A3 Tables Data Entry Screen

3. Press the ENTER key. The description that corresponds to the Quick ID or Short A/N ID displays in the text box.

4. If the Quick ID or Short A/N ID is not found in the database, the message "A1 ID NOT FOUND" displays. Search the database by pressing the

    DATABASE QUERY softkey [image].

5. Once all table entries are complete, press the OK softkey [image] to accept the entries.

◄ For Index Weighing, the A1, A2, and A3 table fields (if enabled) will display the database values as referenced in the Index Table. If necessary, change the values by following steps 1–3. A1, A2, and A3 table values that are changed during Index Weighing will not be changed in the Index Table.

6. If variable data entry has been enabled, variable data fields display. Variable data field names are enabled in the application setup. For example, in Figure 2-11 humidity is enabled as Variable 1 and quality is enabled as Variable 2. Use the alpha keys and the numeric keypad to enter variable data.
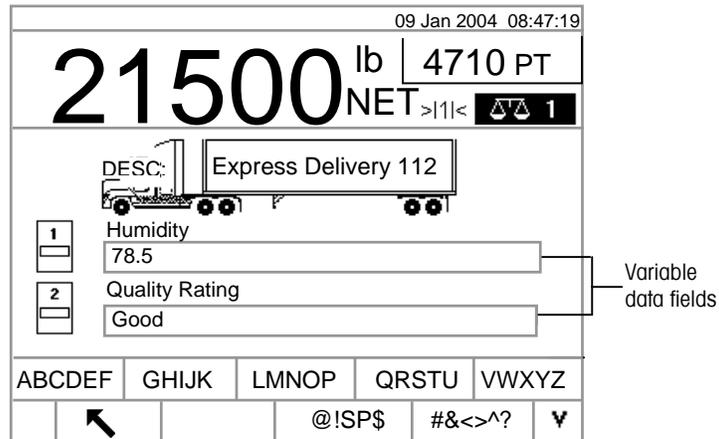
Figure 2-11: Variable Data Entry Screen

7. Once all table entries are complete, press the OK softkey [image] to accept the entries.

◄ Entry of data here is not obligatory. Variable data is not stored. Press the OK softkey to continue without entering data.

Validating the Transaction

After entering all data for the database and variable data, the validation screen displays (Figure 2-12). This screen shows all database table entries.
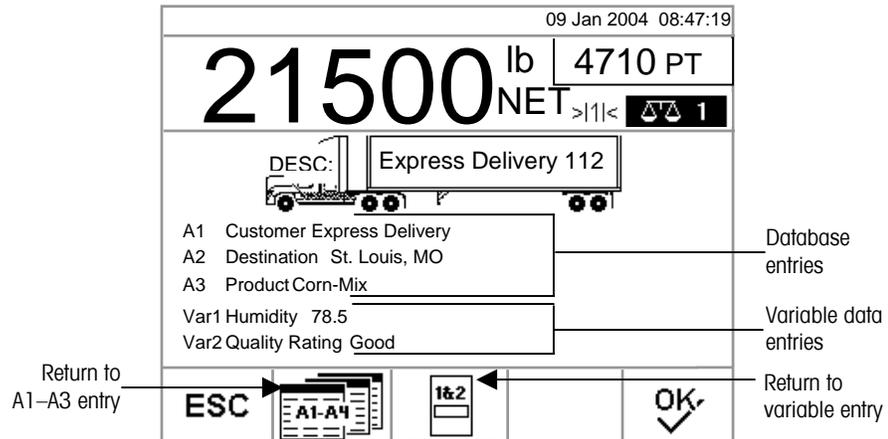
Figure 2-12: Validation Screen

To validate the transaction

1. Verify that the information displayed for the database entries (A1–A3) and the variable data entries (Var1–Var2) is correct.

2. If any information is not correct, press the RETURN TO A1–A3 ENTRY softkey or the RETURN TO VARIABLE ENTRY softkey to go back to the appropriate entry screen to correct the information. Press the ESCAPE softkey to clear all data and re-start the transaction.

3. Once all information is correct as displayed, press the OK softkey to validate the transaction.

◄ If the A4 Table is not enabled as the index table, it can also be a user-defined entry field that functions like the A1–A3 Tables, and information will display and should be validated for this database entry as well.

Printing and Storing

1. Once the transaction is validated, the information related to the transaction is stored in the Transaction Table and the outbound transaction prints (if enabled in setup).

2. After storing and/or printing, the display returns to Gross mode and the terminal is ready for the next transaction.

Inbound Process

Completing the Inbound Process involves:

- **Entering Database Information**—The same procedures as listed under Entering Database Information for the Outbound Process, except for variable data entry, which does not occur during the Inbound Process.

- **Validating the Transaction**—The same procedures as listed under Validating the Transaction for the Outbound Process, except variable data fields are not present.

- **Printing and Storing**—The same procedures as listed under Printing and Storing for the Outbound Process, except ID, description, and inbound weight information related to the transaction are also stored in the Temporary Table.

Report Generation

See [Appendix C, Database Structure and Use, Table Reports,](#) for more information about how to configure reports.

Reports are generated from database tables including:

- Transaction Table

- Vehicle ID Table

- Temporary ID Table

- A1, A2, A3, and A4 Tables

The RUN REPORT softkey ⬚ must display on the operational screens to generate table reports. Otherwise, table reports can only be generated from setup screens.

To generate a table report from an operational screen

1. Press the RUN REPORT softkey. The Reports Run/Full screen displays (see Figure 2-13).
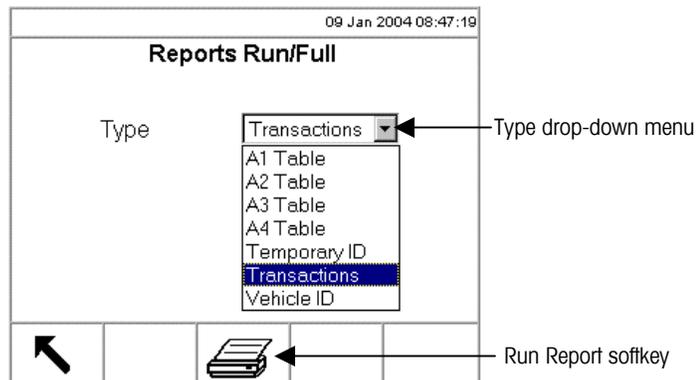
Figure 2-13: Reports Run/Full Screen

2. Use the Type drop-down menu to select the desired type of database table report. Press the ENTER key to accept the selection.

3. Press the RUN REPORT softkey. The Report Setup Screen for the selected report type displays (see Figure 2-14).

4. Continue to Step 5 under to generate a table report from a setup screen below.

To generate a table report from a setup screen

1. Press the SETUP MENU softkey   .

2. Scroll down the setup menu tree to Application>Vehicle Weighing>Reports.

3. Select the desired type of database table report.

4. Press the ENTER key to open the setup screen for the selected table report. The Report Setup Screen for the selected report type displays (see Figure 2-14).
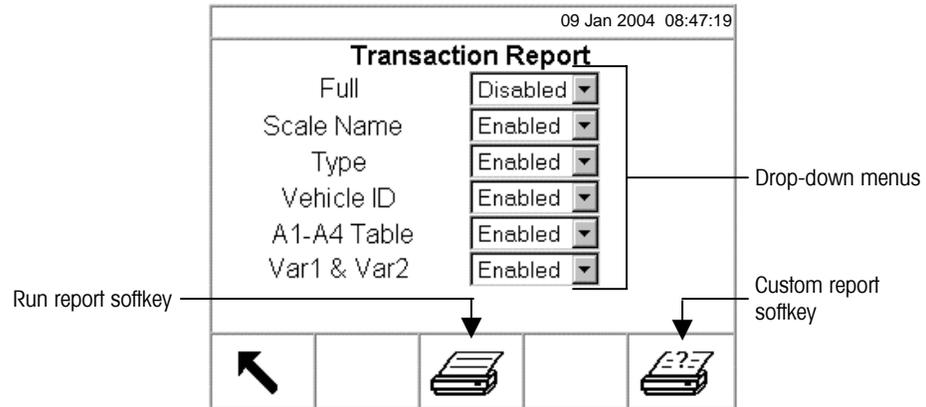
Figure 2-14: Report Setup Screen (Transaction Report)

See Chapter 3.0, Configuration, Memory Setup for more information about A4 table functions.

5. Use the drop-down menus on the Report Setup Screen to enable or disable the defined table fields within the structure of the table report.

◄ If Full is enabled for the transaction table report, other selections do not display.

◄ If the A4 table is configured as the Index Table, the fields that display change to enable set up of the Index Table report structure.

6. Press the RUN REPORT softkey to run a standard table report that includes data from all enabled fields.

7. Press the CUSTOM REPORT softkey to limit the records included within the report fields and run a custom report. See Figure 2-15 for an example of a custom report setup screen.
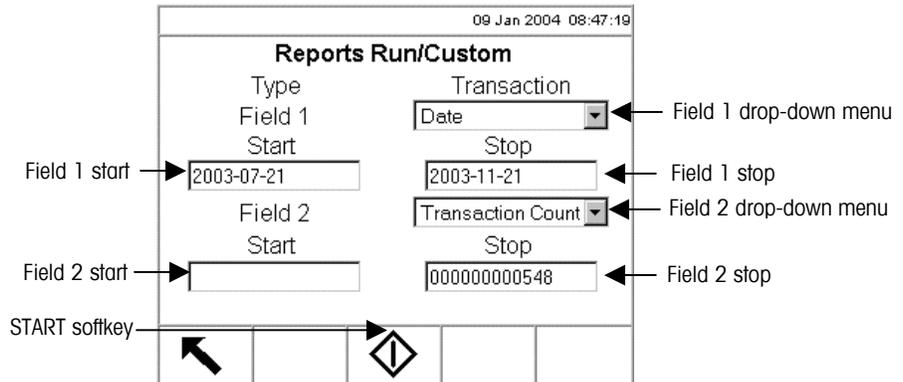
Figure 2-15: Example Custom Report Setup Screen

To configure and run a custom report:

1. Use the Field 1 and Field 2 drop-down menus to select fields to be used to limit records that are included in a report.

2. Specify the range of reported field values by entering start and stop values for the selected fields. For example, if Date is selected for Field 1, and a start value of 2003-07-21 and a stop value of 2003-11-21 are entered, only records with dates between July 21, 2003 and November 21, 2003 will be included in the report.

    If the stop value is left blank, then any records with values that fall after the start value are included in the report. If the start is left blank, then any records with values that fall before the stop value are included in the report. For example, if Transaction Count is selected for Field 2 with a blank start value and a stop value of 548, then all records with transaction counts between 1 and 548 and dates between July 21, 2003 and November 21, 2003 will be included in the report.

    ◄ The date format is fixed at YYYY-MM-DD for these fields. (This date format might not match the terminal's date configuration.)

3. Press the START softkey to run the custom report.

Chapter 3.0

Configuration

This chapter covers

- Entering Setup Mode
- Configuration Options
- Restoring Factory Default Settings
- Exiting Setup Mode

Click on any of the above topics to link to the sections where they are located.

This chapter provides information about how to configure the IND310drive terminal's operating system. It describes access to the setup mode, where functions can be enabled, disabled, or defined by entering parameter values in specific setup screens.

Entering Setup Mode

See Chapter 2.0, General Navigation for more information about how to use the navigation and alpha keys.

The configuration of the IND310drive terminal is accessed through the SETUP softkey. If password security has been enabled, a login screen (Figure 3-1) displays and the user must enter the correct password in order to advance into setup.
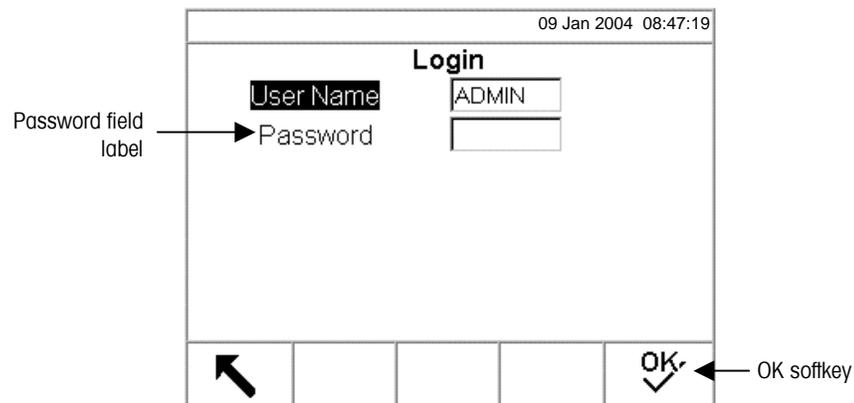
Figure 3-1: Login Screen

To enter a password:

1. Use the DOWN arrow key to move the focus to the Password field label.
2. Press the ENTER key. The softkeys change to alpha keys (see Figure 3-2).
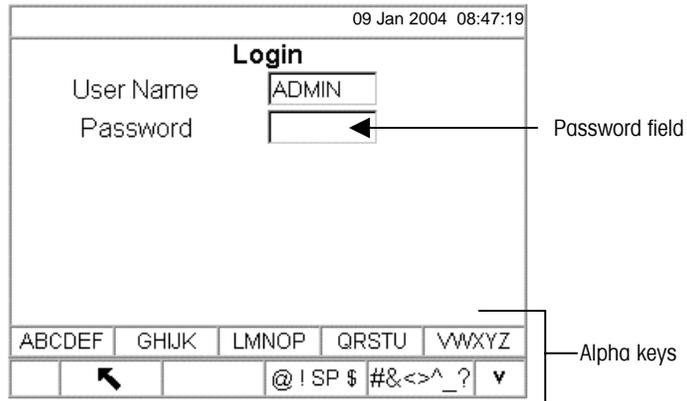
Figure 3-2: Login Screen (Alpha Keys)

3. Use the alpha keys to enter the password in the password field.

4. Press the ENTER key. The alpha keys no longer display.

5. Press the OK softkey $\overset{\text{OK}}{\checkmark}$. If the password is correct, the terminal goes into setup mode.

Once the terminal is in setup mode, the setup menu tree displays.

Setup Menu Tree

Each line of the setup menu tree is referred to as a branch (see Figure 3-3). Some branches are singular, while others have additional branches that become visible when the view of the main branch is expanded. If a branch has additional branches under it, the collapsed symbol (⊞) initially displays in front of the branch name. After the branch view has been expanded, the expanded symbol (⊟) displays in front of the branch name and the additional branches become visible.

If security is enabled in setup the first branch displayed in the setup menu tree will be Login. If security has not been enabled (no password), Login will not be visible and the first branch displayed will be Home.
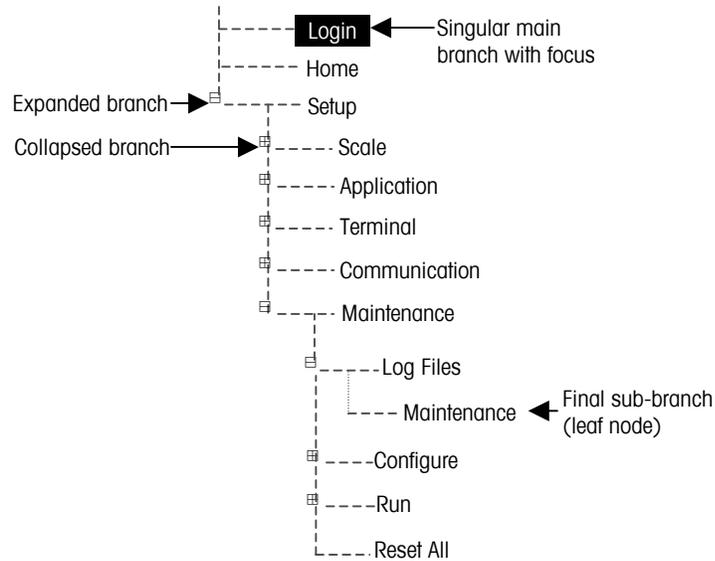
Figure 3-3: Setup Menu Tree

Use the UP and DOWN arrow keys to move through the setup menu tree. Press the UP arrow key to move the focus (shown by highlighted text) up the menu tree.

Press the RIGHT arrow key to expand a branch and the LEFT arrow key to collapse a branch. When the focus is on a sub-branch, focus can quickly be moved back to the main branch by pressing the LEFT arrow key.

When a singular (non-expandable) main branch such as Login or Home is in focus, or when the final sub-branch in a series is reached (also non-expandable and referred to as a leaf node), press the ENTER key to display the setup screen for that function.

Setup Screens

Setup screens enable access to data fields where parameters can be entered or modified to configure the terminal to meet specific application function needs.

Navigation

Use the UP and DOWN arrow keys to move through the field labels displayed on each setup screen. Press the UP arrow key to move the focus (shown by highlighted text) up the field labels (see Figure 3-4). When the focus reaches the top label, it will wrap to the bottom label. Press the DOWN arrow key to move the focus down the field labels. When the focus reaches the bottom label, it will wrap to the top label.
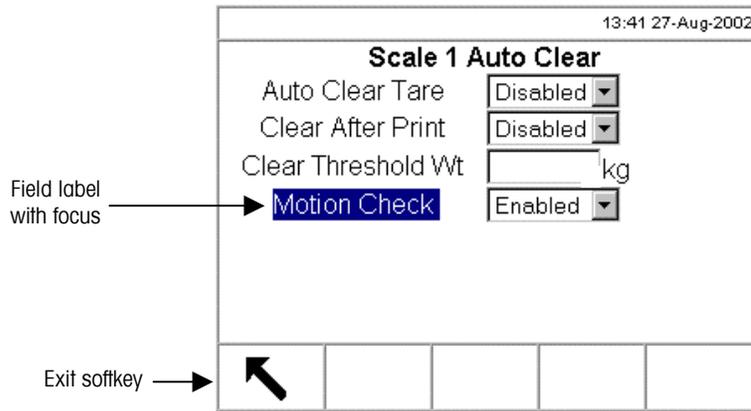
Figure 3-4: Setup Screen (Focus on Field Label)

Data Entry

Press the ENTER key to move the focus from the field label to the value of the field where data is to be entered or edited (see Figure 3-5).
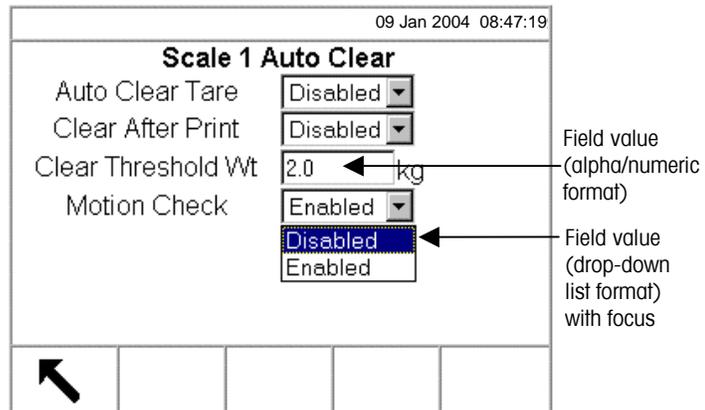
Figure 3-5: Setup Screen (Focus on Field Value)

If the field values are formatted in a drop-down list, the drop-down list will display when the ENTER key is pressed.

To change the field value using a drop-down list

1. Use the UP and DOWN arrow keys to scroll through the list and place the focus on the value to be selected.

2. Press the ENTER key to accept the selection as the value for the field. The selection displays as the value for the field and the focus moves to the next field label.

If the field values are formatted for alpha/numeric character entry, softkeys and application keys will display and function as alpha keys.

To change the field value using alpha/numeric characters

1. Use the alpha keys and the numeric keypad to enter the desired value.

OR

2. Use the LEFT and RIGHT arrow keys to move the cursor into position if the value needs to be edited from a specific point rather than replaced. Position the cursor at the end of the data to be deleted and press the C key once for each character to be deleted.

3. Press the ENTER key to accept the entered alpha/numeric characters for the field. The entry displays as the value for the field and the focus moves to the next field label.

To exit a setup screen, press the EXIT softkey, ↖ which is in the first softkey position. The setup menu tree displays with the focus on the branch for the setup screen that was exited from. After exiting the setup screen, the focus is on the last selected branch.

Overview of Configuration

The setup menu tree can be expanded to show every branch and leaf node in the terminal's configuration. Use the navigation keys as described previously under Setup Menu Tree to select the desired setup screen.

There are five major sections in the setup menu:

*   Scale
*   Application
*   Terminal
*   Communication
*   Maintenance

Details for each section are provided in the Configuration Options section.

Figure 3-6 shows the setup menu tree with all branches expanded.

```
│------- IND310
│------- Login
│------- Home
│---┬--- Setup
    │
    │---┬--- Scale
        │---┬--Scale 1
        │   │----Type
        │   │---┬--Load Cells
        │   │   │--Manual Address
        │   │   │--Auto Address
        │   │   │--Address All 240
        │   │   │--Shift Adjust
        │   │------ Capacity & Increment
        │   │------ Calibration
        │   │---┬--Zero
        │   │   │--AZM & Display
        │   │   │--Ranges
        │   │---┬-Tare
        │   │   │--Types
        │   │   │--Auto Tare
        │   │   │--Auto Clear
        │   │-----Units
        │   │-----Filter
        │   │-----Stability
        │   │-----Log or Print
        │   │-----Sequential Number
        │----Scale 2
        │----Reset
```

```
│---┬--- Application
    │---┬--Memory
    │   │----Log Files
    │   │----Alibi & Transaction Table
    │   │----A1 Table
    │   │----A2 Table
    │   │----A3 Table
    │   │----A4 Table
    │---┬-- Vehicle Weighing
    │   │----General
    │   │----Inbound
    │   │----Outbound
    │   │----Transient
    │   │--┬-Database
    │   │  │----Vehicle ID Table
    │   │  │----Temporary ID Table
    │---┬--Reports
    │   │----Format
    │   │----Transaction Report
    │   │----Vehicle ID Table Report
    │   │----Temporary ID Table Report
    │   │----A1 Table Report
    │   │----A2 Table Report
    │   │----A3 Table Report
    │   │----A4 Table Report
    │----Reset
```

```
│---┬--- Terminal
    │----Device
    │----Display
    │--┬-Region
    │  │----Format Time & Date
    │  │----Set Time & Date
    │  │----Language
    │----Transaction Counter
    │----Users
    │----Softkeys
    │----Application Keys
    │----Reset
│---┬--- Communication
    │--┬-Templates
    │  │--┬-Output
    │  │  │--Copy
    │  │  │--Inbound Template
    │  │  │--Outbound Template
    │  │  │--Transient Template
    │  │  │--Template 1
    │  │----Strings
    │----Connections
    │--┬-Serial
    │  │----COM1
    │  │----COM2
    │--┬-Network
    │  │----Ethernet
    │  │----FTP
    │----Reset
```

```
│---┬--- Maintenance
    │--┬-Log Files
    │  │--Maintenance
    │------Configure
    │--┬-Scale 1
    │  │----Predictive Maintenance
    │  │----Calibration Management
    │  │----Calibration Test
    │----Scale 2
    │----Reset
    │--┬-Run
    │  │----Calibration Test
    │  │--┬-Diagnostics
    │  │  │----Memory
    │  │  │----Keyboard
    │  │  │--┬-Scale 1
    │  │  │  │----Cell Output
    │  │  │  │----Calibration Values
    │  │  │  │----Shift Values
    │  │  │  │----Cell Diagnostics
    │  │  │----Scale 2
    │  │  │----Serial
    │  │  │----Network
    │----Reset All
```

Figure 3-6: Setup Menu Tree With All Branches Expanded

Configuration Options

Configure terminal options on the setup screens that are available under the five major sections of the setup menu.

◀ If the metrology switch is in the approved position, access to the Scale section is not permitted. The Scale section will not display on the setup menu tree.
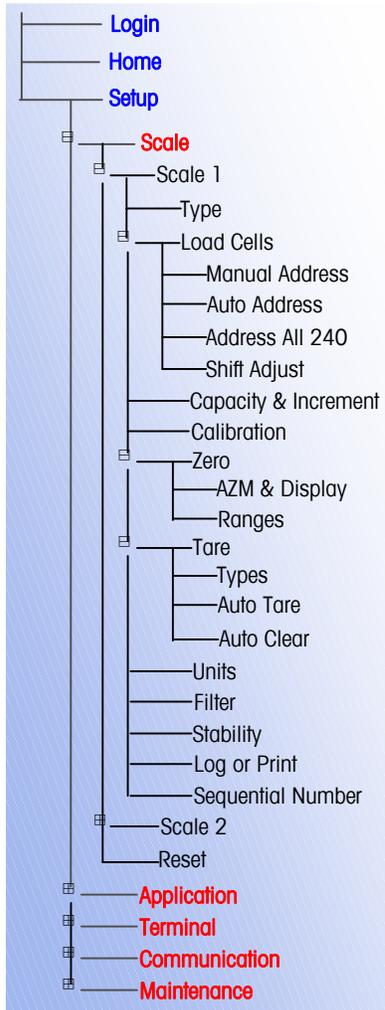
Scale

The Scale section provides the following access to the configuration of the connected scales:

- Type (and Load Cell screens when appropriate)
- Capacity and Increment values
- Calibration
- Zero parameters
- Tare parameters
- Units
- Filter parameters
- Stability parameters
- Log or Printing threshold parameters
- Sequential Number

Each configured scale has its own sub-branch with these sections. A Reset is present at the end of the section to enable a limited reset to the factory default settings for the Scale parameters.

Menu tree:

- Login
- Home
- Setup
  - Scale
    - Scale 1
      - Type
      - Load Cells
        - Manual Address
        - Auto Address
        - Address All 240
        - Shift Adjust
      - Capacity & Increment
      - Calibration
      - Zero
        - AZM & Display
        - Ranges
      - Tare
        - Types
        - Auto Tare
        - Auto Clear
      - Units
      - Filter
      - Stability
      - Log or Print
      - Sequential Number
    - Scale 2
    - Reset
  - Application
  - Terminal
  - Communication
  - Maintenance
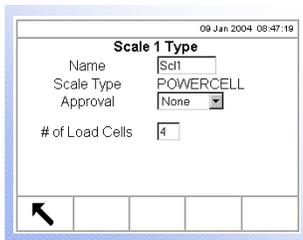
Type

The Scale Type screen enables configuration of the scale Name, displays the current scale PCB Type in the terminal, provides a selection list for Approval mode, and enables the entry of # of Load Cells (only if the scale type is POWERCELL). The EXIT softkey will return the display to the menu tree.

Screen:

```
                        09 Jan 2004  08:47:19
             Scale 1 Type
  Name           Scl1
  Scale Type     POWERCELL
  Approval       None      ▼
  # of Load Cells  4
```

Name

The Name field enables entry of the scale identification. Enter the scale name (an alpha-numeric string of up to ten characters) in the Name entry box. This name appears in the system line of the default operational displays and the menu tree to identify the scale.

Scale Type

The Scale Type field automatically shows the hardware configuration. This field will display either Analog or POWERCELL..

Approval

Approval refers to the metrological (weights and measures) approval configuration for the specific scale. The selection list can be set to:

- None—no approval is required
- Australia
- Canada
- OIML
- USA

of Load Cells

The number of load cells connected to the POWERCELL scale PCB must be entered in this field.

◄ This entry line is only present if the scale type is POWERCELL.

Load Cells

The Load Cells sub-branch is only present if the scale type is POWERCELL. It consists of four leaf nodes:

- Manual Address
- Auto Address
- Address All 240
- Shift Adjust

Manual Address

The Manual Address screen enables a POWERCELL load cell to be addressed or re-addressed to a specific new address value. This procedure page requires

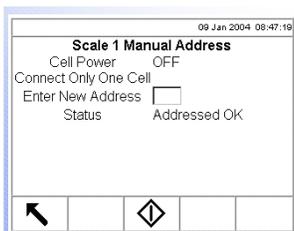entering the new address and then pressing the START softkey ◇ .

The factory default address for all cells is 240. To change the address manually, connect cells one at a time and follow the above procedure. Normally, a POWERCELL is addressed during initial installation only. The only reason to re-address a working POWERCELL is because it has been moved it to a new location.

Cell Power

The Cell Power indicates the current status of the power output to the load cell. This status is always shown as OFF or ON and is automatically switched off to perform the addressing operation.

Enter New Address

The New Address entry box enables entry of the value of the new load cell address. A numeric value appropriate for the specific scale should be entered. The cells are addressed starting at 1.

Status

The status message line indicates the condition of the current procedure. Valid status messages include:

- Searching for Cell...

- No Cell Found

- Addressing XX (where XX is the cell address)

- Failed to Address

- Addressed OK

Auto Address

The Auto Address screen enables all of the POWERCELL load cells to be automatically addressed. If the load cells have never been addressed, this procedure will step through addressing each one. This procedure requires pressing
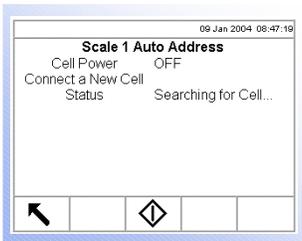
the START softkey .

The address for a newly added cell will be the first available address. For example, if addresses 1, 2, 5, and 6 are assigned and a new cell is automatically addressed, it will be assigned address 3.

◄ Cells must be addressed one at a time.

Cell Power

The Cell Power indicates the current status of the power output to the load cell. This status is always shown as OFF or ON and is automatically switched off to perform the addressing operation.

Status

The status message line indicates the condition of the current procedure. Valid status messages include:

- Searching for Cell…

- No Cell Found

- Addressing XX (where XX is the cell address)

- Failed to Address
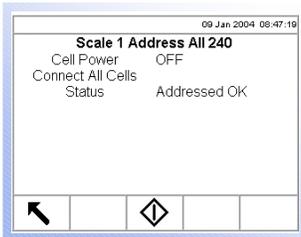
- Addressed OK

Address All 240

The Address All 240 screen enables all of the POWERCELL load cells to be automatically set to address 240. This is the default address. Cells may be re-addressed manually or automatically.

Cell Power and Status messages are the same as the information listed for the Auto

Address screen. This procedure requires pressing the START softkey
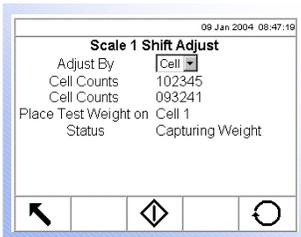
Shift Adjust

The Shift Adjust screen enables the load cell shift adjust values to be reset.

Adjust By

Use the Adjust By drop-down menu to select cell or pair.

Cell Counts

The Cell Counts field(s) display live weight information for the cell(s) being loaded.

Place Test Weight On

Place Test Weight On will read Cell "X" for cell shift adjust and Pair "X" for pair shift adjust (where X is the cell or pair number).

Status

Status messages include:

- Capturing Weight

- Adjust OK

- Adjust Failed

Press the RESET softkey ⟳ to reset all load cell shift adjust values to one. A screen displays that asks for verification to reset all load cell shift adjust values.

Press the OK softkey ✓ to continue. A status message displays verifying that the reset all load cell shift adjust values was successful.
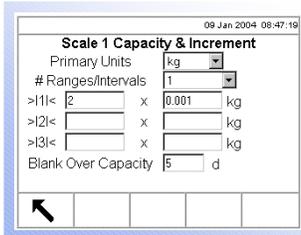
Capacity and Increment

Use the Capacity and Increment setup screen to select primary units, set the number of ranges or intervals, and the blanking over capacity.

Primary Units

Set the primary units from the drop-down menu selections, which include:

- Grams (g)
- Tons (ton)
- Kilograms (kg)
- Tonnes (t)
- Pounds (lb)

#Ranges/Intervals

Set the number of ranges or number of intervals from one to three on the #Ranges/Intervals drop-down menu. Specify the capacity and increments for each range or interval.

Blanking Over Capacity

Blanking the display is used to indicate an over-capacity condition. Set the blank over capacity for the divisions (d) that the terminal is permitted to go over capacity. For example, if capacity is set at 100 kg by 0.1 increments and the blank over capacity setting is 5 d, the terminal can display weights up to 100.5 kg. At weights over 100.5, the display will blank and dashed lines will display instead of a weight.
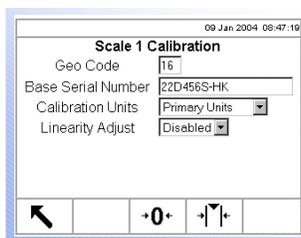
Calibration

The Calibration screen enables entry of a geo code adjustment value, the base serial number, calibration units, and linearity adjustment.

Geo Code

Enter the geo code for the appropriate geo adjustment value for the current geographical location. Geo codes are numbered 0–31.

See Appendix F, Geo Codes for further information and a table of geo adjustment values and associated geo codes.

Base Serial Number

Enter the scale base serial number in this field.

Calibration Units

Calibration units are listed the drop-down menu. Primary is the only selection.

Linearity Adjustment

Select the linearity adjustment from the drop-down menu. Selections are as follows:

- **Disabled**—Use only zero and span

- **3 point**—Use zero, midpoint, and span

- **4 point**—Use zero, lowpoint, midpoint, and span

The Scale 1 Calibration setup screen displays two softkeys that can be used for calibration procedures

- Capture Zero →0←

- Capture Span →| ˇ |←

Capture Zero

The CAPTURE ZERO softkey triggers an independent operation to reset the zero condition of the scale. A status message displays when this softkey is pressed that

directs the user to empty the scale and press the START softkey. ◇ The status of the capture zero operation displays. When the operation is complete, a final status message displays that verifies the completion of the capture zero operation.

Capture Span

The CAPTURE SPAN softkey initiates a sequence to capture span (the difference between the highest and lowest calibration weight values) that can be performed independently of capturing zero.

To capture span

1. Press the CAPTURE SPAN softkey. The Capture Span setup screen displays.

2. Place test load weight 1 on the scale.

3. Enter the weight for test load 1.

4. Press the START softkey. The status of the weight capture operation displays. When the operation is complete, a status message displays that verifies the completion of the weight capture. Press the ENTER key.

5. Repeat steps 2–4 for test loads 2 and 3. These are enabled for linearity adjustment 3 point and 4 point respectively.

6. If the capture span operation was successful, a verification message that reads "Capture Span OK" displays If the capture span operation was not successful, an error message that reads "Capture Span Failed" displays.

Zero

There are several methods that can be used to reset the zero condition of a scale when small amounts of material are on the platform. Two setup screens are available for these methods:

- Auto Zero Maintenance (AZM) & Display
- Ranges
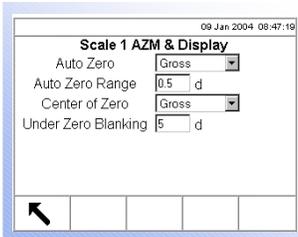
AZM & Display

AZM is a means of enabling "true zero" at all times on a digital scale. AZM compensates for conditions such as indicator or load cell drift or debris on a scale platform.

Auto Zero

Use the AZM & Display setup screen to enable auto zero for gross weighing or gross and net weighing, or to turn auto zero off.

Auto Zero Range

Set the auto zero range for the number of divisions around the original zero in which auto zero can be applied.

Center of Zero

The center of zero icon $>0<$ can be set to display on the operation screen for either gross or gross and net weighing. This display can also be set to off.

Under Zero Blanking

Blanking the display is used to indicate an under-zero condition when the terminal is in the Gross mode (no tare). Set the under zero blanking for the number of divisions (d) that the terminal is permitted to go under zero.
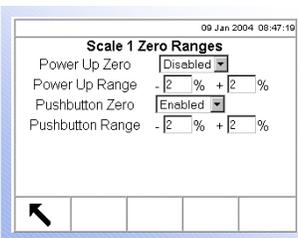
Ranges

Use the settings on the Ranges screen to enable or disable Power Up Zero and Pushbutton Zero and to set the ranges around the original zero condition for the scale for applying these functions.

Power Up Zero

If Power Up Zero is enabled, the terminal resets zero upon power up.

Power Up Range

If Power Up Zero is enabled, +Range and −Range fields will display for setting the range around the original zero condition for the scale within which Power Up Zero can be applied. The range units are percent.

For example, if the +Range setting for Power Up Zero is set at 2%, Power Up Zero will only occur when the weight reading on the scale is at or below 2% of the original zero condition. If the –Range setting for Power Up Zero is set at 2%, Power Up Zero will only occur when the weight reading on the scale is at or above –2% of the original zero condition.

Pushbutton Zero

If Pushbutton Zero is enabled, auto zero can be implemented by front panel pushbutton.

Pushbutton Range

If Pushbutton Zero is enabled, +Range and –Range fields will display for setting the range around the original zero condition for the scale within which Pushbutton Zero can be applied. The range units are percent. For example, if the +Range setting for Pushbutton Zero is set at 2%, the Pushbutton Zero can only be used when the weight reading on the scale is at or below 2% of the original zero condition. If the –Range setting for Pushbutton Zero is set at 2%, the Pushbutton Zero can only be used when the weight reading on the scale is at or above –2% of the original zero condition.

Tare

Tare is used to subtract the empty weight of a vehicle from the gross weight on the scale to determine the net weight of the contents of a vehicle. Tare is inhibited if the scale is in motion.

Three setup screens are available to configure tare

- Tare Types
- Auto Tare
- Auto Clear
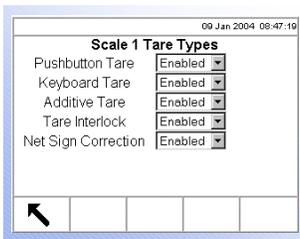
Tare Types

Use the Tare Types setup screen to enable or disable tare types.

Pushbutton Tare

When pushbutton tare is enabled, the TARE scale function key →T← can be pressed 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.

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.

Additive Tare

Additive tare is a tare value that is added to an existing tare weight value to establish a new tare weight value. If additive tare is enabled, a tare weight value can be added using the numeric keypad while the terminal is in the net weight mode. The tare value entered is added to the existing tare weight value. Tare interlocks inhibit this mode.

Tare Interlock

Tare interlocks are a set of restrictions on how tare can be used that are required by certain local weights and measures regulations. If tare interlocks are enabled, the terminal must be at gross zero to clear a tare weight or to enter a keyboard tare. Tare interlocks also prevent the terminal from replacing an existing tare with a new auto tare.

Net Sign Correction

Net sign correction enables the IND310drive terminal to be used for both shipping (inbound empty) and receiving (inbound loaded) operations. If net sign correction is enabled, the terminal will switch 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 only the printed data output. The displayed weight and continuous data output will continue to show a negative net weight value. Table 3-1 provides a net sign correction example.

Table 3-1: Net Sign Correction Example

Data Output	Weight Displayed	Weight Printed
Gross weight	35100 lb	64080 lb G
Tare weight	64080 lb	35100 lb PT
Net weight	−28980 lb	28980 lb N
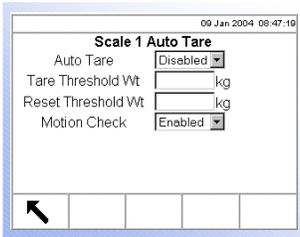
Auto Tare

Use the Auto Tare screen to enable or disable auto tare, set the tare and reset threshold weights, and enable or disable motion check.

Auto Tare

When auto tare is enabled, the tare weight is taken automatically when a vehicle is on the scale. Tare interlocks prohibit replacement auto tare.

Tare Threshold Wt

When weight on the scale platform exceeds the tare threshold value, the terminal automatically tares.

Reset Threshold Weight

The reset threshold weight must be less than the tare threshold weight. When the weight on the scale platform falls below the reset threshold value, such as when a load has been removed, the terminal automatically resets the auto tare trigger.

Motion Check

Enable the motion check setting to prevent auto tare from occurring when the scale is in motion.
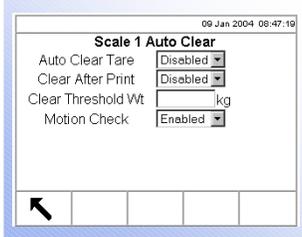
Auto Clear

Use the Auto Clear screen to enable or disable auto clear tare, clear after print, to set the clear threshold weight, and enable or disable motion check.

Auto Clear Tare

To clear tare automatically when the scale returns to the center of zero, enable the auto clear tare setting.

Clear After Print

To clear tare automatically after printing, enable the clear after print setting.

Clear Threshold Wt

When the gross scale weight exceeds then falls below the clear threshold value, the terminal automatically clears tare and returns to gross mode.

Motion Check

Enable the motion check setting to prevent auto clear from occurring when the scale is in motion.
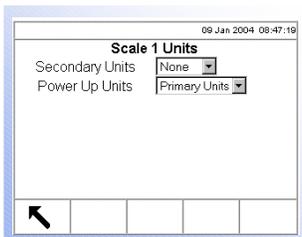
Units

This setup screen enables the selection of secondary weighing and power up units.

Secondary Units

Use the Secondary Units drop-down menu to select secondary weighing units, configure custom secondary units, or to select none. Available weighing units include:

- Pounds (lb)
- Custom
- Kilograms (kg)
- Pennyweight (dwt)
- Grams (g)
- Ounces (oz)
- Tonnes (t)
- Troy Ounces (ozt)
- Tons (ton)

Custom Units

If Custom is selected for secondary units, four additional fields display for configuring custom units. The terminal displays *** when custom units are in use.

Custom Factor

Enter a multiplication factor for the custom unit in this field, such as 0.592 or 1.019.

Custom Name

The softkeys turn into alpha keys when this field is selected. Use the alpha keys to enter the name for the custom unit.

Custom Increment

Program a custom increment of 1, 2, or 5 using the corresponding drop-down menu.

Custom Resolution

The custom resolution drop-down menu enables resolution at:

- 0.00000X
- 0.0000X
- 0.000X
- 0.00X
- 0.0X
- 0.X
- X
- X0
- X00
- X000

For example, a custom increment of 2 and a custom resolution of 0.0000X results in 0.00002.

Power Up Units

Power up units defines the units the terminal defaults to after power up. Use the drop-down menu to select either primary or secondary units.
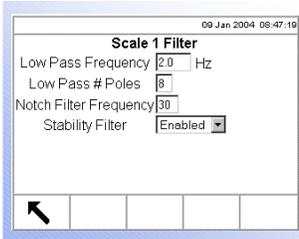
Filter

The IND310drive terminal has a low-pass, multi-pole vibration filter that can be set for several conditions. The heavier the filtering, the slower the display settling time will be.

Low Pass Frequency (Hz)

Low pass frequency is the frequency above which all disturbances are filtered out. The lower the frequency, the better the disturbance rejection, but the longer the settling time required for the scale.

Low Pass Number of Poles

The number of poles determines the slope of the filtering cutoff. For most applications, a slope value of 8 is acceptable; however, decreasing this number will improve settling time slightly. Do not enter a value lower than 4 for this parameter.

Notch Filter Frequency

The notch filter allows selection of one specific frequency below the low pass filter value that can also be filtered out. This enables setting the low pass filter higher to filter out all but one frequency (that the notch filter will handle) and obtain a faster settling time.

Stability Filter

The stability filter can also be enabled or disabled on this setup screen.
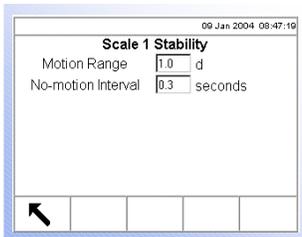
Stability

The IND310drive terminal includes a stability detector (weight in motion). The Stability setup screen enables setting a motion range and a no-motion interval.

Motion Range

Set the motion range to eliminate weight changes from fluctuations in the weight display caused by movement. The range is set in divisions (d) that the terminal is permitted to fluctuate.

No-motion Interval

The no motion interval defines the amount of time (seconds) that will elapse before a no motion signal is sent to the terminal.
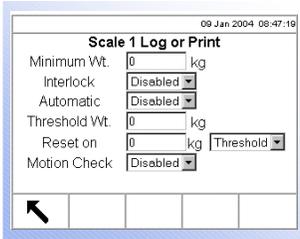
Log or Print

The Log or Print setup screen is where the thresholds to control how and when data is saved or output to a printer are defined. Normal demand mode printing occurs whenever a print request is made, providing there is no motion on the scale and zero has been captured (a negative gross weight will not be printed).

Minimum Weight

The minimum weight setting is the threshold below which log or print functions will not initiate.

Interlock

Interlock prevents repeat logging and printing. If enabled, interlock requires that the weight reading return to zero (or below the minimum print value) and then settle to a weight greater than the minimum print value before responding to the next log or print request.

Automatic

Enable the automatic setting to log data and send a print request every time the weight on the scale settles to a positive value that is larger than the minimum threshold weight value.

Threshold Wt.

Enter the minimum threshold weight value for automatic logging and printing of data in this field.

Reset on

The automatic setting to reset based on weight threshold or weight deviation values can also be configured on this screen. Select threshold (the weight value at which the reset function will be triggered) or deviation (the weight difference between the weight on the scale and the minimum weight value at which the reset function will be triggered) from the drop-down menu and enter the weight value in the "Reset on" field.

Motion Check

Enable the motion check setting to prevent automatic log and print functions from occurring when the scale is in motion.
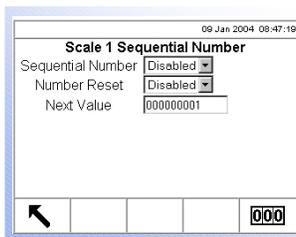
Sequential Number

Sequential number refers to the unique transaction number for the selected scale. Each scale has its own sequential number. This number is separate from the terminal transaction number. Each time a transaction occurs, the terminal transaction number advances and so does the corresponding sequential number for the selected scale.

Sequential Number

Use the drop-down menu to enable or disable the sequential number feature.

Number Reset

Use the drop-down menu to enable sequential number reset. Press the RESET COUNTER softkey **000** to reset the sequential number for the selected scale.

Next Value

Use this field to set the next value to be used for sequential numbering.
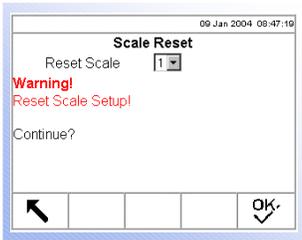
Reset

The Reset screen enables the scale setup values to be reset to factory default settings.

Reset Scale

Use the drop-down menu to select the scale for which setup values will be reset to factory default settings. Press the OK softkey to complete the reset process.

◄ Scale reset does NOT include the reset of type, capacity, increment, or calibration data. Reset this data by selecting Maintenance, Reset All.

```
⊟——Application
  ⊟——Memory
    ——Log Files
    ——Alibi & Transaction Table
    ——A1 Table
    ——A2 Table
    ——A3 Table
    ——A4 Table
  ⊟——Vehicle Weighing
    ——General
    ——Inbound
    ——Outbound
    ——Transient
    ⊟——Database
      ——Vehicle ID Table
      ——Temporary ID Table
    ⊟——Reports
      ——Format
      ——Transaction Report
      ——Vehicle ID Table Report
      ——Temporary ID Table Report
      ——A1 Table Report
      ——A2 Table Report
      ——A3 Table Report
      ——A4 Table Report
    ——Reset
```
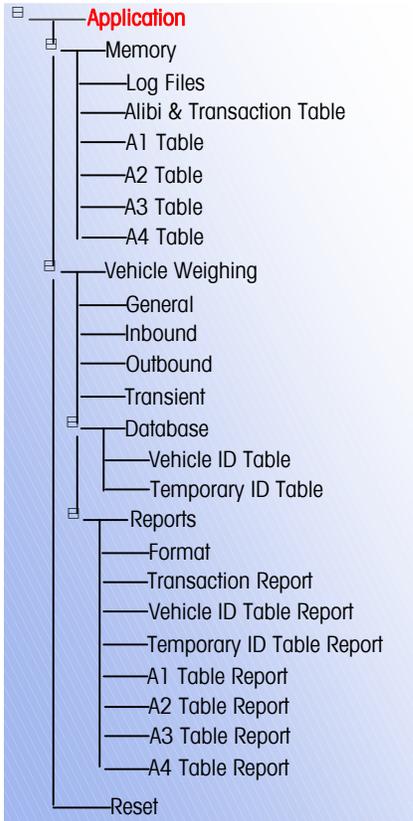
Application

Use application setup screens to configure:

- Memory

- Vehicle Weighing

Memory

Memory setup screens include:

- Log Files

- Alibi and Transaction Table

- A1, A2, and A3 Tables

- A4 Table

- Message Table
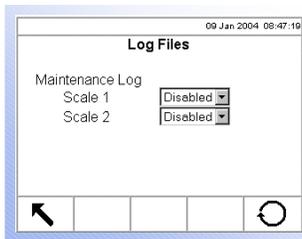
Log Files

Enable or disable the maintenance logging function for each scale using the drop-down menus labeled for Scale 1 and Scale 2 located on the Log Files setup screen.

Maintenance Log

The maintenance log file tracks any calibration changes in the terminal for the selected scales. These log files are always read only (can only be viewed or reset completely).

Press the RESET softkey ⟳ to reset the log files. A screen displays that asks for verification. Press the OK softkey ✓ to continue. A status message displays verifying that the reset was successful.
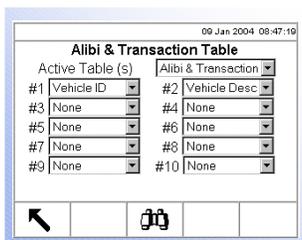
Alibi and Transaction Table

The Alibi and Transaction Table setup screen provides drop-down menus for enabling or disabling the Alibi and/or Transaction tables and the fields for these tables.

Active Table(s)

Use the Active Table(s) drop-down menu to enable or disable tables through the following selections:

- **None**—Disables alibi and transaction tables

- **Alibi only**—Enables only the alibi memory table

- **Alibi and Transaction**—Enables the alibi memory and the transaction table

Alibi Memory Table

See Appendix C, Database, Structure and Use for more information about alibi memory and transaction tables.

The alibi memory table stores basic transaction information that is not user-definable. This information always includes:

- Date and time stamp

- Transaction count

- Gross, tare, and net weights and weight unit

Transaction Table

The transaction table is a user-configurable table that is linked to the alibi table by the transaction counter value. The transaction table consists of up to ten extra fields that can be selected for use. The transaction table always includes:

- Date and time stamp

- Transaction count

#1–#10 Table Fields

Use the #1–#10 drop-down menus to select the fields for the tables. When using a single scale, the fields required for the alibi memory table are:

- Time & Date

- Transaction counter

- Weight values (with unit)

If additional scales are present, the following additional fields are optional:

- Sequence number

- Scale name

Press the SEARCH softkey ![binoculars icon] to view the transaction information.
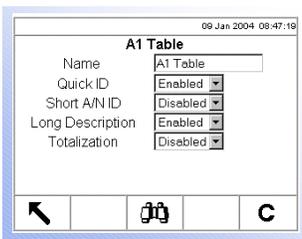
A1, A2, A3 Tables

Set up the A1, A2, and A3 table structures through these three setup screens. Also view and edit table information, and generate custom table reports from these screens.

Name

Enter the desired label for associated operational screens for each table. For example, if the A1 table will contain customer names, enter Customer in the name field.

Quick ID

Quick ID is a numeric value that enables a quick search for table data. Use the Quick ID drop-down menu to enable or disable Quick ID in the table structure.

Short A/N ID

Short A/N ID is a short alphanumeric string (typically a vehicle license plate number) that enables a quick search for table data. Use the Short A/N ID drop-down menu to enable or disable Short A/N ID in the table structure.

Long Description

Long Description is a long alphanumeric string that describes the table entry. Use the Long Description drop-down menu to enable or disable Long Description in the table structure.

Totalization

Totalization is a field that tracks totals for each specific table entry. For example, in a customer table the total weight for all transactions involving each customer in the table. Use the Totalization drop-down menu to enable or disable Totalization in the table structure.

Press the CLEAR softkey **C** to reset the table settings. Press the SEARCH softkey 🔍 to search on specific drop-down menu information or to view or edit the tables that include this information.

When the SEARCH softkey is pressed, the Table/Search screen displays (see Figure 3-7).

See Appendix C, Database, Structure and Use, Tables Searches for more information about searching tables.
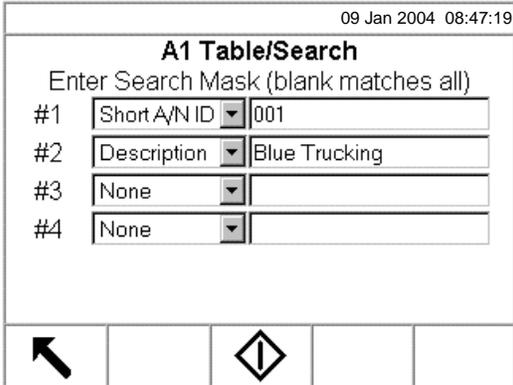
Figure 3-7: Table/Search Screen

Use the drop-down menus and associated fields to enter specific search information, or leave the fields blank to view all table information. Press the START

softkey ◇ . The Table Search/Results screen displays (see Figure 3-8).

Figure 3-8: Table Search/Results Screen

Modifying Information

Modify table information by:

- Editing ✎

- Inserting ▯

- Deleting ▱

Use the CUSTOM REPORT softkey 📖 to generate a custom table report.

Editing

Use the UP and DOWN arrow keys to select a record to edit. Press the EDIT ✎ softkey to open the setup screen for editing a record. An example of a Table/Edit screen is shown in Figure 3-9.

Figure 3-9: Table/Edit Screen

To edit table information:

1. Use the UP and DOWN arrow keys to move the focus to the field name to be edited.

2. Press the ENTER key to select a field value to edit. The alpha keys display.

3. Use the alpha keys and the numeric keypad to enter or edit the desired value.

4. Press the ENTER key to accept the entry.

5. Press the EXIT softkey to return to the Table Search/Results screen.

Inserting

To create a new table entry, press the NEW softkey to open the setup screen to create a new table record. Enter the field values as described in steps 1–5 under editing table information.

Deleting

Use the UP and DOWN arrow keys to select a table record to delete. Press the

DELETE softkey to delete the record.

Running Custom Reports

To run a custom report, press the CUSTOM REPORT softkey . The Table/Reports Run/Custom screen displays (see Figure 3-10).
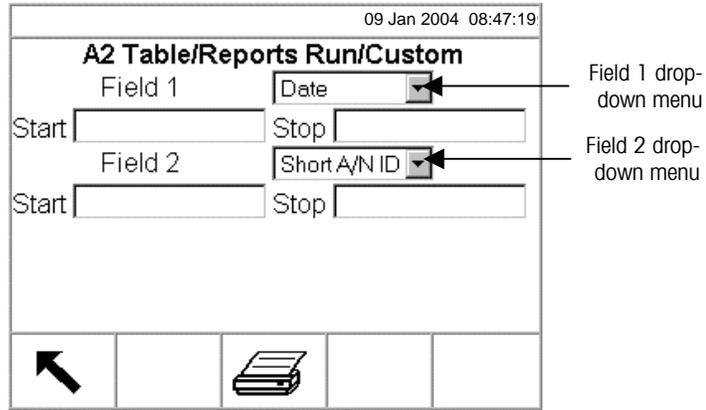
Figure 3-10: Table/Reports Run/Custom Screen

To configure and run a custom report:

1. Use the Field 1 and Field 2 drop-down menus (see Figure 3-10) to select fields to be used to limit records that are included in a report.

2. Specify the range of reported field values by entering start and stop values for the selected fields. For example, if Date is the selected field, and a start value of 2003-07-21 and a stop value of 2003-11-21 are entered, only records with dates between July 21, 2003 and November 21, 2003 will be included in the report. If the stop is left blank, then anything after the start value is included in the report. If the start is left blank, then anything before the stop value is included in the report.

   ◀ The date format is fixed at YYYY-MM-DD for these fields. (This date format might not match the terminal's date configuration.)

3. Press the REPORT softkey to run the custom report.
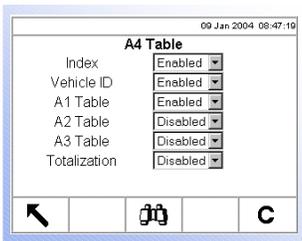
A4 Table

See Appendix C, Database Structure and Use, Index for further information about the A4 Table structure.

Set up the A4 table structure on this setup screen. Also view and edit table information, and generate custom table reports from this screen.

Index

The index table is comprised of ID keys that are used to reference data located in other tables.

If the Index is disabled, the A4 table functions like the A1, A2, and A3 tables as described above.

If the Index is enabled, the A4 table functions as an index table and the fields that display change to enable set up of the index table structure.

Vehicle ID

Use the Vehicle ID drop-down menu to enable or disable reference to the Vehicle ID table from the Index table.

A1 Table, A2 Table, and A3 Table

Use the A1 Table, A2 Table, and A3 Table drop-down menus to enable or disable reference to these tables from the Index table.

See Modifying Information under Memory, A1, A2, and A3 Tables for further information about how to modify table information.

Totalization

Totalization tracks totals for each specific Index table ID. Use the Totalization drop-down menu to enable or disable Totalization in the Index table structure.

Modify table information by editing, deleting, or inserting information. Use the CUSTOM REPORT softkey to generate a custom table report. These procedures are the same as those described previously under A1, A2, and A3 tables.

Vehicle Weighing

Vehicle weighing setup screens enable configuring of operational functions, defining of database table structure for vehicle and transient ID tables, and formatting of reports. Vehicle weighing setup screens include:

- General
- Inbound
- Outbound
- Transient
- Database
- Reports

Vehicle Weighing General

Use the Vehicle Weighing General setup screen to set overload check parameters and variable names.

Overload Check

Overload Check signals overloading of the scale above a maximum weight value. Use the Overload Check drop-down menu to enable or disable the overload check function. If the overload check function is disabled, the Value and Permit Override fields do not display on this screen. If the overload check function is enabled, the Value and Permit Override fields display.

Value

Enter the maximum weight value that can be on the scale and above which will trigger the overload check signal.

Permit Override

Select Yes or No from the permit override drop-down menu. If the Permit Override setting is "No" and an overload condition exists, the transaction automatically

cancels and the terminal returns to an idle state. In order to weigh the vehicle, it is necessary to correct the overload problem and start the transaction again.

Var1 Name and Var2 Name

Use the Var1 Name and Var2 Name fields to enter the desired label for associated operational screens for Variable 1 and Variable 2. For example, if the Variable 1 will contain a quality rating, enter Quality in the Var1 Name field.
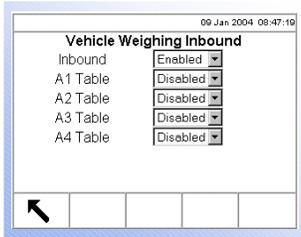
Vehicle Weighing Inbound

Set up parameters for inbound vehicle weighing on this setup screen.

Inbound

Use the Inbound drop-down menu to enable or disable the use of inbound vehicle weighing on the terminal. Temporary ID storage is enabled when inbound vehicle weighing is enabled.

A1 Table, A2 Table, A3 Table, and A4 Table

Enable or disable the use of the A1–A4 tables for inbound weighing transactions in the associated drop-down menus available on this screen.

◀ The A4 table drop-down menu does not display if index is enabled for the A4 table.
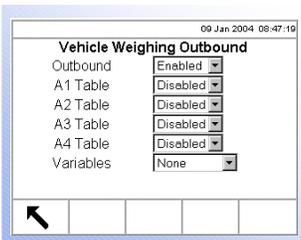
Vehicle Weighing Outbound

Set up parameters for outbound vehicle weighing on this setup screen.

Outbound

Use the Outbound drop-down menu to enable or disable the use of outbound vehicle weighing on the terminal.

A1 Table, A2 Table, A3 Table, and A4 Table

Enable or disable the use of the A1–A4 tables for outbound weighing transactions in the associated drop-down menus available on this screen.

◀ The A4 table drop-down menu does not display if index is enabled for the A4 table.

Variables

Select the variables (if any) to be available for outbound vehicle weighing by using the variables drop-down menu to select:

- None
- Variable 1
- Variables 1 and 2
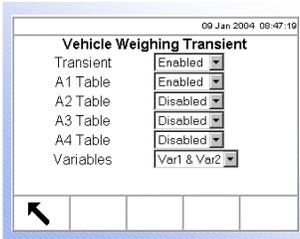
Vehicle Weighing Transient

Set up parameters for transient vehicle weighing on this setup screen.

Transient

Use the Transient drop-down menu to enable or disable the use of transient vehicle weighing on the terminal.

A1 Table, A2 Table, A3 Table, and A4 Table

Enable or disable the use of the A1–A4 tables for transient weighing transactions in the associated drop-down menus available on this screen.

◀ The A4 table drop-down menu does not display if index is enabled for the A4 table.

Variables

Select the variables (if any) to be available for transient vehicle weighing by using the variables drop-down menu to select:

- None
- Variable 1
- Variables 1 and 2

Database

Set up table structures on two database setup screens:

- Vehicle ID
- Temporary ID
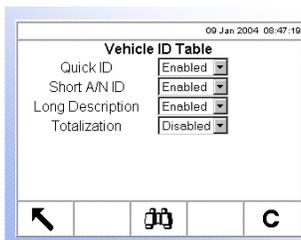
Vehicle ID Table

Use this setup screen to set up the Vehicle ID table structure.

Quick ID

Quick ID is a numeric value that enables a quick search for Vehicle ID table data. Use the Quick ID drop-down menu to enable or disable Quick ID in the Vehicle ID table structure.

Short A/N ID

Short A/N ID is a short alphanumeric string that enables a quick search for Vehicle ID table data. Use the Short A/N ID drop-down menu to enable or disable Short A/N ID in the Vehicle ID table structure.

Long Description

Long Description is a long alphanumeric string that describes the Vehicle ID table entry. Use the Long Description drop-down menu to enable or disable Long Description in the Vehicle ID table structure.

Totalization

Totalization is a field that tracks the total weight for all transactions involving each vehicle ID in the table. Use the Totalization drop-down menu to enable or disable Totalization in the Vehicle ID table structure.

Press the CLEAR softkey **C** to reset the table. Press the SEARCH softkey to search on specific drop-down menu information or to view the tables that include this information.

See Modifying Information under Memory, A1, A2, and A3 Tables for further information about how to modify table information.

Modify database information by editing, inserting, or deleting information. Use the CUSTOM REPORT softkey to generate a custom database report. These procedures are the same as those described previously under Memory, A1, A2, and A3 Tables.

Temporary ID Table

Use this setup screen to set up the Temporary ID table structure.
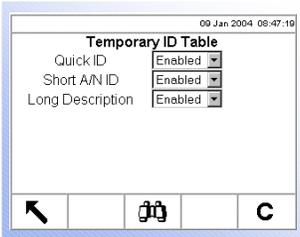
Quick ID

Quick ID is a numeric value that enables a quick search for Temporary ID table data. Use the Quick ID drop-down menu to enable or disable Quick ID in the Temporary ID table structure.

Short A/N ID

Short A/N ID is a short alphanumeric string that enables a quick search for Temporary ID table data. Use the Short A/N ID drop-down menu to enable or disable Short A/N ID in the Temporary ID table structure.

Long Description

Long Description is a long alphanumeric string that describes the Temporary ID table entry. Use the Long Description drop-down menu to enable or disable Long Description in the Temporary ID table structure.

Press the CLEAR softkey **C** to reset the table. Press the SEARCH softkey to search on specific drop-down menu information or to view the tables that include this information.

Modify database information by editing, inserting, or deleting information. Use the

CUSTOM REPORT [icon] softkey to generate a custom database report. These procedures are the same as those described previously under Memory, A1, A2, and A3 Tables.

Reports

The reports setup screens enable configuration of the structure of table reports that are generated by the IND310drive terminal. The reports setup screens include:

- Reports Format
- Transaction Report
- Vehicle ID Table Report
- Temporary ID Table Report

- A1 Table Report
- A2 Table Report
- A3 Table Report
- A4 Table Report

Reports Format

The Reports Format setup screen enables selection of the format for all table reports for vehicle weighing.
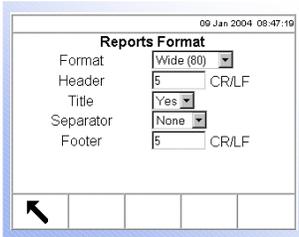
Format

Use the drop-down menu for the Format field to select the width of the reports

- **Wide (80)**—80 character-wide reports
- **Narrow (40)**—40 character-wide reports

Header

The Header field enables a number to be specified for how many line feeds will be placed at the start of each report.

Title

The Title drop-down menu enables a title line to be printed.

Separator

The Separator drop-down menu enables selection from a choice of characters to be used as line separators to separate records in table reports as appropriate. Character choices are:

- None (no characters)
- * (asterisks)
- - (dashes)
- = (equal symbols)
- CR/LF (blank line)

For example, if * (asterisks) is selected, the resulting line separator will appear as follows:

****

Footer

The Footer field enables a number to be specified for how many line feeds will be placed at the end of each report.
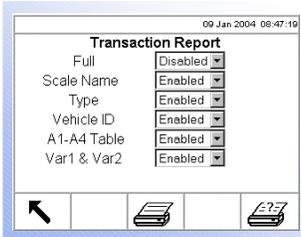
Transaction Report

Use this setup screen to configure the structure for generating transaction reports.

Full

If Full is enabled for the transaction table report, all fields are included in the report and the other selections do not appear on the setup screen. If Full is disabled, the other selections display.

Scale Name

Enable Scale Name to include it in the transaction table report.

Type

Enable Type to include the scale type in the transaction table report.

Vehicle ID

Enable Vehicle ID to include it in the transaction table report.

A1-A4 Table

Enable A1-A4 Table to include A1, A23, A3, and A4 table data in the transaction table report.

Var1 & Var2

Enable Var1 & Var2 to include Variable 1 and Variable 2 data in the transaction table report.

Press the RUN REPORT softkey ⬛ to run a transaction report. Press the

CUSTOM REPORT softkey ⬛ to limit the records included and run a custom report.
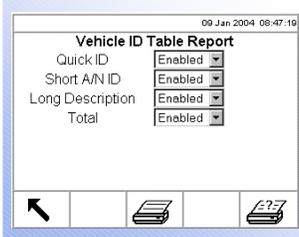
Vehicle ID Table Report

Use this setup screen to configure the structure for generating vehicle ID table reports.

Quick ID

Use the Quick ID drop-down menu to enable or disable quick ID in the vehicle ID table report structure.

Short A/N ID

Use the Short A/N ID drop-down menu to enable or disable short A/N ID in the vehicle ID table report structure.

Long Description

Use the Long Description drop-down menu to enable or disable long description in the vehicle ID table report structure.

Total

Use the Total drop-down menu to enable or disable totals in the vehicle ID table report structure.

Press the RUN REPORT softkey ![run report icon] to run a vehicle ID table report. Press the CUSTOM REPORT softkey ![custom report icon] to limit the records included and run a custom report.
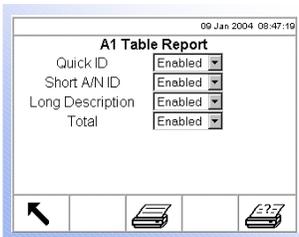
A1, A2, and A3 Table Reports

Use these setup screens to configure the structure for generating A1, A2, and A3 table reports.

Quick ID

Use the Quick ID drop-down menu to enable or disable quick ID in the A1, A2, and A3 table report structures.

Short A/N ID

Use the Short A/N ID drop-down menu to enable or disable short A/N ID in the A1, A2, and A3 table report structures.

Long Description

Use the Long Description drop-down menu to enable or disable long description in the A1, A2, and A3 table report structures.
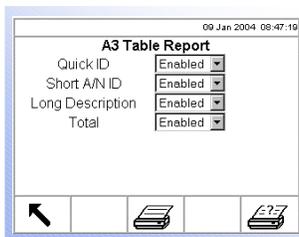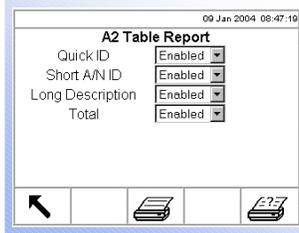
Total

Use the Total drop-down menu to enable or disable totals in the A1, A2, and A3 table report structures.

Press the RUN REPORT softkey to run an A1, A2, or A3 table report.

Press the CUSTOM REPORT softkey to limit the records included and run a custom report.
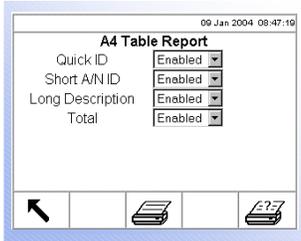
A4 Table Report

If the A4 table is not enabled as the Index table, the setup screen and configuration for the A4 table report is the same as listed previously under A1, A2, and A3 Table Reports.
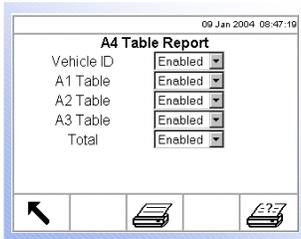
If the Index is enabled, the A4 table functions as an index table and the fields that display change to enable set up of the index table report structure.

Vehicle ID

Use the Vehicle ID drop-down menu to enable or disable vehicle ID in the A4 (Index Table) report structure.

Quick ID

Use the Quick ID drop-down menu to enable or disable quick ID in the A4 table report structure.

Short A/N ID

Use the Short A/N ID drop-down menu to enable or disable short A/N ID in the A4 table report structure.

Long Description

Use the Long Description drop-down menu to enable or disable long description in the A4 table report structure.

Total

Use the Total drop-down menu to enable or disable totals in the A4 table report structure.

Press the RUN REPORT softkey to run an A4 table report. Press the

CUSTOM REPORT softkey to limit the records included and run a custom report.

Reset

The Reset setup screen resets setup values to factory default settings for all of the application setup except for the database information in tables. Tables can be reset only by using the Reset All screen under the Maintenance section. Press the OK softkey OK√ to complete the reset process.
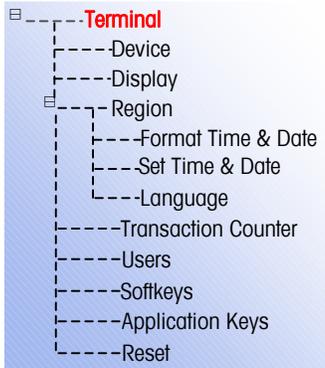
Terminal

Use terminal setup screens to configure:

- Device
- Display
- Region
- Transaction counters

- Users
- Softkeys
- Application key

Device
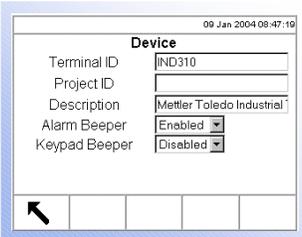
The Device setup screen shows information about the terminal, enables the entry of new information, and allows beeper settings to be enabled or disabled.

Terminal ID

The device setup screen shows a terminal ID of IND310 as the default. When the Terminal ID text box is selected, the softkeys become alpha keys. To change the terminal ID, use the alpha keys to enter a new ID. Press the ENTER key to accept the ID entered.

Project ID

When the Project ID text box is selected, the softkeys become alpha keys. Use the alpha keys to enter a project ID. Press the ENTER key to accept the ID entered.

Description

The device description is Mettler Toledo Industrial Terminal. This field cannot be changed.

Alarm Beeper

The alarm beeper sounds when an error, over capacity, or other warning situation occurs. Use the Alarm Beeper drop-down menu to enable or disable the alarm beeper.

Keypad Beeper

The keypad beeper sounds each time a terminal key is pressed. Use the Keypad Beeper drop-down menu to enable or disable the keypad beeper.
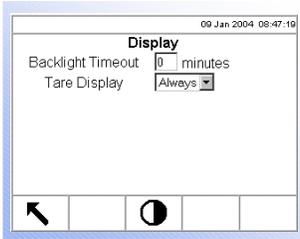
Display

Use the Display setup screen to set the backlight timeout and tare display settings.

Backlight Timeout

Set the number of non-operational minutes that elapse before the backlight times out (dims) on the display setup screen. A setting of 0 in the backlight timeout field will cause the backlight to stay on continuously.

Tare Display

The tare display drop-down menu enables configuration of the tare display to:

- **Active**—Tare displays on the main weight display when a tare is present (will not display a tare of 0)

- **Always**—Tare always displays on the main weight screen even if the tare is 0

- **Never**—Tare value never displays, and the INFORMATION/RECALL softkey

  must be pressed to view tare weight

Use the CONTRAST softkey to adjust the contrast of the display. When this softkey is pressed, a screen displays with two additional softkeys:

- DARKER CONTRAST adjustment softkey

- LIGHTER CONTRAST adjustment softkey

A bar graph displays and changes as the contrast is adjusted. The screen display also changes so the results of adjustments are immediately visible.

Region

The region setup screens enable configuration of:

- Time and date format
- Time and date settings
- Language
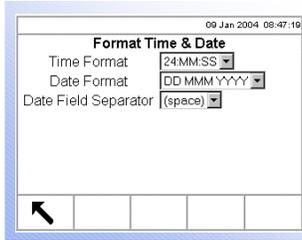
Format Time & Date

Drop-down menus on this setup screen enable formatting of:

Time Format

- 12:MM (12-hour clock with hour and minutes displayed)

- 12:MM:SS (12-hour clock with hour, minutes, and seconds displayed)

- 24:MM (24-hour clock with hour and minutes displayed)

- 24:MM:SS (24-hour clock with hour, minutes, and seconds displayed)

Date Format

- DD MM YY (Two-character day, month, year)

- DD MMM YYYY (Two-character day, three-character month, four-character year)

- MM DD YY (Two-character month, day, year)

- MMM DD YYYY (Three-character month, two-character day, four-character year)

- YY MM DD (Two-character year, month, day)

- YYYY MMM DD (Four-character year, three-character month, two-character day)

Date Field Separator

- (space)

- / (slash)

- - (dash)

- . (period)
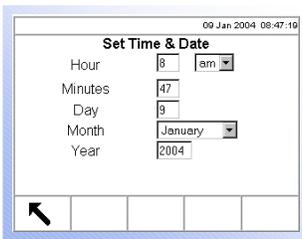
Set Time & Date

Enter the hour, minutes, day, month, and year on this setup screen's text fields and drop-down menus. The terminal automatically adjusts the date for a leap year, and a battery backup maintains the time and date settings in the event of a power outage. Manual setting of the time is necessary for daylight savings time adjustments.

Hour

Use the numeric keypad to enter the hour in the Hour field text box. Use the AM/PM drop-down menu to select AM or PM. The AM/PM drop-down menu only displays if the time format is set to 12:MM or 12:MM:SS on the Format Time & Date setup.

Minutes

Use the numeric keypad to enter the minutes in the Minutes field text box.

Day

Use the numeric keypad to enter the day in the Day field text box.

Month

Use the Month drop-down menu to select the month.

Year

Use the numeric keypad to enter the year in the Year field text box.

Language

Use the Language setup screen to specify the language for terminal operations.
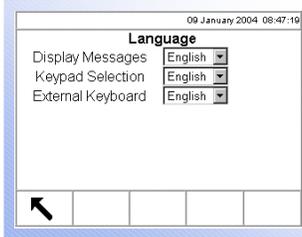
Display Messages

Use the Display Messages drop-down menu to select the language for messages that display on the terminal.

Keypad Selection

Use the Keypad Selection drop-down menu to select the language for the keypad characters that display on the terminal.

External Keyboard

Use the External Keyboard drop-down menu to select the language for an external keyboard connected to the terminal.

Transaction Counter

The transaction counter tracks the total transactions that are completed on the terminal. Use the Transaction Counter setup screen to configure transaction counter operations.
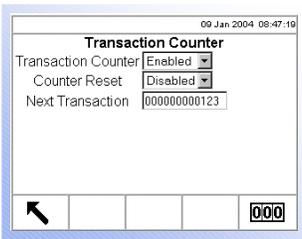
Transaction Counter

Use the Transaction Counter drop-down menu to enable or disable the transaction counter.

Counter Reset

Use the Counter Reset drop-down menu to enable or disable resetting the counter.

Next Transaction

The value for the counter for the next transaction displays in the Next Transaction field. If the counter reset is enabled, the next transaction value can be edited.

If the counter reset is enabled, a RESET COUNTER softkey 000 displays. Press the RESET COUNTER softkey to reset the counter to 000000000001.

◀ Resetting the transaction counter could result in duplicate transaction numbers in the Alibi Memory and Transaction tables.
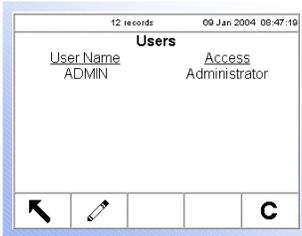
Users

The IND310drive supports a single user/password for setup security. The terminal is pre-configured at the factory with a user name of "ADMIN". The pre-configured user (ADMIN) cannot be changed, only the password can be added or modified. The factory default password is null (no password). The unit as configured at the factory requires no login or password entry to enter the setup mode. All functions of the terminal will be available to all users until a password is entered.

Press the EDIT softkey to access a second screen where a password can be entered.

◀ Passwords are case-sensitive.

◀ Be sure to store a record of the password in a safe place. Without the correct password access to the setup menu will not be possible.

Press the CLEAR softkey to restore the factory default setting to null.
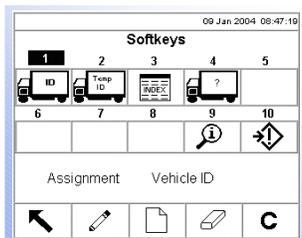
Softkeys

Add or rearrange the softkeys on the terminal's main menu on the softkeys setup screen.

When the softkeys setup screen opens, focus is on the softkey position numbers located above the icons.

Two softkeys, RECALL and SETUP , are automatically placed in the softkey setup. The default setting for the placement of these softkeys is in positions 4 and 5. If a different softkey is placed in position 4 or 5, the RECALL and SETUP softkeys automatically shift to positions 9 and 10. If a different softkey is placed in position 9 or 10, the RECALL and SETUP softkeys automatically shift to positions 14 and 15.

Use the LEFT and RIGHT arrow keys to navigate among the softkey position numbers. Softkeys can be added, removed, and positioned by

Editing—Changes the softkey in the selected position to another softkey or to none, which leaves the softkey position blank.

See [Appendix E, Softkey and Application Key Mapping](#) for further information about configuring softkeys and application keys.

Inserting—Inserts a softkey into a selected position. All other softkeys located at or after that position increase position number by one.

Deleting—Deletes a softkey into a selected position. All other softkeys located at or after that position decrease position number by one.

C Clearing—Clears all softkey assignments.

Application Keys

Assign frequently used functions to application (A1–A4) keys on the application keys setup screen.

Use the assignment drop-down menus for each of the A1–A4 keys to select the desired function assignments.
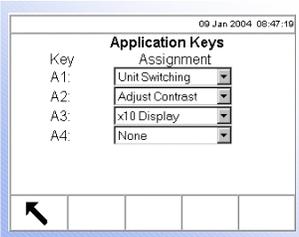
Reset

The Reset setup screen resets setup values to factory default settings for the terminal setup. Press the OK softkey to complete the reset process.
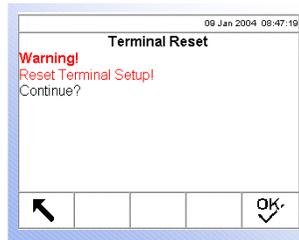
Communication

The communication setup screens enables configuration of:

- Templates
- Connections
- Serial
- Network

Templates

The IND310drive terminal utilizes templates to define printed output following a weighing operation. Several setup screens are available to configure output templates, including:

- Copy
- Inbound Template
- Outbound Template
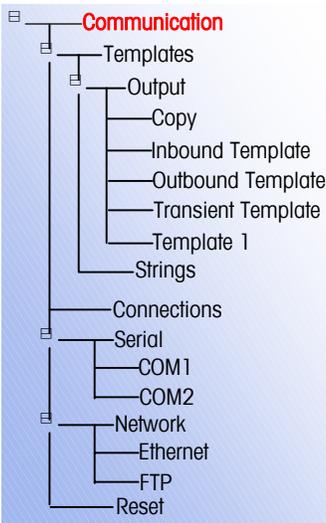
- Transient Template

- Template 1

A template strings setup screen is also available to configure strings of characters that are frequently used in templates.
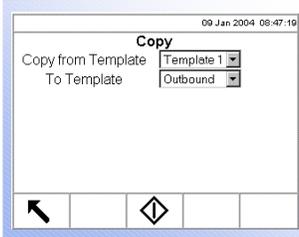
Copy

The Copy setup screen enables template parameters for printed output to be copied from one template to another for quick template setup or modification.

Copy from Template

Use the Copy from Template drop-down menu to select the template to copy parameters from.

To Template

Use the To Template drop-down menu to select the template to copy parameters to.

Press the START softkey ◇ to copy the template and return to the previous screen.

Inbound Template

The Inbound Template setup screen enables configuration of the output for inbound weighing operations defined by placement, data, character length, and justification. For example, if a template table lists element 1 data as Time with a length of 20 characters and center justification, the output will show the time first, using up to 20 characters, and centered on the page.

Parameters on the Inbound Template setup screen can be configured by:

- Editing

- Inserting

- Deleting

- Clearing

Editing

Use the UP and DOWN arrow keys to select a record to edit. Press the EDIT ✎ softkey to open the setup screen for the record where edits can be made. An example of an inbound template record edit screen is shown in Figure 3-11.
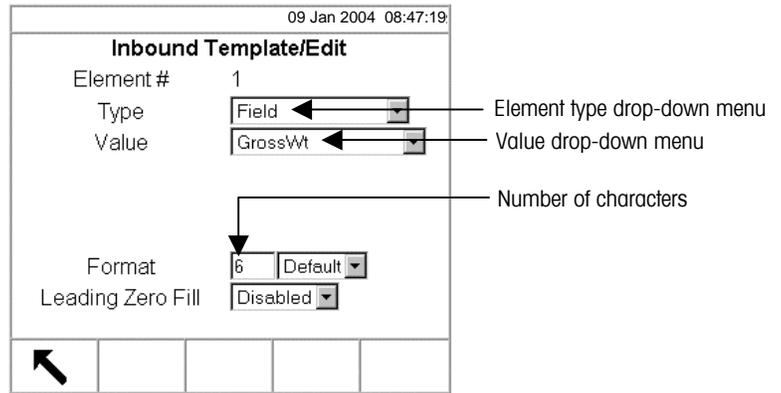
Figure 3-11: Inbound Template Record Edit Screen

There are three types of value fields:

- **Field**—Provides a drop-down menu that displays a list of fieldnames

- **String**—Accepts printable characters

- **Special Character**—Provides a drop-down menu that displays a list of special characters

The selections that display in the value drop-down menu (see Figure 3-11) depend on the element type selected in the type drop-down menu (Field, String, or Special Character).

A repeat count field only displays when the selection from the value drop-down menu is string or special characters.

Format enables a numeric value to be entered for the number of characters for the element. If data for an element includes more characters than the numeric value entered, the data will be cut off. For example, if the number of characters entered under format on the Inbound Template Record Edit Screen (see Figure 3-11) is six, and data for a string that contains eight characters is entered, only six of the characters from the data string will print. If data for a string that contains four characters is entered, all of the characters from the data string will print.

The characters that print and their locations are defined by justification selection, which can be:

- Center

B	C	D	E	F	G

Prints the middle six characters from an eight-character string—drops the first and last characters.

- Left

A	B	C	D	E	F

Prints the first six characters from an eight-character string—drops the last two characters.

- Right

C	D	E	F	G	H

Prints the last six characters from an eight-character string—drops the first two characters.

	A	B	C	D	

Space   Space

Prints all four characters from a four-character string in a centered position, leaving a space at the beginning and a space at the end.

A	B	C	D		
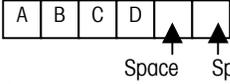
Space   Space

Prints all four characters from a four-character string in a left-justified position, leaving two spaces at the end.

		A	B	C	D
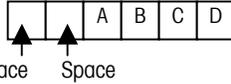
Space   Space

Prints all four characters from a four-character string in a right-justified position, leaving two spaces at the beginning.

- Default (Prints the entire string, left justified.)

Leading Zero Fill displays only for Field element types. If enabled, all leading space characters are converted to leading zeros.

Press the EXIT softkey ↖ to return to the template setup screen when editing of the element is complete.

Deleting

Use the UP and DOWN arrow keys to select a record to delete. Press the DELETE

softkey ▱ to delete the element.

Inserting

Use the UP and DOWN arrow keys to select a location in the list of elements to

insert a new element. Press the NEW softkey ▯ to open the setup screen to create a new record. Configure the parameters as described under Editing.

Press the EXIT softkey to return to the template setup screen when configuration of the new element is complete.

Clearing

Press the CLEAR softkey **C** to clear all elements from a template. A screen displays that asks for verification to clear all elements from the template. Press the

OK softkey ✓ to continue. A status message displays verifying that the clearing of the template was successful.

```
                          09 Jan 2004 08:47:19
           Outbound Template
Element   Data          Length    Justify
  1       Time            20         C
  2       Date            20         C
  3       CR/LF            1         -
  4       Vehicle ID      16         L
  5       NetWt           12         R
  6       CR/LF            4         -

  ↖      ✎      🗋      ⌫      C
```

Outbound Template

The Outbound Template setup screen enables configuration of the output for outbound weighing operations defined by placement, data, character length, and justification.

Parameters on the Outbound Template setup screen can be configured by editing, inserting, deleting, and clearing. The procedures are the same as those listed previously under Inbound Template.

```
                          09 Jan 2004 08:47:19
           Transient Template
Element   Data          Length    Justify
  1       Time            20         C
  2       Date            20         C
  3       CR/LF            1         -
  4       GrossWt         12         R
  5       CR/LF            4         -

  ↖      ✎      🗋      ⌫      C
```

Transient Template

The Transient Template setup screen enables configuration of the output for transient weighing operations defined by placement, data, character length, and justification.

Parameters on the Transient Template setup screen can be configured by editing, inserting, deleting, and clearing. The procedures are the same as those listed previously under Inbound Template.

```
                          09 Jan 2004 08:47:19
                Template 1
Element   Data          Length    Justify
  1       Time            20         C
  2       Date            20         C
  3       CR/LF            1         -
  5       GrossWt         12         R
  6       CR/LF            4         -

  ↖      ✎      🗋      ⌫      C
```

Template 1

The Template 1 setup screen enables configuration of the output for weighing operations defined by placement, data, character length, and justification. Use Template 1 to setup output parameter configurations that can then be quickly recalled or copied to other templates as needed.

Parameters on the Template 1 setup screen can be configured by editing, inserting, deleting, and clearing. The procedures are the same as those listed previously under Inbound Template.

```
                          09 Jan 2004 08:47:19
             Template Strings
  1    TARE
  2    PARTS
  3    Bill Jones
  4    Little Bucket
  5    GROSS
  6    ABC

  ↖      ✎      🗋      ⌫      C
```

Template Strings Setup

The strings setup screen defines strings of characters that are frequently used in template messages. Press the PRINT scale function key ⎚→ to print the template string messages.

Strings can be configured by:

- Editing
- Deleting
- Inserting
- Clearing

Editing

When the strings setup screen opens, the first string in the list will have focus. Use the UP and DOWN arrow keys to select a string to edit. Press the EDIT softkey to open the setup screen for the string where edits can be made. An example of a template strings edit screen is shown in Figure 3-12.
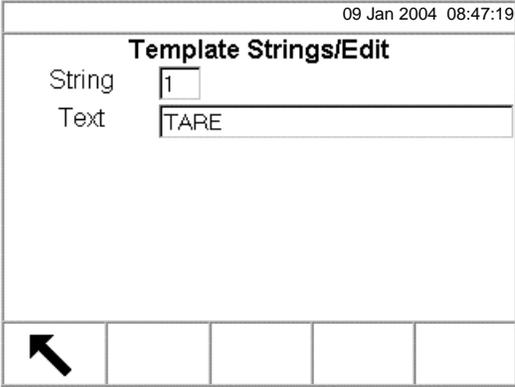
Figure 3-12: Template Strings Edit Screen

Edit the text for the string as desired. Press the EXIT softkey to return to the template strings setup screen when editing of the element is complete.

Deleting

Use the UP and DOWN arrow keys to select a string to delete. Press the DELETE softkey ⬭ to delete the string.

Inserting

To create a new string, press the NEW softkey ▭ to open the setup screen to create a new string record. The next available string number will display. Enter the text for the string message.

Press the EXIT softkey to return to the template string setup screen when configuration of the new string is complete.

Clearing

Press the CLEAR softkey **C** to clear all template strings. A screen displays that asks for verification to clear all strings. Press the OK softkey ✓ to continue. A status message displays verifying that the clearing of the strings was successful.
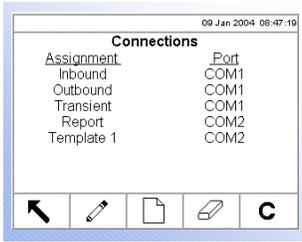
Connections

The Connections setup screen displays port assignments (COM 1 or COM 2) for the following data streams as defined by the respective templates or by the report format:

- Inbound
- Report
- Outbound
- Template 1
- Transient

The continuous output mode of the IND310drive terminal can be used continuously to send weight data and scale status information to a remote device such as a PC or a remote display. The Continuous and Continuous with ck/sum data streams are defined in Appendix D.

The CTPZ data stream sends commands to the IND310drive to perform several basic functions when a control character is received. This connection is further explained in Appendix D.

Connection assignments can be configured by:

See Appendix D, Connections for further information about connection setup.

- Editing
- Deleting
- Inserting
- Clearing

Configure connection assignments by following the same procedures listed previously under template strings setup.

Serial

Serial communication setup screens include COM1 and COM2.
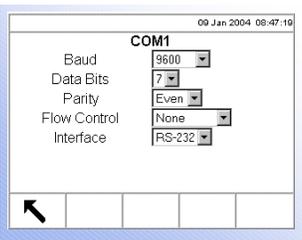
COM1 and COM2

Use the COM1 and COM2 setup screens to configure the COM1 and COM2 serial ports.

Baud

Use the Baud drop-down menu to set the baud rate for the serial port. Selections include:

- 300
- 9600
- 600
- 19200
- 1200
- 38400
- 2400
- 57600
- 4800
- 115200

Data Bits

Use the Data Bits drop-down menu to set the data bits to either 7 or 8 for the serial port.

Parity

Use the Parity drop-down menu to set the parity to None, Even, or Odd for the serial port.

Flow Control

Use the Flow Control drop-down menu to set the flow control to either None or XON-XOFF.

Interface

Use the Interface drop-down menu to select the serial port interface. Selections include:

- RS-232

- RS-422

- RS-485

Network

Network setup screens include Ethernet and FTP.

Ethernet

Ethernet is available for FTP download only. Setup for Ethernet allows static IP addressing only. If the DHCP Client setting is enabled, the IP Address, Subnet Mask, and Gateway Address fields become read-only.
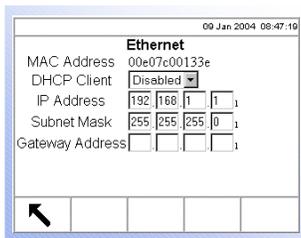
FTP

The setup screen for FTP displays a single user name and password for file download. This information is for reference purposes only and is not configurable.
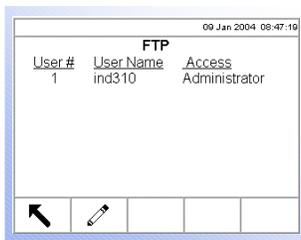
Reset

The Reset setup screen resets setup values to factory default settings for the communication setup. Press the OK softkey to complete the reset process.
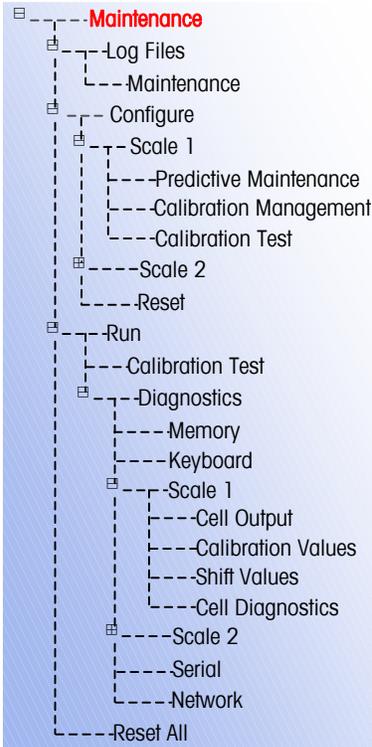
Maintenance

The maintenance setup section includes:

- Log File
- Run
- Configure

Log File

The log file is a record of routine transactions or activities such as capture span and capture zero. Maintenance is the only type of log

file available.

Maintenance

Information that displays on the Maintenance setup screen includes:

- User Name
- Scale
- Date
- Action
- Time

Configure

Use the Scale (Scale 1 or Scale 2) setup screens to configure:

- Predictive maintenance (POWERCELL scales only)
- Calibration management
- Calibration test

Predictive Maintenance

The Predictive Maintenance setup screen is available only if the selected scale is a POWERCELL scale.

The Predictive Maintenance setup screen enables the operator to configure:

Symmetry Monitor

Use the Symmetry Monitor drop-down menu to select

- None

- Radial

- Axial

Start Threshold

Set the value for start threshold (% capacity) in the Start Threshold field text box.

Difference Threshold

Set the value for difference threshold (% span) in the Difference Threshold field text box.

On Failure

Use the On Failure drop-down menu to configure the activity to occur upon failure. Settings include:

- No Action

- Alarm and disable scale

- Alarm only

Run Flat

Use the Run Flat drop-down menu to select

- Disabled

- Manually

- Automatically

Manual Cell

Specify the manual cell number in the Manual Cell # field text box.

Calibration Management

Use the Calibration Management setup screen to configure parameters used for managing calibration activities.

Maintenance Interval

Specify maintenance intervals in days or weightments in the corresponding field text boxes.
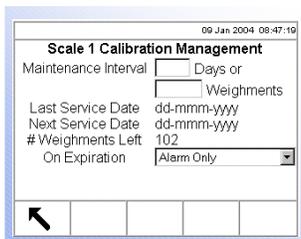
Last Service Date, Next Service Date, and # Weightments Left

The last service date and next service date (if days is specified for intervals), or the number of weightments left until the next service (if weightments is specified for intervals), automatically calculate and display on this screen.

On Expiration

Use the On Expiration drop-down menu to configure the activity to occur upon failure. Settings include:

- No Action

- Alarm and disable scale

- Alarm only

Calibration Test

Configure the steps for calibration testing including test loads and tolerances on the Calibration Test setup screen.

When the Calibration Test setup screen opens, the step numbers and their associated test loads and tolerances display. Calibration test steps can be configured by:

• Editing	• Deleting
• Inserting	• Clearing

Editing

When the Calibration Test setup screen opens, the first step in the list will have focus. Use the UP and DOWN arrow keys to select a step to edit. Press the EDIT

softkey to open the setup screen for the step where edits can be made.

Entering a step number recalls that step's test load and tolerance data (if any). Edit the test step's test load and tolerance as desired. Press the EXIT softkey to save the edits and return to the Calibration Test setup screen.

Inserting

To insert a new step, press the NEW softkey to open the setup screen to create a new calibration test step. Press the EXIT softkey. The current screen data is stored at the indicated step number, and any existing steps move down one record to make room for the new step.

Deleting

Use the UP and DOWN arrow keys to select a step to delete. Press the DELETE

softkey to delete the step.

Clearing

Press the CLEAR softkey **C** to clear all calibration test steps. A screen displays that asks for verification to clear all steps. Press the OK softkey to continue. A status message displays verifying that the clearing of the steps was successful.

Reset

The Reset setup screen resets setup values to factory default settings for the maintenance configuration setup. Press the OK softkey **OK** to complete the reset process.

Run

The Run screens enable the operator to:

- Run the calibration test
- View and run diagnostic tests
- Reset all factory default settings

Run the Calibration Test

From the setup menu tree, expand Run under the Maintenance setup section. Move the focus to Calibration Test. Press the ENTER key to initiate the calibration test.

See Chapter 4.0, Service and Maintenance, Internal Diagnostic Testing for more information about how to use the diagnostics screens.

View and Run Diagnostic Tests

Diagnostic test setup screens include:

- Memory
- Keyboard
- Scale 1
  – Cell Output
  – Calibration Values
  – Shift Values
  – Cell Diagnostics
- Scale 2
  – Cell Output
  – Calibration Values
  – Shift Values
  – Cell Diagnostics
- Serial
- Network

Memory

The Memory screen displays current available memory.
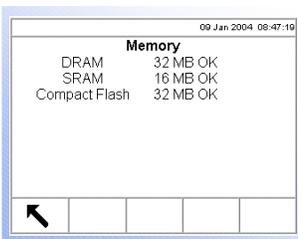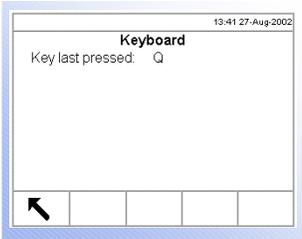
Keyboard

The Keyboard screen enables testing of an external keyboard. Press any key. The screen will display the key last pressed.

Scale 1

Scale 1 setup screens include

- Cell Output

- Calibration Values

- Shift Values

- Cell Diagnostics

Cell Output

The Cell Output screen displays the current cell output for Scale 1.

◀ POWERCELL scales show multiple load cells per scale (up to 24). If more cells are required, scroll up/down. All other scale types have only a single load cell channel output.
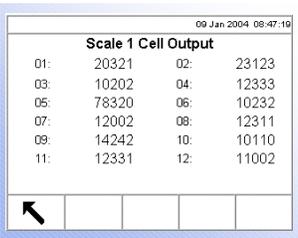
Calibration Values

The Calibration Values screen displays the current calibration values for Scale 1.
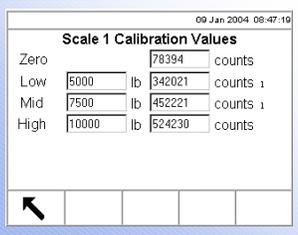
Shift Values

The Shift Values screen displays the current shift values for Scale 1 (POWERCELL scales only).
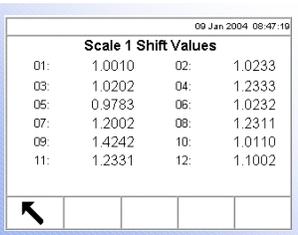
Cell Diagnostics

The Cell Diagnostics screen enables testing for confirmation of cell address for Scale 1 (POWERCELL scales only).

Cell Power

The Cell Power indicates the current status of the power output to the load cell. This is always shown as OFF or ON and is automatically switched off to perform the cell diagnostic operation.
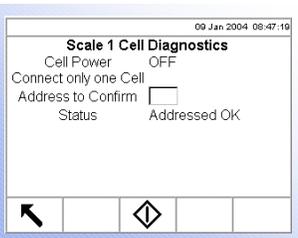
Address to Confirm

Enter the cell address to be confirmed in this field text box.

Press the START softkey to initiate transmission of the test string. Pushing the START softkey, immediately turns it into a STOP softkey. Press this key to end transmission of the test string.

Status

The Status message displays when the confirmation of the cell address is complete to verify that the cell address entered is valid.

Scale 2

Scale 2 setup screens are the same as the Scale 1 setup screens.
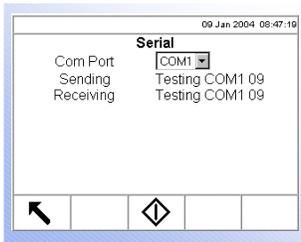
Serial

The Serial screen enables testing of the sending and receiving functions on the serial (COM) ports.

Com Port

Use the Com Port drop-down menu to select the serial port for testing.

Press the START softkey to initiate transmission of the test string. Pushing the START softkey, immediately turns it into a STOP softkey. Press this key to end transmission of the test string.

Sending

The Sending field displays testing status information for the sending function on the serial port.

Receiving

The Receiving field displays testing status information for the receiving function on the serial port.
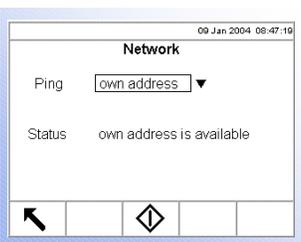
Network

The Network screen enables testing and assists in determining the availability of network options.

Ping

Use the Ping drop-down menu to select a network option. Selections include:

- 127.0.0.1 (to test the TCP/IP stack)
- Own address
- Gateway address
- email host
- DNS host
- Cluster partners
- DHCP host

When any of the following Ping options are selected, a text box displays. Enter the IP address for the selection in the text box.

- email host
- DNS host
- Cluster partners
- DHCP host

Press the START softkey ◇ to initiate transmission of the test string.

Status

The Status field displays messages that indicate the progress and outcome of the network diagnostic process. First, the status shows "Sending Package," then "Receiving Package." The final message shows the test results, such as "own address is available" or "own address is not available."

Reset All Factory Default Settings

The Reset All setup screen resets all setup settings to factory default settings.

Press the ENTER key to select Reset All. A screen displays that asks for verification to reset all setup settings to factory default settings. Press the OK softkey ✓ to continue. (Press the EXIT softkey ◤ to abort the reset all operation.) A status message displays verifying that the reset of all settings was successful.

Restoring Factory Default Settings

See Appendix B, Default Settings for a list of the factory default settings.

Factory default settings can be restored individually for blocks such as scale, application, and terminal, or globally with the Reset All screen under the Maintenance block. To restore factory default settings for Scale 1 for example:

1. Press the SETUP softkey. The setup menu tree displays (see Figure 3-13).
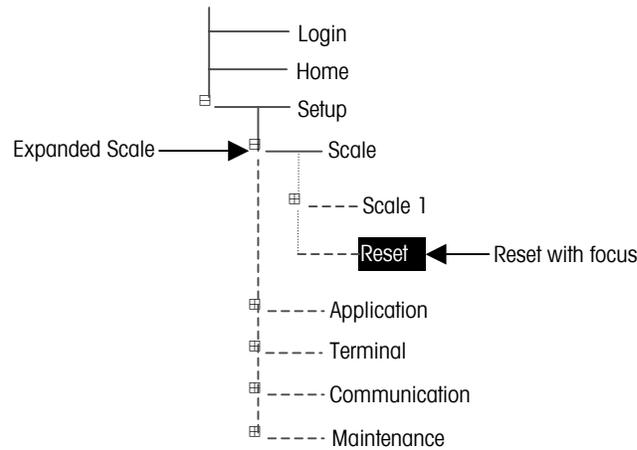
Figure 3-13: Setup Menu Tree—Reset

2. Use the DOWN arrow key to move the focus to Scale.

3. Press the RIGHT arrow key to expand Scale.

4. Use the DOWN arrow key to move the focus to Reset.

5. Press the ENTER key to open the Scale Reset screen (see Figure 3-14).
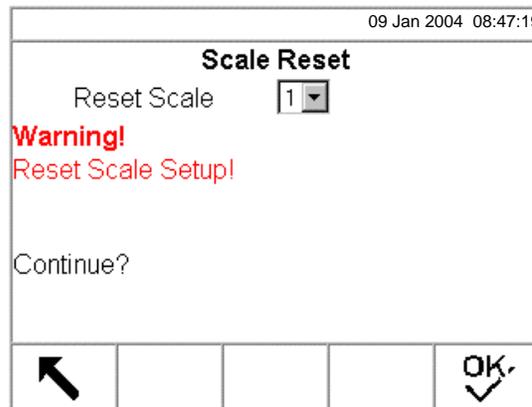
Figure 3-14: Scale Reset Screen

6. Ensure that the scale number in the Reset Scale field is the number of the scale base to be reset to factory default settings. If not

    A. Press the ENTER key to select the data field and display the drop-down menu.

    B. Use the DOWN arrow key to move the focus to the correct scale base number.

    C. Press the ENTER key to accept the selection.

7. Press the OK softkey to reset the scale setup values to factory default settings.

8. A status message appears that verifies a successful reset.

◄ Scale reset does NOT include the reset of type, capacity, increment, or calibration data. Reset this data by selecting Maintenance, Reset All.

9. Press the EXIT softkey to return to the setup menu tree display.

10. Use the DOWN arrow key to move the focus to Application.

11. Press the RIGHT arrow key to expand Application.

12. Use the DOWN arrow key to move the focus to Reset.

13. Press the ENTER key to open the Reset screen (see Figure 3-15).
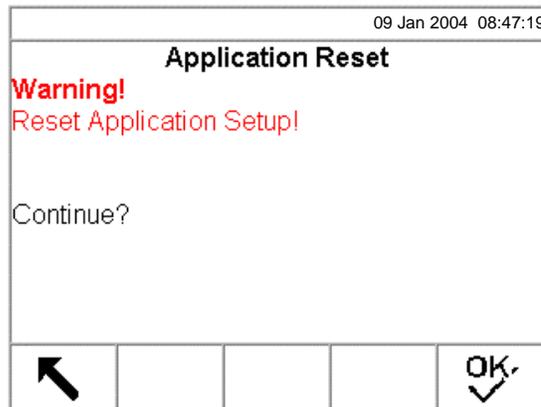
Figure 3-15: Setup Application Default Reset Screen

14. Press the OK softkey to reset the setup values to factory default settings, or press the EXIT softkey to exit without resetting the factory defaults.

15. A status message appears that verifies a successful reset.

16. Press the EXIT softkey to return to the setup menu tree display.

17. Repeat steps 10–16 to reset factory default settings for Terminal, Communication, and Maintenance.

◄ Select Reset All under Maintenance to restore all setup settings to factory defaults.

Exiting Setup Mode

To exit the setup mode:

1. From the setup menu tree screen, press the EXIT softkey (see Figure 3-16).
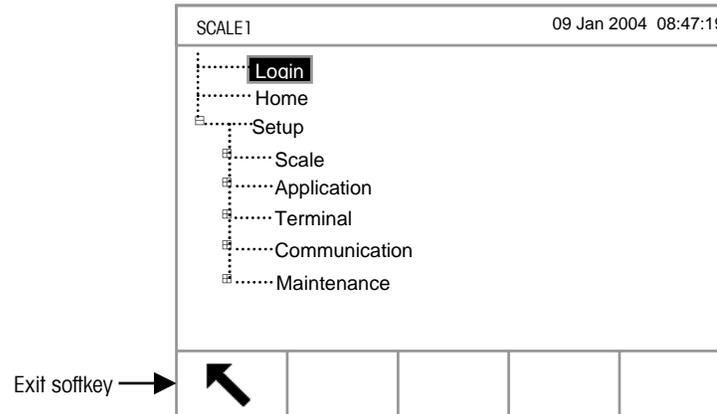
Figure 3-16: Setup Menu Tree Screen

2. The default weighing operation screen displays.

For your notes

Chapter 4.0

Service and Maintenance

This chapter covers

- Cleaning and Maintenance
- Service
- Troubleshooting

Click on any of the above topics to link to the sections where they are located.

The IND310drive terminal is designed to be virtually error-free and reliable. If problems do occur, do not attempt to repair the scale or terminal before the source of the problem has been determined. Record as much information as possible about what has happened including any error messages and physical responses of the terminal and/or scale.

If the IND310drive terminal is malfunctioning, perform the troubleshooting tests described in the next few pages to identify the problem before contacting METTLER TOLEDO.

Cleaning and Maintenance

Clean the IND310drive terminal's keypad and cover with a clean, soft cloth that has been dampened with a mild glass cleaner. Do not use any type of industrial solvent such as toluene or isopropanol (IPA) that could damage the terminal's finish. Do not spray cleaner directly on the terminal.

Regular maintenance inspections and calibration by a qualified service technician are recommended. The IND310drive is a rugged stainless steel enclosed instrument; however the font panel is a vinyl covering over sensitive electronic switches and a lighted LCD display. Care should be taken to avoid any punctures to this surface or any vibrations or shocks to the instrument. Should the front panel become punctured, ensure that steps are taken to prevent dust and moisture from entering the unit.

Battery Maintenance

The battery is a rechargeable lithium battery that should not require replacement.

Display Backlight Maintenance

The display backlight life is 20,000 hours at 50 percent contrast. The display backlight is not field replaceable. Contact an authorized METTLER TOLEDO service representative to replace the display backlight.

Service

Information on installing, programming, and servicing the IND310drive terminal is available in the IND310drive Terminal Installation and Technical Manuals. Only qualified personnel should perform installation, programming, and service. Please contact a local METTLER TOLEDO representative for assistance.

In general, once the IND310drive is installed, programmed, and calibrated for a given application, only routine calibration service is required.

	⚡ WARNING
	ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THE TERMINAL. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.

Troubleshooting

Troubleshooting activities for the IND310drive include:

- AC power test
- Power supply voltage test
- Scale PCB voltage test
- Keyboard test
- Internal Diagnostic Testing
- RS-232 Serial Output Test

AC Power Test

Use a multi-meter to check the AC input power. Input power must be within −15% and +10% of the nominal AC line voltage.

Power Supply Voltage Test

The power supply provides 5 VDC at 1.5 amps and 12 VDC at 1.0 amps. Verify the voltage is between 11.5 and 12.5 volts between Pin 1 and Pin 3 (Ground). Verify the voltage is between 4.9 and 5.1 volts between Pin 2 and Pin 3 (Ground). If the voltages are absent or deviate from the specified range, replace the PCB. See Figure 4-1 for the locations of Pins 1, 2, and 3 on the power supply board.

Figure 4-1: Pins 1, 2, and 3 on the Power Supply Board

Keyboard Test (Optional)

The keyboard test is available in setup mode. Press the SETUP softkey to view the setup menu tree. Use the DOWN arrow key to scroll down the menu tree to Maintenance. Press the RIGHT arrow key to expand the menu tree selections for Maintenance. Scroll down and expand Run and Diagnostics. Then scroll down to Keyboard. Press the ENTER key to open the Keyboard setup screen. Press any key. The screen will display the key last pressed.

Another method to test the keyboard is by removing it from the PS/2 connector on the Main PCB (see Figure 4-2) and performing a continuity test between the pins shown in Figure 4-2 and Table 4-1. The keyboard is a matrix type and should indicate less than 100 Ohms resistance when a key is pressed.
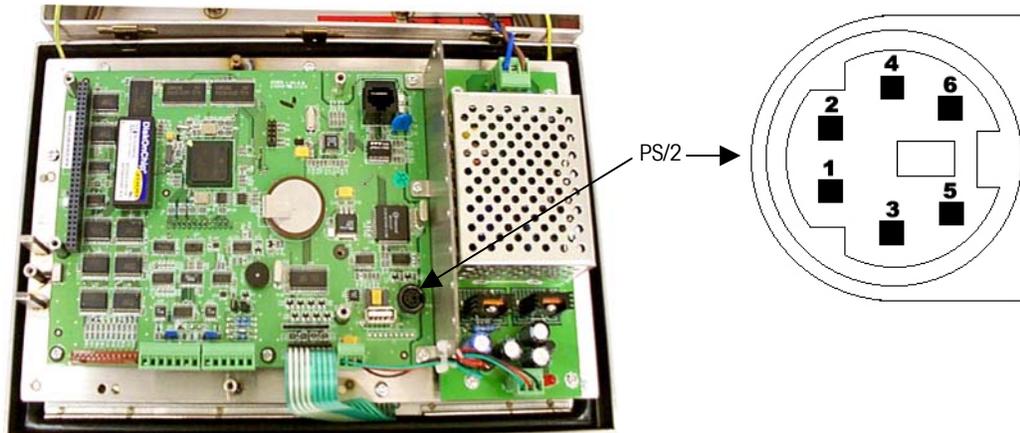
Figure 4-2: PS/2 Connector on the Main PCB and Pin Locations

Table 4-1: Continuity Test Key Names and Pins

Key Name	Pins
Zero	2-3
Tare	2-4
Clear	2-5
Memory	1-3
Select	1-4
Print	1-5

Internal Diagnostic Testing

Perform internal diagnostic testing in setup mode. Press the SETUP softkey

to view the setup menu tree. Use the DOWN arrow key to scroll down the menu tree to Maintenance. Press the RIGHT arrow key to expand the menu tree selections for Maintenance. Scroll down and expand Run and Diagnostics. Available diagnostic setup screens include:

See Keyboard Test for information about how to test the keyboard.

- Memory—Displays current available memory

- Keyboard—Enables testing of the keyboard

- Scale 1

  – Cell Output—Displays the current cell output for the Scale 1

  ◀ POWERCELL scales show multiple load cells per scale (up to 24). If more cells are required, scroll up/down. All other scale types have only a single load cell channel output.

- – Calibration Values—Displays the current calibration values for Scale 1

- – Shift Values—Displays the current shift values for Scale 1 (POWERCELL scales only)

- – Cell Diagnostics—Enables testing for confirmation of cell address for Scale 1

- Scale 2 (Same setup screens as Scale 1)

- Serial—Enables testing of the sending and receiving functions on the serial (COM) ports. Both COM ports can be checked if a loopback jumper is installed on the COM port connector to jumper transmit to receive.

- Network—Enables testing and assists in determining the availability of network options, which include:

  - – 127.0.0.1 to test the TCP/IP stack

  - – Own address

  - – Gateway address

  - – email host

  - – DNS host

  - – Cluster partners

  - – DHCP host

  - – IP config

See Chapter 3.0, Configuration, Maintenance, View and Run Diagnostic Tests for more information about how to run diagnostic tests.

Some diagnostic setup screens provide information on the current status of the system, such as Memory and Cell Output. Other diagnostic setup screens enable the transmittal of test strings for diagnostic testing, such as Serial and Network.

Diagnostic setup screens that enable diagnostic testing include a START softkey. Press this key to initiate transmission of the test string. Pushing the START softkey, immediately turns it into a STOP softkey. Press this key to end transmission of the test string.

RS-232 Serial Output Test

If the testing of the sending and receiving functions on the serial (COM) ports using the loopback test fails, use the following test procedure to determine whether the RS-232 serial port is operational.

1. Remove power from the IND310drive terminal and the printer.

2. Disconnect the data cable from the printer.

3. Set the voltmeter to read 20 VDC.

4. Connect the red lead to pin 3 of the printer end of the data cable and connect the black lead to pin 7.

5. Apply power. The meter should read as follows:

- **Demand mode**—The meter should read between −5 and −15 with no fluctuation.

- **Continuous mode**—The meter should fluctuate between −5 and +5 continuously. The constant fluctuation on the meter display indicates the scale/indicator is transmitting information.

To test Demand baud rates, press the PRINT key. The display should fluctuate between +5 volts to −5 volts for the duration of the transmission, then become stable again. This fluctuation indicates the terminal has transmitted data.

◄ When measuring the higher baud rates in the Demand mode, the meter display will fluctuate for a shorter period of time.

Chapter 5.0
Parts and Accessories

Table 5-1 shows parts and accessories for the IND310drive.

Table 5-1: IND310drive Parts and Accessories

Part	Part Number
Display Board	71207872
Display Driver Board	71207873
Power Supply Assembly	71207874
Main Board	71207875
Sabre Single Analog Channel Board	71207876
Sabre POWERCELL Board	71207877
Sabre Dual Analog Channel Board	71207878
US Line Cord	71207879
Schuko Line Cord	71207880
Swiss Line Cord	71207881
UK Line Cord	71207882
Australian Line Cord	71207883
Kit 1 Front Enclosure Assembly (with standoffs, etc.) Front Cover Keyboard & Overlay Gasket (attached)	71207815
Kit 2 Back Enclosure Assembly Enclosure Base (with clips, standoffs, etc.)	71207816
Kit 3 Connector Kit (1) Connector, M25x1.5 (2) Connector, PG11 (2) Plastic Insert, PG11 (1) PG Insert, Big (2) PG Insert, Small	71207817

Part	Part Number
Kit 4　Fastener & Sealing Kit	71207818
(2) Nut, M3x16	
(1) Sealing Cover	
(1) Sealing insert	
(1) Sealing Wire	
(1) Lead Wire, #14	
(1) Screw, Sealing, M3x10	
(5) Screw, GB9074.4, M3x10	
(5) Screw GB9074.4, M4x10	
Kit 5　Connector Kit	71207819
(2) Connector, Terminal 7P, 3.81mm	
(2) Connector, Terminal, 1803617	
(2) Connector, Terminal, 3P, 5.08mm	

Installation

See the
IND310drive
Installation
Manual for further
information about
installing the
terminal.

This appendix provides installation instructions for the IND310drive terminal.

Mounting the Terminal

Mount the terminal on any flat surface or wall where viewing is optimal and the terminal keys are easily accessible. Observe location and environment considerations as described in Chapter 1.0, Introduction.

Mounting hole locations are shown in **Figure A-1**. The diameter of the mounting holes is 8 mm. The largest recommended bolt/screw size is M6.
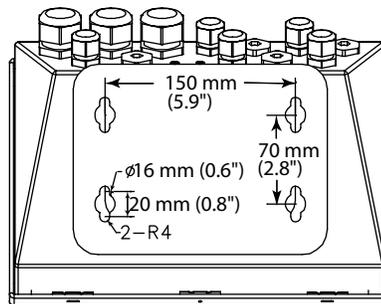
Figure A-1: Mounting Hole Locations

Connection to Peripheral Components

Use the following procedures to connect peripheral components.

Opening the Terminal Enclosure

The front panel of the IND310drive terminal is locked in place by four spring clips attached to the enclosure body. To gain access to the terminal's PCB for internal wiring and setting switches, separate the front panel from the enclosure as follows:

1. Insert the tip of a flat-blade screwdriver into one of the two slots located on the bottom of the front panel assembly (see Figure A- 2) and gently push in toward the enclosure. A "pop" sound is made when the cover is released.

Front Panel spring clip
removal slots (2)
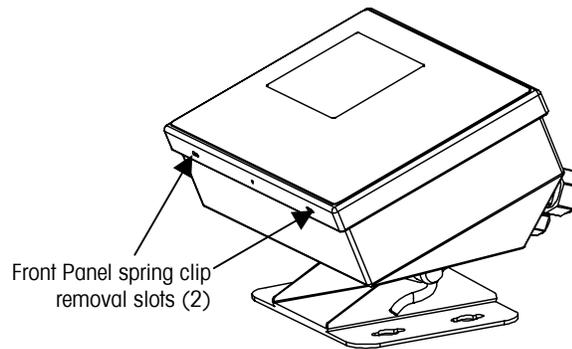
Figure A- 2: IND310drive Terminal Access

2. Repeat Step 1 for the other slot.

3. After releasing the front panel, lift the bottom of the front panel up and out until it completely clears the enclosure.

4. Raise the top of the front panel until it clears the two top clips. The cover will swing down and is hinged by two wire cables at the bottom.

The openings on the bottom of the enclosure are for serial I/O, Ethernet, load cell, and other peripheral component cables.

Installing Cables and Connectors

The IND310drive terminal is designed to withstand harsh environments. However, care must be taken when installing cables and/or connectors that enter the terminal enclosure. To ensure a water tight seal:

•   Pass the cables through an appropriately sized cable grip before connecting the wires. For example, the Ethernet, USB, and PS/2 cables go through the large cable glands (see Figure A-3).

Large cable glands for Ethernet, USB, and PS/2 cables
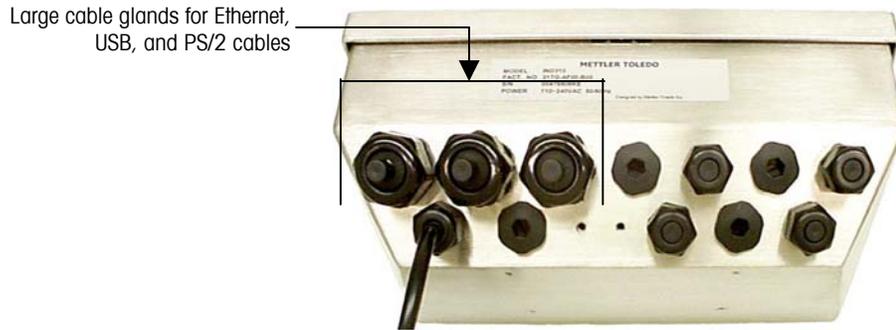
Figure A-3: IND310drive Cable Glands

- Insert the removable terminal strips or connectors in the appropriate sockets on either the main board or on the scale card.

- Ensure that the cable length from the terminal strip/connector to the terminal housing is sufficient so that no strain is placed on the connector assembly when the housing is in the fully open position.

- After re-securing the back cover, tighten the cable grip sufficiently to provide a water-tight seal around the cable. This procedure allows any internal cable slack to be received through the cable grip.

Making Connections

Once the IND310drive terminal is open, electrical connections can be made as shown in Figure A-4.

Pin 1
Ethernet
COM1
PS/2
COM2
USB
Pin 1
Pin 1
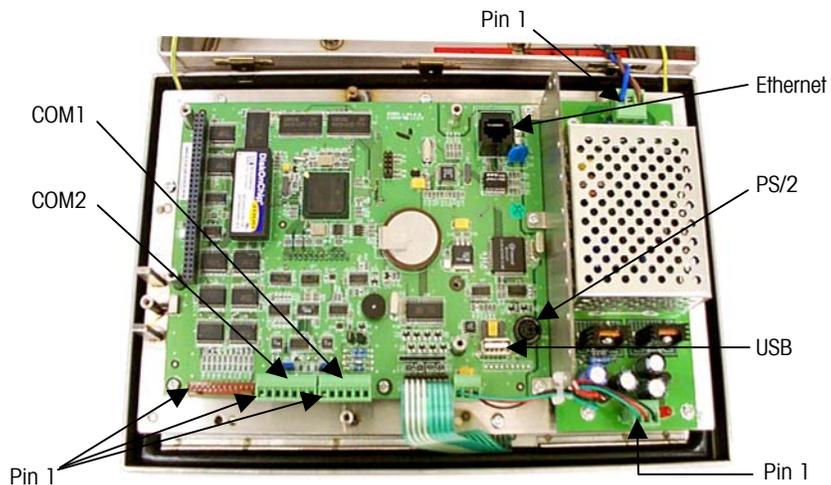
Figure A-4: PCB with Associated Connectors

Power Connection

A permanently attached line cord supplies the main power to the IND310drive terminal. No voltage or frequency settings are required since the terminal includes a universal power supply that operates from 87 to 264 VAC. The supply operates with a line frequency of 49 to 61 Hz.

◀ The integrity of the power ground for equipment is important for both safety and dependable operation of the terminal and its associated scale base. A poor ground can result in an unsafe condition should an electrical short develop in the equipment. A good ground connection minimizes extraneous electrical noise pulses. The IND310drive should not share power lines with noise-generating equipment. To confirm ground integrity, use a commercial branch circuit analyzer. If adverse power conditions exist, a dedicated power circuit or power line conditioner might be required.

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

Before applying power, confirm that the power cord is wired properly for the AC voltage where the terminal will be used (see Figure A-5). The power cord connects to the TB1 terminal strip on the controller PCB.

Power Requirements

The terminal requires 87 to 264 VAC with a line frequency of 47 to 61 Hz (20 watts maximum) of power and is internally fused at 1.6 amp, 250 volts. The fuse is located adjoining the main power connection on the power supply board as shown in Figure A-5. Should the fuse blow, always replace the fuse with the same voltage and amperage as specified.
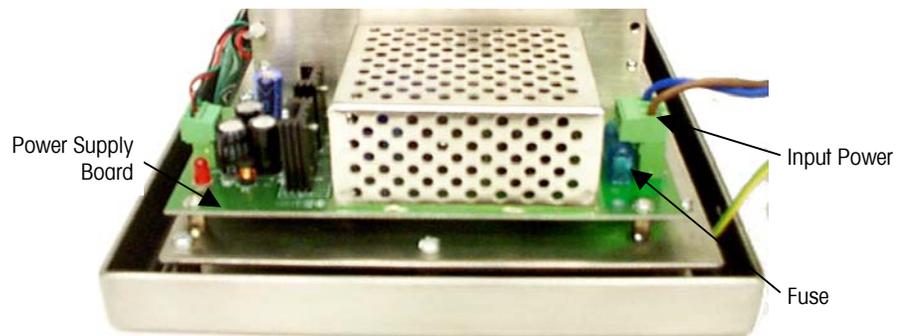
Figure A-5: Power Supply Board

Scale Connections

<div style="border:2px solid red">

⚠ WARNING!

TO AVOID DAMAGE TO THE PCB OR LOAD CELL, REMOVE POWER FROM THE IND310drive TERMINAL AND WAIT AT LEAST 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESS.

</div>

The IND310drive terminal can be configured five ways

- Single analog
- Dual analog
- One POWERCELL
- Single analog and one POWERCELL
- Two POWERCELLS

The location and wiring connections depend on the configuration of the terminal.

Analog Load Cell Connections

Analog load cell connections are made to the J1 or J2 connectors located on the Single or A/D Board as shown in Figure A-6.
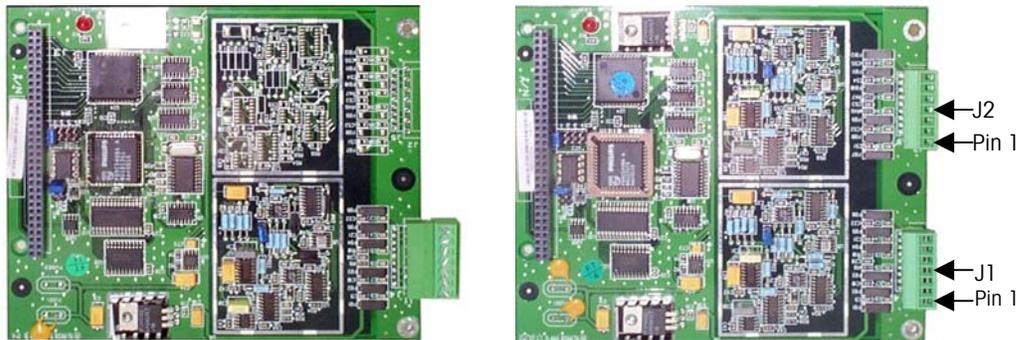
Figure A-6: Single (left) and A/D (right) Board Connector Locations

Total scale resistance (TSR) must be calculated to determine maximum cable length for analog load cell connections. To calculate TSR:

$$TSR = \frac{\text{Load Cell Input Resistance (Ohms)}}{\text{Number of Load Cells}}$$

Table A-1 provides recommended maximum cable lengths based on TSR and cable gauge.

Table A-1: Recommended Maximum Cable Lengths

TSR (Ohms)	24 Gauge (meters/feet)	20 Gauge (meters/feet)	16 Gauge (meters/feet)
350	243/800	610/2000	1219/4000
87 (4-350 Ω cells)	60/200	182/600	304/1000
45 (8-350 Ω cells)	30/100	91/300	152/500

The IND310drive terminal can support eight 350 Ohm analog load cells per channel, maximum of two channels. If a dual analog card is used, a total of sixteen 350 Ohm load cells are supported.

Figure A-7 and Figure A-8 show the analog load cell terminal strip J1/J2 wiring for standard 6-wire and 4-wire cable.

-EXC	7
-SEN	6
-SIG	5
Chassis GND	4
+SIG	3
+SEN	2
+EXC	1

Figure A-7: Standard 6-wire Cable

-EXC	7
-SEN	6
-SIG*	5
Chassis GND	4
+SIG*	3
+SEN	2
+EXC	1
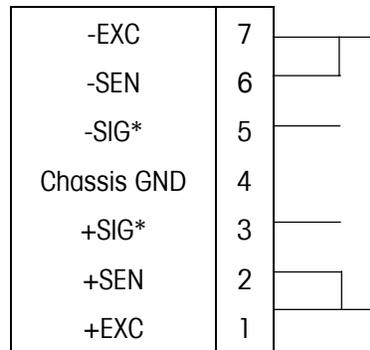
*If an increase in load results in a decrease in weight display, reverse the signal wires (+SIG and –SIG).

Figure A-8: Standard 4-wire Cable

POWERCELL Connections

POWERCELL load cells are connected to the POWERCELL board located inside the IND310drive terminal. J1 and J2 connectors are located as shown in Figure A-9.

Figure A-9: POWERCELL Board Connector Locations

The POWERCELLs should be wired to each PCB as shown in Table A-2.

Table A-2: POWERCELL Connector Termination

J1 Pin #	Function
1	COM A
2	COM B
3	Ground
4	Ground
5	Ground
6	+12 VDC
7	+12 VDC
8	+12 VDC
J2 Pin #	**Function**
1	+24 VDC
2	Ground

Power for ten POWERCELL load cells is supported by the terminal. If an external power supply is connected to J2, a total of 24 POWERCELL load cells are supported for the entire terminal, no matter how many POWERCELL boards are used.

Other Peripherals

Other peripheral connections include:

- Serial Port
- Ethernet
- External Keyboard

Figure A-10 shows main board connection locations.
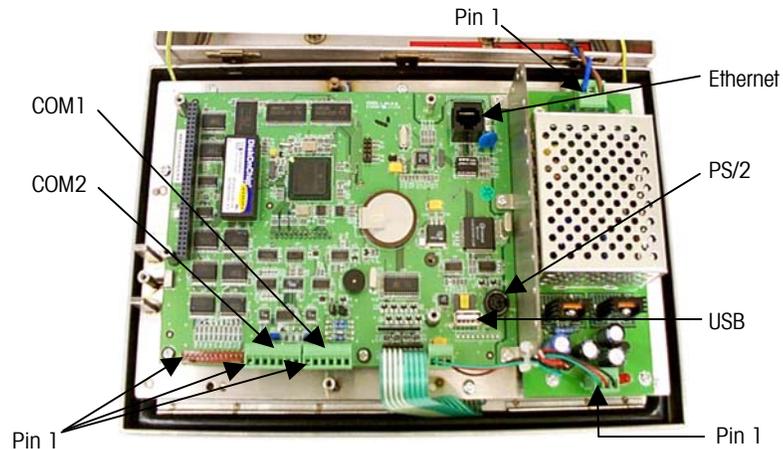
Figure A-10: Main Board Connection Locations

Serial Port

The IND310drive terminal's printer port supplies RS-232/20 mA CL and RS485/422 serial interfaces for both input and output of serial data in either demand or continuous format output. Both serial ports can be configured for demand mode output. Either or both of the ports can be configured for demand continuous mode output. Information concerning serial data format can be found in the setup section of the IND310drive User Manual. The maximum recommended cable length for RS-232 communications is 15.24 meters (50 feet). Table A-3 and Table A-4 provide printer port interconnect information.

Table A-3: Com 1 Port on Main Board

J12 Pin Number	IND310drive Signal Description J12
1	TxD1 RS-232C
2	RxD1 RS-232C
3	Ground
4	CLTX+ 20 mA
5	CLTX– 20 mA
6	+12 V

Table A-4: Com 2 Port on Main Board

J11 Pin Number	IND310drive Signal Description J11
1	TxD2 RS-232C
2	RxD2 RS-232C
3	Ground
4	TXD+ (RS485/422)
5	TXD– (RS485/422)
6	RXD+ (RS485/422)
7	RXD– (RS485/422)

Ethernet

The Ethernet connection is used for FTP download. See Figure A-10 for the location of the RJ45 Ethernet connector.

External Keyboard

A standard computer keyboard can be connected to the terminal via the PS/2 port located on the main board. See Figure A-10 for the location of the connector.

Power-up Sequence

The power-up sequence takes approximately 90 seconds. The unit will beep when plugging it in and then it will display the METTLER TOLEDO logo. The display will be followed by another beep, a truck display, and a status message that shows the progress of the initialization process at the bottom of the screen. The software version number displays during the initialization process.

For application-specific functions, refer to the IND310drive User Manual.

PCB Jumpers and LEDs

All internal jumpers have been factory set and need not be reset unless a change in scale configuration or communication peripherals occurs. The IND310drive terminal as delivered from the factory can be configured five ways:

- Single analog
- Dual analog
- One POWERCELL
- Single analog and one POWERCELL
- Two POWERCELLS

To set up a configuration for:	Use table:
Single analog or dual analog	A-6
Single POWERCELL	A-7
Single analog (Scale 1) and a single POWERCELL (Scale 2)	A-6 (Single analog) A-8 (POWERCELL)
Two POWERCELL load cell boards	A-7 A-8
Single POWERCELL load cell board as Scale 1 and a single analog load cell board as Scale 2	A-7 (POWERCELL-Scale 1) A-9 (Single analog-Scale2)
Two single analog load cell boards	A-6 A-9
Dual analog load cell board	A-6

The standard jumper settings are as follows:

Table A-5: Main Printed Circuit Board

Jumpers/ LEDs	On	Off	Description
J1			J1 is a five-pin jumper set. It is used for factory setup only. No jumpers are to be installed on J1.
W2		X	Hardware reset. (Always off). This jumper performs the same functions as a power cycle. This jumper should not be used in the field.
W3		X	Software debug use. (Always off). This jumper should not be used in the field.
W4	X		Sets Com 2 to RS485 protocol.
W4		X	Sets Com 2 to RS422 protocol.
LED1	X		Power on.
LED1		X	Power off. If unit is plugged in, check main power, power connections, and fuses before contacting service.
LED2	X		Application software running.
LED3	X		Ethernet link connected.
LED4	X		Ethernet is active.

Table A-6: Single and Dual Analog Load Cell—Scale 1

Jumpers/ LEDs	On	Off	Description
W1			W1 is a three-position jumper set. Only one jumper should be connected.
IRQ1		X	
IRQ2		X	
IRQ7	X		
W2	X		This jumper sets the connected scale's load cell setting to 2 mV/V.
W2		X	No jumper sets the connected scale's load cell setting to 3 mV/V
W3[2]	X		This jumper sets Scale 2 to 2 mV/V.
W3		X	No jumper on W2 sets Scale 2 to 3 mV/V

---

2 Jumper W3 is only available on dual analog load cell boards.

Table A-6: Single and Dual Analog Load Cell—Scale 1 (continued)

Jumpers/ LEDs	On	Off	Description
W4			W4 is a four-position jumper set. Only one jumper should be connected.
CS4		X	
CS3		X	
CS2		X	
CS1	X		
LED1	X		Power on.
LED1		X	Power off. If unit is plugged in, check main power, power connections, proper seating of the board, and fuses before contacting service.
LED1	X	X	Flashing. Power is on and communication is ok.

The Dual analog board has the same jumper connections as a single analog board. It should always be configured as board 1.

Table A-7: POWERCELL Load Cell—Scale 1

Jumpers/ LEDs	On	Off	Description
W1			W1 is a three-position jumper set. Only one jumper should be connected.
IRQ1		X	
IRQ2		X	
IRQ7	X		
W2			W2 is a three-pin configuration. If the jumper is in the 12V position, 12 volts is supplied from the IND310drive terminal. If the jumper is in the 24V position, 24 volts is supplied from an external power source. The external power source is connected to J2 on the POWERCELL load cell board. Pin 1 of J2 is +24V and Pin 2 of J2 is Ground. The external power source is not supplied with the IND310drive terminal.
W4	X		This jumper activates the internal terminating resistor for RS485.
W5			W5 is a four-position jumper set. Only one jumper should be connected.
CS4		X	
CS3		X	
CS2		X	
CS1	X		

Table A-7: POWERCELL Load Cell—Scale 1 (continued)

Jumpers/ LEDs	On	Off	Description
LED1	X		Power on.
LED1		X	Power off. If unit is plugged in, check main power, power connections, proper seating of the board, and fuses before contacting service.
LED1	X	X	Flashing. POWERCELL is connected and communication is ok.

Table A-8: POWERCELL Load Cell—Scale 2

Jumpers/ LEDs	On	Off	Description

W1
  IRQ1
  IRQ2
  IRQ7
	
	X
	
		X
		
		X
			W1 is a three-position jumper set. Only one jumper should be connected.

W2			W2 is a three-pin configuration. If the jumper is in the 12V position, 12 volts is supplied from the IND310drive terminal. If the jumper is in the 24V position, 24 volts is supplied from an external power source. The external power source is connected to J2 on the POWERCELL load cell board. Pin 1 of J2 is +24V and Pin 2 of J2 is Ground. The external power source is not supplied with the IND310drive terminal.
W4	X		This jumper activates the internal terminating resistor for RS485.

W5
  CS4
  CS3
  CS2
  CS1
	
	X
	
		X
		X
		
		X
			W5 is a four-position jumper set. Only one jumper should be connected.

LED1	X		Power on.
LED1		X	Power off. If unit is plugged in, check main power, power connections, proper seating of the board, and fuses before contacting service.
LED1	X	X	Flashing. POWERCELL is connected and communication is ok.

Table A-9: Single Analog Load Cell—Scale 2

Jumpers/LEDs	On	Off	Description
W1 　IRQ1 　IRQ2 　IRQ7	 X 	 X X	W1 is a three-position jumper set. Only one jumper should be connected.
W2	X		This jumper sets sets the connected scale's load cell setting to 2 mV/V.
W2		X	No jumper sets sets the connected scale's load cell setting to 3 mV/V
W3[3]	X		This jumper sets Scale 2 to 2 mV/V.
W3		X	No jumper on W2 sets Scale 2 to 3 mV/V
W4 　CS4 　CS3 　CS2 　CS1	 X 	 X X X	W4 is a four-position jumper set. Only one jumper should be connected.
LED1	X		Power on.
LED1		X	Power off. If unit is plugged in, check main power, power connections, proper seating of the board, and fuses before contacting service.
LED1	X	X	Flashing. Power is on and communication is ok.

Table A-10: Power Supply Board Standard Settings

Jumpers/LEDs	On	Off	Description
LED	X		Indicates power is being supplied to the terminal. If main power is available to unit and LED is not on, check power supply fuse.

---

3 Jumper W3 is only available on dual analog load cell boards.

For your notes

Appendix B

Default Settings

The following tables list the factory default settings for the IND310drive terminal.

Setup Feature	Default Value
Login	
Username	
Password	

Setup Feature	Default Value
Scale 1 Type	
Name	
Scale Type	
Approval	None
# of Load Cells	

Setup Feature	Default Value
Scale 1 Manual Address	
Cell Power	OFF
Enter New Address	
Status	Addressed OK

Setup Feature	Default Value
Scale 1 Auto Address	
Cell Power	OFF
Status	Searching for Cell…

Setup Feature	Default Value
Scale 1 Address All 240	
Cell Power	OFF
Status	Addressed OK

Setup Feature	Default Value
Scale 1 Shift Adjust	
Adjust By	Cell
Cell Counts	
Place test weight on	Cell 1
Status	Capturing Weight

Setup Feature	Default Value
Scale 1 Capacity & Increment	
Primary Units	kg
Ranges/Intervals	1
>I1I<	2 x 0.001 kg
Blank Over Capacity	5

Setup Feature	Default Value
Scale 1 Calibration	
Geo Code	16
Base Serial Number	
Calibration Date	

Setup Feature	Default Value
Scale 1 Calibration/Capture Zero	
Status	Empty scale & press

Scale 1 Calibration/Capture Span	
Calibration Units	kg
# Calibration Points	1
Calibration Weight 1	
Status	Place Weight 1

Scale 1 AZM & Display	
Auto Zero	Gross
Auto Zero Range	0.5
Center of Zero	Gross
Under Zero Blanking	5

Scale 1 Zero Ranges	
Power Up Zero	Disabled
Power Up Range	-2 +2
Pushbutton Zero	Enabled
Pushbutton Range	-2 +2

Scale 1 Tare Types	
Pushbutton Tare	Enabled
Keyboard Tare	Enabled
Additive Tare	Disabled
Tare Interlock	Enabled
Net Sign Correction	Disabled

Scale 1 Auto Tare	
Auto Tare	Disabled
Tare Threshold Wt.	
Reset Threshold Wt.	
Motion Check	Enabled

Scale 1 Auto Clear	
Auto Clear Tare	Disabled
Clear after Print	Disabled
Clear Threshold Wt.	
Motion Check	Enabled

Scale 1 Units	
Secondary Units	None
Auxiliary Units	None
Custom Factor	1.0
Custom Name	Custom
Custom Increment	1
Custom Resolution	X

Scale 1 Filter	
Low Pass Frequency	2.0
Low Pass # Poles	8
Notch Filter Frequency	30
Stability Filter	Disabled

Scale 1 Stability	

Motion Range	1.0
No-motion Interval	0.3

Scale 1 Log or Print	
Minimum Wt.	0
Interlock	Disabled
Automatic	Disabled
Threshold Wt.	
Reset on	Threshold
Motion Check	Disabled

Scale 1 Sequential Number	
Sequential Number	Disabled
Number Reset	Disabled
Next Value	00000001

Scale Reset	
Reset Scale	1

Log Files	
Maintenance Log Scale 1	Disabled
Maintenance Log Scale 2	Disabled

Alibi & Transaction Table	
Active Table(s)	Alibi & Transaction
#1	Vehicle ID
#2	Vehicle Desc
#3	None
#4	None
#5	None
#6	None
#7	None
#8	None
#9	None
#10	None

Alibi & Transaction Table/Search	
#1	None
#2	None
#3	None
#4	None

A1 Table	
Name	A1 Table
Quick ID	Enabled
Short A/N ID	Disabled
Long Description	Enabled
Totalization	Disabled

A1 Table/Search	
#1	None
#2	None
#3	None
#4	None

A2 Table	
Name	A2 Table
Quick ID	Enabled
Short A/N ID	Disabled
Long Description	Enabled
Totalization	Disabled

A2 Table/Search	
#1	None
#2	None
#3	None
#4	None

A3 Table	
Name	A3 Table
Quick ID	Enabled
Short A/N ID	Disabled
Long Description	Enabled
Totalization	Disabled

A3 Table/Search	
#1	None
#2	None
#3	None
#4	None

A4 Table (Index Disabled)	
Index	Disabled
Name	A4 Table
Quick ID	Enabled
Short A/N ID	Disabled
Long Description	Enabled
Totalization	Disabled

A4 Table/Search (Index Disabled)	
#1	None
#2	None
#3	None
#4	None

A4 Table (Index Enabled)	
Index	Enabled
Vehicle ID	Enabled
A1 Table	Enabled
A2 Table	DIsabled
A3 Table	DIsabled
Totalization	Disabled

Index Table/Search	
#1	None
#2	None
#3	None
#4	None

Message Table	
The default for the message table is a blank table with no values listed.	

Message Table/Edit	
Message	
Description	

Message Table/Insert	
Message	
Description	

Discrete Inputs	
The default for the discrete inputs is a blank table with no values listed.	

Discrete Inputs/Edit	
Input #	1
Polarity	Positive True
Assignment	None
Scale	Selected

Discrete Inputs/Insert	
Input #	1
Polarity	Positive True
Assignment	None
Scale	Selected

Discrete Outputs	
The default for the discrete outputs is a blank table with no values listed.	

Discrete Outputs/Edit	
Output #	1
Assignment	Motion
Scale	Selected

Discrete Outputs/Insert	
Output #	1
Assignment	Motion
Scale	Selected

Vehicle Weighing General	
Overload check	Disabled
Value	
Permit override	Yes

Vehicle Weighing Inbound	
Inbound	Disabled
Manual Selection	Disabled
A1 Table	Disabled
A2 Table	Disabled

A3 Table	Disabled
A4 Table	Disabled

Vehicle Weighing Outbound	
Outbound	Enabled
A1 Table	Disabled
A2 Table	Disabled
A3 Table	Disabled
A4 Table	Disabled
Variables	None

Vehicle Weighing Transient	
Transient	Disabled
A1 Table	Disabled
A2 Table	Disabled
A3 Table	Disabled
A4 Table	Disabled
Variables	None

Vehicle ID Table	
Quick ID	Enabled
Short A/N ID	Disabled
Long Description	Enabled
Totalization	Disabled

Vehicle ID Table/Search	
#1	None
#2	None
#3	None
#4	None

Temporary ID Table	
Quick ID	Disabled
Short A/N ID	Disabled
Long Description	Disabled

Temporary ID Table/Search	
#1	None
#2	None
#3	None
#4	None

Reports Format	
Format	Narrow (40)
Header	5
Title	Yes
Separator	None
Footer	5

Transaction Report	
Full	Enabled
Time & Date	Enabled
Type	Enabled
Vehicle ID	Enabled

A1 - A4 Table	Enabled
Var1 & Var2	Enabled

Vehicle ID Table Report	
Quick ID	Enabled
Short A/N ID	Disabled
Long Description	Enabled
Total	Disabled

Temporary ID Table Report	
Date	Disabled
Time	Disabled
Quick ID	Disabled
Short A/N ID	Disabled
Long Description	Disabled

A1 Table Report	
Quick ID	Enabled
Short A/N ID	Disabled
Long Description	Enabled
Total	Disabled

A2 Table Report	
Quick ID	Enabled
Short A/N ID	Disabled
Long Description	Enabled
Total	Disabled

A3 Table Report	
Quick ID	Enabled
Short A/N ID	Disabled
Long Description	Enabled
Total	Disabled

A4 Table Report (Index Disabled)	
Quick ID	Enabled
Short A/N ID	Disabled
Long Description	Enabled
Total	Disabled

A4 Table Report (Index Enabled)	
Vehicle ID	Enabled
A1 Table	Enabled
A2 Table	Disabled
A3 Table	Disabled
Total	Disabled

Reports Run/Full	
Type	Transactions

Reports Run/Custom	
Type	Transactions
Field 1	Time & Date

Start	
Stop	
Field 2	None
Start	
Stop	

Device	
Terminal ID	IND310
Project ID	
Description	Mettler Toledo Industrial Terminal
Alarm Beeper	Enabled
Keypad Beeper	Disabled

Display	
Backlight Timeout	15
Tare Display	Active

Display/Adjust Contrast	
Contrast	21

Time & Date	
Set Time	
Set Date	
Time Format	24:MM:SS
Time Field Separator	:
Date Format	DD MMM YYYY
Date Field Separator	(space)

Language	
Display Messages	English
Printer Character Set	USA
External Keyboard	English

Transaction Counter	
Transaction Counter	Enabled
Counter Reset	Disabled
Next Transaction	0000000001

Users/Edit	
User #	1
Access	Administrator
Username	ADMIN
Password	
Confirm Password	

Softkeys	
Softkey #	
Assignment	None

Application Keys	
A1	None
A2	None
A3	None

A4	None

Copy	
Copy from Template	Template 1
To Template	Outbound

Inbound Template	
Outbound Template	
Transient Template	
Template 1	

(any) Template/Edit	
Element #	
Element Type	Field
Value	GrossWt
Repeat Count	
Format	12 Default
Leading Zero Fill	Disabled

(any) Template/Insert	
Element #	
Element Type	Field
Value	GrossWt
Repeat Count	
Format	12 Default
Leading Zero Fill	Disabled

Template Strings	
The default for the template strings is a blank table with no values listed.	

Template Strings/Edit	
String	
Text	

Template Strings/Insert	
String	
Text	

Connections	
The default for the connections is a table with the following values listed:	
Assignment	**Port**
Outbound	COM1
Template 1	COM1

Connections/Edit	
Port	COM1
Assignment	Template 1

Connections/Insert	
Port	COM1

Assignment	Template 1

Serial/COM1	
Baud	9600
Data Bits	7
Parity	Even
Flow Control	None
Interface	RS-232

Serial/COM2	
Baud	9600
Data Bits	7
Parity	Even
Flow Control	None
Interface	RS-232

Ethernet	
MAC Address	
DHCP Client	Disabled
IP Address	192.168.0.1
Subnet Mask	255.255.255.0
Gateway Address	0.0.0.0

FTP/Edit	
User #	1
Username	ind310
Password	sabre

Scale 1 Predictive Maintenance	
Symmetry Monitor	None
Start Threshold	1
Difference Threshold	2
On Failure	Alarm Only
Run Flat	Disabled
Manual Cell #	

Scale 1 Calibration Management	
Maintenance Interval (Days)	0
Maintenance Interval (Weighments)	0
Last Service Date	
Next Service	
On Expiration	Alarm Only

Calibration Test	
The default for calibration test is a blank table with no values listed.	

Scale 1 Calibration Test/Edit	
Step #	
Test Load	
Tolerance	

Scale 1 Calibration Test/Insert	

Step #	
Test Load	
Tolerance	

Scale 1 Calibration Values	
Zero	100000
Low	
Mid	
High	1100000

Scale 1 Cell Diagnostics	
Cell Power	OFF
Address to confirm	
Status	Addressed OK

Diagnostics/Serial	
Com Port	COM1
Sending	
Receiving	

For your notes

Appendix C

Database Structure and Use

The IND310drive terminal operating system includes a maintenance log file and tables.

Maintenance Log File

The maintenance log file tracks any calibration changes in the terminal. The maintenance log file cannot be modified, only viewed and cleared completely. An example of a maintenance log file is shown in Figure C-1.

Figure C-1: Maintenance Log File Example

The maintenance log file can only be cleared in setup mode. To clear the maintenance log file:

1. Press the SETUP softkey   . The setup menu tree displays.

2. Use the DOWN and RIGHT arrow keys to scroll through and expand the setup menu tree to Application, Memory, Log Files.

3. Press the ENTER key to open the Log Files setup screen (see Figure C-2).
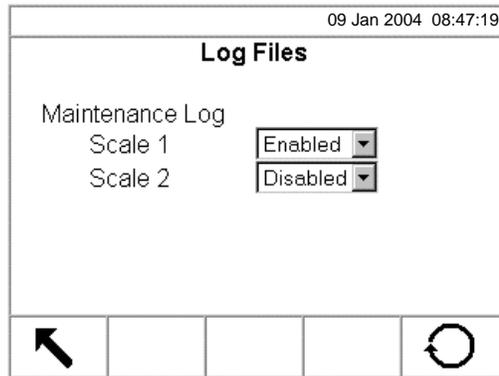
Figure C-2: Log Files Screen

4. Use the Scale 1 and Scale 2 drop-down menus to enable or disable maintenance logging per scale. (Maintenance logging per individual item cannot be disabled.)

5. Press the RESET softkey ⟳ to reset the log files. A screen displays that asks for verification.

6. Press the OK softkey ✓ to continue. A status message displays verifying that the reset was successful.

Tables

See Table Searches for information about how to search tables. See Table Reports for information about how to print tables.

The tables are:

-   Alibi Memory/Transaction

-   A1–A4

-   Vehicle ID

-   Temporary ID

-   Index

Users can search and print all tables.

Alibi Memory

Alibi memory stores transaction information that is not definable by the operator. The alibi memory table includes:

- A transaction count value, which is a unique numeric field that identifies the transaction (the transaction counter must be enabled in terminal setup to activate the transaction count value)

- Date and time stamp fields

- Gross, tare, and net weights, including weight unit

Transaction

The transaction table is linked to the alibi memory table to provide additional operator-selectable fields. The additional fields store custom transaction data.

The transaction table always includes:

- A transaction count value

- Date and time stamp fields

These parameters are a common link between the alibi memory and transaction table.

The transaction table may also include up to ten operator-selected additional fields from the following list:

- Scale name

- Sequence number (selected scale's identification number)

- A1 value (selected value from the A1 table)

- A2 value (selected value from the A2 table)

- A3 value (selected value from the A3 table)

- A4 value (selected value from the A4 table)

- Vehicle ID

- Vehicle description

- Variable 01 value

- Variable 02 value

- Transaction type

A1–A4 User-Defined

The A1–A4 user-defined tables can be structured to meet operational requirements and include four selectable fields

- **Quick ID**—A short numeric value (5 characters) typically used to enable a quick search

- **Short A/N (alpha/numeric) ID**—A short alphanumeric string (16 characters) that also enables a quick search

- **Description**—A long alphanumeric string (40 characters) that describes the table entry

- **Total**—A field that tracks totals based on each specific item in the table (For example, in a customer table the total weight for all transactions involving each customer.)

The A4 table also includes a selection that enables it to act as an index table for other table values. See Index table for further information.

Vehicle ID

The vehicle ID table includes

- **Quick ID**—A short numeric value (5 characters) typically used to enable a quick search

- **Short A/N ID**—A short alphanumeric string (16 characters) that also enables a quick search

- **Description**—A long alphanumeric string (40 characters) that describes the vehicle and is used as the value for a search

- **Tare**—The tare weight of the vehicle

- **Total**—A field that tracks totals based on each specific vehicle in the table

Temporary ID

The temporary ID table includes

- **Quick ID**—A short numeric value (5 characters) typically used to enable a quick search

- **Short A/N ID**—A short alphanumeric string (16 characters) that also enables a quick search

- **Description**—A long alphanumeric string (40 characters) that describes the vehicle

- **Stored Weight**—A field that stores nonpermanent weights for inbound vehicles.

Using Quick ID and Short A/N ID

Every table must have either Quick ID or Short A/N ID enabled. Descriptions must be in the tables for them to be available for use. A description cannot be changed on the operation weight screen, but can only be replaced with another description from the table.

If both Quick ID and Short A/N ID are enabled in the Vehicle ID table, the Quick ID must be used as the look up if the ID is entered **before** pressing the VEHICLE ID, TEMPORARY ID, or INDEX softkeys. The Short A/N ID must be used as the look up if the ID is entered **after** pressing the VEHICLE ID, TEMPORARY ID, or INDEX softkeys.

If only Quick ID is enabled, it can be used as the look up when the ID is entered **before or after** pressing the VEHICLE ID, TEMPORARY ID, or INDEX softkeys. If only Short A/N ID is enabled, it can be used as the look up only **after** pressing the VEHICLE ID, TEMPORARY ID, or INDEX softkeys.

If Quick ID and/or Short A/N ID are enabled for the A1–A4 tables and the corresponding A1–A4 application keys are assigned to Select Table in the setup, the user can enter a Short A/N ID and press the ENTER key to populate a database field with the description for the table entry.

For example, an A1 table defined as Customer Table could include data as shown in Table C-1.

Table C-1: Customer Table (A1 Table)

Quick ID	Short A/N ID	Description	Total
123	Abc78	Red Trucking	12500 lb
345	Xyz98	Big Truck	24000 lb
789	444aaa	Small Truck	10000 lb

In this example, (assuming both Quick ID and Short A/N ID are enabled) the user can populate the A1 database field on an operation weight screen by entering a Short A/N ID of Abc78 in the A1 text box and then pressing the ENTER key. Red Trucking will automatically be entered in the A1 text box. If the user enters Abc678 in the A1 text box and then presses the ENTER key, the message "A1 ID NOT FOUND" will display because there is no Short A/N ID for Abc678.

The user can press the DATABASE QUERY softkey to search the A1 table or try again with a different Short A/N ID.

If Short A/N ID is disabled for any of the tables, then this look up procedure is done using the Quick ID.
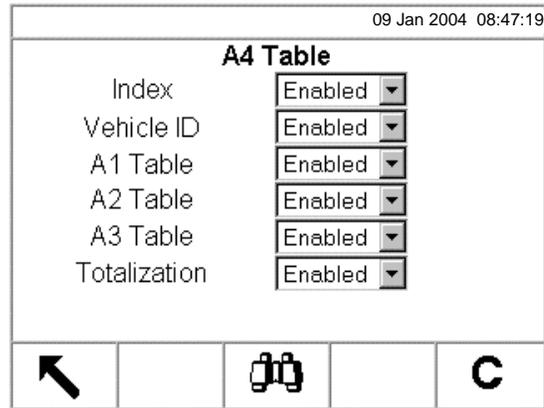
Index

The index table is comprised of ID keys that are used to reference data located in other tables. Index ID keys point to data already stored in other tables to enable quick references for multiple items.

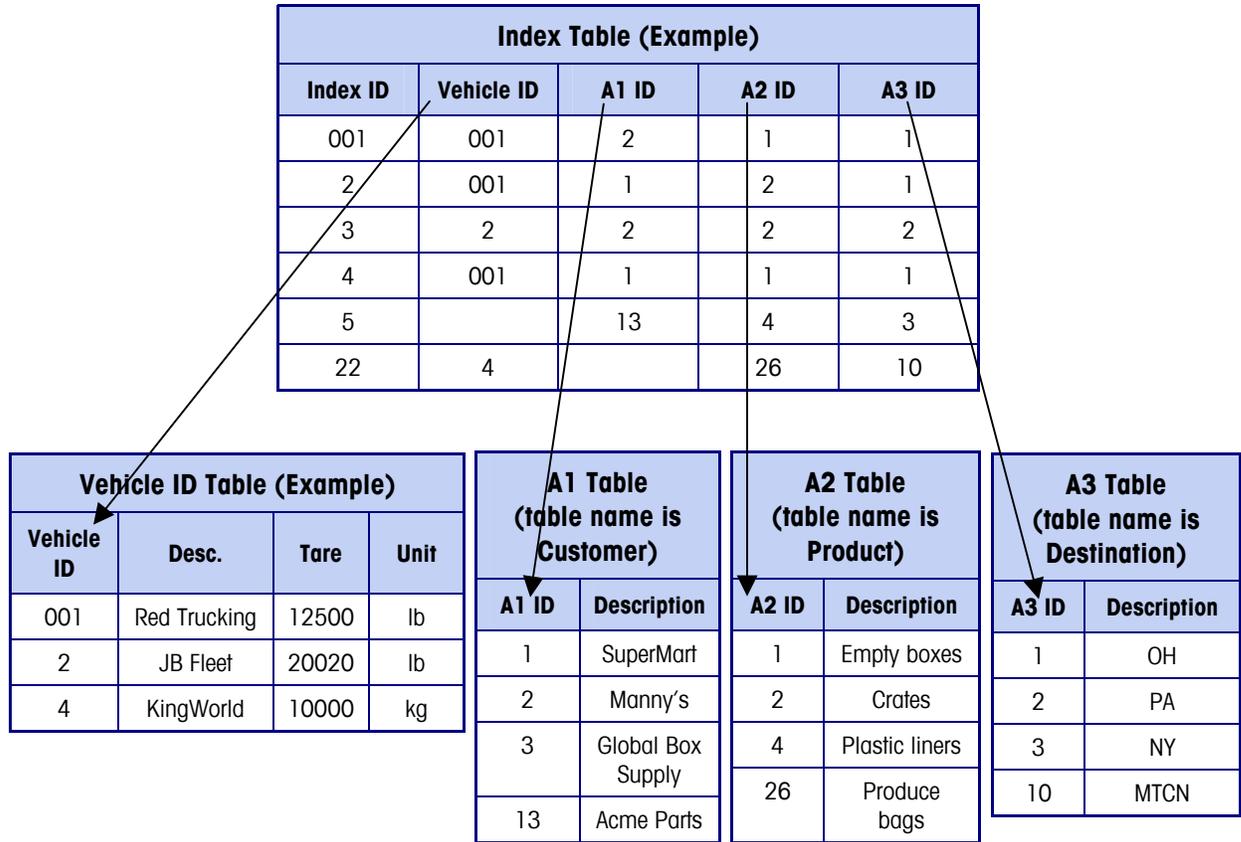Enabling the index table precludes the use of the A4 table.

The following are examples of a possible configuration of the index table and sample contents of tables.

An example of a possible configuration of the index table is shown in Figure C-3.

Figure C-3: Index Table Configuration Example

Figure C-4 illustrates how data in the index table is connected to data in the Vehicle ID, A1, A2, and A3 tables.

Index Table (Example)				
Index ID	**Vehicle ID**	**A1 ID**	**A2 ID**	**A3 ID**
001	001	2	1	1
2	001	1	2	1
3	2	2	2	2
4	001	1	1	1
5		13	4	3
22	4		26	10

Vehicle ID Table (Example)			
Vehicle ID	**Desc.**	**Tare**	**Unit**
001	Red Trucking	12500	lb
2	JB Fleet	20020	lb
4	KingWorld	10000	kg

A1 Table (table name is Customer)	
A1 ID	**Description**
1	SuperMart
2	Manny's
3	Global Box Supply
13	Acme Parts

A2 Table (table name is Product)	
A2 ID	**Description**
1	Empty boxes
2	Crates
4	Plastic liners
26	Produce bags

A3 Table (table name is Destination)	
A3 ID	**Description**
1	OH
2	PA
3	NY
10	MTCN

Figure C-4: Index Table Data Connections With Vehicle ID, A1, A2, and A3 Tables

An example of how the index table is used based on the table data shown in Figure C-4 is as follows:

An operator selects Index weighing by pressing the INDEX softkey [INDEX] . He or she enters an ID of 001.

The system looks up index ID 001 in the index table, which points to data already stored in the other tables. Based on the index ID of 001, the system references and returns data from the other tables as follows:

- Vehicle ID table for ID 001 (Red Trucking, 12500 lb tare)

- A1 table for ID 2 (Manny's)

- A2 table for ID 1 (Empty Boxes)

- A3 table for ID 1 (OH)

The system uses the descriptions and tare information (shown in parentheses above) to automatically populate the associated fields on the vehicle weighing operation screen.

Table Searches

To search database tables

A. Press the DATABASE QUERY softkey to search the database table associated with the current operating mode or active table. For example, if the current operating mode is Vehicle ID Weighing, the Database Query screen for the Vehicle ID Table displays when the DATABASE QUERY softkey is pressed. (see Figure C-5).

Figure C-5: Database Query Screen—Vehicle ID Table

◄ If the search is done with the search fields left blank, the entire table in the database file displays. Use the UP and DOWN arrows to scroll through the table to locate the desired entry. Proceed to Step G.

B. Use the UP and DOWN arrow keys to scroll among the data field labels.

C. Press the ENTER key to select a data field. The softkeys and application keys become alpha keys.

D. Use the alpha keys and the numeric keypad to enter information in the field to search on.

E. Press the ENTER key to accept the entry.

F. Press the START SEARCH softkey . If the information entered is found in the database, it will display with focus (highlighted). If the information is not found, the result screen will list no entries. Press the DATABASE QUERY softkey to return to the main search page and try again.

G. To select an entry from the database search results, press the OK softkey .

◀ The search results for an Index Table search will show data for the A2 and A3 values (if enabled) even though these values cannot be used as part of the query's sort.
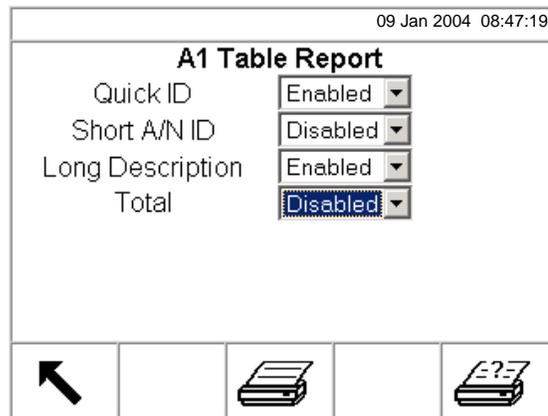
Table Reports

Table reports can be either standard or custom.

See Chapter 3.0, Configuration, Memory and Vehicle Weighing Reports Setup for more information about table and report configuration.

Standard Table Reports

Standard table report structures are based on the fields defined in table and report configuration. If a table field is disabled, that field cannot be reported and is not selectable in the reports configuration section. If all table fields are configured as enabled, they are all available to be enabled or disabled in the table's configured fields for the report.

Figure C-6 is an example of a standard report configuration setup screen that shows the A1 table configured with Quick ID, Short A/N ID, and Long Description enabled. Any of these three fields can be included in a report; however, only Quick ID and Long Description are enabled for the report in this example. When the report is run, only time and date and the enabled table report fields (Quick ID and Long Description) will print.

Figure C-6: Example Standard Table Report Configuration Screen

Custom Table Reports

Custom reports limit the records that are included in a report. The report structure remains the same as defined in report configuration, but two field selections are available to limit the reported records. The range of reported field values is specified by the start and stop values. If the stop is left blank, then anything after the start value is included in the report. If the start is left blank, then anything before the stop value is included in the report. The wildcard (*) query operation also applies so this character can also be included in the entry values. Figure C-7 shows an example of a custom table report configuration screen.

Figure C-7: Example Custom Table Report Configuration Screen

Table Report Examples

The following are examples of table reports:

```
Vehicle ID Report

Quick ID:  1
Short A/N ID:  1
Description:  Eric
Tare WT:  11680.000  lb

Quick ID:  2
Short A/N ID:  2
Description:  Amiel
Tare WT:  12500.000  lb

Quick ID:  3
Short A/N ID:  3
Description:  Jonsey
Tare WT:  14260.000  lb
```

```
Product Report

Quick ID:  1
Short A/N ID:  1
Description:  Grain

Quick ID:  2
Short A/N ID:  2
Description:  Rock

Quick ID:  3
Short A/N ID:  3
Description:  Soy Beans

Quick ID:  4
Short A/N ID:  4
Description:  Waste
```

```
Vehicle ID Report

Quick ID:  1
Short A/N ID:  1
Description:  Eric
Tare WT:  11680.000  lb

Quick ID:  2
Short A/N ID:  2
Description:  Amiel
Tare WT:  12500.000  lb

Quick ID:  3
Short A/N ID:  3
Description:  Jonsey
Tare WT:  14260.000  lb

Quick ID:  4
Short A/N ID:  4
Description:  Kale & Wyde
Tare WT:  13200.000  lb
```

```
          Outbound Ticket

09:55:54          16 Feb 2004

Vehicle ID:       4

Description:      Kale & Wyde

Product          Rock

Customer         Bogsarama

------------------------------------
Gross Weight:    65920lb
Tare Weight:     13200lb
Net Weight:      52720lb
------------------------------------
```

```
Transaction Count:  30
Time & Date:  2004-02-03 16:48:24
Vehicle ID:  3
Vehicle Desc:  Jonsey
Gross WT:  64280.000  lb
Tare WT:  14260.000  lb
Net WT:  50020.000  lb
A1 Table:  Grain
A2 Table:  Bogsarama
A3 Table:
A4 Table:
Var1 Table:  Rain
Var2 Table:  Corky
```

Table Queries

All table query functions operate the same way unless specified otherwise. Table values are case-sensitive. The fixed format for dates is YYYY-MM-DD for all queries. When a query function is included in an application operation, the syntax shown in Table C-2 is used as part of the value to indicate query operations.

Table C- 2: Table Query Syntax

Syntax	Query Operation Return Information
Blank	All stored records
Exact Value	Specific record (equals exactly)
>Value	Anything alphabetically after or numerically greater than the value
>=Value	Anything alphabetically after or numerically greater than the value, and includes the value (=> is also acceptable)
<Value	Anything alphabetically before or numerically less than the value
<=Value	Anything alphabetically before or numerically less than the value, and includes the value (=< is also acceptable)
Value*	Anything containing the value indicated before the * character, can be used in combination with the >, >=, <, and <= (wildcard operation)

The example shown in Figure C-8 enables a search of the A1 table for the record matching a short A/N ID of 001 and a description of Blue Trucking. Since the short A/N ID is a unique field, the query result should contain a single record (if it matches the description).

Figure C-8: Example of an A1 Table Query (single record)

Figure C-9 shows another example of an A1 Table query for multiple records that:

- Match every short ID beginning with HA

- Have an exact description of Blue Trucking

- Have a quick ID less than or equal to 45

- Were stored after July 15, 2002

Figure C-9: Example of an A1 Table Query (multiple records)

Based on example information as listed in Table C-3 – Table C-6, the results of the query would be determined in steps 1–4 as follows:

1. Use only short IDs beginning with HA, which are displayed in the highlighted table rows in Table C-3.

Table C-3: Table A1 Records With Short IDs Beginning With HA

Quick ID	Short A/N ID	Description	Time	Date
001	AM1234	Blue Trucking	12:00	2003-10-23
002	BK2312	Blue Sky	12:00	2003-07-14
005	HAJ78GH	Red Ball	14:45	2002-08-09
007	HD121	Blue Trucking	12:00	2003-07-14
010	MMT19000	Blue Trucking	12:00	2003-10-23
011	HAC9803	Blue Trucking	12:00	2002-08-09
023	HAA3456	Green VanLine	12:00	2002-08-09
026	HA1209	Black & Black	12:00	2003-07-14
027	HAD1	Blue Trucking	12:00	2003-07-19
034	HS4567	Green VanLine	12:00	2003-10-23
035	HAD2	Blue & Black	12:00	2002-08-09
036	HAD3	Blue Trucking	12:00	2003-07-14
043	HAMhds	Blue & Black	12:00	2003-07-19
044	HJY768	Green VanLine	12:00	2003-10-23
049	HAA349	Blue Trucking	12:00	2003-07-19
058	HAA350	Blue Trucking	12:00	2003-07-09
060	HAA351	Blue Trucking	12:00	2003-07-12

2. From this subset, find only records with a description equal to Blue Trucking. The results are shown in the highlighted rows in Table C-4.

Table C-4: Table A1 Records With Short IDs Beginning With HA and a Description of Blue Trucking

Quick ID	Short A/N ID	Description	Time	Date
005	HAJ78GH	Red Ball	14:45	2002-08-09
011	HAC9803	Blue Trucking	12:00	2002-08-09
023	HAA3456	Green VanLine	12:00	2002-08-09
026	HA1209	Black & Black	12:00	2003-07-14
027	HAD1	Blue Trucking	12:00	2003-07-19
035	HAD2	Blue & Black	12:00	2002-08-09
036	HAD3	Blue Trucking	12:00	2003-07-14
043	HAMhds	Blue & Black	12:00	2003-07-19
049	HAA349	Blue Trucking	12:00	2003-07-19
058	HAA350	Blue Trucking	12:00	2003-07-09
060	HAA351	Blue Trucking	12:00	2003-07-12

3. From this subset, find only the records that have a quick id equal to or less than 45. The results are shown in the highlighted rows in Table C-5.

Table C-5: Table A1 Records With Short IDs Beginning With HA, a Description of Blue Trucking, and a Quick ID Equal to or Less Than 45

Quick ID	Short A/N ID	Description	Time	Date
011	HAC9803	Blue Trucking	12:00	2002-08-09
027	HAD1	Blue Trucking	12:00	2003-07-19
036	HAD3	Blue Trucking	12:00	2003-07-14
049	HAA349	Blue Trucking	12:00	2003-07-19
058	HAA350	Blue Trucking	12:00	2003-07-09
060	HAA351	Blue Trucking	12:00	2003-07-12

4. From this subset, find only the records greater than (stored after) July 15, 2002. The results (which are the results that display on the search screen) are shown in the highlighted rows in Table C-6.

Table C-6: Table A1 Records With Short IDs Beginning With HA,
a Description of Blue Trucking, a Quick ID Equal to or Less Than 45,
and Stored After July 15, 2002

Quick ID	Short A/N ID	Description	Time	Date
011	HAC9803	Blue Trucking	12:00	2002-08-09
027	HAD1	Blue Trucking	12:00	2003-07-19
036	HAD3	Blue Trucking	12:00	2003-07-14

Connections

This appendix provides information about terminal connections and communications.

Continuous Mode Output

The continuous output mode of the IND310drive can be used to continuously send weight data and scale status information to a remote device such as a PC or a remote display.

Continuous mode can be assigned to COM1 or COM2. It can also be assigned to COM1 w/cksum (with checksum) or COM2 w/cksum. A data string will be output once each A/D cycle or approximately 10 times per second. The format is fixed, except for baud rate, parity, data flow (Xon, Xoff), and interface. The data consists of 16 or 18 bytes transmitted in a 10-bit ASCII frame consisting of:

- 1 start bit
- 7 data bits
- 1 even parity bit
- 1 stop bit

Non-significant weight data and tare data digits are transmitted as spaces. The continuous output mode provides compatibility with METTLER TOLEDO products that require real-time weight data. Table D-1 shows continuous format output.

Table D-1: Continuous Format Output

		Status			Indicated Weight					Tare Weight							
Character	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Data	STX	SWA	SWB	SWC	MSD	-	-	-	-	LSD	MSD	-	-	-	-	LSD	CR	CHK
Note	A	B			C						D						E	F

◀ Continuous Format Notes

A. ASCII Start of Text character (02 hex), always transmitted

B. Status words. Refer to Tables D-2, D-3, and D-4 for details.

C. Displayed weight. Either gross or net weight. Six digits, no decimal point or sign. Insignificant leading zeroes are replaced with spaces.

D. Tare weight. Six digits of tare weight data. No decimal point in field.

E. ASCII Carriage Return <CR> character (0D hex)

F. Checksum, transmitted only if enabled in setup. Checksum is used to detect errors in the transmission of data. Checksum is defined as the 2's complement of the seven low order bits of the binary sum of all characters preceding the checksum character, including the <STX> and <CR> characters.

Tables D-2, D-3, and D-4 detail the standard status bytes for standard continuous output.

Table D-2: Status Word A Bit Definitions

Bits 2, 1, and 0			
2	1	0	**Decimal Point Location**
0	0	1	XXXXX0
0	1	0	XXXXXX
0	1	1	XXXXX.X
1	0	0	XXXX.XX
1	0	1	XXX.XXX
Bits 4 and 3			
4		3	**Build Code**
0		1	X1
1		0	X2
1		1	X5
Bit 5			Always = 1
Bit 6			Always = 0

Table D-3: Status Word B Bit Definitions

Status Bits	Function
Bit 0	Gross = 0, Net = 1
Bit 1	Sign, Positive = 0, Negative = 1
Bit 2	Out of Range = 1 (Over capacity or Under Zero)
Bit 3	Motion = 1
Bit 4	lb = 0, kg = 1 (see also Status Byte C, bits 0-2)
Bit 5	Always = 1
Bit 6	Zero Not Captured = 1

Table D-4: Status Word C Bit Definitions

Bits 2, 1, and 0			Weight Description
2	**1**	**0**	
0	0	0	lb or kg, selected by Status Byte B, bit 4
0	0	1	grams (g)
0	1	0	metric tons (t)
0	1	1	ounces (oz)
1	0	0	troy ounces (ozt)
1	0	1	penny weight (dwt)
1	1	1	tons (ton)
1	1	1	custom units
Bit 3			Print Request = 1
Bit 4			Expand Data x 10 = 1
Bit 5			Always = 1
Bit 6			Always = 0

CTPZ

The CTPZ data stream sends commands to the IND310drive to perform several basic functions when a control character is received. Remote ASCII control characters and the IND310drive terminal responses include:

- **C**—Clears the scale to gross
- **T**—Tares the scale (causes a pushbutton tare)
- **P**—Initiates a print command
- **Z**—Zeros the scale

All other characters are ignored.

◀ ASCII control characters can be sent in upper- or lower-case.

The ASCII control character pertains to the scale currently selected unless a scale designation character is included in the ASCII control command. The scale can be specified to receive the control character by preceding the command character(s) with the designation "A" for Scale 1 or "B" for Scale 2. If a scale designation character (A or B) is used, it must be followed by the command character(s) within three seconds or the command will be discarded.

Examples:

To take a Pushbutton tare on Scale 1, regardless of which scale is selected, send the command AT. Alternately, the command BT takes a Pushbutton tare on Scale 2, regardless of the selected scale. A command of T will take a Pushbutton tare on the scale currently selected by the terminal.

It is possible to enter Keyboard Tare by preceding the "T" with a numeric value. For example, 1000T enters a tare value of 1,000 on the currently selected scale. For two scales, enter Keyboard Tare using the designation A or B before the tare value. AT2000 enters a tare value of 2,000 on Scale 1.

Appendix E

Softkey and Application Key Mapping

This appendix provides information about softkey and application key mapping, which includes defining softkey and application key functions and positions.

Introduction

Softkeys provide quick access to setup pages or application functions, and are located at the bottom of weight display screens. Up to ten softkeys can be defined. A maximum of five softkeys display at one time on any given screen.

Follow the softkey configuration steps provided in this section to configure the IND310drive softkeys to display in the most convenient manner.

Softkey Setup and Navigation

See Chapter 2.0, Operation, Table 2-1 for a complete list of graphic images and icons, including icons used for softkeys.

Two softkeys, RECALL and SETUP, are always located together in pre-defined positions that shift depending on the configuration of other softkeys. Figure E-1 shows a weight display screen with four softkeys as follows:

- **Temporary ID**—Position defined as softkey number one
- **Inbound/Outbound**—Position defined as softkey number three
- **Recall**—Position automatically defined as softkey number four
- **Setup**—Position automatically defined as softkey number five
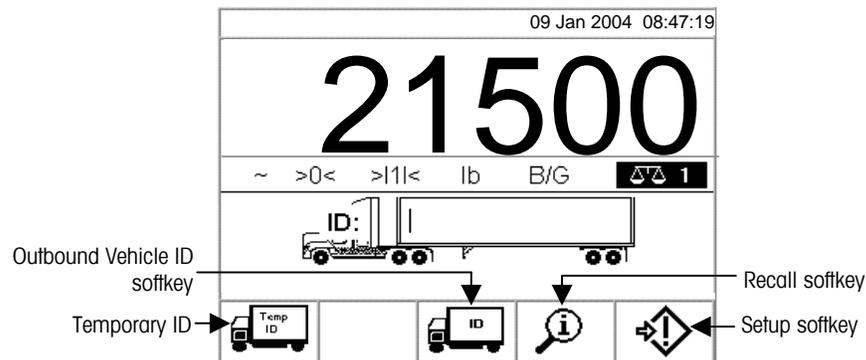
Figure E-1: Weight Display Screen with Four Softkeys

When more than five softkeys are defined, a down arrow icon ⋁ displays to the right of the softkeys. Press the DOWN navigational arrow key on the keypad (or on an external keyboard if available) to advance to the second screen of softkeys. Three screens of softkeys may be available, depending on how softkey positions are defined. Press the DOWN arrow key again to scroll to a third screen of softkeys if available. On the last available screen of softkeys, an up arrow icon ⋀ displays to the right of the softkeys. Press the UP navigational arrow key to return to the first screen of softkeys.

Figures E-2 and E-3 show an example where nine softkeys are available. The last defined softkey (Contrast ◐) position is defined as softkey eight, so RECALL is automatically positioned as softkey nine and SETUP as softkey ten.
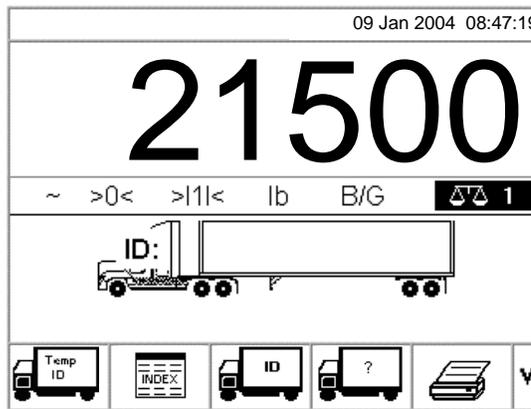
Figure E-2: Example of the First Softkey Screen
(Total of Nine Softkeys Available)
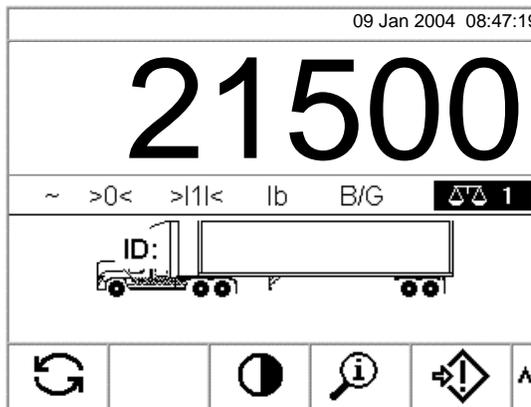
Figure E-3: Example of the Second Softkey Screen
(Total of Nine Softkeys Available)

If a softkey position is defined as softkey number nine or ten, the SETUP and RECALL softkeys will be automatically positioned as softkey numbers fourteen and fifteen. This setup results in a third softkey screen as shown in Figure E-4.
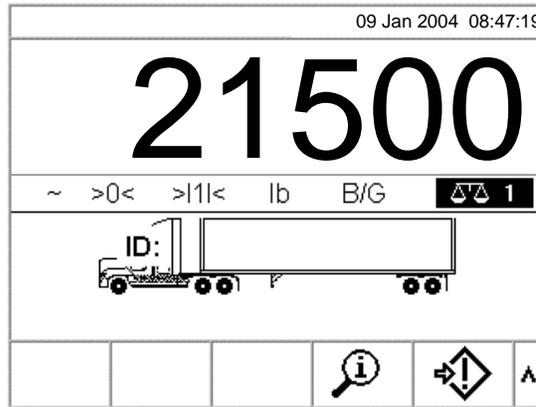
Figure E-4: Example of a Third Softkey Screen

Softkey Configuration

See Chapter 3.0, Configuration, Entering Setup Mode for further information about navigating in the setup menu tree and setup screens.

Add or rearrange the display of softkeys on the main weighing screen by configuring parameters on the softkeys setup screen, which is located under terminal in the setup menu tree. When the softkeys setup screen opens, focus is on the softkey position numbers located above the icons (see Figure E-5).
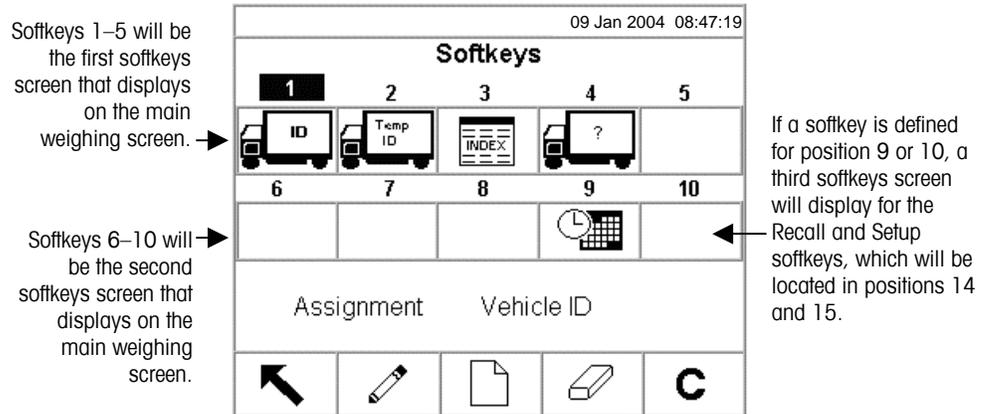
Softkeys 1–5 will be the first softkeys screen that displays on the main weighing screen.

Softkeys 6–10 will be the second softkeys screen that displays on the main weighing screen.

If a softkey is defined for position 9 or 10, a third softkeys screen will display for the Recall and Setup softkeys, which will be located in positions 14 and 15.

Figure E-5: Softkeys Setup Screen

The softkey assignment value at the bottom of the screen changes according to the softkey assignment associated with the position number currently in focus. For example, in Figure E-5 focus in on position number one, which is assigned the Vehicle ID (Inbound/Outbound) softkey. Press the RIGHT arrow key to move focus to softkey position two. The assignment value changes to Temporary ID. Softkey positions that show no icon have an assignment value of None.

The RECALL and SETUP softkeys are automatically placed in the softkey setup. The default setting for the placement of these softkeys is in position numbers four and five. If a different softkey is placed in position four or five, the RECALL and SETUP softkeys automatically shift to positions nine and ten. If a different softkey is placed in position nine or ten, the RECALL and SETUP softkeys automatically shift to positions fourteen and fifteen.

Use the arrow navigational keys to scroll to a softkey position number to edit, insert, or delete a softkey.

Editing Softkeys

To edit softkeys:

1. Use the arrow navigational keys to move the focus to the position number of the softkey to be edited.

2. Press the EDIT softkey. The Softkeys/Edit screen (Figure E-6) displays. The softkey selected for editing is shown on the screen along with the current assignment and the icon associated with that assignment.
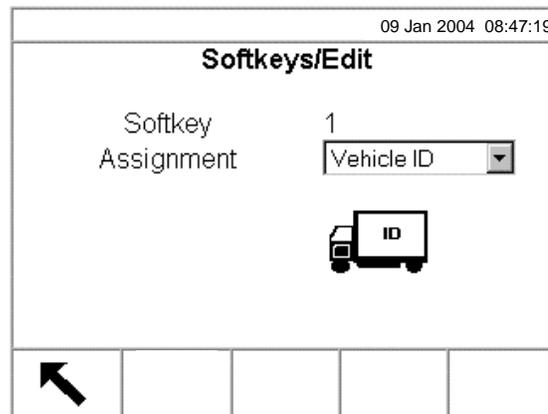
Figure E-6: Softkeys/Edit Setup Screen

3. Press the ENTER key to select the assignment drop-down menu.

4. Use the UP or DOWN arrow keys to scroll through the menu until focus is on the desired assignment.

5. Press the ENTER key to select the assignment. The icon changes to show the icon associated with the new assignment. If None is selected for the assignment, no icon displays and the softkey assignment is reserved as a blank space.

6. Press the EXIT softkey to return to the Softkeys setup screen.

◀ There is no limit on the number of positions that can have the same softkey assignment. For example, the CONTRAST softkey will display on each softkey screen if it is assigned in a 1–5 (first screen) position and a 6–10 (second screen) position.

Inserting Softkeys

To insert softkeys:

1. Use the arrow navigational keys to move the focus to the position number of the softkey to be inserted.

2. Press the NEW/INSERT softkey. The Softkeys/Insert screen displays. The softkey position selected is shown on the screen along with the current assignment and the icon associated with that assignment, or None if the position has no softkey currently assigned.

3. Follow steps 3–6 under Editing Softkeys. The new softkey will display on the Softkey setup screen in the position where it was inserted. All other softkeys located after that position increase position number by one. For example, if a softkey is inserted at position number one, then the softkey that previously held position one will move to position two, the softkey at position two will move to position three, and so on. If a softkey is at position ten, it will be lost (except for the RECALL or SETUP softkeys, which automatically shift to positions fourteen and fifteen).

Deleting Softkeys

To delete softkeys:

1. Use the arrow navigational keys to move the focus to the position number of the softkey to be deleted.

2. Press the DELETE softkey. The softkey is removed from the Softkey setup screen. All other softkeys located after that position decrease position number by one. For example, if a softkey is deleted at position number one, then the softkey that previously held position two will move to position one, the softkey at position three will move to position two, and so on.

Clearing All Softkeys

To clear all softkey assignments, press the CLEAR softkey. A screen displays that asks for verification to clear all softkeys. Press the OK softkey to continue or press the EXIT softkey to return to the Softkeys setup screen.

Application Key Configuration

Application (A1, A2, A3, A4) keys can be assigned to perform specific functions (see the assignment drop-down menu shown in Figure E-7 for functions that can be assigned) during weighing operations. Configure application key function assignments on the application keys setup screen (Figure E-7), which is located under terminal in the setup menu tree.
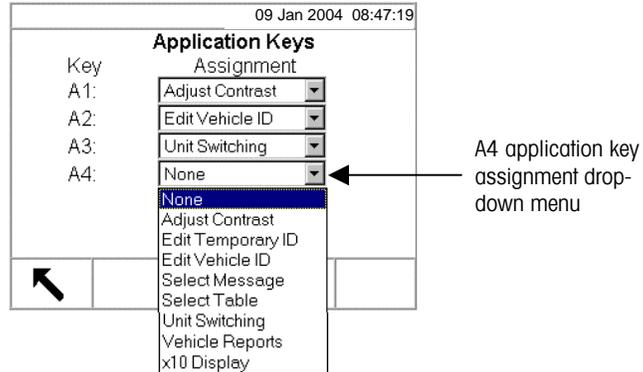
Figure E-7: Application Keys Setup Screen

1. Use the DOWN arrow key to move the focus to the desired application key.

2. Press the ENTER key to select the assignment drop-down menu.

3. Use the UP or DOWN arrow keys to scroll through the menu until focus is on the desired assignment.

4. Press the ENTER key to select the assignment. If None is selected for the assignment, no function will occur when the application key is pressed.

5. Press the EXIT softkey to return to the setup menu tree.

Appendix F

Geo Codes

Change the geo adjustment value after a major change of geographical location according to Table F-1 on the following pages. The scale must be readjusted accordingly when the geo adjustment value changes.

Set the geo adjustment value by entering the associated geo code on the Scale Calibration setup screen.

Table F-1: Geo Adjustment Values

Latitude North or South in Degrees and Minutes	Height Above Sea Level in Meters										
	0	325	650	975	1300	1625	1950	2275	2600	2925	3250
	325	650	975	1300	1625	1950	2275	2600	2925	3250	3575
	Height Above Sea Level in Feet										
	0	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660
	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660	11730
0° 0'–5° 46'	5	4	4	3	3	2	2	1	1	0	0
5° 46'–9° 52'	5	5	4	4	3	3	2	2	1	1	0
9° 52'–12° 44'	6	5	5	4	4	3	3	2	2	1	1
12° 44'–15° 6'	6	6	5	5	4	4	3	3	2	2	1
15° 6'–17° 0'	7	6	6	5	5	4	4	3	3	2	2
17° 10'–19° 2'	7	7	6	6	5	5	4	4	3	3	2
19° 2'–20° 45'	8	7	7	6	6	5	5	4	4	3	3
20° 45'–22° 22'	8	8	7	7	6	6	5	5	4	4	3
22° 22'–23° 54'	9	8	8	7	7	6	6	5	5	4	4
23° 54'–25° 21'	9	9	8	8	7	7	6	6	5	5	4
25° 21'–26° 45'	10	9	9	8	8	7	7	6	6	5	5
26° 45'–28° 6'	10	10	9	9	8	8	7	7	6	6	5
28° 6'–29° 25'	11	10	10	9	9	8	8	7	7	6	6
29° 25'–30° 41'	11	11	10	10	9	9	8	8	7	7	6
30° 41'–31° 56'	12	11	11	10	10	9	9	8	8	7	7
31° 56'–33° 9'	12	12	11	11	10	10	9	9	8	8	7
33° 9'–34° 21'	13	12	12	11	11	10	10	9	9	8	8
34° 21'–35° 31'	13	13	12	12	11	11	10	10	9	9	8
35° 31'–36° 41'	14	13	13	12	12	11	11	10	10	9	9

Table F-1: Geo Adjustment Values (continued)

Latitude North or South in Degrees and Minutes	Height Above Sea Level in Meters										
	0	325	650	975	1300	1625	1950	2275	2600	2925	3250
	325	650	975	1300	1625	1950	2275	2600	2925	3250	3575
	Height Above Sea Level in Feet										
	0	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660
	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660	11730
36° 41′–37° 50′	14	14	13	13	12	12	11	11	10	10	9
37° 50′–38° 58′	15	14	14	13	13	12	12	11	11	10	10
38° 58′–40° 5′	15	15	14	14	13	13	12	12	11	11	10
40° 5′–41° 12′	16	15	15	14	14	13	13	12	12	11	11
41° 12′–42° 19′	16	16	15	15	14	14	13	13	12	12	11
42° 19′–43° 26′	17	16	16	15	15	14	14	13	13	12	12
43° 26′–44° 32′	17	17	16	16	15	15	14	14	13	13	12
44° 32′–45° 38′	18	17	17	16	16	15	15	14	14	13	13
45° 38′–46° 45′	18	18	17	17	16	16	15	15	14	14	13
46° 45′–47° 51′	19	18	18	17	17	16	16	15	15	14	14
47° 51′–48° 58′	19	19	18	18	17	17	16	16	15	15	14
48° 58′–50° 6′	20	19	19	18	18	17	17	16	16	15	15
50° 6′–51° 13′	20	20	19	19	18	18	17	17	16	16	15
51° 13′–52° 22′	21	20	20	19	19	18	18	17	17	16	16
52° 22′–53° 31′	21	21	20	20	19	19	18	18	17	17	16
53° 31′–54° 41′	22	21	21	20	20	19	19	18	18	17	17
54° 41′–55° 52′	22	22	21	21	20	20	19	19	18	18	17
55° 52′–57° 4′	23	22	22	21	21	20	20	19	19	18	18
57° 4′–58° 17′	23	23	22	22	21	21	20	20	19	I9	18

Table F-1: Geo Adjustment Values (continued)

Latitude North or South in Degrees and Minutes	Height Above Sea Level in Meters										
	0	325	650	975	1300	1625	1950	2275	2600	2925	3250
	325	650	975	1300	1625	1950	2275	2600	2925	3250	3575
	Height Above Sea Level in Feet										
	0	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660
	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660	11730
58° 17'–59° 32'	24	23	23	22	22	21	21	20	20	19	19
59° 32'–60° 49'	24	24	23	23	22	22	21	21	20	20	19
60° 49'–62° 9'	25	24	24	23	23	22	22	21	21	20	20
62° 9'–63° 30'	25	25	24	24	23	23	22	22	21	21	20
63° 30'–64° 55'	26	25	25	24	24	23	23	22	22	21	21
64° 55'–66° 24'	26	26	25	25	24	24	23	23	22	22	21
66° 24'–67° 57'	27	26	26	25	25	24	24	23	23	22	22
67° 57'–69° 35'	27	27	26	26	25	25	24	24	23	23	22
69° 5'–71° 21'	28	27	27	26	26	25	25	24	24	23	23
71° 21'–73° 16'	28	28	27	27	26	26	25	25	24	24	23
73° 16'–75° 24'	29	28	28	27	27	26	26	25	25	24	24
75° 24'–77° 52'	29	29	28	28	27	27	26	26	25	25	24
77° 52'–80° 56'	30	29	29	28	28	27	27	26	26	25	25
80° 56'–85° 45'	30	30	29	29	28	28	27	27	26	26	25
85° 45'–90° 00'	31	30	30	29	29	28	28	27	27	26	26

Predictive Failure and Load Cell Symmetry

Introduction

This appendix provides information about predictive failure analysis. This information applies only to units containing the POWERCELL option.

The IND310drive implements built-in algorithms (Predictive Failure Analysis) to observe load cell symmetry problems. The two types of configurations are: Axial mostly for truck scales and Radial mostly for tanks and hoppers.

The algorithm uses a percent offset (Axial) or percent load (Radial) calculation. The difference between the captured (calibrated) percent calculation and the current percent calculation is compared to a threshold value. If the difference is above the threshold value then a symmetry error is recognized. The following is information on how to calculate the threshold value:

Axial Configuration

Calculate the captured percent offset for a load cell pair

1. Record the Calibrated Span (Cal. Span) and Captured Zero (Cap. Zero) counts for both load cells making up the pair.

2. Use the following formula to calculate the **captured percent offset** where $cell_1$ is one cell in the pair and $cell_2$ is the other cell.

$$\textbf{captured \% offset} = \frac{(cell_1 \text{ cal span counts} - cell_1 \text{ cap zero counts}) - (cell_2 \text{ cal span counts} - cell_2 \text{ cap zero counts})}{(cell_1 \text{ cap span counts} - cell_1 \text{ cap zero counts}) + (cell_2 \text{ cal span counts} - cell_2 \text{ cap zero counts})}$$

Calculate the current percent offset

1. Record the Live Load counts and Captured Zero (Cap. Zero) counts for both cells making up the pair.

2. Use the following formula to calculate the current percent offset where $cell_1$ is one cell in the pair and $cell_2$ is the other cell.

$$\text{current \% offset} = \frac{(cell_1\text{ live load counts} - cell_1\text{ cap zero counts}) - (cell_2\text{ live load counts} - cell_2\text{ cap zero counts})}{(cell_1\text{ live load counts} - cell_1\text{ cap zero counts}) + (cell_2\text{ live load counts} - cell_2\text{ cap zero counts})}$$

The difference between the **captured percent offset** and the **current percent offset** is compared to the **differential threshold value**. If this symmetry difference exceeds the **differential threshold value** then a symmetry error results.

symmetry difference = *captured percent offset – current percent offset*

symmetry error if symmetry difference > differential threshold

Radial Configuration

◄ This configuration is typically not used for vehicle scale installations.

Calculate the captured $cell_n$ percent loading for each cell

1. Record the Calibrated Span (Cal. Span) and Captured Zero (Cap. Zero) counts for each load cell in the scale.

2. Use the following formula for each load cell in the scale:

$$\text{captured cell \% loading} = \frac{\text{cell calibrated span counts} - \text{cell captured zero counts}}{\text{sum of all cells (calibrated span counts} - \text{captured zero counts)}}$$

Calculate the current cell percent loading for each cell

1. Record the Live Load counts and Captured Zero (Cap. Zero) counts for each load cell in the scale

2. Use the following formula for each load cell in the scale:

$$\text{current cell \% loading} = \frac{\text{cell live load counts} - \text{cell captured zero counts}}{\text{sum of all cells (live load counts} - \text{cell captured zero counts)}}$$

The percent difference between the **captured cell percent loading** and **current cell percent loading** is calculated as follows:

percent difference = *captured $cell_n$ percent loading – current $cell_n$ percent loading*

symmetry error if percent difference > differential threshold

Appendix H
Glossary

Additive tare	A tare value that is added to an existing tare weight value to establish a new tare weight vale. If additive tare is enabled, the user can add a tare weight value using the numeric keypad while the terminal is in the net weight mode. The tare value entered is added to the existing tare weight value. Tare interlocks inhibit this mode.
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.
Auto clear	Enables the terminal to clear tare automatically when the scale returns to the center of zero.
Auto Zero Maintenance (AZM)	AZM is a way for the terminal to gradually rezero itself in order to compensate for small changes in zero. Class IIIL legal-for-trade vehicle scales use an AZM range of ±3 displayed increments above/below gross zero. AZM is active any time the weight on the scale is stable and is within the AZM range.
Auto tare	An auto tare is taken by pressing the TARE key when an empty vehicle is on the scale. The terminal then displays a zero weight in net mode. The vehicle is loaded and driven back onto the scale. The terminal then 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. Tare interlocks inhibit replacement auto tare.
Capacity	Maximum amount of weight that can be placed on a scale
Focus	Items on a screen that display in reverse video or highlighted text indicate where the current focus is located. For example, a field label on a setup screen that displays focus appears as follows Motion Check

Geo code	A code associated with a geo adjustment value, which is used for scale calibration.
Highlighted text	Items on a screen that display in reverse video to indicate where the current focus is located. For example, a field label on a setup screen that displays (highlighted text) appears as follows: Motion Check
Increment	The value of the finest division of a scale
Index weighing	In index weighing mode, an index file enables a relational ID to be used to select the values for the enabled table information, including vehicle ID.
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.
Manually-Entered tare weights	Manually-entered tare weights can be used for Temporary ID weighing transactions if enabled in the scale tare setup. Manually-entered tare weights are entered **before** the Temporary ID softkey is pressed.
Mode (of operation)	A sequence of operational functions or processes that defines a complete procedure; a mode can consist of several processes.
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 the IND310drive terminal to be used for both shipping (inbound empty) and receiving (inbound loaded) operations. 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 keys	Keys located near the upper-right corner of the terminal face in a 12-key numeric keypad for entering numerical data.
OIML	International Organization of Legal Metrology
One-pass weighing	One-pass weighing is a mode where the user has a fleet of vehicles with known empty (tare) weight. The tare weight is recalled by ID with the loaded vehicle on the scale.

Process	A series of actions or steps; a process is part of a mode of operation.
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 along the right side of the display screen that perform specific actions including: • Select scale • Zero • Tare • Print
Setpoints	Setpoints are on/off outputs that indicate whether the weight displayed on the scale is greater than or less than a preprogrammed weight value. Setpoints are typically used in material filling applications in order to fill a vehicle to a preset weight.
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. Also see auto tare, pushbutton tare, keyboard tare, additive tare, tare interlock, and net sign correction.
Tare interlocks	A set of restrictions on how tare can be used that are required by some local weights and measures regulations. If tare interlocks are enabled, the terminal must be at gross zero to clear a tare weight or to enter a keyboard tare. Tare interlocks also prevent the terminal from replacing an existing tare with a new auto tare.

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. Manually-entered tare weights can also be used for Temporary ID Weighing.
Transaction table	A user-configurable table that is linked to the alibi table (see alibi memory) by the transaction counter value. The transaction table consists of up to ten extra data fields that can be selected for use.
Transient vehicle weighing	The weighing mode used when vehicle information should not be stored in memory or included in table totals.
Vehicle ID weighing	The weighing mode that involves the use of the Vehicle ID Table, where vehicle IDs, descriptions, and permanent stored tares are entered prior to operation. This information is recalled during Vehicle ID weighing transactions. Totals for vehicle weights are also maintained in the Vehicle ID Table (if enabled in setup).
Zero	Zero is the empty weight of the scale platform or weighbridge. The gross zero reference is recorded during calibration. Also see Pushbutton Zero and AZM.

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