

IND246 for PJA5 Weighing Terminal



METTLER TOLEDO

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- 2 **Contact METTLER TOLEDO for service:** The value of a measurement is proportional to its accuracy – an out of specification scale can diminish quality, reduce profits and increase liability. Timely service from METTLER TOLEDO will ensure accuracy and optimize uptime and equipment life.
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 - ➔ **Periodic Calibration Maintenance:** A Calibration Service Agreement provides on-going confidence in your weighing process and documentation of compliance with requirements. We offer a variety of service plans that are scheduled to meet your needs and designed to fit your budget.

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FCC Notice

Product name: Weighing Terminal

Model: IND246

FCC ID: 2ALAI23MT105

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for uncontrolled equipment and meets FCC radio frequency (RF) Exposure Guidelines. This equipment should be installed and operated with at least 2cm and more between the radiator and person's hands.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

■ Declaration of Conformity is available at
<http://glo.mt.com/global/en/home/search/compliance.html/compliance/>.

Statement regarding harmful substances

We do not make direct use of harmful materials such as asbestos, radioactive substances or arsenic compounds. However, we purchase components from third party suppliers, which may contain some of these substances in very small quantities.

Disposal of Electrical and Electronic Equipment



In conformance with the European Directive 2012/19/EC on Waste Electrical and Electronic Equipment (WEEE) this device may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements. Please dispose of this product in accordance with local regulations at the collecting point specified for electrical and electronic equipment.

If you have any questions, please contact the responsible authority or the distributor from which you purchased this device.

Should this device be passed on to other parties (for private or professional use), the content of this regulation must also be related.

Thank you for your contribution to environmental protection.

Warnings and Cautions

- 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 THE AC VERSION OF THE IND246 TERMINAL TO PROPERLY GROUNDED OUTLET ONLY. DO NOT REMOVE THE GROUND PRONG.
	 WARNING
	DO NOT USE THE IND246 TERMINAL IN AREAS CLASSIFIED AS HAZARDOUS BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES. CONTACT AN AUTHORIZED METTLER TOLEDO REPRESENTATIVE FOR INFORMATION ABOUT HAZARDOUS AREA APPLICATIONS.
	 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.
	 CAUTION
	THE BATTERY USED IN THIS DEVICE MAY PRESENT A RISK OF FIRE OR CHEMICAL BURN IF MISTREATED. DO NOT CRUSH, DISASSEMBLE, HEAT ABOVE 60°C OR INCINERATE. REPLACE BATTERY WITH 72253419 ONLY. USE OF ANOTHER BATTERY MAY PRESENT A RISK OF BURN, FIRE OR EXPLOSION.
<i>NOTICE</i>	
NIMH BATTERIES SLOWLY DISCHARGE WHEN NOT USED (FOR EXAMPLE WHEN STORED FOR FUTURE USE). BATTERY OPERATED TERMINALS AND SPARE NIMH BATTERY PACKS IN STORAGE MUST BE FULLY CHARGED EVERY THREE MONTHS TO PREVENT PERMANENT BATTERY DAMAGE.	
<i>NOTICE</i>	
DO NOT ATTEMPT TO CHARGE THE BATTERY IF THE BATTERY TEMPERATURE IS BELOW 0°C (32°F). CHARGING IS NOT POSSIBLE AT OR BELOW THIS TEMPERATURE. DO NOT OPERATE THE BATTERY CHARGER OUTSIDE ITS TEMPERATURE RANGE OF 0°C (32°F) TO 40°C (104°F).	
<i>NOTICE</i>	
DISPOSE OF USED BATTERY PROMPTLY. KEEP AWAY FROM CHILDREN. DO NOT DISASSEMBLE AND DO NOT DISPOSE OF IN FIRE.	
	<i>NOTICE</i>
	OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

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1 Introduction

The IND246 and IND246 POWERCELL industrial scale terminals provide a compact yet flexible solution to a variety of weighing needs. Available as either AC powered for stationary applications or battery-powered for portable analog load cell applications, this terminal is at home in virtually any industrial environment. Innovative use of Secure Data (SD) Memory technology expands the memory available for data storage when required.

- Unless stated otherwise, IND246 refers to both the analog and POWERCELL versions.
- Both 2mv/V and 3mv/V analog load cells are supported without the need for any configuration change. The POWERCELL model supports the advanced capabilities of POWERCELL load cells, featuring sophisticated self-diagnostics. The PowerDeck model for POWERCELL supports a connector for quick home run cable termination, faster calibration and automatic addressing. The IND246 delivers precision measurement data from grams to tons in a single, cost effective package.

Standard applications include basic weighing, animal weighing, check weighing, counting, peak weight measurement and vehicle weighing. Whether communicating weight data to a PC or providing a serial output of data to a printer, the IND246 terminal offers solutions for a wide range of applications.

1.1. IND246 Overview

1.1.1. Standard Features

- Rugged stainless steel enclosure
- Supports one analog load cell platform with up to four (battery version), ten (AC version) 350Ω load cells; or one scale platform with up to 12 POWERCELL PDX load cells; or up to 3 PowerDeck scale platforms, each with 4 SLB615D load cells; or up to 12 SLC611D LCWM load cells
- Large transfective graphic LCD display with backlight for vivid readability in all light conditions
- One electrically isolated serial port (COM1) for asynchronous, bidirectional communication
- Powered by either 85–264 V AC or internal battery pack (selected by model)
- Support for the following option boards:
 - Choice of one serial option:
 - COM2 Serial Interface
 - Optional network interface:
 - Ethernet TCP/IP

- Front panel key access to basic weighing functions – zero, tare, clear, unit switching and print
- Alpha numeric keypad for simple, quick entry of tare and identification information
- Selectable primary unit of measure including grams, kilograms, pounds, tons, metric tons
- Selectable second unit of measure including grams, kilograms, pounds, ounces, tons and metric tons
- Backup and restore of configuration and calibration settings, using SD memory device or InSite® SL PC tool (included)
- PC-based File Transfer Tool (included) exchanges application files and tables with the IND246 terminal
- Automatic shutoff and backlight timeout features to help conserve energy on the battery powered version

1.1.2. IND246 Terminal Versions

The terminal is available in the following four versions:

- IND246 Harsh enclosure, AC power
- IND246 Harsh enclosure, Battery power
- IND246 POWERCELL, AC power
- IND246 POWERCELL for SL_61xD, AC power

1.2. Specifications

The IND246 terminal conforms to the specifications listed in Table 1-1.

Table 1-1: Terminal Specifications

IND246 Specifications	
Enclosure Type	Stainless steel, configurable as desk top or wall mount enclosure
Dimensions (w × h × d)	230 mm x 146 mm x 165 mm (9 in. x 5.75 in. x 6.5 in.)
Shipping Weight	AC Version: 3.4 kg (7.5 lb) Battery Version: 3.9 kg (8.5 lb) POWERCELL Version: 3.6 kg (7.9 lb)
Environmental Protection	IP66 (comparable to Type 4x)
Operating Environment	The terminal can be operated at temperatures ranging from –10° to 40° C (14° to 104° F) at 10% to 95% relative humidity, non-condensing.
Hazardous Areas	The IND246 terminal cannot be operated in areas classified as Hazardous because of combustible or explosive atmospheres in those areas. Contact an authorized METTLER TOLEDO representative for information about hazardous area applications.

IND246 Specifications			
Power	AC version: Operates at 85–264 VAC, 49–61 Hz and includes a power cord configured for the country of use.		
	Battery version: Operates from internal NiMH battery pack		
Power Consumption	Refer to Table 1-2 for details of the AC version. Values shown are with Ethernet option installed and load cell input loaded with 8 x 350Ω load cells. Refer to Table 1-3 for Refer to Table 1-4 for details of the battery life for the battery powered version.		
Power Consumption	Refer to Table 1-2 for the AC version; Table 1-3 for IND246 POWERCELL; and Table 1-4 for the battery version. Values shown in Table 1-2 are for an IND246 terminal with the internal COM2 and Ethernet options installed, and input from 8 x 350Ω load cells.		
Display	Backlit 240 x 96 dot graphic LCD including weight display, weight units, gross/net indication and graphic symbols for motion and center of zero, SmartTrac, operator prompts and data entry display. Update rate of 12 updates per second. Basic weight mode: 27 mm (1.1 in) high weight display Application mode: 20 mm (0.8 in) high weight display		
Weight Display	Maximum displayed resolution of 50,000 divisions.		
Scale Types	Analog load cells (AC or battery models), POWERCELL PDX, GDD, SLC611D or SLD615D load cells (POWERCELL model),		
Number of Cells	AC Version: From one to ten 350-ohm load cells (2 or 3 mV/V) Battery Version: From one to four 350-ohm load cells (2 or 3 mV/V) POWERCELL Version: Up to 12 POWERCELL PDX, GDD, SLC611D or SLB615D load cells		
Number of Scales	One		
Analog Update Rate	Internal analog: 366 MHz		
POWERCELL Update Rate	Update Rates (Hz)		
	Update Rate, Type		Vehicle, 12 load cells
	Load Cell Network		25
	Synchronized Continuous Weight Output	USB, COM1, COM2, Ethernet	17 - 25
Load Cell Excitation Voltage	AC Version: 10 VDC Battery Version : 5 V DC		
Minimum Sensitivity	0.1 microvolt per increment		
Keypad	25 keys; polyester overlay (PET) with polycarbonate display lens		

IND246 Specifications	
Communications	Serial Interfaces Standard: One isolated serial port (COM1) RS-232 (analog only); RS-232/RS-422-RS-485 (POWERCELL only), 300 to 115,200 baud Optional isolated serial port: (COM2) RS-232/485, 300 to 115,200 baud Optional USB port: serial port bridge, 300 to 115,200 baud Ethernet Interface Optional Ethernet port: 10/100 TCP/IP port Protocol Serial Inputs: ASCII commands for CTPZ (Clear, Tare, Print, Zero), SICS (most level 0 and level 1 commands) Serial Outputs: Continuous, Extended continuous, Demand (limited formats), Reports, SICS (most level 0 and level 1 commands) or Variable Access
Approvals, Analog Version	Weights and Measures USA: NTEP Class III/IIIL - 10,000d; Cert. #11-040 Canada: Class III - 10,000d; Class IIIHD - 20,000d; AM-5819 Europe: Class III 6000e, Class IIII 1000e; TC7918, T8030 OIML: Class III 6000e, Class IIII 1000e; R76/2006-A-NL1-23.23 Product Safety UL, cUL, CE
Approvals, POWERCELL Version	Weights and Measures USA: : NTEP Class III/IIIL - 10,000d; Cert. #11-040 Canada: Class III - 10,000d; Class IIIHD - 20,000d; AM-5819 Europe: Class III 6000e, Class IIII 1000e; TC7918, T8426 OIML: Class III 6000e, Class IIII 1000e; R76/2006-A-NL1-23.23 Product Safety UL, cUL, CE

Table 1-2: IND246 Power Consumption (AC Source)

Input Voltage	I (mA)	P (W)
85V/50 Hz	167	7.9
110 V/50 Hz	133	7.7
240 V/50 Hz	64	7.9
264 V/50 Hz	59	7.9
85 V/60 Hz	163	7.9
110 V/60 Hz	128	7.7
240 V/60 Hz	62	7.9
264 V/60 Hz	58	8.0

Values shown are with internal COM2 option and Ethernet option installed and load cell input loaded with 8 x 350Ω load cells.

Table 1-3: Power Consumption for POWERCELL Version

Input Voltage	I(mA)	P(W)
85V/50Hz	112	5.7
110V/50Hz	94	6
240V/50Hz	73	8.4
264V/50Hz	72	8.7
85V/60Hz	108	5.8
110V/60Hz	92	6
240V/60Hz	73	8.3
264V/60Hz	73	8.6

Table 1-4: IND246 Average Battery Life, Analog Version

Continuous Operation Load	Battery Life w/Backlight	Battery Life w/o Backlight
1- 350Ω cell, no options	21.5 hrs	49 hrs
1 – 350Ω cell, COM2 option	12.5 hrs	19 hrs
4 – 350Ω cells, no options	17.5 hrs	32 hrs
4 – 350Ω cells, COM2 option	11 hrs	15.5 hrs

1.3. Battery Performance

NOTICE

NIMH BATTERIES SLOWLY DISCHARGE WHEN NOT USED (FOR EXAMPLE WHEN STORED FOR FUTURE USE). BATTERY OPERATED TERMINALS AND SPARE NIMH BATTERY PACKS IN STORAGE MUST BE FULLY CHARGED EVERY THREE MONTHS TO PREVENT PERMANENT BATTERY DAMAGE.

1.4. Use in Hazardous Areas



WARNING

DO NOT USE THE IND246 TERMINAL IN AREAS CLASSIFIED AS HAZARDOUS BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES. CONTACT AN AUTHORIZED METTLER TOLEDO REPRESENTATIVE FOR INFORMATION ABOUT HAZARDOUS AREA APPLICATIONS.

1.5. Inspection and Contents Checklist

Verify the contents and inspect the package immediately upon delivery. If the shipping container is damaged, check for internal damage and file a freight claim with the carrier if necessary. If the container is not damaged, remove the terminal from its protective package, noting how it was packed, and inspect each component for damage.

If shipping the terminal is required, it is best to use the original shipping container. The terminal must be packed correctly to ensure its safe transportation.

The package should include:

- IND246 Terminal
- Battery Pack (battery version only)
- Mounting brackets (2; analog version only)
- Safety Instructions
- Bag of miscellaneous parts

1.6. Model Identification

The IND246 and IND246 POWERCELL model number, factory number and serial number are located on the data plate of the terminal. Refer to Figure 1-1 to verify the configuration of the IND246 terminal when it left the METTLER TOLEDO factory.

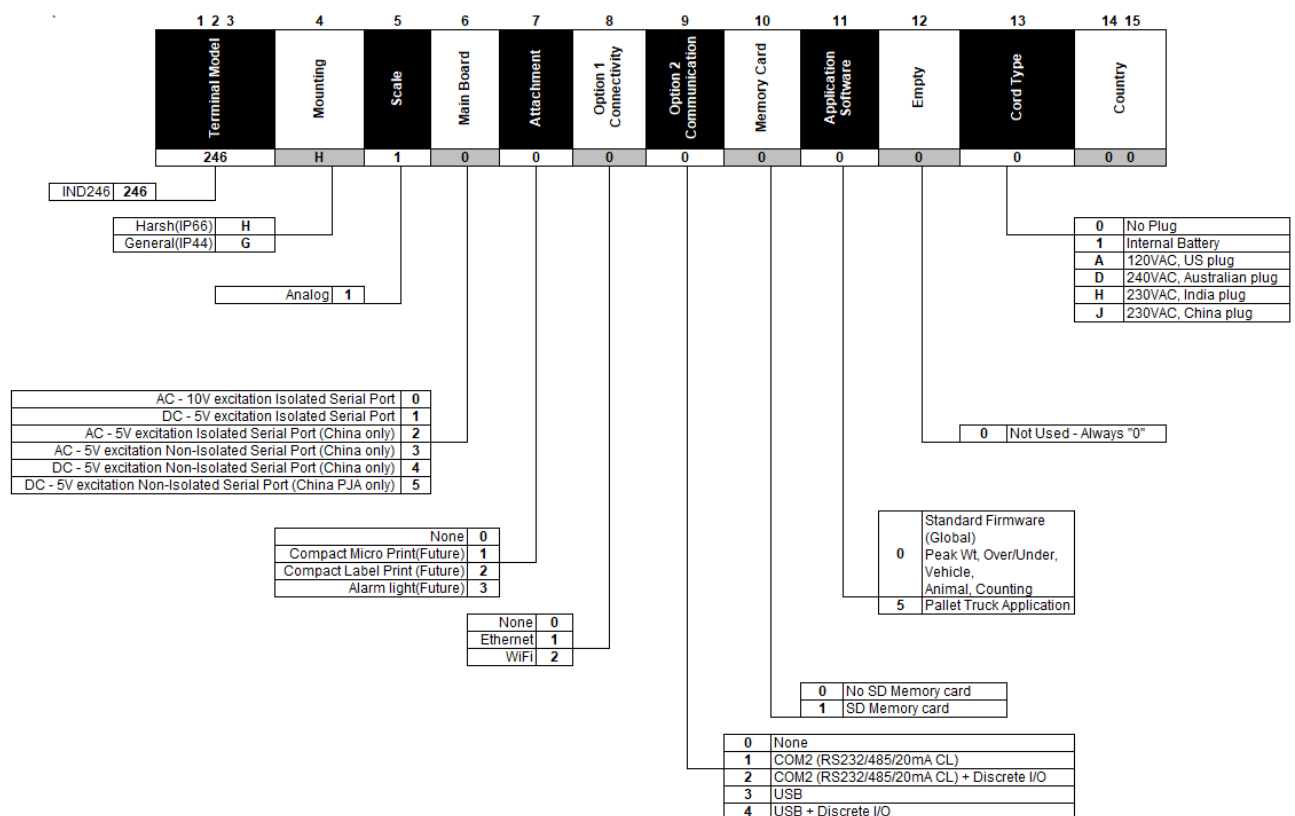


Figure 1-1: IND246 Configuration Chart

1.7. Physical Dimensions

The physical dimensions of the IND246 enclosure are shown in Figure 1-2 and Figure 1-3 in mm and [inches].

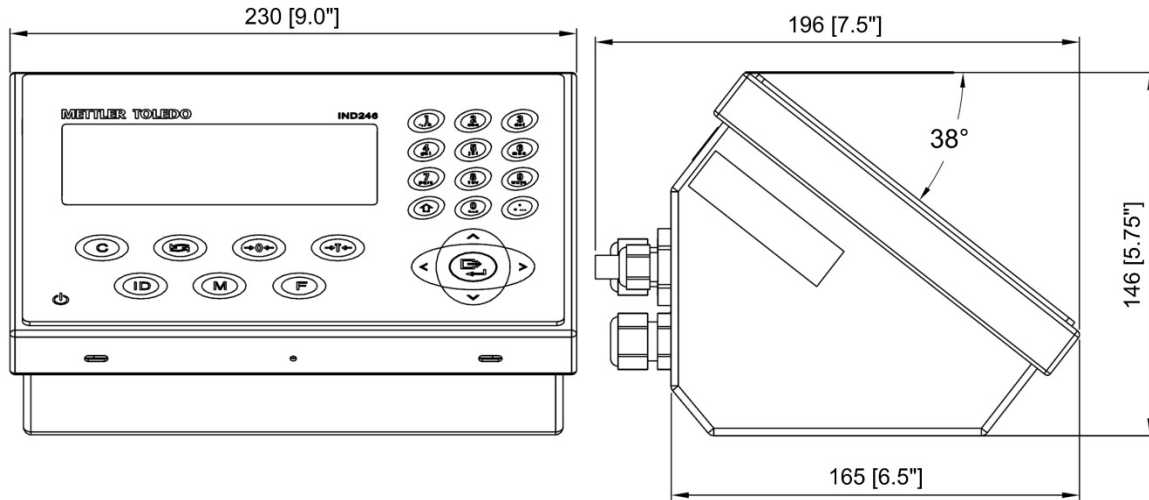


Figure 1-2: IND246 Enclosure Dimensions

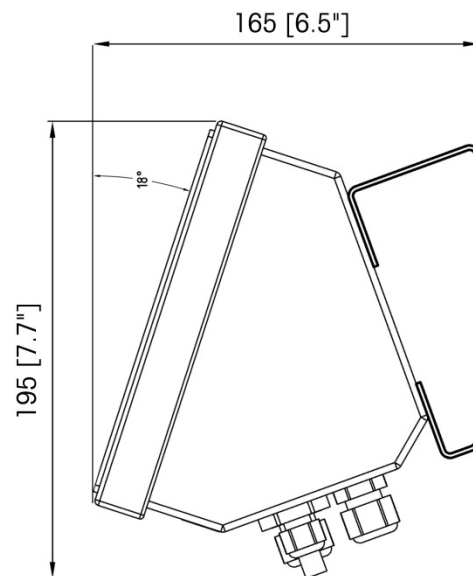


Figure 1-3: IND246 Dimensions with Brackets

1.8. Main PCB

The IND246 terminal's main printed circuit board (PCB) provides the analog load cell scale interface, as well as the COM1 RS-232 serial port. The IND246 POWERCELL main board provides the load cell interface and a standard COM1 RS-232/RS-422/RS-485 isolated serial port.

The main board also contains the power input connection (for either AC supply or battery, depending on the model), display interface, keypad interface and six-position DIP switch.

An SD memory card socket is mounted to the PCB to support the optional SD memory and bus connectors are included for the option boards.

1.8.1. SD Memory

An SD Memory card is included as a standard feature of the analog version of the IND246, and is available as an option for the POWERCELL version. The card provides a medium on which to store files such as Alibi memory, transaction records in the vehicle application, IDs in the counting application and target weights in the checkweighing application.

The SD memory can be used to extract and save the configuration and calibration settings of the terminal. These can then be restored to the terminal or loaded to a different terminal.

1.9. Scale Bases

1.9.1. Analog

The standard IND246 terminal supports analog scale bases and provides either 10 volts (AC version) or 5 volts (battery version) of excitation to drive analog load cells. Up to four (battery version) or ten (AC version) 350Ω load cells can be powered by the terminal.

A six wire load cell connection is provided with sense lines to help maintain accuracy as the load cell cable resistance changes with temperature variations.

1.9.2. POWERCELL

The IND246 POWERCELL terminal supports scale bases that use POWERCELL PDX, GDD, SLC611D or SLB615D load cells. Up to 12 load cells can be configured in a single scale platform. The load cell network provides monitoring and logging of a variety of factors that can affect system integrity, including weighing errors, overloads and network health. The specific characteristics differ by type of load cell.

1.9.3. PowerDeck

The IND246 POWERCELL supports PowerDeck™ weighing platforms. These provide calibration without weights for fast installation and visual guidance for leveling the floor platform.

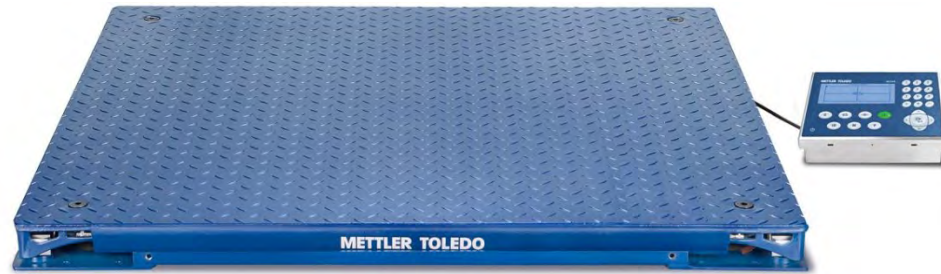


Figure 1-4: IND246 POWERCELL with PowerDeck Platform

1.10. Options

The following options are available for all versions of the IND246:

- COM2 Serial Port
 - One RS-232/485 isolated serial COM port
- Ethernet Port
 - One 10/100 Ethernet port with automatic link polarity detection and correction. Supports TCP/IP socket connection. Does not support FTP
- Wi-Fi
 - The Wi-Fi option board is only supported when the terminal software version is above 2.0.

1.10.1. COM2 Serial Port

This optional port provides RS-232 and RS-485 communication at rates from 300 to 115.2k baud. The port is bidirectional and can be configured for various functions such as demand output, continuous output, extended continuous output, SICS host communications or ASCII command input (C, T, P, Z).

The COM2 port is galvanically isolated for both RS-232 and RS-485, to provide surge voltage protection.

The RS-485 connection can be used as an RS-422 transmit only when sending continuous output to a scoreboard or remote display.

1.10.2. Ethernet

The IND246 Ethernet option provides an RJ45 jack for connection to an Ethernet network or host device. A TCP socket connection can be made to port 1701 to transfer files or to exchange data with a PC. This port can also operate as a print client to send data to a network printer.

1.10.3. Wi-Fi

The Wi-Fi communication performance is strongly related to the wireless environment on the site. In some extreme situations (weak signal, interference), there may be packet loss (when tested under the simulated electromagnetic interference field with a field strength of 10V/m in the laboratory, there will be a packet loss rate of less than 2%).

- *: Make sure that the software version is above the three specified before replacing the spare parts..
- *: Resetting the communication interface menu parameters is necessary when replacing the Wi-Fi option board.

Data can be transmitted through various communication protocols such as continuous output, command printing, SICS, and TFTP via Wi-Fi. The TFTP function is only supported when the instrument software version is above 2.0.

1.11. Display and Keyboard

The IND246 terminal uses a graphic, transfective type Liquid Crystal Display (LCD) with a white LED backlight. The front panel including the display and keypad is shown in Figure 1-5.



Figure 1-5: IND246 Front Panel Layout

1.11.1. Display Layout

At the top of the display, a single system line displays terminal status and operator error displays and messages. Time and date and the status of the Digital I/O can be displayed in this area, when so configured in setup.

Below the system line is the weight display. During normal, basic weighing operation, the IND246 terminal display shows the Gross or Net weight in the larger 28.5mm (1.1 in.) size. When one of the applications is running, the weight is shown in 20mm (0.8 in.) high characters. Below the weight display is a single line to display the weight units, the weight legend, the center of zero icon, weight range and motion icon. Tare values also appear on this line, to the left of the display.

At the bottom of the normal basic weighing display is a line used for data entry. For display operation during setup, refer to Chapter 4, Configuration.

- If the instrument software version is above 2.0 and a Wi-Fi option board is installed, a Wi-Fi signal strength icon will appear in the top left corner of the system row, ranging from 1 bar to 5 bars. If the connection fails, an icon  will be displayed.

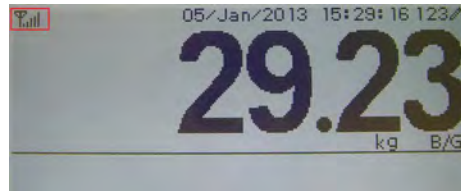


Figure 1-6: Wi-Fi Signal Strength Display

1.11.2. Front Panel Keys

The IND246 terminal provides a total of 25 keys as operator interfaces. The ON/OFF key, four scale function keys and three operational keys are positioned under the display while the alpha-numeric keys are positioned to the right of the display. The print/enter key and navigation keys are located at the bottom right of the display. These keys are used to enter the setup menu, to navigate and select setup elements, and to enter values in setup as described in Chapter 3, Configuration.

2 Installation

This Appendix provides installation instructions for the IND246 terminals. Please read these procedures thoroughly before beginning installation.

This section includes details about opening and mounting the enclosure and explains how to install any cables to the enclosure. Instructions for labeling, closing and sealing the enclosure are also provided.

2.1. Opening the Enclosure

The front panel of the harsh enclosure IND246 terminal is locked in place by four spring clips attached to the body of the enclosure. To access the terminal's PCB to install options, connect internal wiring and set 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 2-1). While squeezing the front panel and enclosure together, gently push the screwdriver in toward the enclosure. A "pop" sound is made when the cover clip is released.
- Be certain to squeeze the front panel and enclosure together when pressing the clips. This removes pressure from the clips, allowing them to release.



Figure 2-1: Opening the Harsh Enclosure

2. Repeat Step 1 for the other slot.
3. After releasing the two clips securing the bottom of the front panel, move the panel to each side to disengage the side clips, then lift the bottom of the front panel firmly up and out (Figure 2-2, 1) until it completely clears the top edge of the bottom enclosure.

4. Squeeze the top of the front panel to the enclosure along the top edge slightly and push upward (Figure 2-2, 2) to unsnap the top two clips, then lift the cover to clear the two top clips. The cover will swing down, hinged by two wire cables at the bottom.



Figure 2-2: Removing the Cover

2.2. Environmental Protection

	 WARNING THE IND246 IS NOT DESIGNED FOR USE IN AREAS CLASSIFIED AS HAZARDOUS BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES. DO NOT INSTALL AN IND246 INTO AN EXPLOSIVE ENVIRONMENT.
--	--

The IND246 terminal is designed for heavy washdown areas. It has been tested and found to meet IP66 standards. An IP66 rating is similar to a Type 4 and a Type 6 rating.

2.3. Mounting the Terminal

The harsh enclosure can be placed on a desktop or mounted to a more vertical surface using the brackets included with the terminal. Mount the terminal where viewing is optimal and the terminal keypad is easily accessible. Observe location and environment considerations as described in Chapter 1, **Introduction**.

2.3.1. Desktop Mounting

When the IND246 terminal will be placed on a flat surface, the four self-adhesive rubber feet (included with the terminal) should be attached to the bottom of the enclosure to prevent sliding. Locate the four rubber feet, remove the protective paper from the adhesive, and press one foot onto each corner of the bottom of the enclosure, as shown in Figure 2-3.



Figure 2-3: Rubber Feet

2.3.2. Wall or Column Mounting with Brackets

Two mounting brackets and four M5 screws are included with the IND246. These can be used to mount the terminal to a vertical surface. To mount the enclosure using these brackets follow these steps:

	 WARNING
	DISCONNECT THE TERMINAL FROM AC POWER BEFORE STARTING THIS PROCEDURE.

■ For clarity, the illustrations do not show a load cell cable installed.

2.3.2.1. AC Model

1. Open the enclosure as detailed in the Opening the Enclosure section. For steps 3 to 10, refer to Figure 2-4.
2. First, the orientation of the front panel must be reversed. This involves detaching the panel and rotating the housing, and exchanging the openings used by the power and load cell cables.

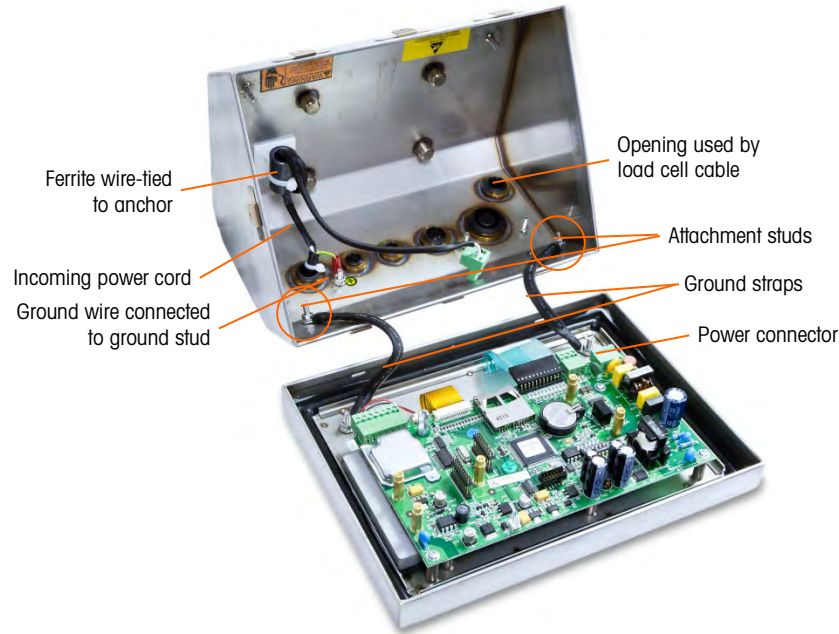


Figure 2-4: Preparing to Detach Front Panel

3. Disconnect the incoming AC power, noting the orientation of the black/brown and white/blue wires. Loosen the two small screws fastening the wires to the connector and detach the wires.
4. Loosen and remove the two nuts securing the two hinge/grounding straps that connect the front panel to the rear housing.
5. Cut the nylon wire tie securing the ferrite core on the AC wires to the plastic adhesive pad.
6. Note how the AC power wire is looped through the ferrite core and then remove the ferrite core from the wire.
7. Unscrew the nut that secures the green/yellow ground wire to the enclosure and remove the wire and loop terminal from the threaded stud.
8. Loosen and remove the cable gland and AC power cable from the rear of the enclosure. Leave the gland clamped to the AC power cable.
9. Remove the load cell cable gland from the rear of the enclosure and reinstall it into the same sized opening at the other side of the enclosure (where the AC cable gland was located in the AC model). Tighten the gland to 2 N-m (18 lbf-in).
10. Install the AC power cable and gland into the open location where the load cell cable gland was previously installed. Tighten the gland to 2 N-m (18 lbf-in).
11. Use the nut removed in step 7 above to secure the green/yellow ground wire to the stud as shown.
12. Loop the two AC wires through the ferrite core in the same manner noted in step 6 and secure the ferrite to the plastic adhesive pad with the new wire tie provided.

13. Carefully rotate the housing 180 degrees and use the nuts removed in step 4 to reattach the two grounding straps to the studs near the grip bushings (Figure 2-5). Tighten the two nuts.

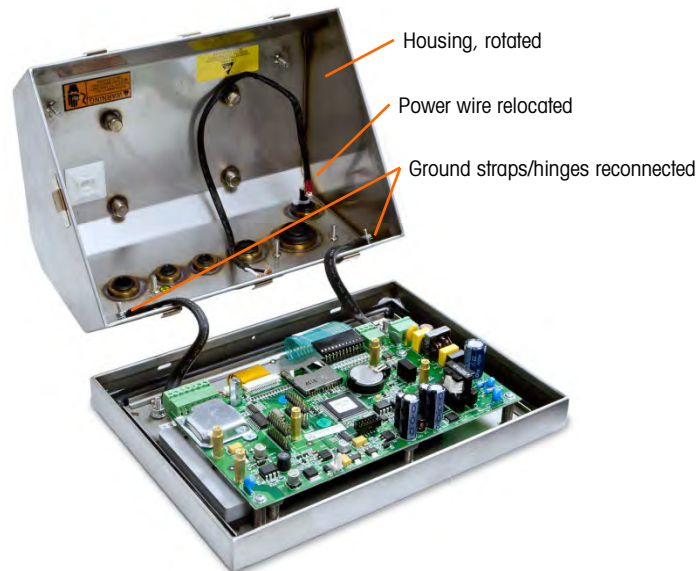


Figure 2-5: Housing Reversed

14. Reconnect the black/brown and white/blue AC power wires to the terminal plug on the main board, in the location indicated in Figure 2-6.

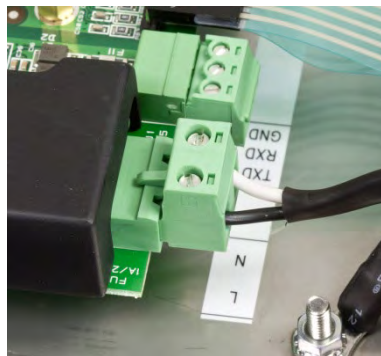


Figure 2-6: AC Wire Termination

2.3.2.2. Battery-Powered Model

1. Open the enclosure as detailed in the Opening the Enclosure section. For steps 3 to 6, refer to Figure 2-7.
2. First, the orientation of the front panel must be reversed. This involves detaching the panel and rotating the housing, and exchanging the opening used by the load cell cable:

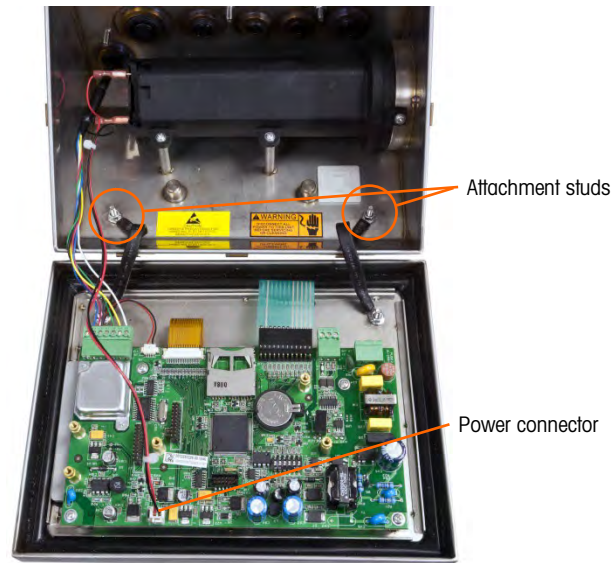


Figure 2-7: Preparing to Detach Front Panel

3. Unplug the power connector from the main board (Figure 2-8).

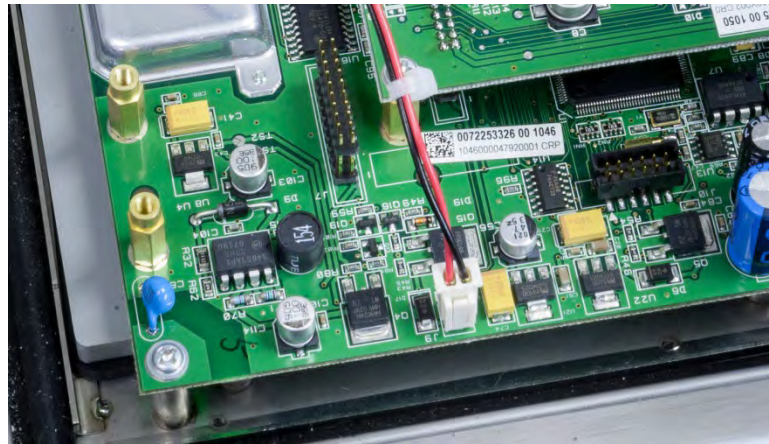


Figure 2-8: Battery Power Connector

4. Loosen and remove the two nuts securing the two hinge/grounding straps that connect the front panel to the rear housing.
5. Remove the load cell cable gland from the rear of the enclosure and reinstall it into the same sized opening at the other side of the enclosure (where the AC cable gland was located in the AC model). the plug in the enclosure must be removed. Tighten the gland to 2 N-m (18 lbf-in).
6. Carefully rotate the housing 180 degrees and use the nuts removed in step 4 to reattach the two grounding straps to the studs near the grip bushings (Figure 2-9). Tighten the two nuts.

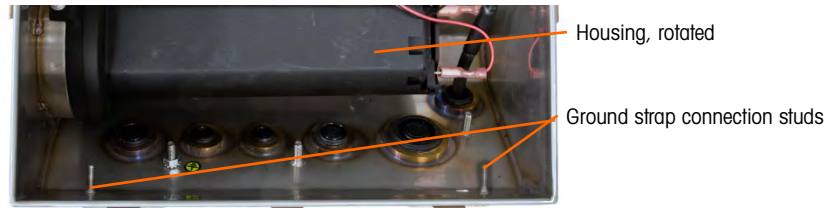


Figure 2-9: Housing Reversed

7. Reconnect the battery power connector to the main board (Figure 2-8).

2.3.2.3. POWERCELL Model, PDX or GDD

1. Open the enclosure as detailed in the Opening the Enclosure section. For steps 3 to 5, refer to Figure 2-10.
2. First, the orientation of the front panel must be reversed. This involves detaching the panel and rotating the housing, and exchanging the openings used by the power and load cell cables:

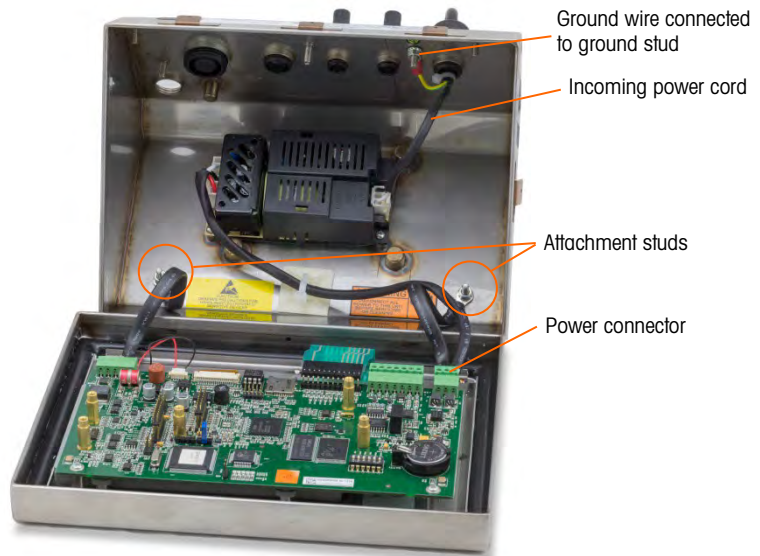


Figure 2-10: Preparing to Detach Front Panel

3. Loosen and remove the two nuts securing the two hinge/grounding straps that connect the front panel to the rear housing.
4. Cut the nylon wire tie securing the AC wires to the plastic adhesive pad.
5. Carefully rotate the housing 180 degrees and use the nuts removed in step 4 to reattach the two grounding straps to the studs near the grip bushings (Figure 2-11). Tighten the two nuts.

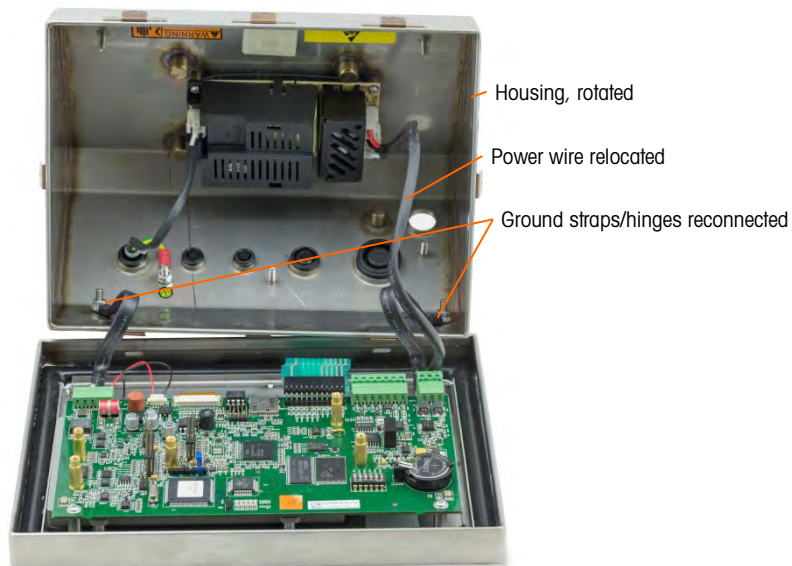


Figure 2-11: Housing Reversed

6. Attach the spare white plastic anchor from the spare parts kit to the inside left wall of the terminal. Reattach the AC power line.

2.3.2.4. POWERCELL Model, SLB615D or SLC611D

The home run cable connects to the rear of the IND246 at a 4-pin connector.



Figure 2-12: 4-Pin Connector

2.3.3. Attaching Brackets and Mounting Terminal

1. Once the enclosure is closed, use the four screws to attach the brackets to the bottom of the terminal, as shown in Figure 2-13.



Figure 2-13: Attaching the Wall-Mounting Bracket

2. Mark the position of the bracket mounting holes on the surface to which the terminal will be mounted per the dimensions shown in Figure 2-14, or by holding the terminal up to the surface and marking through the bracket holes.

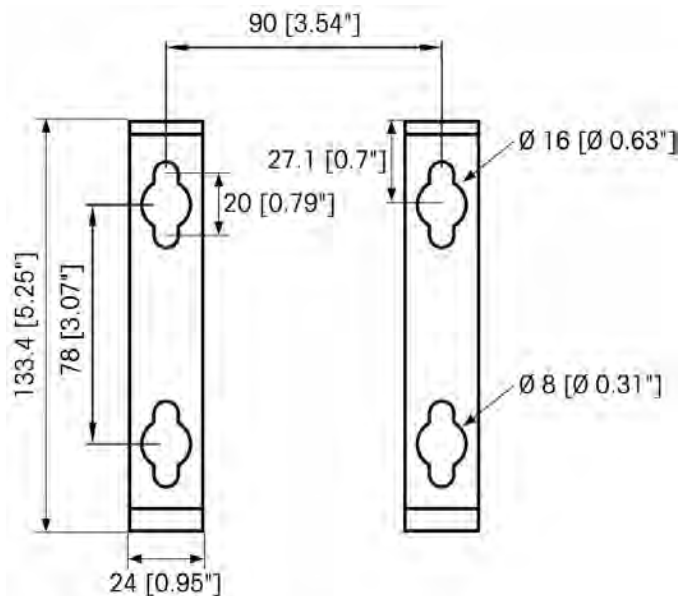


Figure 2-14: Template for Harsh Terminal Mounting

3. The hardware to mount the terminal bracket to the vertical surface is not included with the terminal—it must be supplied locally. Ensure that the mounting hardware is capable of supporting the weight of the terminal, which is approximately 2.6 kg (5.8 lb). Using the locally supplied hardware, secure the terminal bracket to the surface.

2.4. Installing Cables and Connectors

Information for installing cables and connectors for the IND246 terminal is provided in this section, including:

- Ferrite Core
- Cable Glands
- Main Board Wiring Connections
- POWERCELL Wiring Connections
- Wiring Connections for Options

2.4.1. Ferrite Core

In order to meet certain electrical noise emission limits and to protect the standard IND246 from external influences, it is necessary to install a ferrite core on the load cell cable connected to the terminal. The ferrite core is included in the accessory bag supplied with the basic terminal.

To install the ferrite, simply route the cable through the center of the core and then take one wrap around the outside of the core and route the cable through the center again. Either the complete cable or the individual wires can be wrapped through the ferrite. This should be done as close to the enclosure as possible. See Figure 2-15.



Figure 2-15: Installing the Ferrite Core

2.4.2. Cable Glands

The IND246 terminal is designed to withstand severe washdown environments. However, care must be taken when installing cables and/or connectors that enter the terminal enclosure. To ensure a watertight seal:

- Before connecting wires, pass the cables through an appropriately sized cable gland. Figure 2-16 shows a cable gland with its clamping nut removed.



Figure 2-16: Cable Gland

- Depending upon the diameter of the cable to be installed, select one of the rubber grommets (if required) to properly seal around the cable.

Table 2-1: Grommet Cable Sizes

Grommet	Cable Diameter		
	M12 Gland	M16 Gland	M25 Gland
None	3–6.5 mm	5–10 mm	13–18 mm
Small grommet	–	4.5–6.8 mm	–
1 hole -USB	–	–	3.2–5 mm
1 hole - Ethernet	–	–	5.4-7.8mm
2 hole grommet	–	–	3.2–5 mm and 4-6mm

- When making cable terminations inside the harsh enclosure, 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 front panel is in the fully open position.
- After making the wiring connections as described in the next section, ensure the nut on the cable gland is tightened properly to seal around the cable. Ensure that this seal is watertight.
- Cable shielding should be grounded to the inside of the IND246's enclosure as close as possible to the entry point. Ground studs are provided on the interior of the enclosure for this purpose.

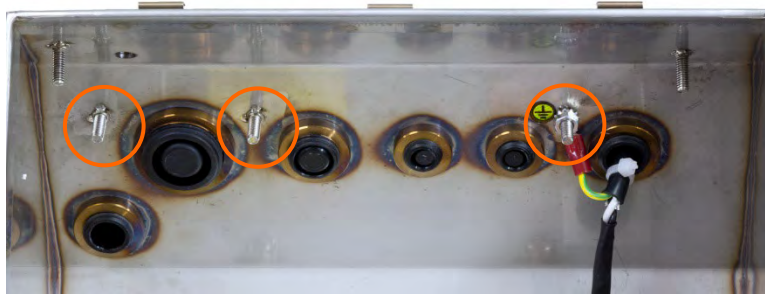


Figure 2-17: Ground Studs Inside Enclosure

2.4.2.1. Cable Gland Assignments

The cable glands on the back of the enclosure are labeled in Figure 2-18 and explained in Table 2-2. Note that, in the AC model, the positions of the power cord and load cell cable differ depending on the orientation of the front panel – refer to section 2.3.2, **Wall or Column Mounting with Brackets** on page 2-3.

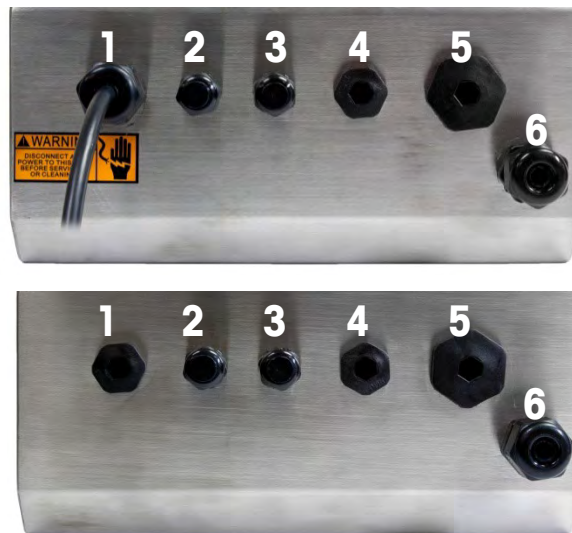


Figure 2-18: Cable Gland Assignments, AC Model (top) and Battery Model (bottom)

Table 2-2: Cable Gland Assignments

Gland	Assignment	
	Standard Front Panel Orientation	Reversed Front Panel Orientation
1	AC Power Cord / None*	Load Cell Cable
2	COM1	
3	COM2 / Digital I/O	
4	Digital I/O	
5	Ethernet / USB	

Gland	Assignment	
	Standard Front Panel Orientation	Reversed Front Panel Orientation
6	PDX or GDD Load Cell Cable or M12 connector for SLB615D or SLC511D	AC Power Cord / None*

* Battery model assignment

2.4.3. Main Board Wiring Connections

Once the IND246 terminal harsh enclosure is open, connections can be made to the terminal strips on the main board, as shown in Figure 2-19.



Figure 2-19: IND246 Main Board Connections, AC Model



Figure 2-20: IND246 Main Board Connections, Battery-Powered Model

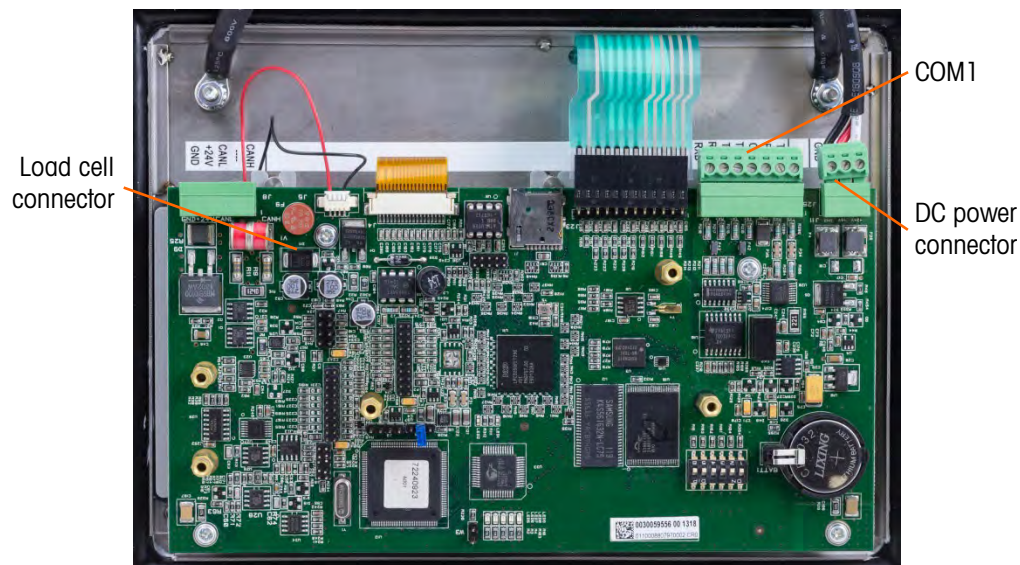


Figure 2-21: IND246 POWERCELL Main Board Connections

2.4.3.1. AC Power Connection

A permanently attached line cord supplies the AC power to the AC version of the IND246 terminal. Note that the two AC power connections are marked "L" for line (hot) and "N" for neutral as shown in Figure 2-6. A loop terminal is provided on the ground wire for the ground connection.

No voltage or frequency settings are required since the terminal includes a universal power supply that operates from 85 to 264 VAC.

- 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 IND246 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.

2.4.3.1.1. Power Requirements

The AC terminal requires 85 to 264 VAC (at 167 mA maximum) with a line frequency of 49 to 61 Hz and is internally fused at 1.0 amps, 250 volts.

The battery powered terminal operates from 6.8 to 8.3 VDC (at 500 mA maximum).

The POWERCELL terminal requires 85 to 264 VAC (at 750 mA maximum) with a line frequency of 49 to 61 Hz of power. It is internally fused at 1.6 amp, 250 volts.

2.4.3.2. Analog Load Cell Connections

<i>NOTICE</i>
TO AVOID DAMAGE TO THE PCB OR LOAD CELL, REMOVE POWER FROM THE IND246 TERMINAL AND WAIT AT LEAST 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESS.

Load cell connections are made to the load cell connector located on the main board as shown in Figure 2-19.

The AC version of the IND246 terminal is designed to power up to ten 350-ohm load cells (or a minimum resistance of approximately 35 ohms). The battery version of the IND246 terminal is designed to power up to four 350-ohm load cells (or a minimum resistance of approximately 87 ohms). To confirm that the load cell load for this installation is within limits, the total scale resistance (TSR) must be calculated. To calculate TSR:

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

Ensure that the TSR of the load cell network to be connected to the IND246 has a resistance greater than the minimums listed above before connecting the load cells. If the resistance is below the minimum, the IND246 will not operate properly.

In addition, the maximum cable distance must be reviewed. Table 2-3 provides recommended maximum cable lengths based on TSR and cable gauge.

Table 2-3: 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
43 (8-350 Ω cells)	30/100	91/300	152/500
35 (10-350 Ω cells)	24/80	60/200	120/400

The IND246 terminal is designed to support both 2mV/V and 3mV/V load cells from the same circuitry. A load cell output rating selection jumper is not required.

Figure 2-22 shows the terminal definitions for the analog load cell terminal strip. Note that when using four-wire load cells, jumpers must be placed between the +Excitation and +Sense terminals and between the –Excitation and –Sense terminals.

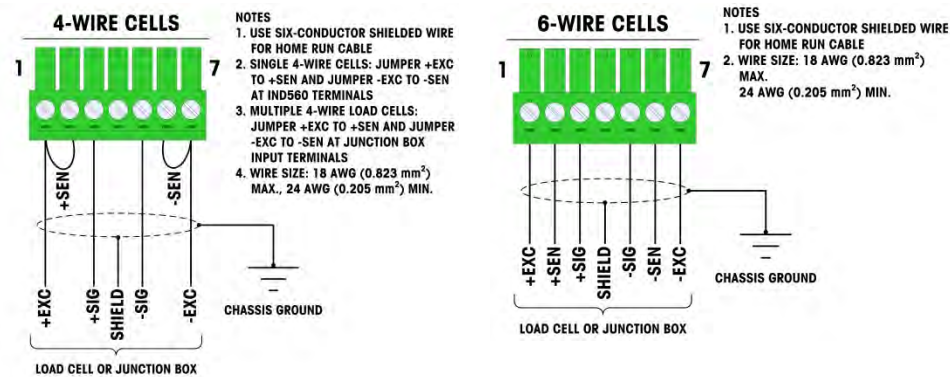


Figure 2-22: Load Cell Termination

- Note for the standard four-wire cable: If an increase in load results in a decrease in weight display, reverse the signal wires (+SIG and –SIG).

2.4.3.3. COM1 Serial Port Connections (Analog)

The COM1 port for the IND246 analog version provides an RS-232 connection for external serial devices. Figure 2-23 indicates which terminal carries which signal on the COM1 port. Make the connections as necessary.

Terminal	Signal
TxD	Transmit RS-232
RxD	Receive RS-232
Gnd	Logic Ground

Figure 2-23: COM1 Port Signals

An example of connecting via RS-232 to external equipment is shown in Figure 2-24. Make the connections as necessary.

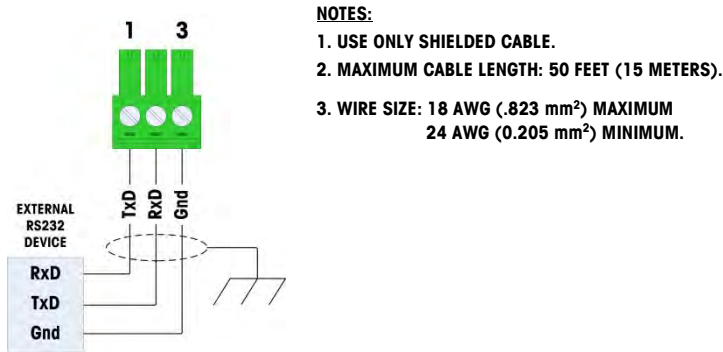


Figure 2-24: Sample COM1 Connections

2.4.3.4. COM1 Serial Port (POWERCELL)

The COM1 port for the IND246 POWERCELL version includes connections for RS-232, RS-422 and RS-485. There is a setup parameter that must be selected to match the hardware connection used. This parameter controls how the transmit and receive lines are controlled.

Figure 2-23 indicates which terminal carries which signal on the COM1 port. Make the connections as necessary.

The diagram shows a 7-pin terminal block with pins labeled 1 through 7. The labels below the pins are: 1: TxD, 2: RxD, 3: Gnd, 4: TxD+, 5: TxD-, 6: RxD+, 7: RxD-.

Terminal	Signal	Notes
TxD	Transmit RS-232	
RxD	Receive RS-232	
Gnd	Ground	
TxD+	+Transmit RS-422, RS-485	Jumper to RxD1+ for RS-485
TxD-	-Transmit RS-422, RS-485	Jumper to RxD1- for RS-485
RxD+	+Receive RS-422, RS-485	Jumper to TxD1+ for RS-485
RxD-	-Receive RS-422, RS-485	Jumper to TxD1- for RS-485

Figure 2-25: COM1 Port Signals

Some examples of connecting external equipment are shown in Figure 2-24.

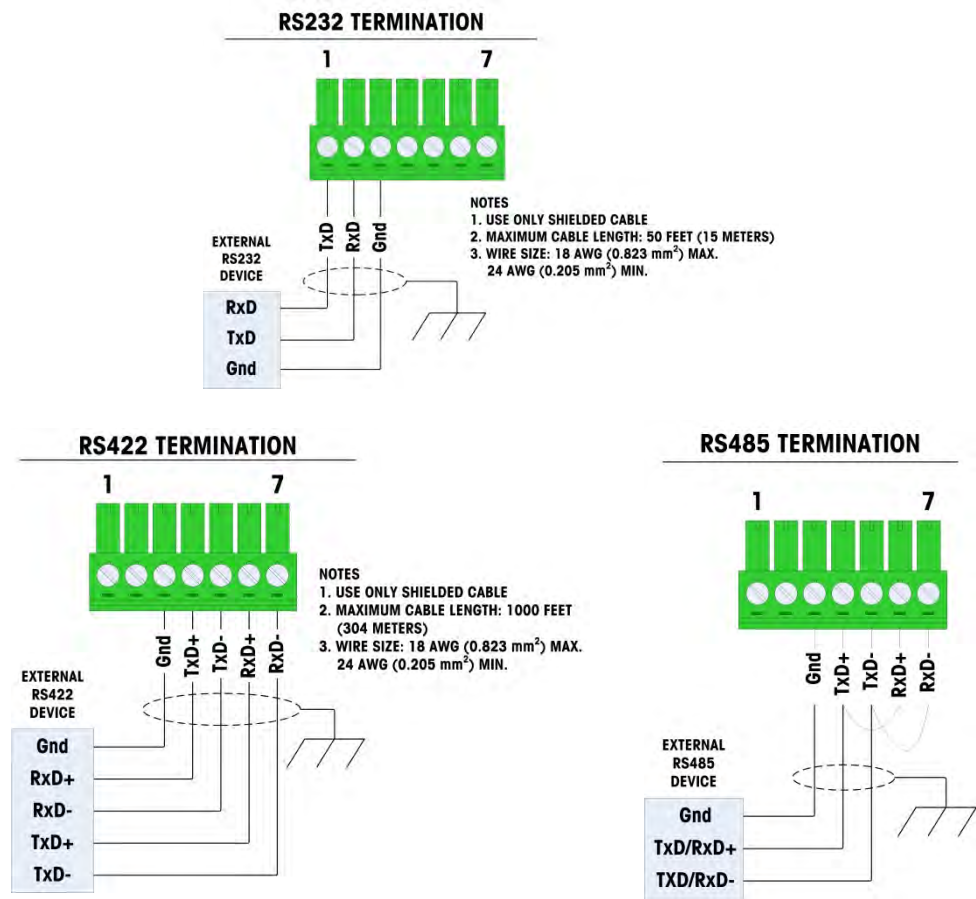


Figure 2-26: Sample COM1 Connections

2.4.3.4.1. RS-485 Transmission Line Termination

The RS-485 network should include a terminating resistor, installed between the two lines at or on the last node. The terminating resistor should match the characteristic impedance of the transmission line, approximately 120 ohms. This terminating resistor is required when connecting ARM100 modules to the port.

2.4.4. PDX or GDD POWERCELL Cabling

<i>NOTICE</i>	
TO AVOID DAMAGE TO THE PCB OR LOAD CELL, REMOVE POWER FROM THE TERMINAL AND WAIT AT LEAST 30 SECONDS BEFORE CONNECTING OR DISCONNECTING ANY HARNESS.	
	! WARNING
	DO NOT INSTALL THE IND246 POWERCELL TERMINAL IN AREAS CLASSIFIED AS HAZARDOUS BECAUSE OF COMBUSTIBLE OR EXPLOSIVE ATMOSPHERES. CONTACT AN AUTHORIZED METTLER TOLEDO REPRESENTATIVE FOR INFORMATION ABOUT HAZARDOUS AREA APPLICATIONS.

2.4.4.1. Overview

The IND246 POWERCELL is supplied with a gland that is compatible with the POWERCELL PDX home run cable.



Figure 2-27: IND246 POWERCELL Enclosure with POWERCELL Cable Gland and Grounding Point

Preparing the terminal for use with POWERCELL PDX load cells involves three phases:

- Preparing of the cable and gland
- External connection and grounding of the cable
- Internal connection and grounding of the cable.

Each of these steps must be correctly completed to ensure the correct function of the POWERCELL PDX network.

2.4.4.2. Preparing the Cable and Gland

1. Make sure that the un-terminated end of the POWERCELL cable is cut cleanly.



Figure 2-28: Cut POWERCELL Cable

2. Mark the exterior braided armor 12"/30 cm from the end of the cable.



Figure 2-29: Measuring the Exterior Braided Armor Before Cutting

3. Use metal shears to cut along the exterior braided armor, taking care not to cut into the cable jacket or the outer drain wire.

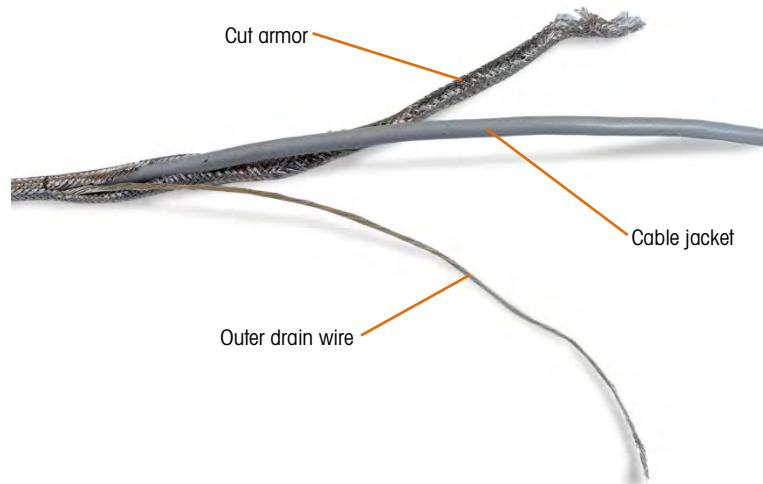


Figure 2-30: Exterior Braided Armor Cut, Outer Drain Wire Exposed

4. Trim the exterior braided armor back to the cut mark, and remove stray wires from the cut.



Figure 2-31: Exterior Braided Armor Trimmed Back

5. Mark the cable jacket 1.25"/3 cm from the cut end of the exterior braided armor.



Figure 2-32: Marking the Cable Jacket

6. Using a razor knife, cut carefully around the cable jacket, without cutting into the inner braided shield.



Figure 2-33: Cutting Around Cable Jacket

7. Use the razor knife to cut along the cable jacket, so that it can be peeled off the wires. Again, take care to cut only the cable jacket, and not its contents: push the knife deep enough into the cable jacket until it is just possible to feel the tip of the blade drag on the inner braided shield.



Figure 2-34: Cutting Along the Cable Jacket

8. Peel the cut sheath off the inner braided shield, back to the cut made in step 6.



Figure 2-35: Peeling the Cable Jacket away from the Inner Braided Shield

9. Mark the inner braided shield 1 1/2.5 cm from the cut end of the cable jacket.



Figure 2-36: Marking the Inner Braided Shield

10. Carefully cut around the inner shield at the cut mark, without cutting into its contents. Remove the cut portion of the inner shield from the cable.



Figure 2-37: Removing the Inner Braided Shield

11. Unscrew the outer portion of the POWERCELL cable gland from the terminal, and disassemble the cable clamp. Set the clamps and screws aside in a safe place.



Figure 2-38: Outer Component of POWERCELL Cable Gland Disassembled

12. Slide the outer part of the gland down the prepared cable, keeping the outer drain wire outside the body. Position the gland against the cut end of the exterior braided armor. Note the orientation of the gland – the clamping features should be toward the exterior braided armor.



Figure 2-39: Outer Portion of Cable Gland Installed on Cable

13. Slide the plastic grommet down the cable, and fit it into the gland.

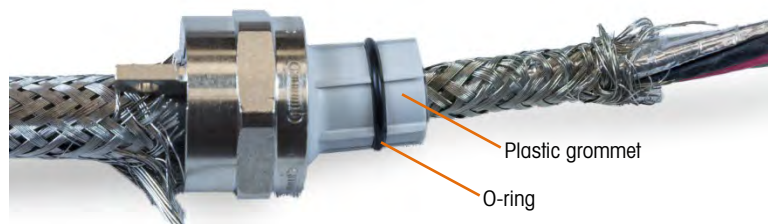


Figure 2-40: Plastic Grommet Positioned in Gland

14. Unbraid the individual strands of the inner braided shield.



Figure 2-41: Inner Shield Unbraided

15. Fold the individual strands of the inner braided shield back over the grommet. The individual strands should be uniformly distributed around the outer surface of the grommet.

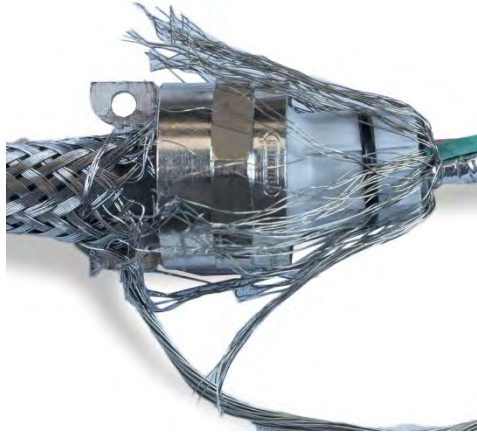


Figure 2-42: Inner Braided Shield Folded Back over Grommet

16. Separate the elements of the cable – the green, red and black wires, the inner drain wire, the blue and white wires and their foil wrapper. The nylon string, used only during manufacture, can be cut off.

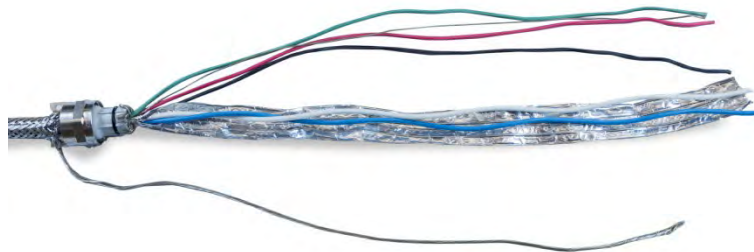


Figure 2-43: Cable Components Separated

17. Cut the foil back to about an inch from the grommet. Snip lengthwise to allow it to fold back all around the grommet, and cut both foil and inner braided shield wires so that they cover the end of the grommet, without covering the O-ring.



Figure 2-44: Inner Braided Shield Wires and Foil Trimmed to Length and Folded Back Over Grommet

18. Insert the wires through the body of the gland and into the enclosure.
19. Press the plastic grommet into the body of the gland, then screw the outer part over it, tightening with an adjustable wrench. The end of the cable, with the wires and foil pressed into

the gland should appear as shown in Figure 2-45; here, the cable and gland assembly is shown removed from the terminal for clarity.



Figure 2-45: Inner Armor and Foil Pressed into Body of Cable Gland

20. Push and slide the exterior braided armor up the cable so that its cut end is tight against the cable gland. Tidy up any stray wires, using a small screwdriver to push them into the back of the outer part of the gland.
21. Install the clamp disassembled in step 11. Tighten the screws evenly so that the clamps tighten symmetrically on the outer armor. Note that the outer drain wire should emerge between the clamp and the cable gland. (For clarity, Figure 2-46 shows the gland assembly separate from the terminal enclosure.)



Figure 2-46: Exterior Braided Armor Clamped in Place

22. The cable is now ready for installation and grounding.



Figure 2-47: Cable and Cable Gland Installed in Enclosure

2.4.4.3.

External Grounding of the Cable

1. Disassemble the external grounding feature provided with the IND246 POWERCELL terminal – it includes a screw clamp and a mounting bracket. Slide the screw clamp about 8"/20 cm onto the flat braided grounding cable.



Figure 2-48: Grounding Feature and Flat Braided Cable

2. Slide the outer drain wire through the clamp, next to the flat braided cable.

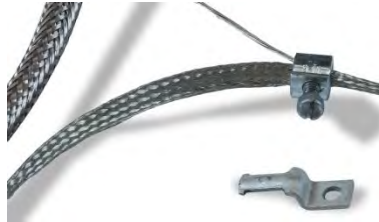


Figure 2-49: Outer Drain Wire Inserted Through Grounding Clamp

3. Slide the end of the mounting bracket into the clamp.



Figure 2-50: Grounding Clamp Mounting Bracket Inserted

4. Fasten the mounting bracket to the enclosure using the screw at the external grounding point indicated in Figure 2-27.
5. Adjust the lengths of the braided cable and outer drain wire as necessary, and tighten the clamp on the grounding feature.
6. Wrap the free end of the braided grounding cable about two turns around the POWERCELL cable. Adjust the length of the braided cable as necessary.

7. Install a screw clamp over the flat braid, and tighten it to secure it to the POWERCELL cable.

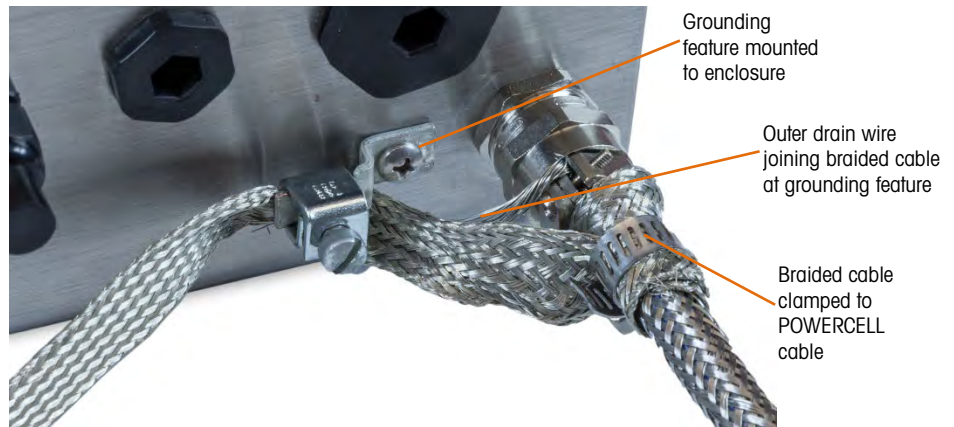


Figure 2-51: Braided Cable Clamped to POWERCELL Cable

8. The external installation of the POWERCELL cable is now complete.

2.4.4.4.

Internal Grounding and Connections

1. Inside the terminal enclosure, twist together the black and green wires, and the inner drain wire.



Figure 2-52: Grounding Wires and Inner Drain Wire Twisted Together

2. Cut the wires twisted in step 1 to a length appropriate to reach one of the grounding studs inside the enclosure. One grounding stud is already used by the incoming power ground, while a second stud is free. **Note:** Do not discard the black wire cut off in this step.
3. Terminate the twisted wires with the ring terminal provided.



Figure 2-53: Ground Wire Termination

4. Create a ground wire to connect the grounding stud to the ground connector on the motherboard:
 - a. Cut the black wire removed in step 2 to 8"/20.5 cm long.

- b. Terminate one end with the ring terminal provided.
- c. Strip enough of the insulation at the free end of the black wire to permit insertion into the connector on the motherboard.



Figure 2-54: Black Grounding Wire with Ring Terminal

- 5. Attach both ring terminals either to the grounding stud (see Figure 2-55).
- 6. Insert the black ground wire into the POWERCELL connector on the motherboard and tighten it in place. This establishes the correct orientation of the wires in the connector.
- 7. Remove the connector from the motherboard, to simplify connection of the remaining wires.
- 8. Twist the blue and white wires together, and cut them and the red wire to the appropriate length, to reach the connector at the motherboard without putting strain on the wires or connections.
- 9. Insert the wires into the connector as indicated in Table 2-4.

Table 2-4: PDX Cable Color Code

Terminal	Description				Wire Color
	1	2	3	4	5
					
	CANH		CANL	+24V	GND
CANH	CANbus High				White
- -	Not Used - Empty				- -
CANL	CANbus Low				Blue
+24V	PDX Network Power Supply				Red
GND	PDX Network Ground				Black

10. Figure 2-55 shows the completed cabling procedure inside the IND246 POWERCELL enclosure.

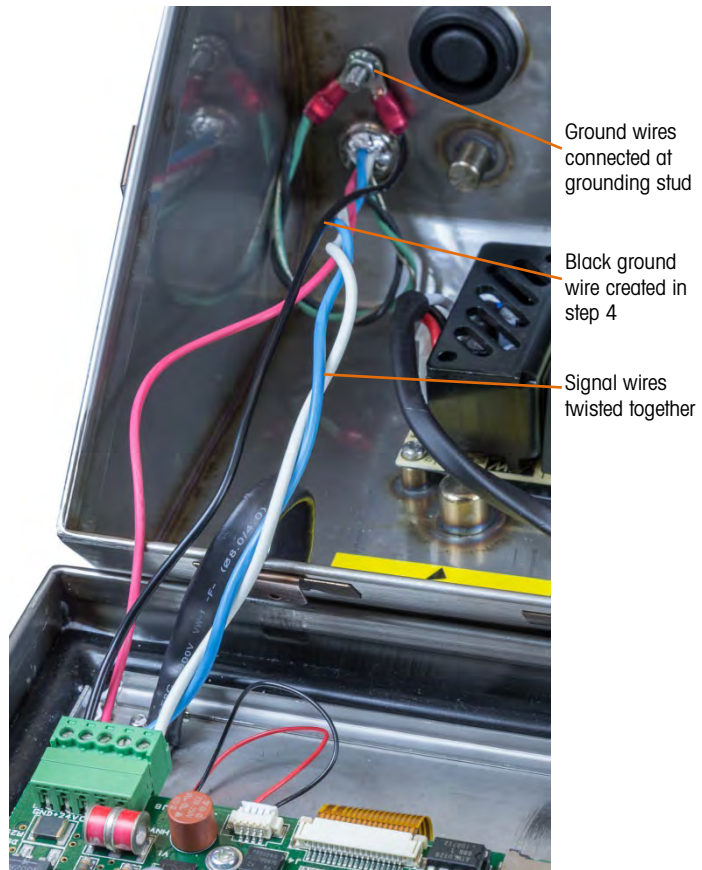


Figure 2-55: Internal POWERCELL Cable Connections Completed

2.4.4.5. Cable Lengths

The terminal cannot be used with cable lengths exceeding those given in Table 2-5, or with more than 12 PDX cells.

Table 2-5: Maximum PDX Cable Lengths

Total Cell-Cell Cable (meters/feet)	Home Run Cable (meters/feet)	Number of PDX Cells
130/426	300/984	≤ 12

2.4.5. PowerDeck Connection

PowerDeck scale bases connect to the IND246 POWERCELL through an 4-pin connector installed in the housing. The connector is provided from the factory installed and with its internal connections complete.



Figure 2-56: PowerDeck Connector Installed in the IND246 POWERCELL



Figure 2-57: PowerDeck Connector, External View



Figure 2-58: PowerDeck Home Run Cable

2.4.6. Wiring Connections for Options

Options for the IND246 that require external connections include the following:

- Ethernet TCP/IP
- COM2
- Wi-Fi

Figure 2-59 shows the two option locations on the main board, where the boards mount on the connectors indicated in Figure 2-19. Figure 2-60 shows the mounting position for each option. Connections for each option are described in the following sections.

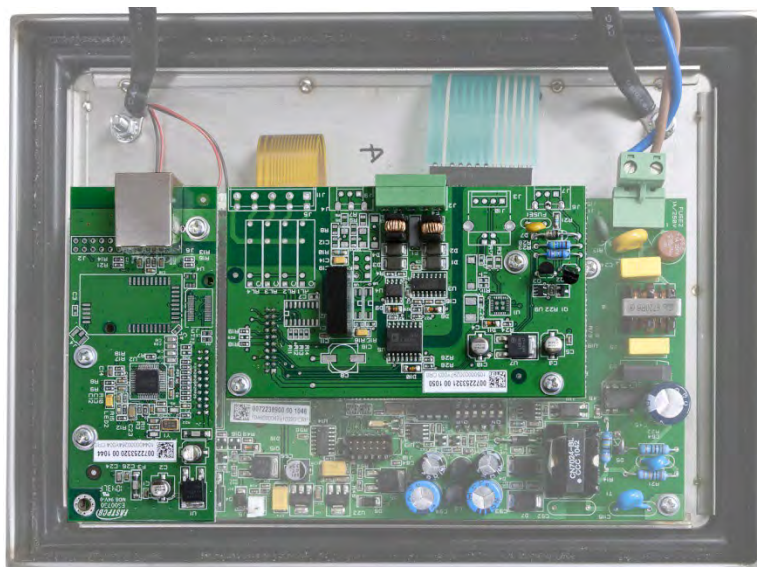


Figure 2-59: Option Board Locations

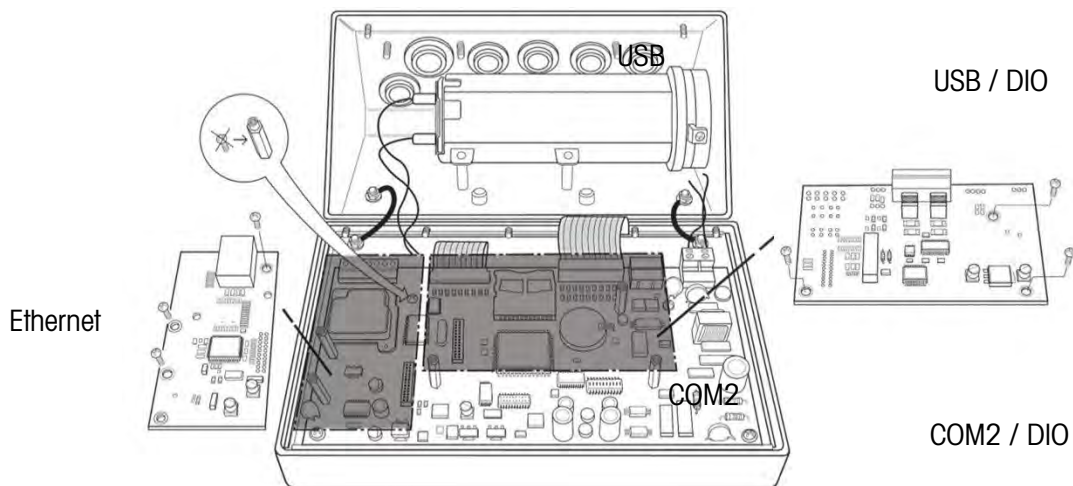


Figure 2-60: Option Board Locations

2.4.6.1. Ethernet Connections

The Ethernet option board (Figure 2-61) is positioned in position 2 on the Main board. This port provides a 10 Base-T connection (10 Mb) connection for Ethernet. The Ethernet connection is made via a standard RJ45 connector (indicated in Figure 2-61) on the option board.



Figure 2-61: Ethernet Connection Option Board

- **Important:** When installing the Ethernet option, adhere the Ethernet label from the kit to the enclosure near the Ethernet connector.

2.4.6.2. COM2 Connections

The COM2 option board (Figure 2-62) is positioned in option position 1 on the Main board. This option board provides a single serial port labeled COM2.



Figure 2-62: COM2 Option Board

The COM2 port provides RS-232 and RS-485 connections. There is a setup parameter that must be selected to match the hardware connection used. This parameter controls how the transmit and receive lines are controlled. See Figure 2-24 and Figure 2-65 for connection details.

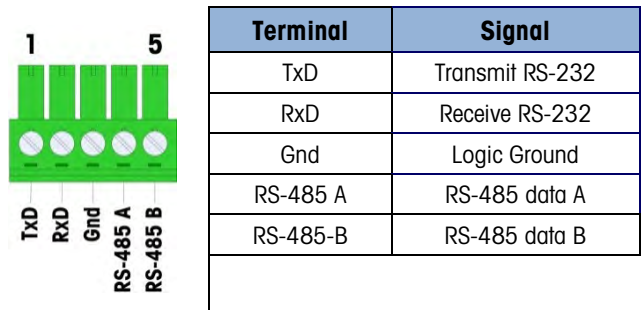


Figure 2-63: COM2 Port Signals

2.4.6.3. Wi-Fi Connection

The Wi-Fi module is installed in the Option Board 2 position on the mainboard. When connecting, one end of the antenna connector cable is fixed to the socket of the option board, while the other end is fixed on the rear cover of the terminal.

To avoid interference between the feeder and the AC power supply, secure the feeder in the buckle position as shown in Figure 2-64.

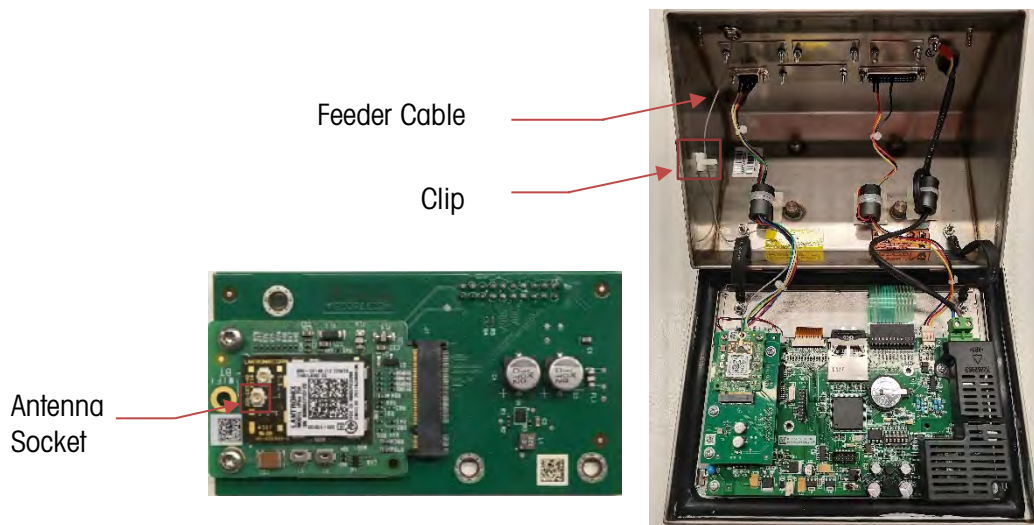


Figure 2-65: Installation of Wi-Fi Option Board and Feeder Cable

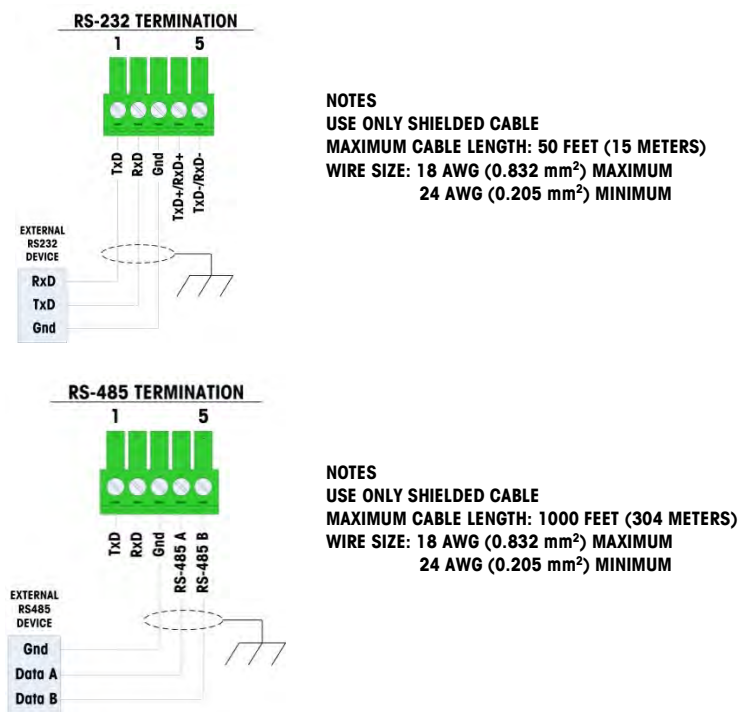


Figure 2-66: Sample COM2 Connections

2.5. PCB Switch Settings

PCB switch settings are described in this section, including settings for main PCB switches and the discrete I/O switch.

2.5.1. Main PCB Switches

A six position switch block (Figure 2-66) is located on the main PCB. These switches function as shown in Table 2-6.

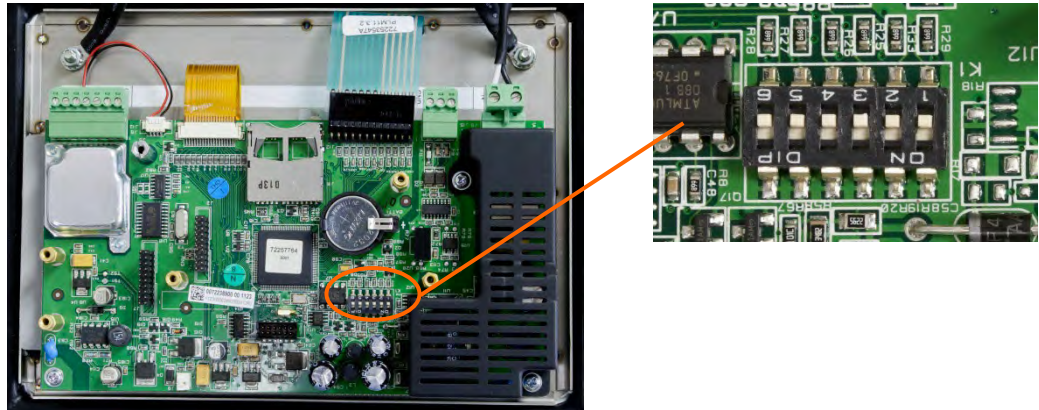


Figure 2-67: Location of Switch Block 1 on the Main PCB, Analog Version

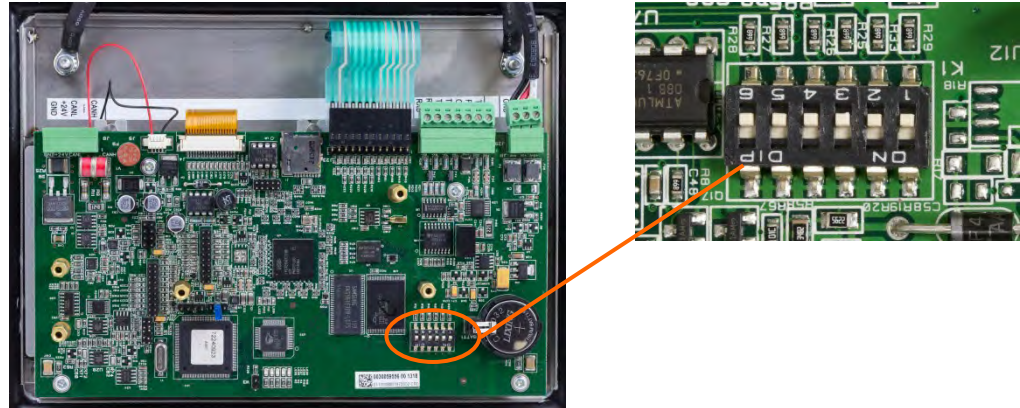


Figure 2-68: Location of Switch Block 1 on the Main PCB, POWERCELL Version

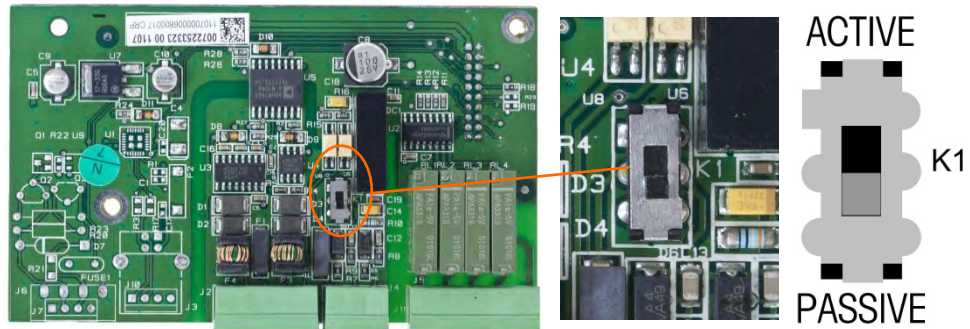
Table 2-6: Switch 1 Functions

Switch	Functions	Notes
SW1-1	Metrology Security Switch (legal for trade) When in the ON position, this switch prohibits changes to metrological parameters in setup. This must be ON for “approved” applications	This is true even if the Scale Approval parameter is selected as “None” in setup.
SW1-2	Master Reset Set in the ON position and power cycle to perform a master reset of all data in the terminal Set in the OFF position during normal operation.	When a Master Reset is performed, set SW1-4 to ON to reset metrologically significant data, such as scale calibration, GEO code, etc.
SW1-3	Flash Software Set in the ON position for software download Set in the OFF position during normal operation	
SW1-4	Reset Calibration Set in the ON position to reset calibration during a master reset Set in the OFF position to retain current calibration values during a master reset	Works with switch SW1-2
SW1-5	Not used	
SW1-6	Not used	

- When both SW1-2 and SW1-4 are positioned ON and AC power is applied to the terminal, a Master Reset function will be initiated. This procedure will erase all programming in the terminal and return all settings back to factory default values. This process is described in the IND246 Technical Manual, Chapter 5, **Service and Maintenance**.

2.5.2. Discrete I/O Switch

A switch on the Discrete I/O board selects if the inputs will be active or passive. Ensure that the switch is set properly before wiring to the inputs. The location of the switch and the active/passive positioning are shown in Figure 2-68.

**Figure 2-69: Location and Switch Settings for Discrete I/O Switch**

2.6. PCB Jumper Positions

There are no jumpers on the Main board or any of the option boards in the IND246 terminal.

2.7. SD Card Installation

The SD memory card can be used for additional storage in the Checkweighing and Counting applications, and must be installed if the Vehicle Application is used. Figure 2-69 shows the installation of an SD card into the socket on the edge of the IND246 main board.



Figure 2-70: Sliding an SD Card into the SD Socket (left); SD Card Installed (right)

2.8. Capacity Label Instructions

The regulations in some locations require that the scale capacity and increment be shown on the front of the terminal, near the display. To satisfy this requirement, a blue capacity label is included with the terminal that must be completed and adhered to the front overlay.

The capacity label (shown in Figure 2-70) provides space for the Max, min, and e information for both ranges for which the scale is programmed. If only one range is used, the unused portion of the label may be cut off with scissors. Written information must be legible and a minimum of 2mm or 0.08 in. in height. A permanent marker should be used for this information.

→ 1 ←	Max		Min		e =	
→ 2 ←	Max		Min		e =	

Figure 2-71: Capacity Label

Clean any oil or other contaminants from the area of the overlay shown in Figure 2-71 where the capacity label will be added. Peel the backing from the label and adhere it to the overlay in the location shown in Figure 2-71, or another location acceptable to the local regulations.



Figure 2-72: Capacity Label Installed

2.9. Closing the Enclosure

After all work has been completed inside the terminal, the enclosure must be snapped shut properly to maintain its environmental integrity.

To properly close the terminal, follow these steps:

1. Position the front cover over the rear housing then gently press it down into place.
2. Press down firmly in each of the four corners of the front cover in sequence until each corner clip snaps audibly into place.
3. It is very important that each of the 4 corner clips have snapped into place. When pressing down on the cover during installation, listen for the “click” sound of each clip engaging.

2.10. Securing the Enclosure

When the IND246 terminal is used in a metrologically “approved” application, it must be protected from tampering by use of a seal. A wire security seal is included with the terminal.

For sealing details of the IND246 terminal, refer to Figure 2-72 and follow these steps:

4. Ensure that the appropriate approval region has been selected in setup under **Scale > Type > Approval**, and that the Metrology security switch SW1-1 is in its ON position (refer to Figure 2-66 and Table 2-6).
5. With the front panel installed on the enclosure and snapped into place, thread the free end of the wire seal through either the left or right hole in the IND246 front panel, and through the hole in the retaining clip.
6. Thread the end of the wire cable through the hole in the plastic seal (as shown in Figure 2-72), remove any remaining slack in the wire, and snap the seal shut.

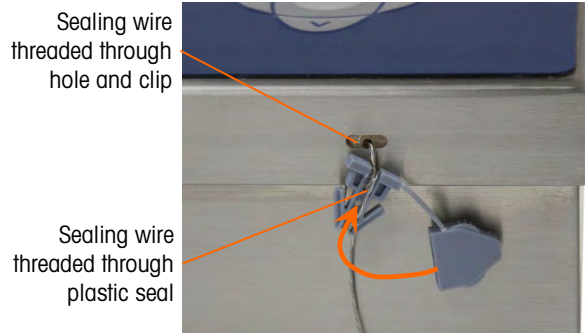


Figure 2-73: Seal Threaded and Ready to be Closed

2.11. Connecting the Terminal to the Printer

When the printer leaves the factory, the wiring harness connected to the terminal will be pre-placed. Users can choose different printers according to the terminal.

2.11.1. Connecting APR220 Dot Matrix Printer

Cable connection: Connect the printer communication cable to the DB9 connector of the printer and tighten the screws on both sides.

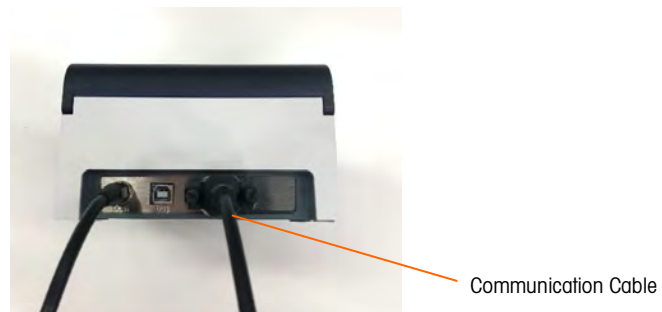


Figure 2-74: APR220 Printer Connector

Pass the communication cable through the rubber ring of the rotating bracket of the terminal, connect it to the corresponding position of the serial port option board in the IND246. The wiring definition is as shown in the Table 2-7.

Table 2-8: Signal Cable Definition

Signal	Cable Color
TXD	Blue
RXD	White
GND	Black

2.11.2. Connecting EPM205 Thermal Printer

Cable connection: Connect the printer communication cable to the corresponding connector of printer.

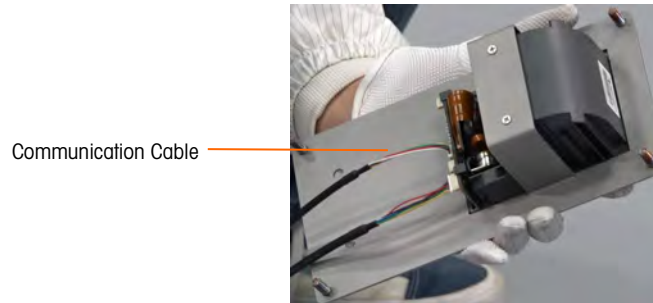


Figure 2-75: EPM205 Printer Connector

Pass the communication cable through the rubber ring of the rotating bracket of the terminal, connect it to the corresponding position of the serial port option board in the IND246. The wiring definition is as shown in the Table 2-8.

Table 2-8: Signal Cable Definition

Signal	Cable Color
TXD	Green
RXD	White
GND	Brown

3 Operation: Terminal

3.1. Overview

This chapter provides information about the basic functionality of the IND246 terminal, including display operation, keypad functions and menu navigation.

Operation of the terminal varies depending on which functions are enabled, and on the configuration of parameters in setup. Configuration is described in Chapter 4, **Configuration: Terminal**.

3.2. Display Elements and Keypad Operation

Refer to Figure 1-4 for an over view of the layout of the front panel of the IND246.

3.2.1. Display Elements

When in the weighing mode, the display is used for indicating the weight value and other types of information related to the weight. Refer to Figure 3-1.



Figure 3-1: Elements of the Display

The symbols that may appear on the display are described in Table 3-1.

Table 3-1: Main Display Symbols

Symbol	Explanation
	Battery status indicator (battery-powered version only)
	I/O status* (On and Off) 2 inputs, 4 outputs = Input or output active
	Time and date*

Symbol	Explanation
123↗ ABC↗ abc↗ Dec↗	Numeric, Upper case alpha, lower case alpha and Decimal data entry mode. Decimal mode is available only in the template string entry screens
24.60 kg T	Tare type and value indicator
~	Motion on platform
→0←	Center of zero
>1K	Weighing range*
kg	Unit (kg, lb, oz, lb-oz, g, ton, t)
B/G Net	Bruto/Gross or Net operating mode
ID? 246	Prompt for ID entry and entry field

* These elements appear if configured to do so in setup.

3.2.2. Keypad Operation

The front panel keys are used to operate and configure the IND246.

3.2.2.1. Alphanumeric Keypad

The IND246 permits the entry of both alphabetical and numeric data, using the 12-element keypad to the right of the display.

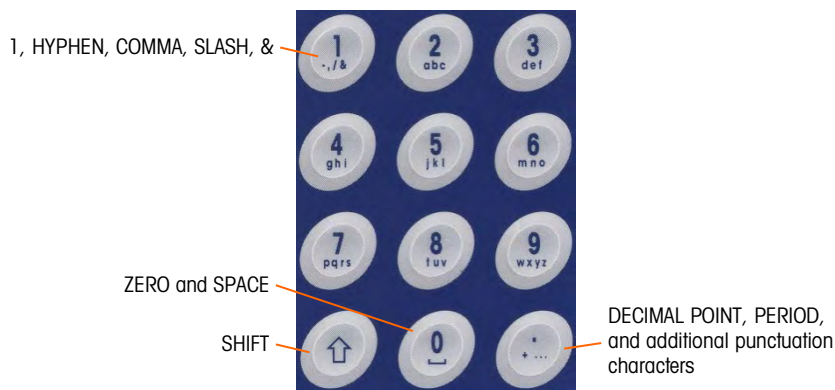


Figure 3-2: Alphanumeric Keypad

3.2.2.1.1. Key Timeout Period

When using the keys to enter data, after a set amount of time elapses the terminal accepts the character that is currently displayed, and moves to the next position. Pressing the key without allowing the Key Timeout period to elapse cycles through the current option for that key. For instance, when the 4 key is pressed in `abc↗` mode, the display cycles through **g**, **h** and **i**.

The length of this timeout period is measured in tenths of a second, and can be configured in setup at **Terminal > Terminal\Device**.

3.2.2.1.2. SHIFT Key

The SHIFT key  is used to determine the type of entry made when a key is pressed. Four entry modes are available:

- Numerical (**123**)
- Upper case alphabetical (**ABC**)
- Lower case alphabetical (**abc**).
- Decimal entry (**Dec**) (This mode is available only when entering template strings.)

The current entry mode is indicated at the upper right corner of the display (Figure 3-1, Table 3-1).

3.2.2.1.3. Entering Numeric Data

To enter a number into either the ID (data) field in the main display, or into a field in one of the setup screens:

1. Check that the entry type display shows 123; if it does not, press the SHIFT key  until 123 appears.
2. Then simply press the appropriate keys on the key pad – 0 to 9 and period.

Pressing a numeric key followed by TARE  enters a manual tare value. Pressing the ID key  shifts focus to the prompt line at the bottom left of the screen, and allows data entry there.

To delete one or more characters, press the CLEAR  key.

3.2.2.1.4. Entering Alphanumeric Data

To enter an alphabetic character:

1. Press the SHIFT key to access the character type (lower or upper case)
2. Press the appropriate key until the correct character displays.

For example, when the display is in its default (numeric, 123) entry mode, the key sequence to enter **The IND246** (including a space) is shown in Table 3-2.

Table 3-2: Example Data Entry Sequence

Entry	Explanation and Notes	Result
 	SHIFT sets the input mode to ABC 8 inputs a T	T
  	SHIFT sets the input mode to abc 4 4 inputs an h	h
 	3 3 inputs an e	e
	0 enters a space	

Entry	Explanation and Notes	Result
    	SHIFT SHIFT returns input mode to ABC 4 4 4 inputs an I	I
 	6 6 inputs an N	N
	3 inputs a D	D
    	SHIFT SHIFT sets the input mode to 123 2 4 6 inputs 246	246
	ENTER confirms data entry	

3.2.2.2.

Function Keys

Table 3-3 explains the function of each of the keys during normal operation.

Table 3-3: Keypad Functions – Normal Operation

	CLEAR	When in the net weight mode, press CLEAR to clear the current tare value; the display will revert to the gross weight value. CLEAR operates regardless of motion on the scale. Note that once the tare value has been cleared, it cannot be recalled. The complete tare process as described above must be performed. When in alphanumeric entry mode, press CLEAR to backspace and delete the last character in a string.
	SWITCH UNITS	Press to toggle between primary and secondary units, as configured in setup at Scale > Units .
	ZERO	Used to reset the displayed weight to Zero.
	TARE	Captures current weight as a tare value, and sets terminal to Net mode.
	ID	Changes focus to the ID/data-entry field at the bottom left of the display.
	MENU	Opens the Operator Menu – refer to the Operator Menu section starting on page 3-5.
	FUNCTION	Toggles between selected application and basic weighing.
	PRINT/ENTER	Pressing the PRINT key in normal weighing mode will trigger a demand output (if configured in setup) During data entry, press ENTER to confirm current selection.

In menus, moves focus to next field label or entry/selection box.

- The ZERO and TARE functions will not operate when there is motion on the scale. If one of these keys is pressed while the scale is in motion, the command will be retained for the programmed number of seconds while the terminal waits for no-motion. If a no-motion condition is not detected within the timeout period, the request is cancelled and discarded.

3.2.2.3.

Navigation Keys

The navigation keys are used for changing focus between on-screen items, for confirming a selection, and to initiate a demand output.

Table 3-4: Navigation Keys



ARROW KEYS

Move focus, or the cursor, in the direction indicated. When the display is in the menu mode, and the left-most item is selected, the LEFT arrow will return to the previous screen.



PRINT/ENTER

Press the PRINT/ENTER key in the Navigation Keypad to accept the item or selection in focus and move to the next display.

3.3. Operator Menu

There are a few functions that operators typically perform which are available in a top-level menu system in the IND246 terminal. These include access to Alibi Memory, setting time and date, adjusting contrast, viewing and resetting the transaction counter, viewing and clearing totals, expanding the displayed weight resolution by 10, and recalling information. An explanation of how to access these functions follows.

3.3.1.

Language Selection – F Codes

Depending on the terminal's language setup (at **Terminal > Region > Language**), parameter labels in the operator menu will appear as words ("Hour") or as an F-code ("F3.3.2.1").

3.3.2.

Menu Navigation

To access the operator menu, press the MENU key . The display will change from showing the normal weigh display to an array of icons (Figure 3-3). The icons included depend on the terminal's configuration – for details, refer to Table 3-5.



Figure 3-3: Operator Menu Display

Items in this menu can be selected directly by pressing the corresponding number on the alphanumeric keypad, or by using the arrow keys to move focus up, down, left and right and then pressing ENTER .

- When focus is in the left column, as in Figure 3-3 and Figure 3-4, pressing the LEFT arrow key will exit the **SETUP** menu and display the **OPERATOR** menu.

3.3.2.1. Accessing Operator Screens

For instance, from the screen shown in Figure 3-3, pressing ENTER or pressing 4 displays the **Time & Date** setup screen.

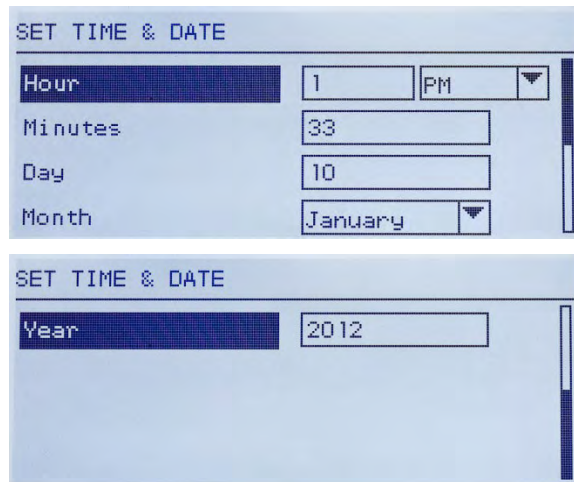


Figure 3-4: Set Time & Date

Here, items may be selected by number or by moving focus and pressing ENTER.

- Note that the header line reflects the currently displayed screen, and the input mode icon is also displayed at upper right.

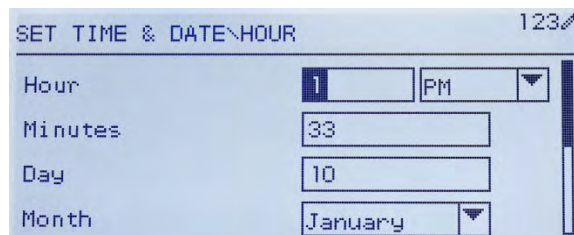


Figure 3-5: Time & Date Setup, Hour Field in Focus

In Figure 3-4, a field label (**Hour**) is in focus. In Figure 3-5, the numeric entry field for the Hour value is selected. Use the number pad keys to modify the value. When the correct number is displayed, press ENTER to confirm the selection and move to the next (**Minutes**) field label.

When all the time and date values are correctly set, press the LEFT arrow key to return to the Operator Menu (Figure 3-3).

3.3.2.2.

Operator Menu Items

Depending upon programming in the terminal and whether one of the Applications is enabled in setup, the icons displayed will include a selection of those shown in Table 3-5. The **Information Recall** and **Setup** icons will always appear last in the list. The other icons can be added or removed from the operator menu by configuring the menu keys display in setup at **Terminal > Menu Keys**.

Table 3-5: Operator Menu Icons

Icon	Function	Description
Standard		
	Alibi Memory	Displays the ALIBI SEARCH screen.
	Adjust Contrast	Displays the ADJUST CONTRAST screen.
	Transaction Counter	Displays the TRANSACTION COUNTER screen.
	Time and Date	Displays the SET TIME & DATE screen.
	Totals Memory	Displays the TOTALS screen. The contents of this screen vary depending on whether Subtotals are enabled or disabled.
x10	Expand x10	Changes the main display to add an additional digit to the displayed weight. The appearance of the display will differ, depending on whether the terminal is in approved or non-approved mode.
	Information Recall	Displays the RECALL INFO screen, where the terminal's serial number, software version, last calibration date, etc., are displayed.
	Setup	Enters the setup menu. Depending on the settings made at Terminal > Users , it may be necessary to enter a valid user name and password to access the setup menus.
Counting Application		
	Switch Sampling Mode	Switches sampling mode between piece sampling and APW entry.
	ID Memory	Displays a view of the ID Table , from which an ID can be selected for use.
	Reports	Displays the ID Table for printing . The table can also be cleared .
Over/Under Application		
	Target	Displays ACTIVE VALUES screen, where target, tolerances and description can be edited.
	Set Target	Displays QUICK SET TARGET screen, where target, tolerances and description can be entered using live scale weight.
	Target Memory	Displays TARGET TABLE , from which a target can be selected for use.
	Reports	Displays the TARGET TABLE for printing. Totals in the table can also be cleared .

Icon	Function	Description
Vehicle Application		
	Temporary ID	Displays a view of the Temporary ID Table .
	Permanent ID	Displays a view of the Permanent ID Table .
	Reports	Displays a printable  Vehicle ID Table or Temporary ID Table , depending on which mode is active.
Peak Weigh Application		
	Reports	Displays the PEAK WEIGHT MEMORY page. Values on the page can be printed  or cleared  .

3.3.3. Alibi Memory

The Alibi Memory key opens the **ALIBI SEARCH** screen. Here, the contents of Alibi memory can be viewed and printed. The results can be filtered using comparisons with one or two search fields, and printed. The elements of this search screen are summarized in Table 3-6. Default values are indicated in bold.

Table 3-6: Elements of the Alibi Search Screen

Field	Function / Options
Search Field 1	Transaction Counter* , Date (2010-11-07), Gross Weight, Net Weight, Tare Weight, Time (15:51:40)
Data Comparison	Less than (<), less than or equal to (<=), equal to (=)* , greater than or equal to (=>), greater than (>), not equal to (≠)
Data	Alphanumeric entry field for value to be compared. Default is * (all).

Once the search has been defined and executed, the **ALIBI SEARCH VIEW** screen opens, displaying the results.

ALIBI SEARCH VIEW		
Date:	31-Dec-2011	
Time:	15:18:25	
Trans #:	0000017	
B/G:	1540	kg
T:	1112	kg
N:	428	kg

Figure 3-6: Alibi Search View

Press the UP and DOWN arrow keys to scroll through the entries.

Press the PRINT key  to output the search results to a connected printer or the LEFT arrow to exit the view.

■ To print a report, the communications port must have the assignment **Reports**.

3.3.4. Adjust Contrast

Displays the **ADJUST CONTRAST** screen. The display contrast can be set for best visibility. Press the UP arrow to make the screen darker, and the DOWN arrows to make the screen lighter, and exit by pressing the LEFT arrow.

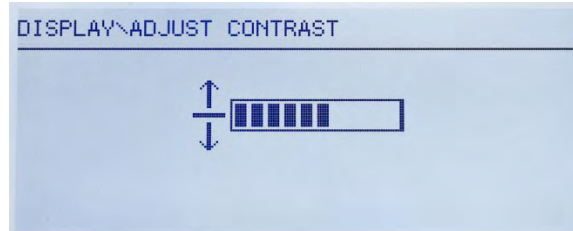


Figure 3-7: Contrast Adjustment Screen

3.3.5. Transaction Counter

Opens the **TRANSACTION COUNTER** screen, in which a value can be entered in the Next Transaction screen. Once the value is entered, press ENTER  to confirm it, and the LEFT arrow key to exit the screen.

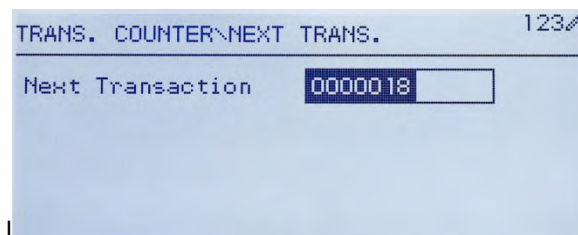


Figure 3-8: Transaction Counter Screen

3.3.6. Totals Memory

Depending on how the terminal is configured in setup at **Application > Totalization**, this screen displays the Grand Total of number of transactions and total weight, or both Grand Total and Subtotal of transactions with accumulated weight for each.

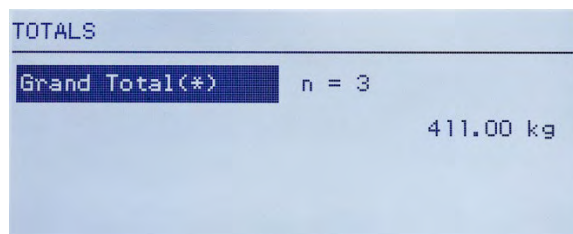


Figure 3-9: Totals Memory

3.3.7. Expand x 10

This icon toggles the weight display between standard and expanded mode. When this icon is selected and ENTER pressed, the weight display appears. The appearance of the expanded display differs, depending on whether or not the terminal is approved:

- Non-Approved Mode** An extra digit of resolution is added to the main weight display (e.g. **123.45** becomes **123.456**) and the x10 indicator appears in place of the range symbol. The PRINT function prints weights in the expanded format.
- Approved Mode** An extra digit of resolution is added to the main weight display, in a smaller size (e.g. **123.45** becomes **123.456**). The range symbols operate normally. The PRINT function is disabled.

3.3.8.

Information Recall

The information recall function is always available in the operator menu. In the Operator Menu, select the Information Recall icon ⓘ and press ENTER, to recall specific information about the terminal. The RECALL screen displays, with two screens of information available. Move between the two screens by pressing the UP and DOWN arrow keys.

RECALL INFO	
Model	IND246
Serial No.	B738701365
Platform Model	PFD778
Platform SN	B751123456
Option 1	COM2 & DIO
Option 2	Ethernet

RECALL INFO	
Firmware	30065264 2.02.0051_2011
OptionSoftware	30307056 2.09
Service	
Approved	No
Certificate #	
Calibrated	

RECALL INFO	
IP Address	192.168.0.1

Figure 3-10 shows an example of the two pages of information, and Table 3-7 lists the elements in the sequence in which they appear. Some items may not appear, depending on the configuration of the terminal. Press the LEFT arrow key to exit the RECALL screen.

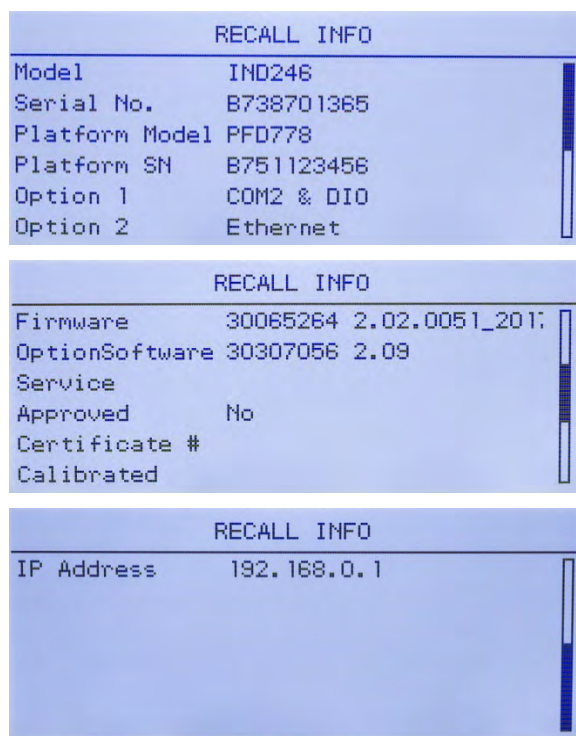


Figure 3-10: Information Recall Screens

Table 3-7: Information Recall Menu Items

Item	Value/Explanation
Model	The model number of the terminal is shown.
Serial No.	Serial number of the terminal as entered in the setup mode.
Platform Model	The model number of the platform.
Platform Serial Number	Serial number of the platform.
Option 1	Shows installed hardware options, if any.
Option 2	
Firmware	Shows the firmware revision number (2 lines).
Service	A telephone number used to contact METTLER TOLEDO authorized service.
Approved	Yes <u>or</u> No Indicates whether the terminal has been programmed as Approved for use in legal for trade applications.
Certificate #	Displays approval certificate number. An approval region must be selected to enable the display of the certificate number.
Calibrated	Shows date of most recent calibration.
IP Address	IP address assigned to the terminal. Shown only when the Ethernet option is installed.

3.3.9. Setup Access

The last icon displayed in the **OPERATOR** menu accesses the **SETUP** menu, from which all the terminal's programming parameters can be viewed and modified. The settings and options available in setup are described in detail in Chapter 3, **Configuration: Terminal**.

It is not intended that operators enter the setup mode. After a weighing system is installed and is operational, it should not be necessary for an operator to access setup.

Note that a security password can be enabled in setup. When a password is set, it must be entered in order to access setup. This protects the setup parameters from inadvertent changes.

3.4. Basic Functionality

This section provides information about IND246 basic functionality. Functions addressed in this section include:

- Zero
- Tare
- Clearing Tare
- Print
- Information Recall
- Target

Refer to Chapter 3, **Configuration: Terminal**, for further information about programming all the functionality described in this section.

3.4.1. Zero

The Zero function is used to set or reset the initial zero reference point of the terminal. There are three types of zero setting modes:

- Automatic Zero Maintenance
- Power Up Zero
- Pushbutton Zero

When the scale platform or weighbridge is empty, the terminal should indicate zero. The gross zero reference is recorded during calibration. If pushbutton zero is enabled in configuration and the weight is within the zero range pressing ZERO will capture a new gross zero reference point.

3.4.1.1. Automatic Zero Maintenance

Automatic Zero Maintenance (AZM) enables the IND246 to compensate for the build up of small amounts of weight and track itself back to the center of zero. Within the AZM operating range (selectable from 0.5, 1, 3 or 10 divisions), when the terminal is in a no motion condition, it makes small adjustments to the current zero reading to drive the weight reading toward the true center-of-zero. When the weight is outside of the programmed AZM range, this feature is not functional.

3.4.1.2. Power Up Zero

Power-Up Zero enables the IND246 terminal to capture a new zero reference point after power is applied. If there is motion during a power-up zero capture function, the terminal will continue to check for a no-motion condition until zero is captured.

Power-up zero can be disabled or enabled, and a range above and below calibrated zero can be configured. The range is programmable from 0% to 100% of capacity and can include a positive range and also a range below calibrated zero.

3.4.1.3. Pushbutton Zero

The pushbutton (semi-automatic) zero function can be accomplished by pressing the ZERO key , by programming a discrete input or by issuing a serial command.

The range for all types of semi-automatic zero is selectable (Disabled, 2% or 20%) plus or minus from the calibrated zero point.

Remote initiation of the semi-automatic Zero command is possible via a discrete input, or an ASCII 'Z' command sent serially (CPTZ and SICS interface modes).

3.4.2. Tare

Tare is the weight of an empty container. A tare value subtracts from the gross weight measurement, providing the computation of the net weight (material without the container). The tare function can also be used to track the net amount of material being added to or removed from a vessel or container. In this second case, the weight of the material in the container is included with the tare weight of the container and the display then reflects the net amount being added to or removed from the vessel.

Tare operations in the IND246 include:

- Pushbutton Tare
- Keyboard (Preset) Tare
- Tare Clear
 - Manual Clear
 - Auto Clear
- Net Sign Correction
- Automatic Tare

3.4.2.1. Pushbutton Tare

Pushbutton tare can be configured in setup as enabled or disabled. When disabled, pressing the TARE key  has no effect.

If pushbutton tare is enabled, pressing the pushbutton TARE key  initiates a semi-automatic tare. The IND246 will attempt to perform a tare process. If the process is successful, the display changes to a zero net weight indication and the previous weight on the scale is stored as the tare value. The net mode will be indicated on the display.

Several conditions could inhibit the pushbutton tare function:

Motion – Pushbutton tare cannot be taken when the scale is in motion. If motion is detected when a pushbutton tare command is received, the IND246 will wait for a programmed amount of time (the default value is 3 seconds) for a no-motion condition. If a stable (no motion) weight condition occurs before the timeout expires, the pushbutton tare command is executed.

If there is still motion at the end of the timeout, the command is aborted.

Pushbutton Tare Disabled – If pushbutton tare is configured as disabled, the TARE scale function key will not initiate a semi-automatic tare.

Negative Gross Weight – Any pushbutton tare attempted when the gross weight is at or below zero is ignored. Ensure that the gross weight is above zero.

3.4.2.2.

Keyboard Tare

A keyboard (preset) tare is a numeric tare that is entered manually through the numeric keypad or received serially from a peripheral. The preset tare value cannot exceed the capacity of the scale. Data entered is interpreted to have the same units as the current displayed value. Motion does not affect the entry of preset tare values.

Keyboard tare can be configured in setup as enabled or disabled. When disabled, the numeric keypad and the TARE scale function key  cannot be used to obtain a tare.

To enter a preset tare value manually, use the numeric keypad to enter the tare value (the data entered will display in the weight legend if keyboard tare is enabled in setup at **Scale > Tare > Types**) and press the TARE scale function key .

If configured in setup, remote equipment can enter a preset tare value using a serial command

If the preset tare is successful, the display changes to a net weight indication.

Several conditions could inhibit the preset tare function:

- **Keyboard Tare Disabled** – If keyboard tare is configured in setup as disabled, the numeric keypad and the TARE scale function key  cannot be used to obtain a tare.
- **Over-Capacity or Under-Zero Conditions** – Preset tare is not allowed when the weight display indicates over capacity or under zero conditions. Any preset tare attempted when the scale is over capacity is ignored and a “Tare Failed–Over Cap” error displays. Any preset tare attempted when the weight display indicates an under zero condition is ignored and a “Tare Failed–Too Small” error displays.

A preset tare can be entered in free format. If the entered value does not match the displayed weight decimal point location or display interval, the entered tare value is rounded to the nearest display interval and the decimal point adjusted to match the gross weight. The rounding method is that 0.5 or more of a display interval (d) is increased to the next display interval and 0.49 or less of a display interval is decreased to the next lower display interval.

When entering a preset tare value less than 1.0, the operator can enter the data without the leading zero (left of the decimal point), but all subsequent display, storage, or printing of this value will include the leading zero. For example, a preset tare entry of .05 will display as 0.05.

If a preset tare has already been established and another preset tare is entered, the second preset tare replaces the previous value (it does not add to the previous value). The replacement tare can be larger or smaller than the original tare value.

3.4.2.3.

Net Sign Correction

Net sign correction enables the terminal to be used for both shipping (inbound empty) and receiving (inbound loaded) operations. Net sign correction can be either disabled or enabled on the IND246.

If net sign correction is disabled in setup, the stored weight value in the tare register is assumed to be a tare regardless of the gross weight present on the scale at the time of the final transaction. Net values can therefore be negative if the weight on the scale is less than the tare value.

If net sign correction is enabled, the terminal will switch the gross weight and tare weight fields when necessary, so that the larger weight is the gross weight, the smaller weight is the tare weight, with the difference always a positive net weight. Net sign correction affects the display and printed data.

An example of weight values with and without net sign correction is shown in Table 3-8. In this example, the tare register value is 53 kg and the live weight on the scale is 16 kg.

Table 3-8: Weight Values With and Without Net Sign Correction

Printed and Displayed	Net Sign Correction	
	Disabled	Enabled
Gross	16 kg	53 kg
Tare	53 kg	16 kg
Net	-37 kg	37 kg

3.4.2.4.

Automatic Tare

The IND246 can be configured so that tare is automatically taken (auto tare) after the weight on the scale exceeds a programmed tare threshold weight. Auto tare can be configured in setup as enabled or disabled. When auto tare is enabled, the display changes to a zero net weight indication after the weight exceeds the threshold value. The previous weight on the scale is stored in the Alibi Table as the tare value. Auto tare operations involve:

- **Tare Threshold Weight** – 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** – A motion check is provided to control the re-arming of the auto tare function. If disabled, the auto tare trigger will be reset as soon as the weight falls below the reset value. If enabled, the weight must settle to no-motion below the reset threshold before the next auto tare can be initiated.

Several conditions could inhibit the auto tare function:

- **Motion** – Auto tare cannot be taken when the scale is in motion. If motion is detected after the weight on the scale exceeds a preset tare threshold weight, the IND246 will wait for a no-

motion condition. If a stable (no motion) weight condition occurs within three seconds, the auto tare command is executed.

- **Auto Tare Disabled** – Auto tare can be configured in setup as enabled or disabled.

3.4.2.5. Clearing Tare

Tare values can be cleared manually or automatically.

3.4.2.5.1. Manual Clear

Manually clear tare values by pressing the CLEAR key  on the numeric keypad when the IND246 is in the net mode and has completed the weighing operation. Motion on the scale will not impact a manual clear.

If configured in setup, pressing the ZERO scale function key  will first clear the tare, then issue a zero command (see Chapter 3, **Configuration: Terminal**, the Scale section, Auto Clear).

3.4.2.5.2. Auto Clear

The IND246 can be configured to clear tare automatically when the weight returns to a value below a programmable threshold, or when a print command is issued. Once the tare is cleared, the display returns to the gross weighing mode.

Auto clear is disabled or enabled in setup. If auto clear is enabled the following parameters, configured in setup, affect the auto clear operation:

- **Clear Threshold Weight** – The clear threshold weight is the gross weight value below which the IND246 will automatically clear a tare after settling to a value above this threshold value.
- **Motion Check** – A motion check is provided to control the automatic clearing of tare. If the motion check is disabled, the tare value is cleared as soon as the weight drops below the threshold weight (auto clear threshold), regardless of the motion status.
- If the motion check is enabled, after meeting the requirements for weight value above and then below the threshold weight (auto clear threshold), the IND246 waits for a no-motion condition before automatically clearing the tare.
- **Clear After Print** – If enabled, tare is automatically cleared and the scale returned to the gross mode after data has been transmitted by pressing the ENTER/PRINT key  or from a remote source.

Refer to the Scale, Auto Clear section of Chapter 3, **Configuration: Terminal**, for further information about configuring auto clear.

3.4.3. Unit Switching

In order to support locations and applications that utilize multiple measurement units, the IND246 supports unit switching. The SWITCH UNITS key  enables switching between primary units (the main unit of measure) and alternate units.

When the SWITCH UNITS key  is pressed, the display changes from the primary unit to the second unit. When this softkey is pressed again, the display returns to the primary unit. Each subsequent time the SWITCH UNITS key  is pressed the IND246 continues to switch the unit.

When units are switched, the units value changes to the correspondingly selected units, and the conversion of the display value occurs. The display division changes to an equivalent weight value in the switched unit (for example, from 0.02 lb to 0.01 kg) and the decimal location switches to accommodate the conversion.

When switching units, the capacity of the converted units is dictated by the original number of divisions established in the capacity and increments area of setup. In some situations, this may reduce the capacity of the terminal when converting to second unit.

3.4.4. Expand By 10

The **Expand by 10** icon appears in the **OPERATOR** menu (Figure 3-3), if so configured. It used to increase the selected weight display resolution by one additional digit. For example, a weight display of 40.96 could increase by one additional digit to display as 40.958. The Expand By Ten mode is indicated on the display by x10, which displays below the weight display. When Expand by Ten is selected again, the display reverts to the normal display of weight.

If programmed as approved with the metrology switch (SW1-1) ON, the Expand by Ten mode is displayed for five seconds then automatically returns to normal resolution. Printing is disabled when the weight is expanded and the terminal is programmed as approved.

3.4.5. Print

The print function (demand print) can be initiated by pressing the ENTER/PRINT  key or by automatic print settings. Demand printing of data may also be initiated as part of a particular sequence of operation or special application software.

3.4.5.1. Print Interlock

Print Interlock is designed to enforce a single print output per transaction. Print Interlock can be disabled or enabled. If enabled, the print command is ignored until the measured gross weight exceeds the print interlock threshold. A print command initiated before the measured gross weight exceeds the print interlock threshold returns a **Command failed – scale not ready** error in the system line.

After the first print command is executed, subsequent print commands are ignored until the gross weight indication falls below the print interlock reset threshold. If a print command is blocked by print Interlock, a **Command failed – scale not ready** message appears in the system line.

3.4.5.2. Automatic Print

Automatic initiation of a demand print occurs after the gross weight exceeds the minimum threshold and there is no motion on the scale. After initiation, the gross weight must return below the reset threshold before a subsequent automatic print can occur.

Automatic print may be disabled or enabled. Automatic print can be triggered and reset by weight exceeding thresholds or by weight deviation from a previously stable reading.

3.4.6. Information Recall

A limited number of data fields are made available for easy recall on the terminal display. These fields include data such as model, serial number, identification fields, hardware and software configuration, a service contact phone number and whether the terminal has been set up as approved for legal for trade operation.

All this data is accessible under the **Information Recall** icon  in the **OPERATOR** menu.

3.4.7. ID Entry

The ID function is used for two different purposes, depending on whether the terminal is in basic weighing mode or in one of the application modes.

- In basic weighing mode, a single ID field is available for transaction identification purposes, and the ID value will be shown at the bottom left of the display. The ID may also be included as a print field in any of the print templates.
- When the terminal is running one of the applications, the ID key  may access records from an application table.

The basic weighing transactional ID value can be entered using one of two methods, described below.

3.4.7.1. Pressing the ID key first

Press the ID key . An "ID?" prompt will appear at the bottom of the display, with an entry box to its right.

Using the alphanumeric keypad, enter the desired ID value and then press ENTER. The ID value will be shown at the bottom left of the display and will be available for printing.

To clear the ID field, press the ID key and when the previous ID value is displayed in focus in the entry box, press the CLEAR key .

3.4.7.2. Pressing the ID key last

Begin to enter the desired ID value using the alpha-numeric keypad. A "Data:" prompt will appear at the bottom of the display, with an entry box to its right. As keys are pressed, the entered data will be displayed inside the entry box.

When the complete ID has been entered, press the ID  key to terminate the entry. The ID value will be shown at the bottom left of the display and will be available for printing.

To clear the ID field, press the ID key and when the previous ID value is displayed in focus in the entry box, press the CLEAR key .

3.4.8. Time and Date

Select the TIME & DATE menu item in the **Terminal > Region** menu and press ENTER to display the Set Time & Date screen (Figure 3-4). When the time is set, seconds are set to 0.

Depending on the terminal's time and date format settings, the following values can be entered. Time and date formats, including date field separators, are configured in setup at **Terminal > Region > Format Time & Date**.

Unless otherwise noted, all values are numeric entries:

Hour, AM/PM (if 12-hour time selected)
Minute
Day
Month (selected from a list)
Year

Although the format for the time and date can be selected according to local preferences (in Setup at **Terminal > Region > Format Time & Date**), the use of a timestamp in log files is not selectable. Timestamp formats are always fixed as:

Time: HH:MM:SS stored in 24 hour format (for example, 10:01:22 PM becomes the fixed format time 22:01:22)

Date: YYYY/MM/DD (for example, July 23, 2005 becomes the fixed format date 2005/07/23)

3.4.9. Totalization

Knowing how many weighing transactions were performed and how much material was processed during a particular period of time is useful information for many weighing applications.

The IND246 terminal provides both grand total (GT) and subtotal (ST) registers and counters. Counters have a limit of 1,500,000 and registers will accumulate up to 11 digits of weight, including any digits to the right of the decimal point. For example, a scale programmed for 500 x 0.1 kg will accumulate weight values up to 9999999999.9 (11 total digits). If either of these limits is exceeded, an error message will display and the totals must be reset before additional weights or counts will be added.

3.4.10. Alibi Memory

The Alibi Memory stores transaction data that can be retrieved in order to verify transaction information.

Information stored in the Alibi Memory includes:

- Transaction counter value
 - Date and time of transaction
 - Gross, net, and tare weights including units of measure
- If the IND246 terminal has been programmed as "approved", Alibi Memory enabling or disabling is only accessible if the security switch (SW1-1) is in the OFF position.

3.5. Applications

Each of the five applications is accessed by pressing the FUNCTION key . When this key is pressed, the terminal will leave normal weighing mode and enter whichever application mode is selected in setup at **Application > Function Key > Assignment**. Press the FUNCTION key again to return to normal weighing mode.

Chapters 3 through 7 detail the operation of each application. Appendices D through H include setup steps required to prepare for operation in each application.

3.5.1. Animal Weighing

The Animal Weighing application provides the ability to calculate and display an average weight value over a user-defined sampling time period. This is useful when the weight data is constantly unstable as in the case of weighing live animals such as livestock or lab animals. The application provides the following:

- Simple, one key operation
- Prompts for start of weighing cycle
- Weight averaged over variable sampling time period
- Display of remaining time in cycle
- Final average weight display and print



Figure 3-11: Animal Weighing Application Screen

3.5.2. Checkweighing

The Checkweigh application provides the ability to compare weight on the scale to a stored target weight, while indicating a comparison status. Three zones are supported in the – **Under**, **OK** and **Over**.

The IND246 display indicates the Over/Under status graphically. Three discrete outputs can be configured for control of external lights, or a similar device, to indicate the current status of the weight comparison.



Figure 3-12: Checkweighing Application Screen

3.5.3. Counting

The Counting application offers the following capabilities:

- Variable sample selection that allows a numeric sample quantity to be entered via the numeric keypad.
- A prompt-based mode of operation.
- Direct entry of an average piece weight, using the numeric keypad.
- Accumulation by user-defined ID.

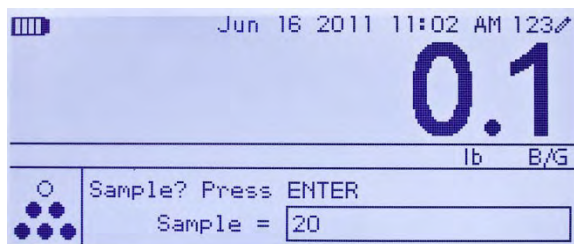


Figure 3-13: Counting Application Screen

3.5.4. Peak Weight

The Peak Weight application provides the ability to:

- Display the peak weight value from the current weighing cycle.
- Operate in a single weigh cycle mode.
- Operate in a multiple weigh cycle mode in which multiple transactions are recorded in a sample run. The maximum, minimum and average weight values are recorded over the multiple weigh cycles of the sample run.

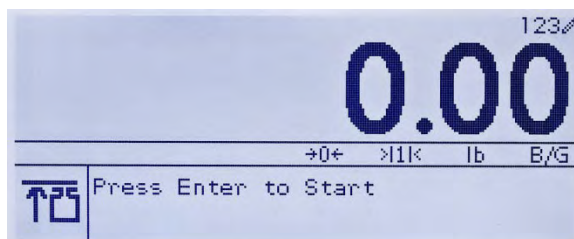


Figure 3-14: Peak Weight Application Screen

3.5.5. Vehicle Weighing

The Vehicle Weighing application provides two special modes of operation

Temporary ID weighing 

Permanent ID weighing 

These modes support the various methods of storing, retrieving and printing weights from truck scales.

Each mode can be separately enabled in setup, so that either or both of them is available. In this case, pressing the FUNCTION key enters the first enabled vehicle weighing mode. The next press of the FUNCTION key *either* returns to normal weighing mode *or* (if the mode is enabled) enters the second vehicle weighing mode. From here, a further press of the FUNCTION key will return to normal mode.

Once a Vehicle Weighing mode is selected, an icon representing the selected mode will appear in the lower left corner of the display.

In addition to these two special modes, the terminal provides the ability to print gross weights, which are not included in any of the special features of the modes above. This is done in the normal weighing mode, and is called Quick Print.

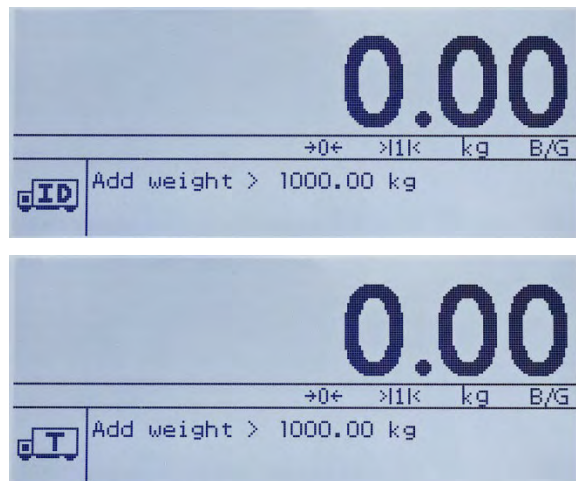


Figure 3-15: Vehicle Weighing Application Screens – Permanent ID (top) and Temporary ID (bottom)

4 Configuration: Terminal

This chapter provides information about how to configure the IND246 and IND246 POWERCELL terminal for the required application. It describes access to the setup mode, where functions can be enabled, disabled, or defined by entering parameter values in specific setup screens.

4.1. Entering Setup Mode

The configuration of the IND246 terminal is accessed by pressing the MENU key  to access the OPERATOR menu. Use the navigation keys to highlight the SETUP icon  and press ENTER or press the number on the keypad that is shown to the left of the SETUP icon .

4.2. Security

If password security has been enabled, a login screen (Figure 4-1) displays and the user must enter the correct password in order to advance into setup. A single password of up to 6 digits can be programmed. If enabled, the password will be prompted automatically when the setup mode is accessed. The correct password must be entered in order to access the setup mode. (See the Security section in Chapter 3, **Operation**, and the Configuration Options, Terminal, User section of this chapter for further information about password setup and security.) To return to the OPERATOR menu without entering any login information, press the LEFT navigation key.

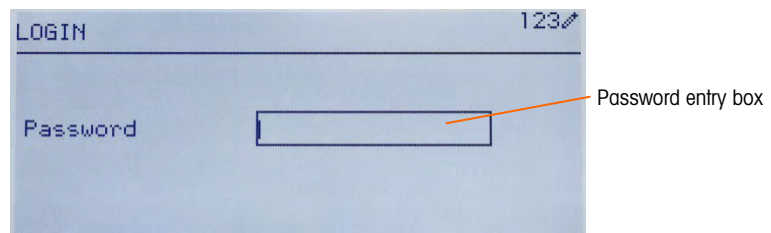


Figure 4-1: Login Screen

To enter a password:

1. With the Password entry field in focus, use the numeric keys to enter the password.
2. Press the ENTER key. If the password is correct, the terminal will enter setup mode, and the setup menu will display. If the password is not valid, the display returns to the Operator Menu.

4.3. Exiting Setup Mode

To exit the setup mode and return to the OPERATOR menu, press the LEFT arrow key until the OPERATOR menu reappears.

If focus is inside an entry or selection box in setup, the ENTER key must be pressed to complete the selection before the LEFT arrow key will allow exit from setup.

4.4. Setup Menu Structure

When setup is first entered, All five main branches are displayed as shown in Figure 4-2 with focus (reverse video) shown on the SCALE branch.

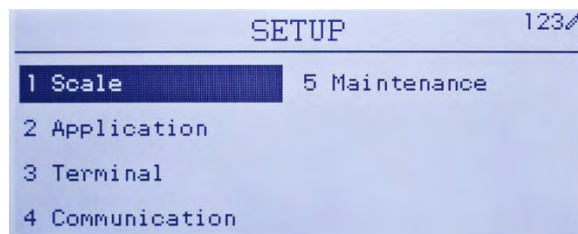


Figure 4-2: Major Branches in Setup

4.4.1. Navigation

Each display of setup branches will include one branch shown in reverse video. This indicates the branch that has "focus". The display of each setup branch will also include a number shown to the left of it. Navigation to a specific branch can be done two different ways.

- Traditional: Press the UP-DOWN-RIGHT navigation keys to move focus to the desired branch, then press ENTER.
- Shortcut: On the numeric keypad, press the number shown to the left of the desired branch.

4.4.2. Setup Page

Whichever navigation mode is used, the selected setup page will display. The setup page provides access to menus with data fields, where parameters can be viewed, entered or modified, to configure the terminal to meet specific application function needs.

Figure 4-3 shows an example of a typical setup page. Each parameter will have a label describing the feature and either an entry box or selection box for entry of a parameter value. The shortcut method of navigation is not supported on setup pages so traditional navigation must be used. Navigate from parameter to parameter by using the DOWN and UP keys then press ENTER to move focus into the entry or selection box.

SCALE\CAPACITY&INC	
Primary Unit	kg
# of Ranges	2
> < Capacity	50 kg
> < Increment	0.01 kg

Figure 4-3: Typical Setup Page

Each setup page can display up to four parameters. When a menu includes more than four parameters, a second page is used, indicated by a scroll bar at right. In this case, when focus is on the last parameter, press DOWN to display the next set of parameters. Figure 4-4 illustrates a two-page menu.

Field label with focus

TERMINAL\DISPLAY	
Screensaver	10 min.
Backlight Timeout	10 min.
Auto off Timer	Disabled
System Line	Both

Scroll bar indicating first setup screen

Field label with focus

TERMINAL\DISPLAY	
Tare Display	Active
Adjust Contrast	

Scroll bar indicating second setup screen

Figure 4-4: Example of Multiple Setup Pages

4.4.2.1.

Data Entry

Press the ENTER key to move the focus from the parameter label to either the selection box or data entry box where data is to be entered or edited (see Figure 4-5). If the field values are presented in a selection box, the current selection will have focus when the ENTER key is pressed.

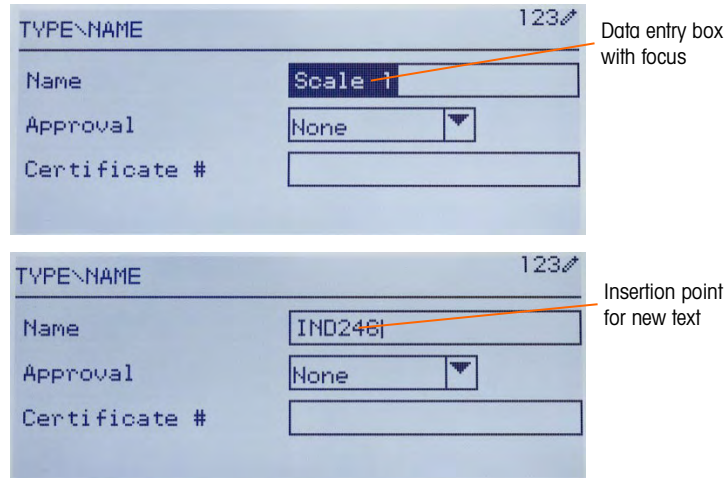


Figure 4-5: Setup Screen of Standard IND246: Field Contents Select (top) and New Data Entered (bottom)

To change the field value in a selection box:

1. Press the UP and DOWN navigation 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 parameter label.
3. Note that if the DOWN navigation key is pressed at the end of a list or the UP navigation key is pressed at the beginning of a list, the list will “wrap around” to the opposite end of the list.

When focus moves into an entry box, the numeric/alpha indicator at the far right of the system line **123** will indicate the current entry mode. If another entry mode is desired, press the SHIFT key  and the numeric/alpha indicator will change.

To change the field value using alphanumeric characters:

1. When a data entry box is first entered, the previous data (if present) is in focus. To replace previous data, use the numeric keypad to enter the desired alphanumeric value. For details, refer to the **Entering Alphanumeric Data** section of Chapter 2.

OR

Press the LEFT and RIGHT navigation 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 CLEAR key  once for each character to be deleted.

2. Press the ENTER key to accept the entered alphanumeric 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, with focus on one of the parameter labels and not inside an entry or selection field, press the LEFT navigation key. The previous level of the setup menu displays with the focus on the branch for the setup screen that was exited.

4.5. Configuration: Overview

An overview of the setup menu structure is provided in Figure 4-6. This shows all setup pages in the terminal’s configuration, except branches that application specific, which are described in Chapter 4. Note that some branches appear only in the IND246 POWERCELL version.

Details for each of the five major branches in setup are provided in the sections following the overview. Use this information to program the IND246 for the required application.

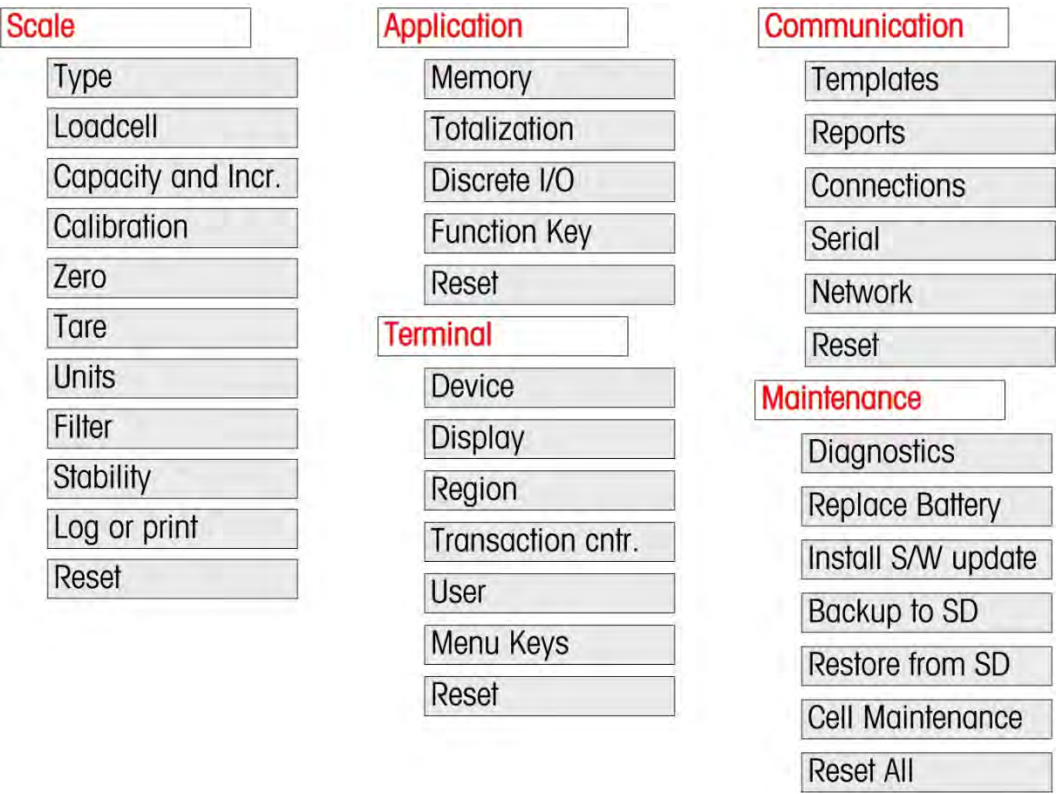


Figure 4-6: IND246 Setup Menu Structure – Overview

4.6. Configuration: Scale

- Note that some branches and parameters are present only in the IND246 POWERCELL version.
- If the metrology switch is in the approved position (SW1-1 = ON), access to certain parameters in the Scale branch is restricted. These parameters can be viewed but cannot be changed when the scale is "sealed".

4.6.1. Type

The Type screens permit the entry of basic information about the attached scale, including:

- Scale name
- Type of scale
- Number of attached load cells
- Approval region
- Weights and Measures approval certificate number

The LEFT navigation key returns the display to the setup menu.

4.6.1.1. Name

The Name field enables entry of the scale identification. Enter the scale name (an alphanumeric string of up to 20 characters) in the Name entry box. This name will then be available as a selectable field in a print template.

4.6.1.2. Scale Type

Select the type of POWERCELL load cells connected to the terminal. The choices are:

- POWERCELL PDX
- POWERCELL GDD
- POWERCELL SLB615D
- POWERCELL SLC611D

4.6.1.3. # of Load Cells

The number of load cells connected to the terminal.

4.6.1.4. 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**
- **Argentina**
- **Australia**
- **Canada**

- OIML
- Sri Lanka (POWERCELL ONLY)
- USA

If an approval for USA, OIML, Canada or Australia is configured and the metrology security switch, SW1-1, is set to ON, access to metrological parameters in the Scale setup branch will be limited to view only.

If the approval is configured for Argentina, and the metrology security switch SW1-1 is set to ON, access to the entire setup menu is prohibited. If an attempt is made to access the setup menu, a message will display: **Access denied. Scale is approved.**

When an approval region is selected, the terminal will require that SW1-1 be turned ON before setup can be exited. If an approval is selected and SW1-1 is not ON, an error message of [Err 0001] will appear when trying to exit setup.

4.6.1.5. Certificate

The Certificate field enables entry of the W&M certificate number for the region. This data is shown on the Information Recall screen along with other approval information. Enter the certificate number (an alphanumeric string of up to 16 characters) in the entry box.

4.6.2. Load Cell

The Load Cell screen provides access to parameters specific to the POWERCELL PDX, GDD and SLC611D load cells.

The parameters are:

- Single Cell Address
- Manual Address
- Shift Adjust
- Shift Adjust Single

The load cell screens are used to address the POWERCELL PDX, GDD or SLC611D load cells and perform a shift adjustment. There are two different methods provided to address the PDX or GDD load cells. Refer to Table 4-1 as a guide as to which one to use.

Table 4-1: Addressing Method

Cell Address Method	Description
Single Cell Addressing	This procedure would typically be used after the replacement of a cell, off-site testing or pre-installation when there is no cell-to-cell cable available. It typically is used to discover a single connected cell's serial number and node address. During an actual on-site installation when many load cells are already connected in the network, or when installing a new scale, the Manual Address procedure should be used.
Manual Address	Typically, this procedure is used when installing a new scale with load cells that have the factory default node address. The serial number and location of each cell must be known.

4.6.2.1. Single Cell Address, Manual

- When auto-addressing a single new SLB615D, refer to section 错误!未找到引用源。 .

Use the Single Cell Address step to reassign the node address of a single connected load cell identified by its serial number or to its factory default node address of 125. This procedure would typically be used after the replacement of a cell.

Follow this procedure to perform a single cell address:

1. The initial screen prompts for the connection of the load cell.
2. Make sure the PDX or GDD cell that needs to be addressed is connected and press ENTER to begin the process, or the LEFT arrow to exit. The display indicates that load cell discovery process has begun, and then displays the cell's address.
3. When this discovery process is completed, the terminal will display the serial number and node address of the first cell it discovers. The node address of the cell can now be reassigned
4. To quit the addressing process or return to the Single Cell Address Start screen, press the LEFT arrow. Otherwise, enter the required address in the Node entry box and press ENTER to start the addressing process.
5. Press the LEFT arrow to return to the setup menu tree.

4.6.2.2. Single Cell Address, Automatic

When installing a single new load cell which has a factory default cell address, the cell can be replaced without manually addressing it to the missing node. After the cell has been replaced, the IND246 displays a prompt indicating that the new cell has been found, and requesting operator confirmation. Once the replacement is confirmed by selecting **Yes**, the system automatically assigns the missing node address to the new cell. If the user declines the prompt by selecting **No**, a prompt appears offering the option to assign a different node address.

This method cannot be used if more than one cell is replaced, or if the replaced cell does not have the factory default load cell address.

- If the terminal is in Weights and Measures sealed mode, the automatic addressing procedure cannot be used without applications without breaking the seal.

4.6.2.3. Manual Address

- Note that, when a new PowerDeck base with SLB615D load cells is installed, the cells are already uniquely addressed 1 through 4, clockwise from the corner where the home run cable exits – for example:



Figure 4-7: PowerDeck 4-Cell Addressing Sequence

Use the Manual Address step to program the node address of every load cell connected in a network. Typically, this procedure is used when installing a new scale with load cells that have the factory default node address of 125. To address the PDX or GDD cells manually, follow this procedure:

1. Before starting the addressing process, record the serial number of each cell and where each cell is arranged on the scale. Determine which node address should be assigned to each of the cells.
2. The initial screen displays a message indicating that the process will take several minutes.
3. Make sure all the PDX or GDD cells are connected to the network and press ENTER.
4. The display will indicate that the process has started.
5. During the procedure, the terminal will automatically assign a unique node address to each of the cells discovered. The addresses are assigned arbitrarily by the terminal. After the process is complete, the serial number and node address for each cell is displayed as the Load Cell View.
6. Review the list of serial numbers and location created in Step 1. If the node address preset by the terminal is not appropriate for a particular serial number, press the UP or DOWN arrow key to select the serial number and press ENTER.
7. After pressing the ENTER, the Load Cell Node editing screen will appear.
8. Press the LEFT arrow key to return to the previous screen if no changes are required. To change the node address, enter the required address in the Node entry box and press ENTER twice to start the addressing process.
9. The display indicates that addressing is in progress by showing the message Addressing Cell.
10. After the address has been successfully changed, a message of Addressing Complete is displayed. Press ENTER to return to the Load Cell View.
- If the node address entered by the user is an existing address already assigned to another load cell, the terminal will complete the addressing as requested, and will reassign the original address of the selected cell to the other load cell. This resolves any potential conflicts by swapping the addresses between the cells.
11. Repeat steps 5 – 9 to address another cell, or press the LEFT to return to the Scale/Load Cell menu.

4.6.2.4. Shift Adjust

Depending on the location of the test weight on the scale, small mismatches in mechanical and electronic gain of the load sensing paths can cause the same test weight to produce slightly different readings. The IND246 POWERCELL provides two types of adjustment – adjustment by individual cells or adjustment by pairs of cells.

The **Shift Adjust by Cell or Pair** parameter is preset to Cell and cannot be changed when fewer than four POWERCELL load cells are used.

4.6.2.4.1. Adjust by Cell

Adjustment by Cell adds a factor to each load cell's output to compensate for the slight differences between them. The scale will then output the same weight value regardless of the physical location of the weight on the scale.

4.6.2.4.2. Adjust by Pair

Adjustment by Pair ensures a constant reading from the scale regardless of where the load is placed on the long axis between pairs of cells – for instance, in vehicle weighing applications. Before beginning the shift adjustment procedure, select whether the adjustment will be done by cell or by pair. The procedure for shift adjusting by pair of cells is listed below. The procedure for shift adjusting by individual cell follows the same sequence, but cells are read and adjusted one at a time.

For either case, enter setup and access **Scale > LoadCell > Shift Adjust**.

The procedure for shift adjusting by pair of cells is:

1. In the **Adjust By** selection list, select **Pair** and press the ENTER key.
2. The display shows the space on the first two lines for the number of counts for each cell. A prompt will appear: **Empty scale, press ENTER**. Empty the scale then press the ENTER key.
3. The display will indicate that the initial reading is taking place by showing the message **Getting Counts**.
4. After the initial zero reading is complete, follow the on-screen prompt of **Press ENTER after putting a weight on load cell 1&2** (where **1&2** identifies the first cell pair being adjusted). The test load should be centered between the specified cells.
5. An on-screen message will indicate that the terminal is **Getting Counts**. The Cell Counts lines will change to reflect the new readings from the load cells, and the prompt will show **Press ENTER after putting a weight on load cell 3&4** (where **3&4** identifies the next cell pair).
6. Move the test load from the previous pair of cells to the next pair keeping the load centered between the cells. Press ENTER to continue.
7. The display will show **Getting Counts**.
8. Repeat steps 5 through 7 until all cell pairs have been adjusted. An on-screen message of **Adjust OK, press ENTER to return** will then be displayed.
9. Press ENTER to return to the Scale/Load cell menu.

4.6.2.4.3. Shift Adjust Single

This procedure allows you to quickly adjust the shift values for a single pair or single cell after a cell has been replaced on the scale. A complete shift adjust (previous setup branch) is more accurate and should be used if more than one POWERCELL cell has been replaced on the scale.

The Shift Adjust Cell or Pair branch is accessible based on if Cell or Pair was selected in setup at **Scale > Load Cell > Shift Adjust**

Based on the selection made in the **Shift Adjust > Shift By Cell or Pair** parameter (step 1 above), the terminal allows adjustment by either Cell or Pair. The following example describes the procedure when adjusting by cell. The adjustment by pair follows the same procedure except the terminal will prompt for weight to be placed between a pair of cells instead of a single cell.

To do a single cell/pair shift adjust, enter setup and access **Scale > Load Cell > Shift Adjust Single**.

To adjust a specific cell (in this example, cell 3):

1. Select the cell to adjust, then press ENTER to start. An on-screen prompt will appear: **Empty scale, press ENTER**.
2. The display will display **Getting Counts**, to indicate that the initial reading is taking place.
3. After the initial zero reading is complete, follow the on-screen prompt: **Press ENTER after putting a weight on load cell # 3** (or the address of the current cell being adjusted).
4. An on-screen message will indicate that the terminal is **Getting Counts**. The cell count lines will change to reflect the new reading from the load cell, and then the prompt will appear: **Press ENTER after putting a weight on Load Cell 4**.
5. Move the test load from the current cell to the next prompted cell, then press ENTER to continue.
6. The display will indicate that the cell is being read: **Getting Counts**.
7. When the process is complete, the display will show **Adjust OK**. Press ENTER to return. Press ENTER to return to the setup menu tree.

4.6.2.4.4. Shift Adjust Values

To view the Shift Adjust values in setup, access **Maintenance > Diagnostics > Scale > Shift Adjust**.

4.6.3. Capacity and Increment

Use the Capacity and Increment setup screen to select primary units, set the number of weighing ranges, and the scale capacity and increment size.

4.6.3.1. Primary Units

Set the primary units from the selection box choices, which include:

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

4.6.3.2. #Ranges/Increments

The IND246 can be configured to use one or two ranges, or (in the case of IND246 POWERCELL) one or two intervals. Each range or interval can be assigned its own increment. With multiple **ranges** configured, the increment changes when the weight exceeds the capacity of Range 1, and remains the same until the weight returns to within the zero tolerance. With multiple **intervals** configured, the increment changes when the weight exceeds the capacity of Interval 1, and returns to the interval 1 increment when the weight falls below the value defined as the start of Interval 2.

Options are:

- 1
- 2 Intervals
- 2 Ranges

4.6.3.2.1. 1 Range

When **1** is selected the terminal functions with a single range, and the additional parameters available are:

- >I1< Capacity
- >I1< Increment

4.6.3.2.2. 2 Intervals (POWERCELL only)

In this case, the terminal functions with two ranges, each with its own increment. The increment size will change when the weight reaches the second range. In addition to the **Range 1 Capacity** and **Increment** parameters, the following two settings are available:

- >I2< Capacity
- >I2< Increment

4.6.3.2.3. 2 Ranges

In addition to the **Interval 1 Capacity** and **Increment** parameters, the following two settings are available:

- >I2< Capacity
- >I2< Increment

4.6.3.2.4. >I1< Capacity

Specify the weight capacity for range 1. If only one range is enabled, this will be the scale capacity and the display will show an overcapacity graphic if the weight exceeds this value by more than five increments. If two ranges are enabled, this will be the weight at which the increment size changes from the range 1 increment size to the range 2 increment size.

4.6.3.2.5. >I1< Increment

Specify the increment size for weighing range 1. If only one range is enabled, this will be the increment size for the entire weighing range of the scale. If two ranges are enabled, this will be the increment used in the lower range.

4.6.3.2.6. >I2I< Capacity

Specify the weight capacity for range 2. If only one range is enabled, this parameter will not be shown. If two ranges are selected, this will be the scale capacity and the display will show an overcapacity graphic if the weight exceeds this value by more than five increments.

4.6.3.2.7. >I2I< Increment

Specify the increment size for weighing range 2. If only one range is enabled, this parameter will not be shown. If two ranges are selected, this will be the increment size for the second weighing range of the scale.

To use multiple range mode, the ratio of range 2 increment to range 1 increment must be less than 50.

4.6.4. Calibration

The Calibration screen enables entry of a GEO code adjustment value, linearity adjustment, and provides access to zero and span adjustments.

4.6.4.1. GEO Code

Enter the GEO code for the appropriate adjustment value for the current geographical location. GEO codes are numbered 0–31. (Refer to Appendix D.)

When the load cell type is SLB615D, and a new PowerDeck is connected to the terminal (or after a Master Reset is performed, or the terminal's main PCB is replaced), and the terminal is not in Weights and Measures sealed mode, the terminal will automatically prompt for the local GEO code. It will then read the calibration data from the load cells, and the system will be ready for use.

4.6.4.2. Linearity Adjustment

Linearity Adjustment is used to adjust the maximum deviation between the scale indication and the linear value from zero to max. capacity, linearity adjustment with hysteresis compensation is recommended for better linearity in applications involving discharge or loss-in-weight.

The menu settings noted affect the calibration steps.

Disabled [default]	Use only zero and one span point (test load #1)
3-point	Use zero, midpoint (test load #1), and highpoint (test load #2)
4-point	Use zero, lowpoint (test load #1), midpoint (test load #2), and highpoint (test load #3)
5-point	Use zero, lowpoint (test load #1), midpoint (test load #2), mid-highpoint (test load #3), and highpoint (test load #4)
3-point with Hysteresis	Use zero, midpoint (test load #1), and highpoint (test load #2), then unload to midpoint (test load #1)
4-point with Hysteresis	Use zero, lowpoint (test load #1), midpoint (test load #2), and highpoint (test load #3), then unload to midpoint (test load #2) and lowpoint (test load #1)
5-point with Hysteresis	Use zero, lowpoint (test load #1), midpoint (test load #2), mid-highpoint (test load #3), and highpoint (test load #4), then unload to mid-highpoint (test load #3), midpoint (test load #2), and lowpoint (test load #1)

4.6.4.3.

Set Zero

The Set Zero function in the Calibration setup triggers an independent operation to reset the zero condition of the scale. A status message displays when this function is accessed that directs the user to empty the scale and press the ENTER key. 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.

- If motion is present during the zero capture process, the terminal will average the weight readings then display a message indicating unstable weight values were used. This message must be acknowledged to save the values.

4.6.4.4.

Set Span

The Set Span function in the Calibration setup initiates a sequence to capture span that can be performed independently of capturing zero.

To capture span:

1. If 3-point, 4-point or 5-point linearity adjustment method is selected:
 - a) With focus on the Set Span label, press ENTER. The Capture Span setup screen displays.
 - b) If necessary, the pre-load weight value can be directly modified in the input box. Ensure that each new input pre-load weight value is higher than the previous pre-load weight value.
 - c) Press ENTER key to confirm the modification of the pre-load weight. Continue to press ENTER key until all pre-load weight values are confirmed.
 - d) Place the pre-load weight on the scale platform according to the screen prompt. If the weight is placed above the prompt value, it cannot be re-reached by unloading the weight, and calibration needs to be performed again.
 - e) Press ENTER key to start the calibration of the loading point of the pre-load weight.
 - f) The loading point calibration progress will be displayed on the screen during the calibration process.
 - g) If the capture span operation was successful, a verification message that reads "Capture Span OK" displays. Press the LEFT navigation key to return to the Calibration screen.
2. If 3-point with hysteresis, 4-point with hysteresis or 5-point with hysteresis linearity adjustment method is selected:
 - a) For specific adjustment operations, refer to the **above** 3-point, 4-point or 5-point linearity adjustment method. 3-point with hysteresis, 4-point with hysteresis or 5-point with hysteresis is based on the corresponding linearity calibration and adds unloading calibration to obtain better linearity performance.
 - b) When unloading, ensure that the scale platform is gradually unloaded to the prompted pre-load weight. If the weight is unloaded below the prompt value, the prompt value cannot be reached again by adding weight, and recalibration needs to be performed.

4.6.5. Zero

This section provides access to Auto Zero Maintenance (AZM) settings, under zero blanking, power-up zero, and pushbutton zero parameters.

4.6.5.1. Auto Zero

AZM is a means of tracking zero when the scale is empty. AZM compensates for conditions such as terminal or load cell drift or debris on a scale platform.

Use the Auto Zero setup screen to enable auto zero for gross weighing or gross and net weighing, or to turn auto zero off.

4.6.5.2. Auto Zero Range

Set the auto zero range for the number of divisions (d) around the current zero setting in which auto zero will operate. Selections include 0.5, 1, 3 and 10 d.

4.6.5.3. Under Zero Blanking

When Under Zero Blanking is set to **Disabled**, the terminal displays a negative weight as far below zero as possible when the weight goes under gross zero. Other options are:

- | | |
|----------------------|--|
| 20d | The terminal displays a negative weight until 20 divisions below zero, and then blanks the display. |
| 20d with Zero | The terminal displays a negative weight until 20 divisions below zero, and then blanks the display. The display remains blanked until the scale is manually zeroed. This feature is required for approval in Thailand. |

4.6.5.4. Power Up Zero

A Power Up setting of **Disabled** enables the terminal to save and reuse the last zero reference weight after a power cycle so it returns to the same gross or net weight value. If a power up range of **+/-2%** or **+/-10%** is selected, the terminal tries to capture zero upon power up.

For example, if the setting for Power Up Zero is set at 2%, Power Up Zero will only occur when the weight reading on the scale is within +/- 2% of the original calibrated zero condition.

- If Power Up Zero capture is enabled and the weight on the scale is outside of the zero capture range, the display will indicate [E E E] until the weight is removed and zero is captured.

4.6.5.5. Pushbutton Zero

If Pushbutton Zero is **Disabled**, the front panel ZERO pushbutton will not operate to capture a new zero reference point. If a range of **+/-2%** or **+/- 20%** is selected, pushbutton zero will operate within the selected range to rezero the scale.

- If Pushbutton Zero is **Disabled**, execution of a remote Zero is still possible via SICS or CPTZ commands from a PC and a discrete input command.

For example, if the setting for Pushbutton Zero is set at +/-2%, the Pushbutton Zero can only be used when the weight reading on the scale is within +/- 2% of the original calibrated zero condition.

4.6.6. Tare

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

Three setup screens are available to configure tare:

Tare Types Auto Tare Auto Clear

4.6.6.1. Tare Types

Use the Tare Types setup screen to enable or disable pushbutton tare, keyboard tare, and net sign correction.

4.6.6.1.1. Pushbutton Tare

When pushbutton tare is **Enabled**, the TARE scale function key **→T←** can be pressed when an empty container is on the scale to determine tare. The terminal displays a zero weight and net mode. When the container is loaded and placed back on the scale, the terminal displays the net weight of the contents.

- If Pushbutton Tare is **Disabled**, execution of a remote Tare is still possible via SICS or CPTZ commands or from discrete input command.

4.6.6.1.2. Keyboard Tare

When keyboard tare is **Enabled**, the known value for the empty weight of a container (tare) can be entered manually. The terminal will then display the net weight of the contents of the container. Keyboard tares are automatically rounded to the closest display division.

4.6.6.1.3. Net Sign Correction

Net sign correction enables the IND246 terminal to be used for both shipping (inbound empty) and receiving (inbound loaded) operations. If net sign correction is **Disabled**, the terminal will display and print a negative net weight when the tare weight is larger than the gross weight. 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 the printed data output and the displayed weight. Continuous data output will continue to show a negative net weight value.

Net sign correction will operate with pushbutton tare and preset tare. An example of weight values with and without net sign correction is shown in Table 4-2. In this example, the tare register value is 53 kg and the live weight on the scale is 16 kg.

Table 4-2: Weight Values With and Without Net Sign Correction

Printed and Displayed	Net Sign Correction	
	Disabled	Enabled
Gross	16 kg	53 kg
Tare	53 kg	16 kg
Net	–37 kg	37 kg

- When net sign correction is enabled, the tare weight field in the recall display will be labeled with the letter "M" to indicate "Memory" instead of "T" or "PT".

4.6.6.2. Auto Tare

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

4.6.6.2.1. Auto Tare

When auto tare is **Enabled**, the tare weight is taken automatically when a container above the threshold weight is on the scale and settles to no-motion. Set to **Disable** if automatic tare will not be used.

4.6.6.2.2. Tare Threshold Wt.

When weight on the scale platform exceeds the tare threshold value and settles to no-motion, the terminal automatically tares.

4.6.6.2.3. Reset 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, depending upon the programming of motion checking. The reset threshold weight must be less than the tare threshold weight.

4.6.6.2.4. Motion Check

Enable the motion check setting to prevent auto tare reset trigger from occurring when the scale is in motion. When enabled, the scale must detect a non-motion condition below the reset value to reset the auto tare trigger.

4.6.6.3. 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 checking for auto clearing of tare.

4.6.6.3.1. Auto Clear Tare

To clear tare automatically when the scale returns to below the threshold weight, enable the auto clear tare setting.

4.6.6.3.2. Clear Threshold Wt.

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

4.6.6.3.3. Motion Check

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

4.6.6.3.4. Clear After Print

The Clear After Print field displays only when Auto Clear Tare is enabled. To clear tare automatically after printing, **Enable** the clear after print setting. Select **Disable** to not clear tare after a print.

4.6.7. Units

This setup screen enables the selection of a second unit.

4.6.7.1. Second Unit

Use the Second Unit selection box to select a second weighing unit or to select none. The weight will be converted from primary to the selected secondary unit when the Units Switch key is pressed.

Available weighing units include:

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

4.6.8. Filter

The IND246 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.

4.6.8.1. Low Pass Filter

Low Pass filter selections include **Very Light**, **Light**, **Medium** (default) and **Heavy**. This parameter sets the amount of filtering that is applied to the weight. The heavier the filter applied, the more stable the weight will be, but the longer the settling time required for the scale.

4.6.8.2. Stability Filter

The stability filter works in conjunction with the standard low pass filter to provide a more stable final weight reading. The stability filter should only be used in transaction weighing applications, since the nonlinear action of the filter switching may cause inaccurate cutoffs in filling applications. The stability filter can be **Enabled** or **Disabled** on this setup screen.

4.6.9. Stability

The IND246 terminal includes a stability detector (weight in motion). The Stability setup screen enables setting a motion range, no-motion interval and timeout period.

4.6.9.1. Motion Range

Sets the motion range of the weight value (in divisions) that the weight is permitted to fluctuate and still have a no-motion condition. Select a value from **Disabled**, **1d** or **3d**. If the motion range is disabled, motion detection is disabled and the scale will never indicate motion.

4.6.9.2. No-motion Interval

The no motion interval defines the amount of time (seconds) that the scale weight must be within the motion range to have a no-motion condition. Select a value from **0.3**, **0.5**, **0.7** or **1.0** seconds. A shorter interval means that a no-motion condition is more likely, but may cause the terminal to indicate no-motion while there is still a small amount of motion on the scale.

4.6.9.3. Timeout

Defines the period (in seconds) after which the terminal stops attempting to perform a function that requires a no-motion condition (such as a zero, tare or print command) and aborts the function. This timeout is used regardless of the source of the command such as the keypad, discrete input or SICS. Select a values from **Disabled**, **3**, **10** or **30** seconds, the default value being 3. A smaller value means that less time will be used to check for no-motion before aborting a command. When disabled is selected, the terminal will abort the command if motion is detected.

4.6.10. Log or Print

The Log or Print setup branch 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.

The weight values entered are the gross weight values in primary units. Gross weight in primary units is used regardless of whether the IND246 is in Gross or Net mode and regardless of the units that are displayed.

4.6.10.1. Minimum Weight

The minimum weight setting is the threshold below which log or print functions will not initiate. A value of 0 permits printing when any weight value is shown (not blanked over capacity or under zero).

4.6.10.2. Interlock

Interlock prevents repeat logging and printing without a weight change. If **Enabled**, interlock requires that the weight reading be reset per the "Reset on" parameter setting (see below) and then settle to a weight greater than the minimum print value before responding to the next log or print request. If **Disabled**, multiple prints of the same weight are possible.

4.6.10.3. Automatic

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

If Automatic is set to **Disabled**, the Threshold Weight field does not appear and a print or log of data must be triggered manually.

4.6.10.4. Reset on

The resetting of auto printing or logging can be based on weight threshold or weight deviation values. Select **Return** (the weight must return to below this value to reset) or **Deviation** (the weight must change more than this value to reset) from the selection box and enter the weight value in the "Reset on" field.

If both "Interlock" and "Automatic" settings are disabled, the "Reset on" field does not display.

If "Reset on" is set to Deviation, The "Threshold Weight" and "Motion Check" fields do not display.

4.6.10.5. Threshold Weight

The Threshold Weight is the value above which an Automatic logging or printing of data can/will occur. Threshold Weight does not appear if “Automatic” is set to Disabled or if “Reset on” is set to Deviation.

4.6.10.6. Motion Check

Enable the motion check setting to prevent interlock and automatic log and print functions from resetting when the scale is in motion below the “Reset On” return point. Motion Check does not appear if “Reset on” is set to Deviation.

4.6.11. Scale Reset

To initiate a reset of the Scale branch, press the ENTER key. If the reset was successful, a verification message that reads “Reset Successful” displays. If the reset was not successful, an error message that reads “Reset Failure” displays. If the reset fails, try to initiate the reset again. If the reset continues to fail, contact a local METTLER TOLEDO representative for assistance.

Press the LEFT navigation key to exit without resetting.

- Scale reset does NOT include the reset of metrologically significant parameters – scale type, approval, weight units, capacity, increment, or calibration data. This data is reset only by performing a Master Reset.

4.7. Configuration: Application

4.7.1. Memory

Memory setup screens includes parameters for Alibi memory.

4.7.1.1. Alibi Memory

The Alibi Memory can be **Enabled** or **Disabled** in the selection box. Alibi memory is configured as a “ring” buffer that overwrites the oldest record when it reaches its memory limit. Each time a demand print is triggered, specific data fields are stored in Alibi memory. Alibi memory can hold approximately 60,000 transactions before it reaches its limit and begins overwriting old transactions. More detailed information about Alibi memory can be found in Appendix C, **Alibi Memory Structure**.

The use of Alibi Memory requires installation of an SD memory card. Attempts to generate a print transaction from the front panel without an SD card installed return a pop-up error message **SD card is not installed.**, while a print command issued serially or via an input will result in an **SD memory card not installed** message in the system line. The transaction counter will not increment.

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

- Date and time stamp
- Transaction counter value
- Gross, tare, and net weights and weight unit

- If the IND246 terminal has been programmed as “approved”, Alibi Memory enabling or disabling is only accessible if the security switch (SW1-1) is in the OFF position.

4.7.2. Totalization

Use the Totalization setup screen to select parameters for totalization operations, including which source to use as input for totalization, settings for grand totals and subtotals, and to enable or disable the conversion of second unit weights for totalization. When a demand print occurs, the selected weight field will be added to the totals register.

4.7.2.1. Mode

Select which source to use as input for totalization comparison – either **Displayed Weight** or **Gross Weight**. A selection of **None** disables totalization.

4.7.2.2. Clear GT on Print

The Grand Total can be configured to clear automatically after printing the Totals report. If Clear GT on Print is **Enabled**, the subtotal also clears automatically after printing the Totals report.

4.7.2.3. Subtotal

The Subtotal can be separately disabled while the GT continues to accumulate weights. Choose to either **Enable** or **Disable** the subtotal register.

4.7.2.4. Clear ST on Print

Clearing the subtotal on print and not clearing the grand total on print allows the subtotal register to totalize sub-sets of weighments and to be reset while the grand total continues to track the grand total of weight. Choose to Clear ST on Print or not by selecting **Enabled** or **Disabled** in the selection box.

4.7.2.5. Convert Weight

The total registers always store weights in primary units. If Convert Weight is **Disabled**, scale weights other than primary units are not accumulated. If Convert Weight is **Enabled**, then the weight is converted to primary units, then accumulated.

4.7.3. Discrete I/O

Discrete I/O setup menus allow the configuration of 2 inputs and 4 outputs. The Discrete I/O option must be installed to program this functionality.

4.7.3.1. Inputs

The Discrete Input menus display discrete input polarity and assignments for Input 1 and Input 2. The two Inputs are configured in the same way.

4.7.3.1.1. Polarity

The inputs can be programmed to accept either a **+ True** or **– True** polarity level as “ON”. The default is **+ True**.

4.7.3.1.2. Assignment

Options for input assignment are:

- None (default)
- Blank Display
- Clear Tare
- Print
- SICS – S
- SICS – SI
- SICS – SIR
- Tare
- Unit Switching
- Zero

4.7.3.2. Outputs

For each Discrete Output, menus permit an assignment to be selected from the following options:

- None (default)
- Center of Zero
- Motion
- Net
- Over Capacity
- Under Zero

4.7.4. Function Key

The Function Key setup allows selection of the application that will be active when the FUNCTION key is pressed. Only one application can be selected.

4.7.4.1. Assignment

Options for the assignment of the FUNCTION key are:

- Disabled (default)
- Animal Weighing
- Checkweighing
- Counting
- Peak Weight
- Vehicle

The next setup branches will vary based on the selection for the FUNCTION key assignment. Depending on the FUNCTION key selection, one of the following applications will be shown. If the FUNCTION key is disabled, none of the application setup branches will be shown and the next parameter will be the Reset function (refer to page 4-26).

For details on the setup, configuration and operation of each of these applications, please refer to Chapter 4, **Applications: Configuration and Operation**.

4.7.4.2. Auto Start

If the function key has been given an assignment, this parameter determines whether, when the terminal is powered on, the display will show the application. If **Disabled**, on startup the terminal will be in basic weighing mode.

4.7.5. Animal Weighing

The following parameters are used to configure the Animal Weighing application.

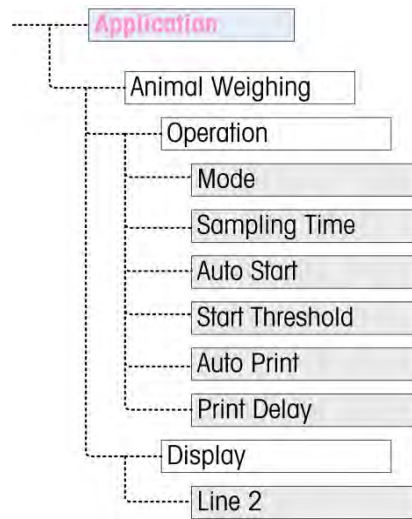


Figure 4-8: Application Menu – Animal Weighing

4.7.6. Counting

The following parameters are used to configure the Counting application.

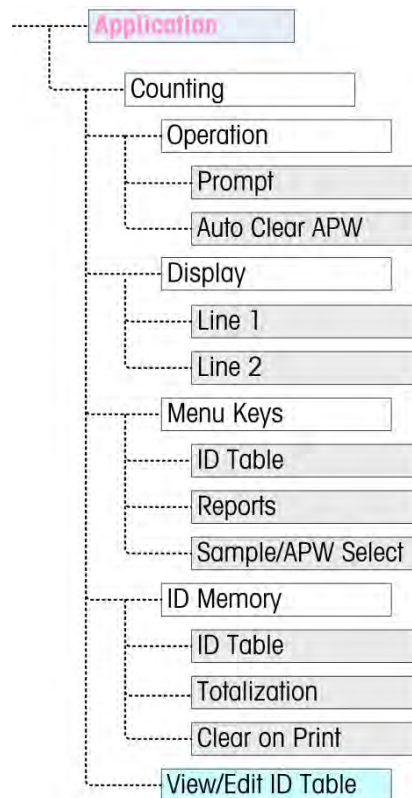


Figure 4-9: Application Menu – Counting

4.7.7. Checkweighing

The following parameters are used to configure the Checkweighing application.

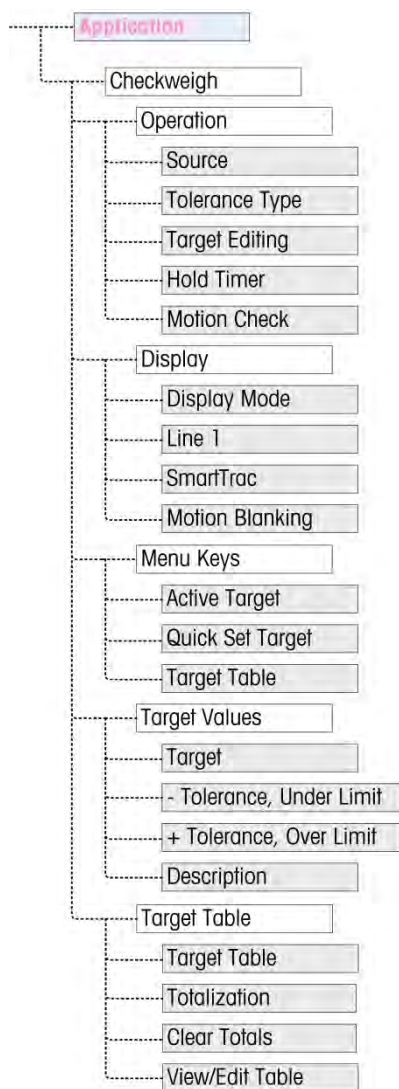


Figure 4-10: Application Menu – Checkweighing

4.7.8. Peak Weight

The following parameters are used to configure the Peak Weight application.

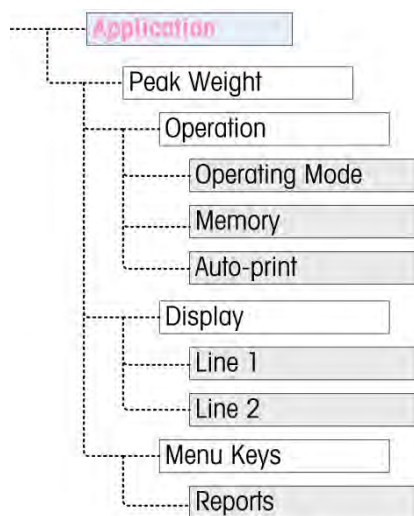


Figure 4-11: Application Menu – Peak Weight

4.7.9. Vehicle Weighing

The following parameters are used to configure the Vehicle Weighing application.

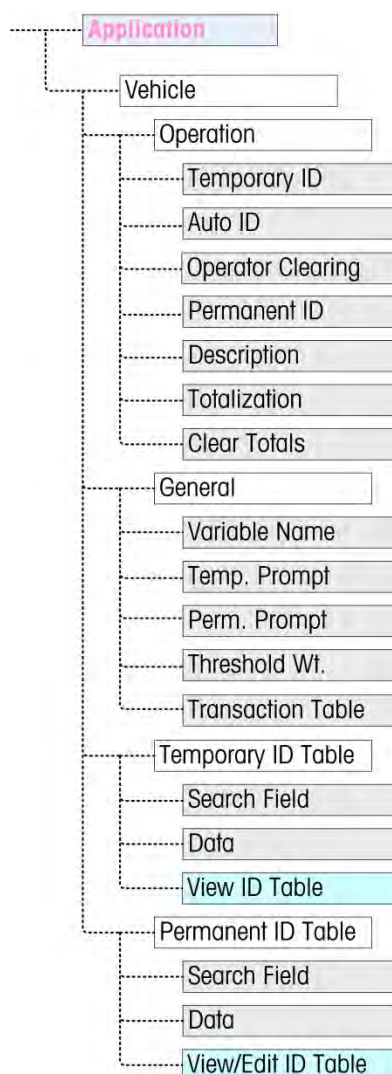


Figure 4-12: Application Menu – Vehicle Weighing

4.7.10. Reset

To initiate a reset of the Application branch, press the ENTER key. If the reset was successful, a verification message that reads "Reset Successful" displays. If the reset was not successful, an error message that reads "Reset Failure" displays. If the reset fails, try to initiate the reset again. If the reset continues to fail, contact a local METTLER TOLEDO representative for assistance.

Press the LEFT navigation key to exit without resetting.

- Application reset does NOT include the reset of information in Alibi Memory. This data can only be reset by selecting Maintenance, Reset All or a Master Reset.

4.8. Configuration: Terminal

4.8.1. Device

The Device setup screen enables the entry of the terminal's serial number and the keypad timeout value.

4.8.1.1. Serial Number

Use the alphanumeric keys to enter the terminal's serial number. The serial number is located on the data label on the back of the terminal. Press the ENTER key to accept the serial number entered.

4.8.1.2. Key Timing

Use the numeric keys to enter the timeout period, in 100 mS increments, for key-presses when making alphanumeric data entry.

The value sets the amount of time that a letter shown on the display can be changed (e.g. from **a** to **b** to **c**) by pressing the key again. Once the Key Timing value has elapsed, the selected letter is set and the next key press will initiate a new character or digit entry.

Values between 3 and 12 are normal. The shorter the time, the faster an entry can occur. The default value is **8**.

4.8.2. Display

Use the Display setup screen to set the screensaver and backlight timeouts, the auto off timer, what appears in the system line, select the tare display and adjust contrast of the display.

4.8.2.1. Screensaver

Select the number of minutes (**1**, **5**, **10** or **30**) that must elapse with no scale motion and no keypad activity before the screensaver is shown (replaces the view on the display screen). If motion is detected or any key is pressed, the screen saver automatically exits and its time is reset. A keystroke used to exit the screen saver mode is ignored for all other purposes.

A setting of **Disabled** in the Screensaver field will disable the screensaver.

4.8.2.2. Backlight Timeout

This parameter selects the amount of time that the backlight will stay "On" after no-motion is detected and no keys are pressed. Select between **Always On**, **Disabled (always off)**, **1 minute**, **5 minutes** or **10 minutes**.

4.8.2.3. Auto Off Timer

This feature helps conserve battery power by putting the terminal into a sleep mode by turning off the display after a certain amount of time has passed with no-motion and no key presses. Selections are **Disabled** (default), **10 minutes**, **30 minutes** and **60 minutes**. If this field is disabled, the terminal will never turn itself off automatically.

4.8.2.4. System Line

The system line is the top line of the display above the weight display. This step allows selection of what will be shown in the system line during normal operation. Choose between **Blank**, **Discrete I/O** status, **Time and Date** or **Both** Discrete I/O and Time and Date.

4.8.2.5. Tare Display

This step selects if the tare value will be shown below and to the left of the normal weight field when in the net mode. The selections are **Disabled**, **When Active** and **Always**. If Active is selected, the tare area on the display will be shown only after a tare has been taken and will be blank when the terminal is in the gross mode. If Always is selected, when no tare is present, the tare display will indicate a 0 tare value in the tare display area.

4.8.2.6. Adjust Contrast

This parameter accesses a screen where the display contrast can be adjusted. Press the **UP** navigation key to increase the contrast and the **DOWN** navigation key to decrease the contrast. Press the **LEFT** navigation key to exit the adjustment.

4.8.3. Region

The region setup screens enable configuration of the time and date format, the actual time and date values and language selection.

4.8.3.1. Format Time & Date

Selection boxes on this setup screen enable formatting of:

4.8.3.1.1. 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)

4.8.3.1.2. Date Format

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

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

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

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

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

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

4.8.3.1.3. Date Field Separator

/ (slash)

- (dash)

. (period)

(space)

None

4.8.3.2. Set Time & Date

Enter the hour, minutes, day, month, and year on this setup screen's text fields and selection boxes. 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.

4.8.3.2.1. Hour

Use the numeric keypad to enter the hour in the Hour field text box. If a 12 hour format was selected, use the AM/PM selection box to select AM or PM. The AM/PM selection box only displays if the time format is set to 12:MM or 12:MM:SS on the Format Time & Date setup.

4.8.3.2.2. Minutes

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

4.8.3.2.3. Day

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

4.8.3.2.4. Month

Use the Month selection box to select the month.

4.8.3.2.5. Year

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

4.8.3.3. Language

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

4.8.3.3.1. Menu Language

Use the Menu Language selection box to select the language for the operator menu and messages that display on the terminal. Choices are:

- English
- "F" Codes
- French
- German
- Italian
- Spanish

4.8.3.3.2. Setup Language

Use the Setup Language selection box to select the language to be used when the terminal is in the setup mode. If F-codes is selected, each setup parameter label will be replaced with an equivalent numeric code. Refer to Appendix B for a list of the F-code values. Choices are:

- English
- F-codes

4.8.4. Transaction Counter

The transaction counter is a seven-digit register that tracks the total transactions that are completed on the terminal. When the value reaches 9,999,999, the next transaction causes a roll-over to 0000001. Use the Transaction Counter setup screen to configure transaction counter operations.

4.8.4.1. Transaction Counter

Use the Transaction Counter selection box to **Enable** or **Disable** the transaction counter.

4.8.4.2. Edit Counter

Use the Edit Counter selection box to **Enable** or **Disable** manual editing of the next transaction counter value.

4.8.4.3. Next Transaction

The value for the counter for the next transaction displays in the Next Transaction field. If Edit Counter is **Enabled**, the counter can be manually preset to any valid number above 0.

4.8.5. User

The IND246 terminal supports password protection of the setup mode. All setup functions of the terminal will be available to all users via the SETUP icon  in the Operator's menu until password protection is enabled and a password is entered.

4.8.5.1. Password Protection

If **Disabled** (default), all areas of the terminal (including the setup mode) can be entered normally. If **Enabled**, a password code must be entered before access is granted to the setup mode.

4.8.5.2. Password

If password protection is enabled in the previous step, this parameter allows entry of the actual password for access. A numeric entry up to six digits in length can be entered.

4.8.5.3. Confirm Password

Confirm the password previously entered. If the password does not agree, it will not be accepted.

4.8.6. Menu Keys

This screen permits the addition or removal of icons from the terminal's operator menu screen. Two icons, INFORMATION RECALL  and SETUP , are automatically placed in the menu and cannot be removed.

Access each field on this page to **Enable** or **Disable** each of the icons. The list includes:

- Alibi Memory
- Contrast Adjust
- Transaction Counter
- Time and Date
- Totals Memory
- Expand x10

Note that additional operator menu icons may be enabled in the Application Pac section of setup based on the application selected.

4.8.7. Reset

To initiate a reset of terminal parameters, press the ENTER key. If the reset was successful, a verification message that reads "Reset Successful" displays. If the reset was not successful, an error message that reads "Reset Failure" displays. If the reset fails, try to initiate the reset again. If the reset continues to fail, contact a local METTLER TOLEDO representative for assistance.

Press the LEFT navigation key to exit without resetting.

4.9. Configuration: Communication

4.9.1. Templates

The IND246 terminal provides three different output formats available to demand outputs. Each of these formats is created in a template. A template supports up to 25 data fields to define the format of a demand data output. In addition, each application has at least one template dedicated to it. So, a total of 9 templates are supported in the IND246.

A template strings setup screen is also available to configure strings of characters that are frequently used in templates such as a customer name or address.

4.9.1.1. Output Templates 1, 2 and 3

The Output Template setup screen enables configuration of the output data formats and the number of line feeds at the end.

To format a template, first select the field number (from 1 to 25) in the first selection box then select the item for that field in the second selection box. Using this method, a template of up to 25 fields can be created. To terminate a template, an End of Template field must be included. All fields after the End of Template field will be ignored.

4.9.1.2. Output Templates 4 through 9

Each of the templates 4 through 9 is used for a specific application, as indicated in Table 4-3.

Table 4-3: Application Templates

Template	Application	Template	Application
4	Vehicle – Inbound	7	Peak Weight
5	Vehicle – Outbound	8	Animal Weighing
6	Checkweighing	9	Counting

Each of the application templates is configured as described above, using the field number and item. Each application also provides new application-specific items that can be added to a template. The additional items for each template are listed in Chapter 4.

4.9.1.2.1.

Field

Table 4-4 lists the available items that can be selected for a field.

Table 4-4: Items Used in Templates

Item	Length	Item	Length
3 spaces	3	String 2	40
10 spaces	10	String 3	40
15 spaces	15	String 4	40
Date	8 or 11	String 5	40
Displayed Weight	10 - 14	String 6	40
End of Template	0	String 7	40
Gross Weight	10 - 12	String 8	40
ID	20	String 9	40
Net Weight	12 - 14	String 10	40
New Line (<CR><LF>)	2	Tare Weight	12 - 14
Scale Name	20	Time	5 - 11
String 1	40	Transaction #	7

■ Refer to Appendix A, **Default Settings**, for more details on template structure and contents.

4.9.1.2.2.

Add Line Feeds

On each template page is an entry box for entering the number of blank lines to be added at the end of the template. This provides the ability to advance a ticket or label after printing. Enter a value from 0 to 9 for the number of line feeds to be added after a template is transmitted.

4.9.1.3.

Strings

The Template Strings setup screen defines up to 10 strings of characters that may be used in template messages. Template strings can be viewed, edited or cleared.

To enter or edit template strings:

Select the string number in the first selection box then any existing data for that string will be shown in the second entry box. Using the alphanumeric keys, enter or edit the characters to be used as the selected string.

Note that there is a new method of data entry called Decimal supported in Template Strings. The SHIFT key  now switches between numeric entry , upper case alpha entry , lower case alpha entry , and decimal entry . The decimal entry method can be used to enter specific characters not available via the IND246 alphanumeric keypad by entering the decimal value of the ASCII character. This is also useful when preparing a template for a printer that uses a different character set to print international characters. By entering the decimal value of the international character, new ASCII characters can be transmitted. When decimal entry is selected, an entry box below the string entry box will be shown. Enter the two or three digit decimal number for a special character and then press ENTER. To exit the decimal entry mode, press the SHIFT key  and the decimal entry box will be removed and focus moves back to the string entry box.

- Note that decimal values from 32 to 255 can be entered. Control characters in decimal values 0 to 31 cannot be entered using this method. Control characters can be included in a template created using the InSite software. They will be recognized by the IND246 when the template is downloaded, and will be included in the template when it is printed

When entry is complete, press ENTER and focus will move back to String #. It is then possible to select another string to enter or edit.

4.9.2. Reports

The reports setup screen enables configuration of the structure of reports that are generated by the IND246 terminal. The reports setup screens include width, header, record separator and footer selections.

4.9.2.1. Width

Use the selection box for the Width field to select the width of the reports

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

4.9.2.2. Header

The Header field specifies the number of blank lines (CR/LF) to be placed at the start of each report.

4.9.2.3. Record Separator

A repeated character may be selected as a separator between printed records in the report. This step selects the character to be used. The character choices in the selection box are:

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

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

4.9.2.4. Footer

The Footer field specifies the number of blank lines (CR/LF) to be placed at the end of each report.

4.9.3. Connections

The connections setup provides a method to assign a function to a physical port in the terminal. The optional ports are only available if the appropriate option board has been installed.

Setup pages are available for the COM1, COM2, USB and Ethernet ports in the IND246 terminal.

These screens define what type of communication will occur over each port. If no connections are programmed, there will not be any data communication on that port. Specific details of the different assignments can be found in Appendix D, Communications.

It may be required that one port support a demand output from basic weighing, a demand print from an application and maybe a report print. To support this capability, if the first Assignment is Demand or Report, a second assignment is made available (Assignment 2). If Assignment 2 is programmed for Demand or Report, then a third assignment (Assignment 3) will be available. If an assignment is programmed as anything except Demand or Reports, then no additional assignments will be possible.

Depending upon the assignment for a port, a template or checksum setup parameter will be shown. Refer to Table 4-5 for a list of the possible assignments for each port and the additional setup parameters required for that assignment.

Table 4-5: COM1 Connection Assignments

Port	Assignment	Template	Checksum
COM1	Assignment		
	Continuous Output		Disabled, Enabled
	Continuous-Extended		Disabled, Enabled
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		
	SICS		
	Variable Access		
	Assignment 2 (if Assignment = Demand or Reports)		
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		
	Assignment 3 (if Assignment 2 = Demand or Reports)		
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		

Table 4-6: COM2 Connection Assignments

Port	Assignment	Template	Checksum
COM2	Assignment		
	Continuous Output		Disabled, Enabled
	Continuous-Extended		Disabled, Enabled
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		
	SICS		
	Assignment 2 (if Assignment = Demand)		
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		
	Assignment 3 (if Assignment 2 = Demand or Reports)		
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		

Table 4-7: USB Connection Assignments

Port	Assignment	Template	Checksum
USB	Assignment		
	Continuous Output		Disabled, Enabled
	Continuous-Extended		Disabled, Enabled
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		
	SICS		
	Variable Access		
	Assignment 2 (if Assignment = Demand or Reports)		
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		
	Assignment 3 (if Assignment 2 = Demand or Reports)		
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		

Table 4-8: Ethernet Connection Assignments

Port	Assignment	Template
Ethernet	Assignment	
	Continuous Output	Disabled, Enabled
	Continuous-Extended	Disabled, Enabled
	Demand	Template 1, 2, 3, 4 - 9
	Print Client	
	Reports	
	SICS	
	Variable Access	
	Assignment 2 (if Assignment = Demand or Reports)	
	Demand	Template 1, 2, 3, 4 - 9
	Reports	
	Assignment 3 (if Assignment 2 = Demand or Reports)	
	Demand	Template 1, 2, 3, 4 - 9
	Reports	

Table 4-9: Print Client Connection Assignments

Port	Assignment	Template	Checksum
Print Client	Assignment		
	Continuous Output		Disabled, Enabled
	Continuous-Extended		Disabled, Enabled
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		
	SICS		
	Variable Access		
	Assignment 2 (if Assignment = Demand or Reports)		
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		

Port	Assignment	Template	Checksum
	Assignment 3 (if Assignment 2 = Demand or Reports)		
	Demand	Template 1, 2, 3, 4 - 9	
	Reports		

Connection options notes:

- Not all choices are available for all connection assignments. Only valid choices are shown in the selection boxes.
- The Variable Access assignment is not available for COM2.
- The Print Client assignment is available only for the Ethernet port. If selected as the Ethernet port assignment, a Print Client port will be shown to select the connections for the Print Client.
- The Template field displays only when the assignment selection is Demand Output.
- The Checksum field is available for continuous outputs only.
- The SICS selection provides some Level 0 and Level 1 interface commands.
- If a Continuous or Demand assignment is made, that port automatically supports the CTPZ input command capability. No selection is required. The Print Client port does NOT support CTPZ in this situation.

Network

When an Ethernet or Wi-Fi option board is installed, a configuration menu for the network will appear in the communication interface menu. The interface is similar to that of COM1. The optional communication modes for Ethernet/Wi-Fi include:

- None*
- Print Command
- Print client
- Continuous output
- Report print
- SICS
- Extended continuous output
- Variable access

4.9.4. Serial

Serial communication setup screens provide access to the communication parameters for the serial ports COM1 and COM2/USB. The COM2 port and USB port share the same setup parameters as only one of them can be installed into the terminal at one time.

The COM2 and USB ports are only shown if the corresponding option board has been installed.

4.9.4.1. COM1

Use the COM1 setup screens to configure the parameters for the COM1 serial port.

4.9.4.1.1. Baud

Use the Baud selection box to set the baud rate for the serial port. Options are:

300	1200	4800	19200	57600
600	2400	9600	38400	115200

4.9.4.1.2. Data Bits

Use the Data Bits selection box to set the data bits to either **7** or **8** for the serial port.

4.9.4.1.3. Parity

Use the Parity selection box to set the parity to **None**, **Odd**, or **Even** for the serial port.

4.9.4.1.4. Flow Control

Use the Flow Control selection box to set the flow control to either **None** or **XON-XOFF** (software handshaking).

- After an XOFF command is received on COM1 configured for XON/XOFF handshaking, data remaining in the port's output buffer will still be sent. The COM1 port buffer contains a maximum of 16 bytes of data.

4.9.4.1.5. Interface

Use the Interface selection box to select the serial port interface. **For the standard IND246 terminal COM1** provides an RS-232 interface only. For the IND246 POWERCELL terminal there is a choice of a RS-232, RS-422 or RS-485 interface.

4.9.4.2. COM2/USB

Use the COM2/USB setup screens to configure the parameters for the COM2 and USB ports.

4.9.4.2.1. Baud

Use the Baud selection box to set the baud rate for the serial port. Options are:

300	1200	4800	19200	57600
600	2400	9600	38400	115200

4.9.4.2.2. Data Bits

Use the Data Bits selection box to set the data bits to either **7** or **8** for the serial port.

4.9.4.2.3. Parity

Use the Parity selection box to set the parity to **None**, **Odd**, or **Even** for the serial port.

4.9.4.2.4. Flow Control

Use the Flow Control selection box to set the flow control to either **None** or **XON-XOFF** (software handshaking).

- After an XOFF command is received on COM2 configured for XON/XOFF handshaking, data remaining in the port's output buffer will still be sent. The COM2 port buffer contains a maximum of 64 bytes of data.

4.9.4.2.5. Interface

Use the Interface selection box to select the serial port interface. Selections for COM2 include either **RS-232** or **RS-485**. This parameter is not shown for the USB option.

4.9.5. Network

Network setup screens include Ethernet and Print Client.

4.9.5.1. Ethernet

Ethernet is available for transfer of data, connecting to InSite™, variable access and connection to a Print Client. Setup for Ethernet allows static Internet Protocol (IP) addressing only.

The Ethernet branch includes the following fields:

4.9.5.1.1. MAC Address

The Medium Access Control (MAC) Address cannot be edited; it is shown for information only.

4.9.5.1.2. DHCP Client

The DHCP (Dynamic Host Configuration Protocol) client can be **Enabled** or **Disabled**. If the DHCP Client setting is enabled, the IP Address, Subnet Mask, and Gateway Address fields are assigned automatically by the network and become read-only in the setup screens. If disabled, the IP address must manually be assigned in the following fields.

4.9.5.1.3. IP Address

Enter the IP address (or view if DHCP Client is enabled) for the IND246 terminal. After each group of digits has been entered, press ENTER to proceed to the next group. The default value for the IP is 192.168.000.001.

4.9.5.1.4. Subnet Mask

Enter the subnet mask (or view if DHCP Client is enabled) for the IND246 terminal. After each group of digits has been entered, press ENTER to proceed to the next group. The default value for the subnet mask is 255.255.255.0.

4.9.5.1.5. Gateway Address

Enter the gateway address (or view if DHCP Client is enabled) for the IND246 terminal. After each group of digits has been entered, press ENTER to proceed to the next group. The default value for the gateway is blank.

After entry is complete, press the LEFT navigation key to return to the setup menu

4.9.5.2. Print Client

The Print Client connection allows the IND246 to send data to a network device such as a printer. The Print Client configuration is only shown if a print client connection was created at **Communication > Connections > Ethernet**.

4.9.5.2.1. Server IP Address

The Server IP Address is the IP address of the network device (usually a printer) where the terminal will send the print information. Enter the IP address using the numeric keypad.

4.9.5.2.2. Server TCP Port

Enter the Server TCP Port of the device on the network. This is the port on the network device through which communication is established.

If the user installs the Wi-Fi option board, three menu items will be included in the network menu, including Wi-Fi connection settings, Wi-Fi network settings, and TFTP file transfer.

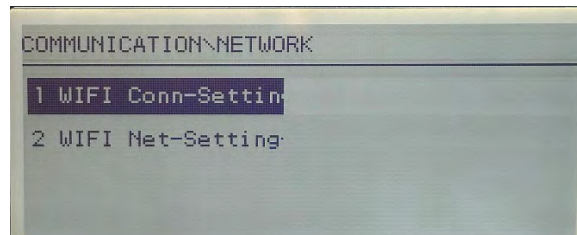


Figure 4-13: Wi-Fi Menu

Wi-Fi connection setting:

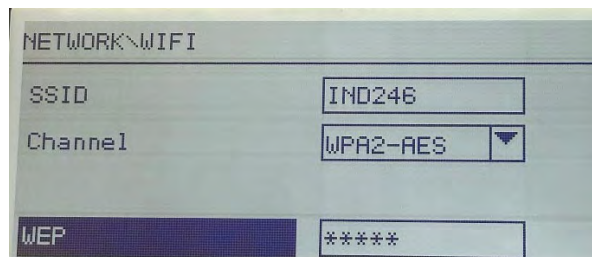


Figure 4-14: Wi-Fi Connection Settings Menu

SSID:

The SSID parameter is used to set the service set identifier, which is the name of the WLAN, allowing a maximum of 20 characters to be entered. The default is IND246.

Encryption Method:

Set the encryption method for the WLAN. Users can choose from options such as no password, WEP-64, WEP-128, WPA-TKIP, and WPA2-AES*.

WEP-KEY:

When the encryption method is selected as WEP-64 and WEP-128, the WEP-KEY menu appears, with options such as WEP KEY1*, WEP KEY2, WEP KEY3, and WEP KEY4, as shown in Figure 3-15.

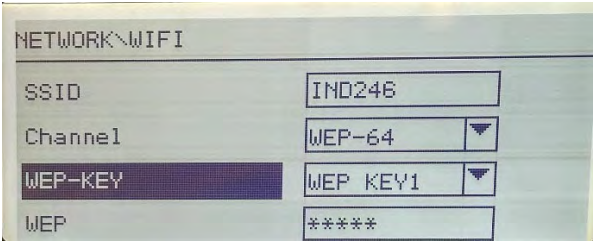


Figure 4-15: WEP Password Index Options

Password:

The password parameter allows users to enter up to 20 characters as the password, which can be numbers, upper and lower case letters, and punctuation marks. The default value is "12345678".

When the user modifies the password parameter, the input box displays the characters entered by the user in plaintext. After saving the input, the password parameter is displayed as asterisks.

If the user modifies any of the SSID, encryption method, and password parameters, the terminal will restart when exiting the Wi-Fi connection settings menu.

Wi-Fi Network Setting:

The Wi-Fi network settings menu includes DHCP client, IP address, subnet mask, and gateway address, as shown in Figure 3-16.

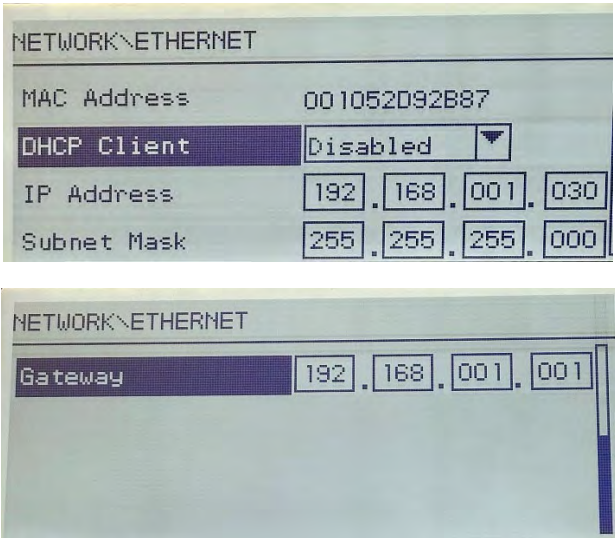


Figure 4-16: Wi-Fi Network Settings Menu

DHCP Client:

The DHCP client can be enabled or disabled. If it is disabled, the IP address must be manually set in the subsequent fields. If it is enabled, the terminal will obtain IP address and other related information from the network server. When DHCP is enabled, IP address information can only be browsed, not edited.

IP Address:

Enter the IP address of the IND246 Weighing Terminal (or browse whether DHCP client is enabled). After a group of numbers is entered, press the confirm key to proceed to the next group of numbers. The default IP value is 192.168.0.1.

Subnet Mask:

Enter the subnet mask of the IND246 Weighing Terminal or browse whether DHCP client is enabled. After a group of numbers is entered, press the confirm key to proceed to the next group of numbers. The default subnet mask value is 255.255.255.0.

Gateway Address:

Enter the gateway address of the network where the IND246 Weighing Terminal is located.

TFTP File Transfer:

The TFTP file transfer interface under the Wi-Fi menu is similar to the TFTP file transfer menu interface of Ethernet.

4.9.6. Reset

To initiate a reset of the Communication block of setup, press the ENTER key. If the reset was successful, a verification message that reads "Reset Successful" displays. If the reset was not successful, an error message that reads "Reset Failure" displays. If the reset fails, try to initiate the reset again. If the reset continues to fail, contact a local METTLER TOLEDO representative for assistance.

Press the LEFT navigation key to exit without resetting.

4.10. Configuration: Maintenance

4.10.1. Diagnostics

4.10.1.1. Scale

Scale diagnostics setup screens include Load Cell Output, Calibration Values and Statistics.

4.10.1.1.1. Load Cell Output

The Load Cell Output screen displays the current number of counts (active value) for the scale. These are raw counts and do not take into consideration the zero or span factors.

Press the LEFT navigation key to return to the menu.

4.10.1.1.2. Load Cell Output

The Calibration Values screen displays the current calibration values for the scale. The number of test loads that display calibration values is determined by the Linearity Adjustment setting configured for the scale (refer to **Scale > Calibration**).

These calibration values can be recorded and then manually entered into a new replacement board should a failure ever occur, which eliminates having to recalibrate the scale with test weights. While this method is quick, it is not as accurate as placing test weights on the scale.

Use the UP and DOWN navigation keys to select a calibration value to be modified. Use the numeric keypad to enter new values.

Press the LEFT navigation key to return to the menu.

4.10.1.1.3. Statistics

The Scale Statistics screen displays statistical information for the scale such as weighments (increments each time a transaction is triggered), overloads (increments when the applied load for a single load cell exceeds its overload capacity), peak weight (the maximum weight recorded by the scale), zero commands (increments each time a zero command is received from an operator or remotely) and the number of failed zero commands.

Use the UP and DOWN navigation keys to view all information and records.

Press the LEFT navigation key to return to the menu.

4.10.1.1.4. Zero Drift and Overloads

For POWERCELL PDX-, GDD-, SLB615D- and SLC611D-based scale bases, the Zero Drift and Overloads screen (Figure 4-17) is accessible. These settings permit early diagnosis of load cells that are failing, and of possible damage to weighing equipment caused by excessive loads.



Figure 4-18: Zero Drift and Overloads Screen

The Zero Drift Check option may be Disabled, set to Count Only (the default), or set to Count and Log. The count is recorded in the scale's statistics (in setup at **Maintenance > Diagnostics > Scale > Statistics**).

When a scale Zero command is issued the scale is assumed to be empty. The threshold measure compares the current zero balance reading with the calibrated zero for each load cell; if the difference exceeds the value set in this field a cell Zero Drift error is generated and either counted, or counted and logged, in the Maintenance Log. The Zero Threshold value is set as a percentage of the calibrated load cell capacity. Its default value is 10%.

Note that an out-of-tolerance zero value for a load cell does not mean that the scale zero range (configured in setup at **Scale > Zero**) has been exceeded. In that aggregate measure, individual variations between load cells may cancel one another out. An error generated by a load cell will not necessarily prevent the scale as a whole from zeroing. If the scale is out of its zero range, an error message will appear prompting the operator to correct the fault condition.

For non-digital load cells, the cell overload condition is not configurable. For digital load cells, the threshold at which a cell overload is logged may be set as a total weight value in primary weight units. The value entered should also account for the pre-load amount and typically not exceed the

load cell's rated capacity. The overload trigger is not re-set until the measured weight falls below 90% of the overload threshold value.

4.10.1.1.5. Load Cell Mapping (POWERCELL load cells only)

This branch provides a graphical view of connected load cells. When completed, the network diagram will help to clarify errors reported by showing the physical load cell layout (by address), identifying the cell to which the home run cable connects, and which load cell is the last in the network. It is recommended that the load cell network be sketched on a sheet of paper before completing the functions described in this section.

Figure 4-19 shows a POWERCELL map. Before mapping is performed, each cell's address appear as a "?," and the cable connection list below the diagram is blank. The platform graphic includes the number of loads cells specified in setup at **Scale > Type > # of Load Cells**. Use the navigation keys to move focus from one cell position to the next in the diagram.

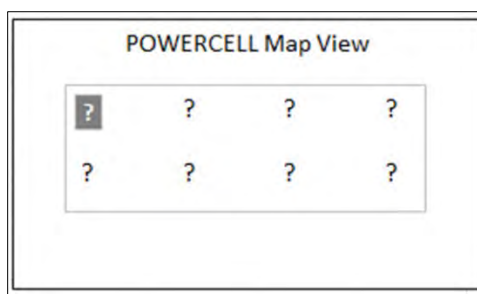


Figure 4-20: POWERCELL Map View

Note that the position of each cell in a platform is designated alphabetically – to differentiate it from the numeric address value. Figure 4-21 shows the alphabetic positions for 12 load cells. In the example shown in Figure 4-22, only the first position is used.

A	C	E	G	I	K
B	D	F	H	J	L

Figure 4-23: Alphabetic Designation of Load Cells in a Platform

These alphabetical designations will appear, with the corresponding node number, in the **Position** column of the **POWERCELL Map Table View** screen (Figure 4-24),

4.10.1.1.6. Editing

In setup, press 5-1-3-6 to access the map view. Use the arrow keys or number keypad to select (highlight) a node, then press ENTER to pen the edit screen shown at right, below. This screen allows entry of the information required to create a graphic representation of the load cell network.

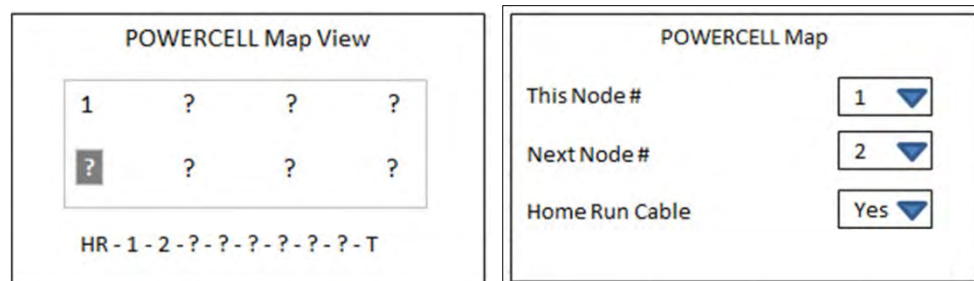


Figure 4-25: Map with One Cell Configured, and Node Edit Screen

With a ? selected (highlighted), press ENTER to open the editing screen shown at right, above. Use the arrow keys to select a number and to set Home Run Cable to **Yes** or **No**. When node configuration is complete, press the LEFT arrow to exit the editing screen and return to the map, then select the next node to configure. When configuration is complete, press the LEFT arrow key to exit the map view and return to the setup menu.

The **Node Edit** screen includes the following parameters and softkeys:

- This Node #** The cell address of the current cell position. Default value is null; the drop-down box lists all available cells. Select the cell address of the physical location in focus in the network graphic, then press ENTER.
- HR Cable** Select **No** if the Home Run cable is not connected to this cell.
Select **Yes** if the Home Run cable is connected to this cell.
- Next Node #** Enter the cell address of the next cell in the network connected to the current cell. Default value is null; the drop-down box lists all available cells, plus a selection for **Termination**. Enter the cell address of the next load cell that the load cell cable is connected to in the network via the cell-to-cell cable. If this is the last load cell in the system (which contains the termination connector), select **Termination**.
- C** When in the edit screen, press C to reset that node. A confirmation dialog will appear, "Reset this node?" Use the arrow keys to select **Yes** or **No**, then press Enter to confirm. If **Yes**, a confirmation dialog will appear. When the dialog is dismissed, the edit screen will reappear. Either enter new values or press the LEFT arrow to return to the map view, which will show that node as unconfigured (?).

Reset

Resets the values shown on this screen. When pressed, a warning screen is displayed:

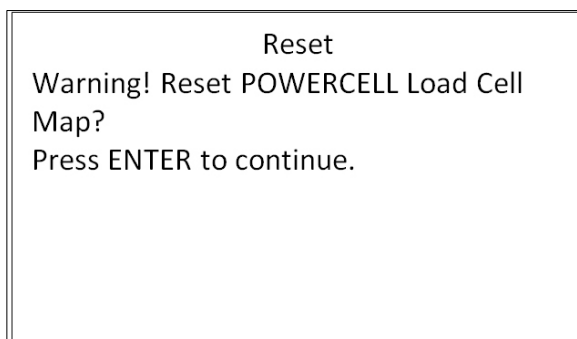
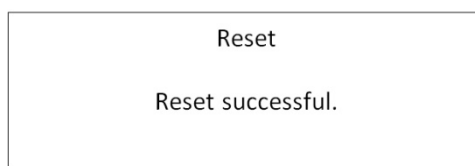


Figure 4-26: Node Reset Warning

- If **ESC** is selected, the screen is closed and the values are not reset.
- If **OK** is selected, both node values are reset to null, **HR Cable** to **No**, and a [Complete] message is shown. Press EXIT to return to the Node Edit screen.



OK

Saves the settings and exits the screen, **only if**

- both Node parameters **have values** or
- both Node parameters are **null**

After all information has been entered correctly, a graphic describing each load cell address position displays. Below the graphic, the load cell connection sequence is shown beginning with the home run cable and finishing with the load cell that contains the termination connector. The information shown here can be used to better understand and locate specific load cell or load cell network errors.

4.10.1.1.7. List View

In the setup menu, press 5-1-3-6-2 to display the Map List shown at left, below. This view shows data for each cell from the home-run cable to termination, as entered on the **Node Edit** screens, and displayed in the load cell map.

Use the navigation keys to scroll through the table and display further nodes. The **Position** column indicates the cell's physical location relative to the scale. Refer to Figure 4-27 for an explanation of the position letters.

To exit this screen, press the LEFT arrow. Or, if a Report connection is configured (refer to section 4.9.3), press ENTER/PRINT to generate a printout like the one shown at right, below.

POWERCELL Map List View				
Location	Node	Position	HR	Next Node
Home Run	4	D	Y	2
Next Node	2	B	N	1

POWERCELL Layout Map			
<pre> ----- 1 3 5 7 2 4 6 8 -----+----- </pre>			
Location	Node	Position	Next
Home Run	4	D	2
Next Node	2	B	1
Next Node	1	A	3
Next Node	3	C	5
Next Node	5	E	7
Next Node	7	G	8
Next Node	8	H	6
Termination	6	F	T

Figure 4-28: Table View and Printout

Alternatively, press **C** to reset the map. A warning dialog will appear, "Reset Load Cell Map?" Select either **Yes** or **No** with the arrow keys, then press ENTER. If **Yes** was selected, a confirmation dialog will appear; select **OK** and press ENTER to return to the map view (Figure 3-18) with all values unconfigured (?).

Use the LEFT arrow to exit the screen.

4.10.1.1.8. Installation Guidance

- Note that the features accessed in setup at 5-1-3-7 (**Leveling Guidance**) and 5-1-3-8 (**Load Cell Restore**) are only applicable for a single PowerDeck of four SLC615D load cells, and not to double or triple platforms with 8 or 12 load cells.

When the scale type is POWERCELL SLB615D or SLC611D (in four-cell PowerMount™ platforms), the system provides leveling assistance for installers. In setup, press 5-1-3-7 to display the leveling guidance screen.

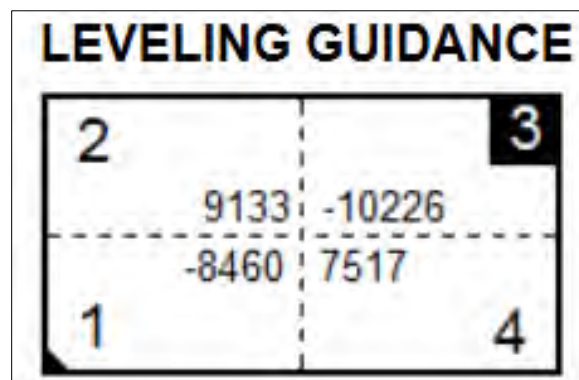


Figure 4-29: Installation Guidance Graphic Display

- Note: If factory values are recalled, the graphic will display a value representing the difference between the current value and the recalled value, as in 错误!未找到引用源。 3-23. If factory values are not present, or not recalled, the graphic will display the absolute value of current counts.

When a PowerDeck floor scale is first installed, its accuracy is enhanced by ensuring that it is levelled so that its calibration values match the stored, factory calibration, values as closely as possible. In IND246 POWERCELL terminals, this feature is available in setup at **Maintenance > Run > Diagnostics > Scale > Installation Guidance**.

- The installation guidance is valid **only for platforms with all the original cells in place**. It should not be used for platforms in which one or more cells have been replaced.

The displayed counts indicate whether the current reading is above or below the factory value, and the number of the cell with the greatest deviation is highlighted – cell 3 in the example above.

- Cells are numbered clockwise, when viewed from above, starting at the corner where the home run cable exits.

Once the deviations are observed, the platform can be levelled and shims added or subtracted to correct them. The display updates approximately once per second, so the effect of changes can be observed while levelling is carried out.

4.10.1.1.9. Loadcell Restore

In the case of POWERCELL load cells in a 4-cell platform configured for floor scale operation, it is possible to create a new functional weighing system, or a re-create an existing system with a new component, using the system configuration data stored in each POWERCELL. These data include:

- | | | |
|---------------------------|---------------------------------|--|
| • Version | • Factory calibration GEO value | • Initial zero counts |
| • Number of load cells | • Field calibration GEO value | • Test load 1 weight |
| • Platform serial number | • Primary weight unit | • Test load 1 counts |
| • Platform model number | • Scale capacity | • Load cell shift values for all cells |
| • Calibration weight unit | • Scale increment size | • Load cell calibration zero counts |

To access the Loadcell Restore function, in setup press 5-1-3-8.

This capability may be used in any of five cases:

- A new floor platform and new terminal are combined and must be commissioned on-site
- The terminal in an existing system fails and must be replaced
- The main PCB in the terminal is replaced
- It is necessary to restore the factory default settings to the load cell system
- The platform model and serial number information stored in the terminal does not match those stored in the load cells

For a new terminal/platform combination or a replacement terminal, the terminal's configuration settings must be backed up and restored, as described in the following sections. The terminal is then connected to the new platform and powered up.

For all the cases noted above, the following must be true:

- The number of load cells must be set to 4
- In setup at **Scale > Type**, SLB615D or SLC611D is selected

- The platform Model and Serial Number fields in the terminal are blank
- At least two of the four cells have factory configuration data
- The terminal is not metrologically sealed

1. At start-up, the terminal confirms that load cell configuration data is present in each cell and validates the data.
 2. The terminal then displays a confirmation dialog **Use factory calibration?**
 3. If the operator selects **Yes**, the terminal displays a GEO code entry dialog, where the local GEO code is either displayed (if already configured in the terminal) for confirmation, or must be entered and confirmed.
 4. Use the arrow keys to highlight **START**, then press **ENTER** to continue.
 5. Once the GEO entry is confirmed, the terminal completes the configuration process. Selecting **No** aborts the process and continues the normal start-up sequence.
- Once the system is complete, the platform must be levelled using the utility provided in setup at **Maintenance > Run > Diagnostics > Scale > Installation Guidance**.

4.10.1.1.10. Serial Test

The Serial Test screen enables testing of the sending and receiving hardware on the serial ports COM1 and COM2.

4.10.1.1.11. Port

Use the Port selection box to select the serial port for testing (**1** or **2**).

As soon as the port selection is entered, the test begins. To stop the test, change the port selection back to **None** or press the **LEFT** navigation key.

In the serial test mode, the terminal will transmit a string "Testing COMX nn" out the selected serial port where the "X" is the selected com port number (1 or 2) and "nn" is a sequential two-digit number (00–99). If a jumper is placed between the transmit and receive terminals on that port, the same data displays in the receiving field.

If another device is connected to the receiving port, any ASCII data received displays in the receiving field.

4.10.1.1.12. Discrete I/O Test

Discrete I/O Test setup screens include testing for both inputs and outputs.

- **VERY IMPORTANT!:** When any of the Discrete I/O Test screens are first accessed, a warning message displays with instructions to remove output control power before proceeding with the test. The Discrete I/O Test screens enable manual setting of any of the outputs to on or off for testing, so it is necessary to remove output control power before proceeding.

Press the **LEFT** navigation key to abort and not perform the test.

To continue the test:

1. Press the ENTER key. A real-time display shows the status of each of the inputs and enables each of the outputs to be turned on and off. An input or output that displays ○ is turned off. An input or an output that displays ● is turned on.
2. Use the LEFT and RIGHT navigation keys to select an output to turn on or off.
3. With an output in focus, press the DOWN navigation key to turn the output off, and press the UP navigation key to turn the output on.
4. Press the ENTER key to return to the menu. The outputs return to their previous on/off configuration before the tests were initiated.

4.10.1.1.13. Display Test

The Display Test screen displays all dots "on" when first accessed. After three seconds, all dots turn "off". This cycle will continue until the LEFT navigation key is pressed to return to the menu.

4.10.1.1.14. Keyboard Test

The Keyboard Test screen enables testing of the terminal keys, including Scale function keys, Navigation keys and Numeric keys.

Press any key and the screen will display a graphic for that key. When testing is complete, press the LEFT navigation key to return to the menu.

4.10.1.2. Tilt Display

The Tilt display screen displays the current scale tilt value.

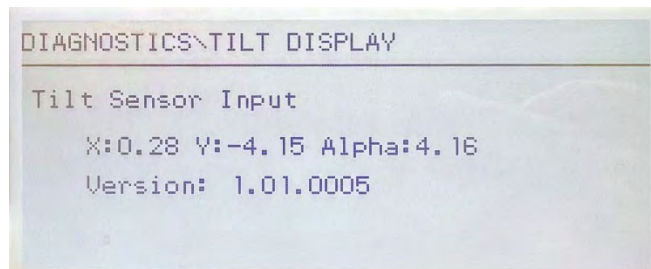


Figure 4-30: Tilt Display

4.10.1.3. Tilt Calibration

The Tilt calibration screen includes set zero and cal measurement.

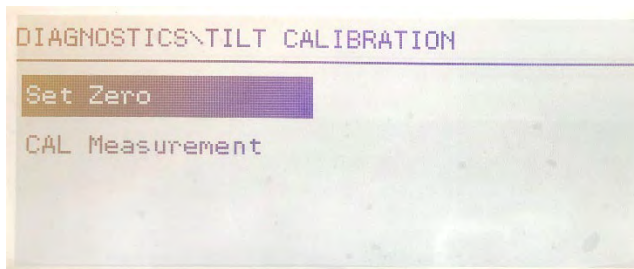


Figure 4-31: Tilt Calibration

When the tilt angle exceeds 1.5° , the main interface of the terminal will display warning message: "Attention! Move to the level ground!". At this time, tilt needs to be reset to zero.

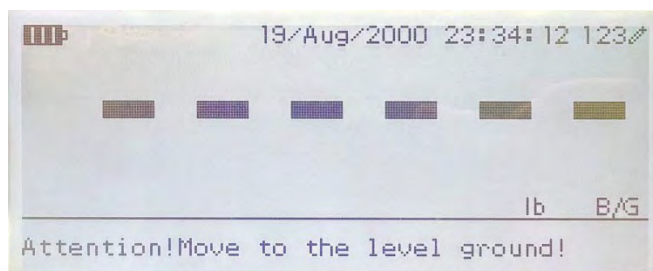


Figure 4-32: Set Zero

Move the forklift to the horizontal position, press the OK key, a warning message will show: "This operation will change the measurement performance." Press the OK key again, and the zero calibration is successful. Press the confirmation key again to exit.

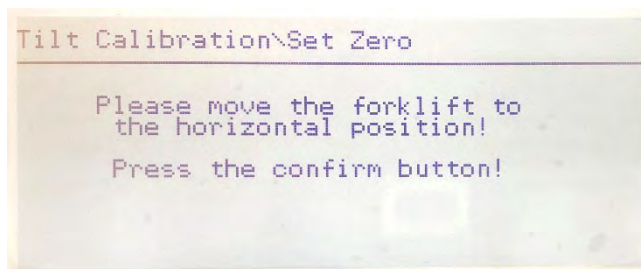


Figure 4-33: Set Zero

Input the tilt values of the x-axis and y-axis of the current scale respectively, and press the OK key, a warning message will show: "This operation will change the measurement performance." Press the OK key to save and exit, the cal measurement is completed.

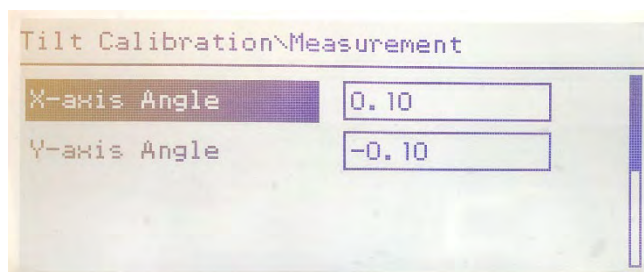


Figure 4-34: Cal Measurement

4.10.1.4. Tilt Switch

The Tilt switch allows the user to choose whether to turn on the Tilt Compensation function. If the user chooses “Always on”, the Tilt Compensation is turned on. If choosing “Disabled”, the Tilt Compensation function is turned off, and the main interface of the instrument displays that the Tilt Compensation function is turned off.

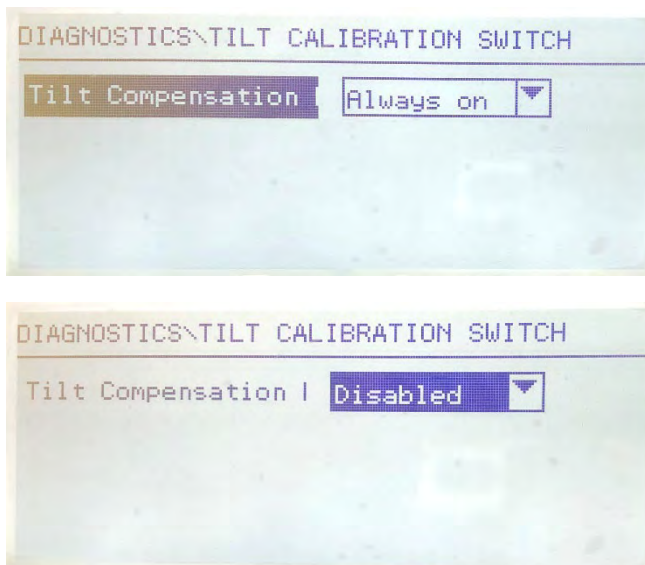


Figure 4-35: Tilt Switch

4.10.2. Replace Battery

This step provides access to a sequence used to replace the coin cell battery used to back up RAM memory. Details of this procedure are described in the Technical Manual in the Maintenance chapter. It is recommended that an authorized METTLER TOLEDO service representative perform this service.

4.10.3. Install Software Update

This step is used to update the program in flash memory. Details of this procedure are described in the Technical Manual in the Maintenance chapter. It is recommended that an authorized METTLER TOLEDO service representative perform this service.

4.10.4. Backup to SD

The terminal will store all setup parameters and table data to the SD card. In case of a catastrophic failure, the saved file could then be restored to the terminal.

Details of this procedure are described in the Technical Manual in the Maintenance chapter. It is recommended that an authorized METTLER TOLEDO service representative perform this service.

4.10.5. Restore from SD

If a “Backup to SD” process has previously been triggered, this step retrieves the stored data from the SD card and writes the data back into the terminal.

Details of this procedure are described in the Technical Manual in the Maintenance chapter. It is recommended that an authorized METTLER TOLEDO service representative perform this service.

4.10.6. POWERCELL Maintenance

4.10.6.1. Performance Log

The Performance Log provides a summary of the performance and diagnostics data collected on a scale using POWERCELL PDX, GDD, SLB615D and SLC611D load cells. The log will hold approximately 1600 individual records before it begins over-writing the oldest entries. Note that the accumulation of data in the log depends on the number of cells in the system – each cell produces one record at each log interval.

Log Interval

Use the Log Interval entry box to enter a time interval in hours for the terminal to automatically record a set of data in the log. Valid entries are from **0** to **999.9**. A value of **0** (default) disables the automatic logging. For day-to-day operation, 24 hours (default) is a typical value. When a scale is being tested, the interval can be reduced to collect data more frequently.

The PDX / GDD Performance Log cannot be viewed in the terminal. To see the POWERCELL Performance Log file, retrieve the **perfllog.csv** file via the File Transfer Tool, or use the InSite™ CSL software tool.

- The MT Service Security feature must be unlocked in order to retrieve the records in the POWERCELL Performance Log. Refer to the MT Service Security section.

4.10.6.2. Error Log

The Error Log is a record of POWERCELL PDX / GDD-related errors logged by the system. The log file is approximately 150k bytes in size and will support approximately 2500 records.

- The contents of the Error Log are not cleared by a Master Reset.

The selection box on the setup screen is set to **Enabled** by default.

The PDX / GDD Error log is also available as an extractable file. Retrieve the **errlog.csv** file via the File Transfer Tool, or use the InSite™ CSL software tool.

- **IMPORTANT:** The MT Service Security feature must be unlocked in order to retrieve the records in the log. Refer to the MT Service Security section.

4.10.6.3. MT Service Security

The MT Service Security screen allows only a METTLER TOLEDO authorized service representative to unlock or lock access to the MT Service View and POWERCELL PDX or GDD diagnostic functions. The terminal is in a locked state by default.

The serial number of the terminal is shown at the top of this screen and the security status is displayed in the middle. The status will either be **Open** or **Secured**.

At the bottom of the screen a message is displayed: **Press ENTER to create lock string**

Pressing ENTER opens a screen like the one shown in Figure 3-29.



Figure 4-36: MT Service Security Unlock Screen

On a PC, open InSite™ CSL. (Refer to the **InSite™ CSL User's Guide** for full details on using the software.) On the **Home** tab, select IND246 POWERCELL as the Terminal and then, from the **Options** tab, select MT Service Security.

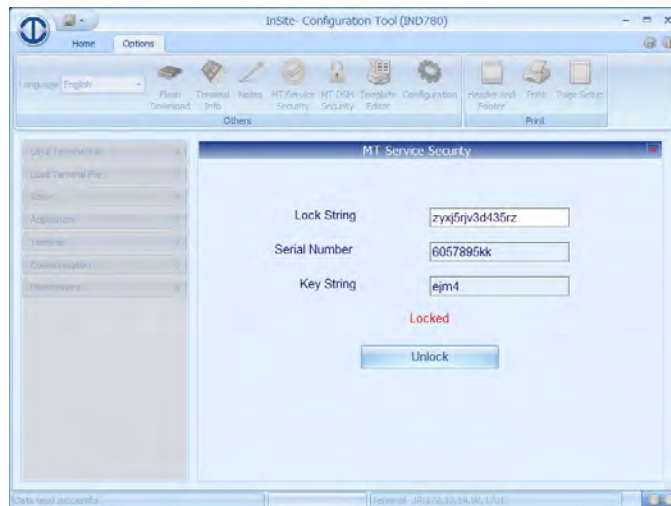


Figure 4-37: MT Service Security Unlock Button, Key String Displayed

Enter the **Serial Number** and **Lock String** from the IND246 POWERCELL terminal into the appropriate fields in InSite CSL, then click on **Unlock**. InSite will display the **Key String** that will unlock the terminal.

Enter the Key String into the terminal using the alphanumeric keypad – press the UP button once to enter upper case letters, and twice to enter lower case letters. Once a correct lock string has been entered, press ENTER again. The IND246 POWERCELL display will change to indicate that the terminal is unlocked, or **Open**.

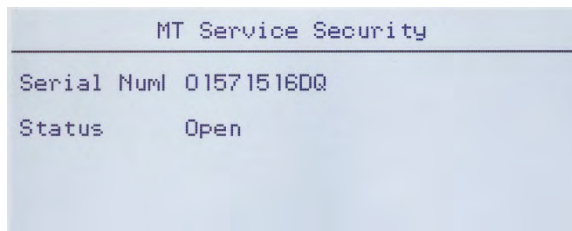


Figure 4-38: MT Service Security Unlocked

It is now possible to access the **MT Service View** screens.

4.10.6.4. MT Service View

If the terminal has not been unlocked, accessing this branch will display a message: **Function disabled**. Refer to section 4.10.6.3, above, to enable the **MT Service View**.

If the terminal is unlocked, the **MT Service View** screen (Figure) will appear.

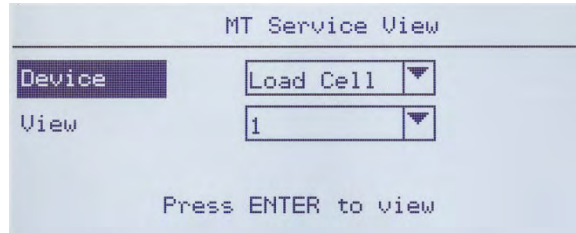


Figure 4-39: MT Service View, Initial Screen

Select the **Device** to view. The options and associated information are listed in Table 4-10.

Table 4-10: MT Service View Options

Device	View	Data
Load Cell	[Load cell number]	Selects load cell for which data will be displayed. See Figure and refer to section 4.10.6.4.1, Load Cell Info .
Scale	COM Voltage	Displays the COM voltage, after warning that the Can BUS will be stopped. See Figure and refer to section 4.10.6.4.2, COM Voltage
	Supply Voltage	Displays the load cell supply voltage. See Figure and refer to section 4.10.6.4.3, Supply Voltage .
Terminal	Terminal	Displays screens of data about the terminal. See Figure and refer to section 4.10.6.4.4, Terminal .

Load Cell Info(1)			Load Cell Info(1)		
	Calibrated	Current		Calibrated	Current
S/N	007281310023	007279010308	CANL DX	1.009V	0.000V
DATE	2013-09-16	2013-12-04	CANH R	2.389V	0.000V
Supply Volt.	24.480V	0.000V	CANL R	2.367V	0.000V
CANH DX	3.569V	0.000V			

Figure 4-40: Load Cell Data Screens

Before the COM Voltage view can be accessed, a message warns **CAN BUS WILL STOP**. The operation can either be continued (**Yes**) or cancelled (**No**).

MT Service View		COM Voltage View(V)				
Device	CAN BUS WILL STOP Yes No Press ENTER to view	Cell	CANH DX	CANL DX	CANH R	CANL R
View		1	0.000	0.000	0.000	0.000
		2	0.000	0.000	0.000	0.000
		3	0.000	0.000	0.000	0.000

Figure 4-41: Scale COM Voltage Displays

Supply Voltage View	
01:	24.6 U

Figure 4-42: Scale Supply Voltage Display

Terminal Info		Terminal Info	
CANH Max.	3.709V	CAN Diff. Min.	0.005V
CANH Min.	2.280V	Max. Voltage	24.117V
CANL Max.	2.342V	Min. Voltage	23.741V
CANL Min.	1.162V	Max. Current	18mA
CAN Diff. Max.	2.332V	Min. Current	12mA

Figure 4-43: Terminal Data View

4.10.6.4.1. Load Cell Info (*n*)

The Load Cell Information screen displays various diagnostics data for a selected POWERCELL PDX, GDD, SLB615D or SLC611D cell (where *n* is the cell's number). Each data field will show a current value and, where relevant, a value recorded at the time of calibration. This enables the user to make a comparison between current data and data from a known working condition of the cell. The displayed information includes:

- Cell S/N
- Install Date
- LC Supply Voltage
- CAN-High Dominant X
- CAN-Low Dominant X
- CAN-High Recessive (CANH R)
- CAN-High Recessive (CANH R)

4.10.6.4.2. COM Voltage View

The Scale Load Cell COM Voltage screen displays the voltage levels on the CAN Bus communication lines for every load cell of the scale.

4.10.6.4.3. Supply Voltage View

The Scale Load Cell Supply Voltage screen displays the input supply voltage for the POWERCELL network.

4.10.6.4.4. Terminal Info

The POWERCELL Terminal screen displays the minimum and maximum voltages and current detected on the IND246 POWERCELL terminal. The displayed information includes:

- Maximum CAN-High Voltage
- Minimum CAN-High Voltage
- Maximum CAN-Low Voltage
- Minimum CAN-Low Voltage
- Minimum CAN Voltage Difference
- Maximum Supply Voltage
- Minimum Supply Voltage
- Maximum Supply Current

- Maximum CAN Voltage Difference
- Minimum Supply Current

4.10.7. Reset All - Factory Default Settings

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

- The Reset All step resets all setup parameters in the terminal, except metrologically significant settings such as Scale type, capacity, etc.

When the Reset All screen is first accessed, a message displays that asks for verification to reset all setup parameters to factory default settings. To continue with the Reset All, press the ENTER key. If the reset was successful, a verification message that reads "Reset Successful" displays. If the reset was not successful, an error message that reads "Reset Failure" displays. If the reset fails, try to initiate the reset again. If the reset continues to fail, contact a local METTLER TOLEDO representative for assistance.

Press the LEFT navigation key to exit without resetting.

4.11. Restoring Factory Default Settings

Factory default settings can be restored individually for branches such as scale, application, and terminal, or globally with the Reset All screen under the Maintenance branch. The Reset screen is the last branch in each major section of the menu structure (except for Maintenance). To restore factory default settings for Scale, for example:

1. Press the MENU key then select the setup icon . Figure shows the first page of the setup menu, with the five main branches displayed.

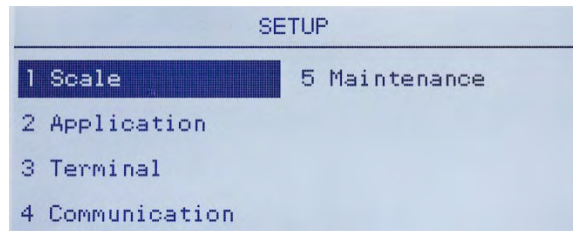


Figure 4-44: Setup Menu – Reset

2. With Scale in focus, press ENTER, or press the 1 key on the numeric keypad to use the shortcut method. Figure shows the first selection of Scale sub-branches.

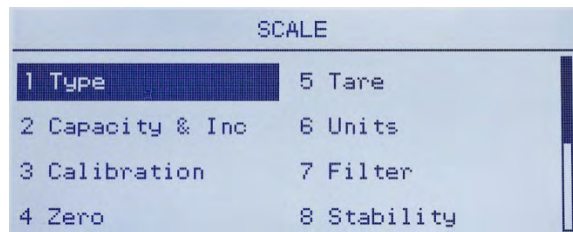


Figure 4-45: Scale Setup Menu, First page

3. Use the DOWN navigation key to move the focus to the second page of the Scale menu, so that the Reset branch (shortcut 10) is displayed. Alternately, press the UP navigation key once to proceed to the end of the second page.

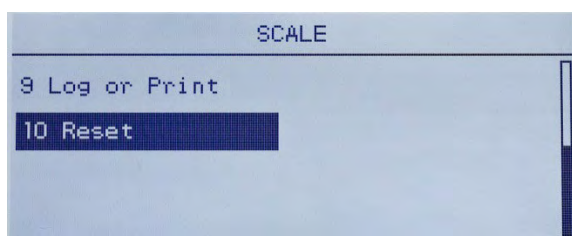


Figure 4-46: Sub-branches for Terminal Branch of Setup

4. Use the DOWN navigation key to select Reset, then press ENTER. The screen shows a warning message about resetting the Scale setup (Figure).

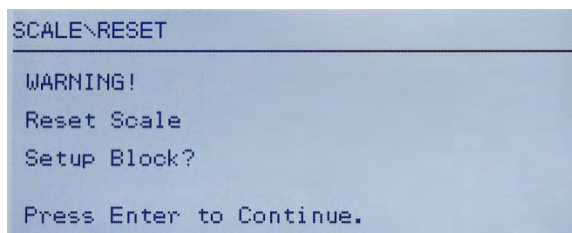


Figure 4-47: Terminal Reset Warning Screen

5. Press the ENTER key to reset the Scale setup values to factory default settings.
 6. A status message appears that verifies a successful reset.
 7. Press the LEFT navigation key to return to the setup menu display.
 8. This same procedure can be used to reset factory default settings for any major branch in setup.
- Select **Reset All** under Maintenance (Figure) to restore all setup settings to factory defaults. Note that neither this, nor Scale Reset, includes the reset of type, capacity, increment, or calibration data. Only a Master Reset will reset these parameters to factory default values. A Master Reset should only be performed by a trained METTLER TOLEDO service technician.

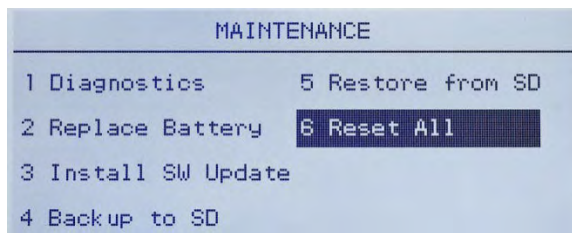


Figure 4-48: Reset All Setup Blocks

5 Applications: Configuration and Operation

5.1. Introduction

Each of the following sections details operating procedures, operational features and function for the five applications included in the IND246 terminal.

For information on general operation of the IND246 terminal, please refer to Chapter 3, **Operation: Terminal**.

For information on general configuration of the IND246 terminal, please refer to Chapter 4, **Configuration: Terminal**.

5.2. Animal Weighing

5.2.1. Overview

The Animal Weighing application provides the ability to calculate and display an average weight value determined over a user-defined sampling period. This is useful when the weight is constantly unstable, as in the case of weighing live animals.

Two modes of operation are supported in the animal weighing application. One mode simply determines the average weight on the scale regardless if a single animal or multiple animals are on the scale. The second mode is designed for weighing multiple animals and provides the average weight per animal in addition to the total average weight of all animals. The application provides the following:

- Simple, one key operation
- Prompts for start of weighing cycle
- Weight averaged over variable sampling time period
- Display of remaining time in cycle
- Final average weight display and print

When the FUNCTION  key is pressed from the basic weigh mode the initial Animal Weighing display screen will be shown. The  icon in the lower left corner indicates the Animal Weighing application mode. Pressing the FUNCTION  key again will return the terminal to display the basic weighing mode.

5.2.2. Operational Features

In addition to the fundamental weighing functions, the following IND246 terminal basic weighing features can also be used within the Animal Weighing application.

5.2.2.1. ID Entry

An identification field (ID) is available for entry and printing. The ID will be retained until changed or cleared manually. ID entry can be completed in either of two ways – by pressing the ID key , entering data and then confirming the entry, or by entering data and then pressing the ID key .

5.2.2.1.1. ID Key First

Press the ID  key at any time before or during a cycle to enter the identification field. An "ID?" prompt and data entry field will appear in the lower part of the display. Use the alphanumeric keypad to enter the ID information, then press ENTER  to confirm and return to the operating mode.

5.2.2.1.2. Data First

At any time before or during a cycle, use the alphanumeric keypad to begin entry of the ID. A "Data:" prompt and data entry field will appear in the lower part of the display. Complete the entry then press the ID  key to accept the ID and return to the operating mode.

5.2.2.2. Tare

A semi-automatic tare can be taken before the weighing cycle starts. Simply press the TARE  key.

A preset tare value can be entered using the numeric keypad. Use the numeric keys to enter the preset tare value. The digits will appear in line 2 of the lower part of the display, below the "Data:" prompt. When tare entry is complete, press TARE  to accept the value.

5.2.2.3. Discrete I/O

The animal weighing application supports one new discrete input and two new discrete outputs.

The new input is a command for **Start** that can be issued when the **Press ENTER to Start** message is displayed.

The two new outputs are **Working** and **Cycle Complete**. The **Working** output turns ON when the averaging cycle is in process and turns OFF after the average weight has been determined and is displayed. At this point, the **Cycle Complete** output turns ON. The **Cycle Complete** output turns OFF when the next averaging cycle is started.

5.2.2.4. Totalization

If Totalization is enabled, the averaged weight from the Animal Weighing application will also be added to the totals when printed.

5.2.3. Configuration

The FUNCTION key **F** must be programmed for Animal Weighing in setup at **Application > Function Key > Assignment** in order for this application to operate and to access the setup steps for the Animal Weighing application. When the FUNCTION key is properly programmed, the Animal Weighing branch of setup is displayed as shown in Figure 5-1.

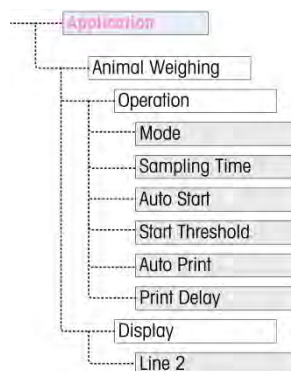


Figure 5-1: Animal Weighing Application Configuration Menu

5.2.3.1. Operation

5.2.3.1.1. Mode

The **Mode** assignment is selected from a drop-down list. Options are:

Selection	Function
1	Application determines the average total weight on the scale
2	Application determines the average total weight on the scale and calculates the average weight per animal

The default value is **1**.

5.2.3.1.2. Sampling Time

The **Sampling Time** setting determines the amount of time over which the scale will sample the weight on the scale in order to determine an average total weight.

The value is entered using the alphanumeric entry keys. Valid settings are from 1 to 9.9 seconds, in 0.1 second increments. The default value is **5.0**.

5.2.3.1.3. Auto Start

When enabled, **Auto Start** begins the weighing process when the weight on the scale exceeds a minimum weight defined by the **Start Threshold**, and has reached stability. When the process is complete, the weight must fall below 20d (display divisions) and then exceed the threshold again to start the next cycle.

This feature can be **Enabled** or **Disabled**. By default, it is **Disabled**.

- When Auto Start is enabled, after a cycle has been aborted the next cycle must be started manually.

5.2.3.1.4. Start Threshold

The **Start Threshold** appears in the menu tree only when **Auto Start** is **Enabled**. It defines the scale weight value above which the averaging process will begin after stability is reached.

Valid settings are from 0 to the full scale capacity. This value should be relatively high – for example, 80% of the estimated weight of all animals on the scale. A very low number may cause the sampling period to start before all the animals are on the scale.

5.2.3.1.5. Auto Print

This **Auto Print** setting overrides the basic weighing Auto Print function, configured in setup at **Scale > Log or Print > Automatic** when operating within the application.

When **Auto Print** is enabled, the processed weight value is displayed for the amount of time defined by the **Print Delay** setting, and then a transaction print is automatically triggered.

This feature can be **Enabled** or **Disabled**. By default, it is **Disabled**.

5.2.3.1.6. Print Delay

Print Delay is only shown in the menu tree when **Auto Print** is enabled. It determines the delay between completion of the transaction and triggering the transaction print.

Valid settings are from 0 to 10 seconds in 1 second increments. The default value is **5**.

5.2.3.2. Display

5.2.3.2.1. Line 2

The **Line 2** assignment determines what data is displayed during and after a transaction. It is selected from a drop-down list. The selection list varies depending on the **Mode** selected:

Selection	Function	
	Mode 1	Mode 2
Disabled	Line 2 is blank.	
Average	Not available	Line 2 shows Average weight per animal
ID	Line 2 shows the transaction ID	Line 2 shows the transaction ID

The default value is **Disabled**.

5.2.4. Operating Sequence

The following sections describe the two modes of operation of the animal weighing application:

Mode 1 Determines the average total weight of a single animal or multiple animals

Mode 2 Determines the average total weight of multiple animals, and calculates the average weight per animal

5.2.4.1. Mode 1 Operation

Begin with the scale empty and the terminal in the Animal Weighing application.

1. The display will prompt either **Press ENTER to start**. In normal operation or if Auto Start is enabled, the system will prompt **Add weight > xxx** (i.e., greater than xxx), where xxx is the programmed threshold weight.
2. Press ZERO  to capture an accurate zero reference.
3. If required, a transactional ID may be entered via the ID key . If programmed in setup, the ID will be shown on Line 2 at the bottom of the display.
4. Add the desired number of animals to the scale and then press the ENTER key  to start the weighing cycle. If Auto Start is enabled, the cycle will start automatically when the weight on the scale exceeds the programmed threshold and there is no-motion on the scale.
5. The weight display will show dashes, and Line 1 will indicate **Working** and count down from the programmed Sampling Time while the averaging cycle is in process.
6. When the cycle is complete, the averaged weight will be shown on the display, with an asterisk (*) to the left indicating that it is not a live scale weight. Line 1 will indicate **Cycle complete**.
7. Press PRINT  to print the resulting average weight. The display will return to show the current weight on the scale. If Auto Print is selected, the print will be triggered automatically after the programmed Print Delay time.
8. Remove the animals from the scale. When the weight returns to below 20d, Line 1 will return to the original prompt.

5.2.4.2.

Mode 2 Operation

Begin with the scale empty and the terminal in the Animal Weighing application.

1. The display will prompt **Number of animals?**
2. Press ZERO  to capture an accurate zero reference.
3. Enter the number of animals to be placed on the scale and then press the ENTER key .
4. The display will show **Press ENTER to start**. or, if Auto Start is enabled, it will prompt **Add weight > xxx** (i.e., greater than xxx), where xxx is the programmed threshold weight.
5. If required, a transactional ID may be entered via the ID key . If programmed in setup, the ID will appear on Line 2 at the bottom of the display.
6. Add the number of animals entered in step 3 to the scale, then press the ENTER key  to start the weighing cycle. If Auto Start is enabled, the cycle will start automatically when the weight on the scale exceeds the programmed threshold and there is no motion on the scale.
7. The weight display will show dashes, and Line 1 will indicate **Working** and a count down from the programmed Sampling Time while the averaging cycle is in process.

8. When the cycle is complete, the averaged weight will be shown on the display with an asterisk (*) to the left indicating that it is not a live scale weight. Line 1 will indicate **Cycle complete**. If Line 2 has been programmed to do so, it will show the average weight.
9. Press PRINT  to print the resulting average weight. The display will return to an active weight display. If Auto Print is selected, the print will be triggered automatically after the programmed hold time.
10. Remove the animals from the scale. When the weight returns to below 20d (display divisions), Line 1 will return to the original prompt.

5.2.4.3. Aborting a Weighing Cycle

During the animal weighing cycle, the process can be aborted at any time by pressing CLEAR . If operating in the Auto-start mode, pressing the CLEAR key will revert to manual start for the next cycle.

5.2.5. Remote Displays

The Animal Weighing application is designed to operate with the METTLER TOLEDO ADI family of scoreboard displays. Function depends on which mode is selected in setup at F2.5.1.1. Refer to sections and 5.2.4.2, above.

In Mode 1, the standard continuous output is modified to send live weight to a single scoreboard during the weighing cycle, and the averaged weight when averaging is complete.

In Mode 2, the Continuous Multi-1 mode can be used to display three separate fields (the number of animals, the total averaged weight and the average animal weight) simultaneously on three separate scoreboards.

Refer to section E.4 of Appendix E, **Communications**, for complete details of using the ADI family of scoreboard displays with the Animal weighing application.

5.2.6. Serial Input Commands

The Animal Weighing application supports three new serial commands in addition to the standard ASCII commands for a demand or continuous connection assignment. These commands are:

- S** Starts the animal weighing process.
- xxQ** Enters a new quantity of animals value. "xx" can be any whole value from 01 to 99.
- E** Ends the cycle, clears the display and returns focus to the first screen.

5.2.7. Print Formats

When a demand print is triggered in the Animal Weighing application, the terminal will look for a demand connection to one of the ports using template 8. If such a connection exists, then template 8 will be sent out via the selected port. If there is no demand connection using template 8, a "No demand connection" error will be displayed.

5.2.7.1. New Print Fields

Template 8 contains three data fields related to the Animal Weighing application that are not available in the other print templates. These new data fields are:

- Averaged weight
- Quantity of animals
- Average weight per animal

5.2.7.2. Default Template

The default template for template 8 is shown in Figure 5-2. Elements in braces {...} are fields of data supplied by the terminal. Figure 5-3 shows an example of the printed default template.

```
{String 1} {New Line}  
{String 2} {New Line}  
{Time} {3 spaces} {3 spaces} {Date} {New Line}  
{ID} {New Line}  
{Averaged Weight} {New Line}  
{End of template}
```

Figure 5-2: Default Structure of Template 8

- The Weight Legend will be blank when the Terminal is in gross mode, and N when the terminal is in Net mode.

```
New Brighton Farms  
Columbus, OH 43085  
10:23 AM Jan 22 2012  
Tag 1Y-227  
* 635 lb
```

Figure 5-3: Print Sample, Default Template 8

This template can be edited, as described in the **Communication** section of **Chapter 3** of this manual, **Configuration > Communication > Templates**. The template can be modified to include the additional fields associated with weighing multiple animals when Mode 2 is selected. Figure 5-4 shows a suggested modification to the structure of the default template, and Figure 5-5 shows an example of a print based on the modified template.

```
{String 1} {New Line}  
{String 2} {New Line}  
{Time} {3 spaces} {3 spaces} {Date} {New Line}  
{ID} {New Line}  
Quantity: {# of Animals} {New Line}  
Avg. Wt.: {Avg. per Animal} {New Line}  
Total Wt.: {Averaged Total Weight} {New Line}  
{End of template}
```

Figure 5-4: Suggested Structure of Template 8 for Mode 2

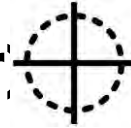
```

Greenfield Auction House
Lexington, KY 40504
05:03 PM      Jan 18 2012
Lot #21
Quantity: 8
Avg. Wt.: *    835 lb
Total Wt.: *   6682 lb

```

Figure 5-5: Print Sample, Format Modified for Mode 2

5.3. Checkweighing (Over/Under)



5.3.1. Overview

In the Over/Under application, the IND246 compares weight on the scale to a stored target weight, and indicates the status of the comparison on screen.

The application can also control external equipment, such as status lights, using three external outputs for Under, OK and Over. This application provides the following features and functions:

- Very fast weight response
- Three zone status (Under, OK, Over) with SmartTrac® graphical representation of status on display
- Storage of up to 25 target weights by ID for quick recall of target values
- Optional discrete output signals for remote status lights

When the FUNCTION  key is pressed from the basic weigh mode the initial Checkweighing display screen will be shown. The  icon in the lower left corner indicates the Checkweighing application mode. Pressing the FUNCTION  key again will return the terminal to display the basic weighing mode.

5.3.2. Operational Features

In addition to the fundamental weighing functions, the following IND246 terminal basic weighing features can also be used within the Checkweighing Weighing application.

5.3.2.1. Auto-Print

If the IND246 checkweighing application is used to assess the weight of a series of items, enabling **Auto-print** will automatically generate a demand output of the weight data and comparison status once the scale weight is above the threshold value and is stable. The Checkweighing application shares the auto print features of the basic weighing mode.

5.3.2.2. ID

If an ID value is entered in the basic weighing mode, it remains available for printing when in the Checkweighing mode. However, within the Checkweighing application the ID function is used only to retrieve target records by ID.

5.3.2.3. Tare

A semi-automatic tare can be taken any time during the weighing cycle. Simply press the TARE  key.

A preset tare value can be entered using the numeric keypad. Use the numeric keys to enter the preset tare value. The digits will appear in line 2 of the lower part of the display, below the "Data:" prompt. When tare entry is complete, press TARE  to accept the value.

5.3.2.4. Discrete I/O

The Checkweighing application supports three new discrete outputs.

The three new outputs are **Under Zone**, **OK Zone** and **Over Zone**:

- The **Under Zone** output turns ON when the weight on the scale is below the target minus the – tolerance value.
- The **OK Zone** status turns ON when the weight on the scale is above the target minus the – tolerance value and below the target plus the + tolerance value.
- The **Over Zone** output turns on when the weight on the scale exceeds the target plus the + tolerance value.

5.3.2.5. Target Table Import and Export

The METTLER TOLEDO IND246 File Transfer Tool (FTT) program, included on the IND246 Resource CD-ROM, runs on a PC to exchange application files and tables with the IND246 terminal. Refer to the User's Guide of the File Transfer Tool for details.

5.3.3. Configuration

The FUNCTION key  must be programmed for Checkweighing in setup at **Application > Function Key > Assignment** in order for this application to operate and to access the setup steps for the Checkweighing application. When the FUNCTION key is properly programmed, the Checkweighing branch of setup is displayed as shown in Figure 5-6.

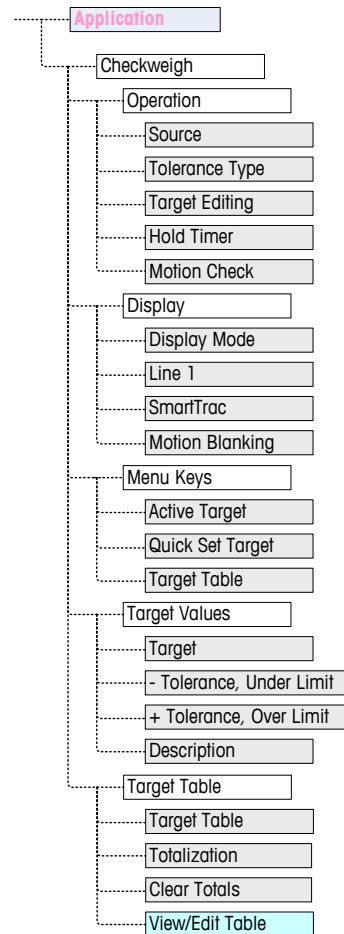


Figure 5-6: Checkweighing Application Configuration Menu

5.3.3.1. Operation

5.3.3.1.1. Source

Source may be set as **Displayed Weight** (the default) or **Gross Weight**. If Displayed Weight is selected, the over/under function will work based on the displayed weight, either gross or net. If gross weight is selected, the target comparison will be based on the gross weight even if a tare is taken and a net weight is displayed.

5.3.3.1.2. Tolerance Type

The **Tolerance Type** can be **Target Deviation** (the default), **% of Target** or **Weight Value**. This setting determines the type of tolerance to be used in calculating the weight status. **Target Deviation** provides both + tolerance and – tolerance weight values. **% of Target** is similar to Target Deviation except the tolerances are entered as percentages instead of weights. **Weight Value** eliminates the target entry and allows direct entry of the Under Limit and Over Limit values which equate to the minimum and maximum acceptance values.

5.3.3.1.3. Target Editing

The **Target Editing** parameter determines which active target values can be edited when accessed from the Operator Menu. Options are **Target & Tolerance** (the default), **Target Only** and **Disabled**.

Values are always editable from within setup, but only values selected as editable can be modified from the Operator Menu. Values not selected as editable can only be viewed.

The Description field can be edited if either **Target Only** or **Target & Tolerance** is selected.

If Target Editing is selected as **Disabled**, none of the values can be edited in the Operator Menu.

5.3.3.1.4. Hold Timer

The **Hold Timer** is a value, between **0.0** and **9.9** seconds, that sets the amount of time for which the display will freeze after a print command, before returning to the live display. If a second print command is issued during the set period, it will over-ride the existing count, the new current value will display, and the display will freeze again for the set time.

During the hold time, an asterisk (*) is shown on the display to indicate the weight is not live.

5.3.3.1.5. Motion Check

The **Motion Check** parameter can be **Disabled** (the default) or **Enabled**. When **Enabled**, the discrete outputs for Under, OK and Over and the zone indication on the display will turn ON only when no motion is detected. When **Motion Check** is **Disabled**, the corresponding output and zone indication display will turn on when the zone edge is reached, regardless of motion.

5.3.3.2. Display

5.3.3.2.1. Display Mode

This parameter determines what will be displayed in the main display area – **Actual Weight** (the default), **Target Difference** or **No Display**.

5.3.3.2.2. Line 1

Line 1 can be set to display the target **Description** (the default), **ID**, **Target and Tolerances**, **Zone** or **Disabled** (Line 1 blank).

5.3.3.2.3. SmartTrac

The graphic zone display of the results of the target comparison can be **Enabled** (the default) or **Disabled**.

■ If **Line 1** is **Disabled** and **SmartTrac** is **Enabled**, the **SmartTrac** graphic will expand to occupy both lines of the lower display.

5.3.3.2.4. Motion Blanking

If **Motion Blanking** is **Enabled**, the numeric weight display will be blanked when the scale is in motion, and will only display a weight value when the scale is stable. **Motion Blanking** is **Disabled** by default.

5.3.3.3. Menu Keys

The **Menu Keys** parameters determine which functions will be accessible from the Operator Menu.

■ If the feature accessed by the key must be enabled or configured separately, such as the Target Table, enabling its menu key will display the corresponding icon in the Operator Menu, but will not give access to the feature.

5.3.3.3.1.

Active Target

By default, the **Active Target** is **Enabled**, so that the active target and tolerance values in use can be viewed by the Operator. The Target Editing parameter at Operation > Target Editing determines which of the viewable fields can be edited.

5.3.3.3.2.

Quick Set Target

Disabled by default, **Quick Set Target** can be **Enabled** to permit the Operator to define a new target by placing actual weights on the scale.

5.3.3.3.3.

Target Table

Operator access to the **Target Table** can be **Disabled** (the default) or **Enabled**.

5.3.3.4.

Target Values

Selecting **Target Values** opens a screen that displays the current target information. The appearance of this screen will vary depending on the **Tolerance Type** selected under **Operation**:

- If the **Tolerance Type** is set to **Target Deviation** or **% of Target**, the screen will include a target value together with upper and lower tolerances, expressed either as a weight value or a percentage of the target, and the **Description** field.
- If the **Tolerance Type** is **Weight Value**, the Under Limit and Over Limit are displayed, together with the **Description** field.

Each value is updated when focus leaves the entry box.

 Note: Disabling all of the target menu keys will prohibit an operator from viewing or changing the target and tolerance values. These values can still be entered and edited in setup at the Target Values page.

5.3.3.5.

Target Table

The Target Table can store up to 25 target IDs, each with its own target and tolerance values together with a description and (if Totalization is enabled) a total register and transaction counter. The target ID can be used for the quick recall of a set of target parameters for Checkweighing.

 Note: The first 10 records are stored in memory on the main board and are always available. An SD memory card must be installed to store the remaining 15 records, giving a total of 25.

5.3.3.5.1.

Target Table

The **Target Table** can be **Enabled** or **Disabled** (the default). If the table is **Enabled**, the **Totalization** and **Clear Totals** parameters and the **View Table** option also appear on the screen. If the table is **Disabled**, the ID field in Checkweighing will refer to the basic weighing ID.

5.3.3.5.2.

Totalization

Totalization allows the terminal to track the total weight and number of transactions associated with an ID in the target table.

Totalization can be **Enabled** or **Disabled** (the default). If it is **Enabled**, count and total weight values are accumulated for each ID when a demand output with template 6 is generated.

- Note: If any parameters of a recalled ID are changed while viewing the active record, the **Totalization** link will be broken and accumulation will no longer occur.

5.3.3.5.3. Clear Totals

Clear Totals can be set to **Disabled**, **Automatic** or **Manual** (the default).

- Automatic** The count and total values for all IDs are cleared after printing a Target Table report.
- Manual** Pressing the CLEAR key  after the Target Table report has been printed clears the count and total values.
- Disabled** Each record's count and total values must be re-set to zero individually, in the Target Table view in setup, as described under **View Table**, below.

5.3.3.5.4. View Table

Selecting **View Table** in the Target Table screen displays the first record found in the Target Table. Each record occupies a single screen. A blank screen indicates the ID Table is empty. The following functions are accessible from this view:

Key	Function
 ID	Opens ID NEW screen, where a new ID can be set up.
 (CLEAR)	Prompts Delete record? Press ENTER to confirm and delete the displayed record, LEFT arrow to display a message, Delete all records? Press ENTER to confirm and delete all records, LEFT arrow to return to the view without deleting.
UP and DOWN arrow keys	Move the view to the next or previous ID.
 (ENTER/PRINT)	Sends the ID Table to all ports with a Reports assignment.
LEFT arrow key	Exits the ID Table view.

The information displayed for each record depends on the **Tolerance Type** selected under **Operation**. In addition to the information shown for **Target Values**, above, if **Totalization** is **Enabled** these screens also include a count (n:) and **Total** value.

5.3.3.5.5. ID NEW Screen

The following options are available when setting up a new ID and when editing an existing ID. The record is updated when the LEFT navigation key is pressed to exit the screen.

Parameter	Function
ID	Enter up to a 16-character ID to be used to recall the ID record. Once the ID has been entered and the record saved, the ID cannot be changed. If the ID is incorrect, the entire record must be cleared and a new record created. If the entered value is not unique, an error message displays – ID already exists . Press ENTER to clear the error and enter a unique value for the ID. Note: To exit the screen without creating a new ID, leave the ID field blank and press ENTER.
Target	Target value, in the scale's primary weight units. Not shown if the tolerance type is selected as Weight Value.
-Tolerance or Under	Tolerance value below the target that is acceptable or low limit of acceptable weight.

Parameter	Function
Limit	
+Tolerance or Over Limit	Tolerance value above the target that is acceptable or high limit of acceptable weight.
Description	Alphanumeric description associated with this ID.
n	Indicates the number of times a weight value has been accumulated for this ID.
Total	Indicates the total weight accumulated for this ID.
UP and DOWN arrows	Navigates between the labels on the setup page.
ENTER	Confirm entry and move to next parameter.
LEFT arrow	Enters the new or edited ID record and exits the new/edit mode.

5.3.4. Operating Sequence

The following sections describe operation of the checkweighing application.

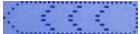
5.3.4.1. Checkweighing Sequence

Begin with the scale empty and the terminal in the Checkweighing application.

1. Press ZERO  to capture an accurate zero reference.
2. Enter the target and tolerance values for the product to be weighed. There are several different methods to enter these values – refer to the **Target Entry** section starting on page 5-16.
3. If checkweighing will be done in the net mode, enter the tare weight of the product container by either placing an empty container on the scale and pressing the TARE key , or by using the numeric keypad to enter the preset tare value and then pressing the TARE key .
4. Place the product to be weighed onto the scale.
5. The weight of the product or the weight difference from target will be shown on the display as selected in setup.
6. The zone into which the product's weight falls will be indicated at the bottom of the display as **Under**, **OK** or **Over**.
7. If the remote I/O is being used for indicator lights, the lights will also indicate the zone.
8. Press PRINT  to print the resulting weight. If Auto Print is enabled, the terminal will automatically trigger a demand output when it determines a no-motion condition.
9. Remove the product from the scale.
10. If checkweighing the same product again, place the next product on the scale and view its weight and zone status.

5.3.4.2. Operation Below 10% of Target

When scale weight is below 10% of the assigned target value, the discrete outputs (if configured) are turned OFF, so that the **Under** output does not remain ON all the time when the scale is empty.

In this condition, the **Under** SmartTrac display appears as an outline – . When the weight exceeds the 10% threshold, the zone discrete outputs become active and the Under display graphic appears solid ().

5.3.4.3. SmartTrac Display

The SmartTrac display is a graphic representation of the zone to which the weight corresponds. If line 1 is **Disabled** and SmartTrac is **Enabled** in setup, the graphical display will be larger, occupying both lines of the lower display area. Figure 5-7 shows two composite displays of the Under, OK and Over graphics, in small and large sizes. Figure 5-8 shows the small and large graphics as they appear when the weight is below 10% of the target weight.



Figure 5-7: Composite SmartTrac Graphic Display: Small (top) and large (bottom)



Figure 5-8: SmartTrac Graphic Display, Zones Not Activated: Small (top) and large (bottom)

5.3.4.4.

Target Entry

Target parameters for the IND246 Checkweighing application can be entered in any of five ways:



by accessing Active Values from the Operator Menu



by using Quick Set from the Operator Menu



by opening the Target Table from the Operator Menu



by quick recall using the numeric keypad and ID key



in setup mode at the Target Values screen

5.3.4.4.1.

Active Values

To set the target parameters via the Active Values screen:

1. Press MENU  to view the Operator Menu.
2. Use the arrow keys to select the Active Values icon , then press ENTER . The Active Value icon must be enabled in the Menu Keys setting.
3. The Active Values screen will display, with a set of entry fields that vary depending on the type of tolerance selected as shown in Table 5-1.

Table 5-1: Elements of the Active Values Screen

Tolerance = % of Target Value <i>or</i> Weight Deviation	
Field	Explanation
Target	Weight value of target
- Tolerance	Lower and upper tolerance limits expressed as a percentage or as a weight
+ Tolerance	
Description	A descriptive field for display and printing, comprising up to 20 characters
Tolerance = Weight Value	
Field	Explanation
Under Limit	Lower and upper tolerance limits expressed as a weight.
Over Limit	
Description	A descriptive field for display and printing, comprising up to 20 characters

4. When editing of a value is complete, press ENTER  to confirm.
5. After editing all values, press the LEFT arrow  and the display will return to the Checkweighing run display.

5.3.4.4.2. Quick Set Target

The Quick Set Target screen allows live weight readings from the scale to be used to define target and limit values.

1. Press MENU  to view the Operator Menu.
2. Use the arrow keys to select the Active Values icon , then press ENTER .
3. The Quick Set Target screen will display, with a set of entry fields that vary depending on the type of tolerance selected. Live weight is shown at the bottom of the page.

Table 5-2: Elements of the Quick Set Target Screen

Tolerance = % of Target Value <i>or</i> Weight Deviation	
Field	Explanation
Target	Weight value of target
- Tolerance	Lower and upper tolerance limits expressed as a percentage or as a weight
+ Tolerance	
Description	A descriptive label for display and printing, comprising up to 20 characters
Live weight display	The current live weight reading from the scale is shown at bottom center of the screen
Tolerance = Weight Value	
Field	Explanation
Under Limit	Lower and upper tolerance limits expressed as a weight.
Over Limit	
Description	A descriptive label for display and printing, comprising up to 20 characters
Live weight display	The current live weight reading from the scale is shown at bottom center of the screen

4. Use the arrow keys to select the field to be modified.
5. Place a weight equal to the target or limit on the scale.
6. Press ENTER . The live weight value is automatically entered in the selected field, and focus is moved to the next field.
 - The +/- tolerance values must be changed by manual entry – Quick Set with live scale weight only functions for Target and Limit values.
7. When parameter entry is complete, press the LEFT arrow  to exit and return to the application's operation screen.

5.3.4.4.3. Recall From Target Table

Up to 25 sets of target parameters can be stored in the Target Table and recalled by ID.

1. Press MENU  to view the Operator Menu.
2. Use the arrow keys to select the Target Table icon , then press ENTER .

3. The first record from the Target Table will appear. The data in each record will vary depending on the selected tolerance mode:
4. If Tolerance = **% of Target Value** or **Weight Deviation**, the fields are:
ID, Description, Target, Units, -Tol, +Tol
5. If Tolerance = **Weight Value**, the fields are:
ID, Description, Units, Under Limit, Over Limit.
6. Use the UP and DOWN arrows to move focus from one record to the next until the desired record is shown. Press ENTER  to select it and return to the Checkweighing run display, or the LEFT arrow  to return to the Operator Menu without selecting a new set of target parameters.

5.3.4.4.4. Quick Recall From Target Table

If the ID of the Target Table record is known, the record can be recalled without accessing the Operator Menu:

1. Use the keypad to begin to enter the alphanumeric ID number. The screen will show the **Data:** label on line 1, and the entered value on line 2 of the display.
2. When the entire ID has been entered, press ID  to recall the record.
3. If the ID exists, the application will use the new parameters. If the ID is not found, an error message will appear – **ID not found**. Clear the message by pressing ENTER . The display will return to the checkweighing application, using the previous target parameters.

5.3.4.4.5. Setup Mode Target Entry

This entry mode is described in the **Target Values** configuration section, on page 5-12.

5.3.5. Print Formats

When a demand print is triggered in the Checkweighing application, the terminal will look for a demand connection to one of the ports using template 6. If such a connection exists, then template 6 will be sent out the selected port. If there is no demand connection using template 6, a “No demand connection” error will be displayed.

5.3.5.1. New Print Fields

Template 6 contains seven new data fields related to the Checkweighing application that are not available in the other templates. These new print fields are:

- n (count of totalization by ID)
- Target Description
- Target ID (from Target Table)
- Target Weight
- Target and Tolerances
- Total (totalized weight by ID)
- Zone (text for the active zone – Under, OK, Over)

5.3.5.2. Default Template

The default format for template 6 is shown in Figure 5-9. Elements in braces {...} are fields of data supplied by the terminal. Figure 5-10 shows the resulting print.

```
{String 1} {New line}  
{String 2} {New line}  
{Time} {3 spaces} {3 spaces} {Date} {New line}  
{Transaction #} {New line}  
{Target Description} {New line}  
{Displayed Weight} {New line}  
{End of template}
```

Figure 5-9: Default Structure of Template 6

Shake Inc. Recycle Center Upper Arlington, OH 43085 11:19 AM Feb 17 2012 000194 Crushed #5 87520 lb N
--

Figure 5-10: Print Sample, Default Template 6

This template can be edited, as described in the **Communication** section of **Chapter 3** of this manual, **Configuration > Communication > Templates**.

5.3.5.3. Report Format

The Target Table Report can be configured as narrow (40 characters) or wide (80 characters) in setup at **Communication > Reports**.

Figure 5-11 details the structure and contents of the Target Table Report in narrow format. Figure 5-12 shows the same information for the wide format report.

The printed examples show only the format for the **Target Deviation** tolerance type.

```

-- TARGET TABLE REPORT --
12:27:43      26 Jan 2012

L5-5          L5 Stake 5Pk
 26.56 lb  (-)  0.22  (+)  2.36
      12      318.42
*****
L7-5          L7 Stake 5Pk
 35.70 lb  (-)  0.53  (+)  3.50
      8      285.63
*****
S7-8          L7 Stake 8Pk
 34.66 lb  (-)  0.48  (+)  3.26
      18      623.88
*****

```

Figure 5-11: Example of Checkweighing Printed Report, Narrow Format

```

-- TARGET TABLE REPORT --
12:27:43      26 Feb 2012

L5-5          L5 Stake 5Pk          26.56 lb  (-)  0.22  (+)  2.36          12          318.42
*****
L7-5          L7 Stake 5Pk          35.70 lb  (-)  0.53  (+)  3.50          8          285.63
*****
S7-8          L7 Stake 8Pk          34.66 lb  (-)  0.48  (+)  3.26          18          623.88
*****

```

Figure 5-12: Example of Checkweighing Printed Report, Wide Format

5.4.

Counting



5.4.1.

Overview

The IND246 Counting application provides a simple counting sequence that guides an operator through a sampling process to determine a count value. The counting application offers the following capabilities:

- Operator prompting.
- Variable sample entry using the terminal's numeric keypad.
- Average piece weight (APW) entry using the numeric keypad.
- Up to 99 stored ID records in the ID Table
- Count accumulation by ID.

When the FUNCTION  key is pressed from the basic weigh mode the initial Counting display screen will be shown. The  icon in the lower left corner indicates the Counting application mode. Pressing the FUNCTION  key again will return the terminal to display the basic weighing mode.

5.4.2. Operational Features

In addition to the fundamental weighing functions, the following IND246 terminal basic weighing features can also be used within the Counting application.

5.4.2.1. Semi-Automatic Tare

When the **Tare?** prompt is displayed on the terminal, press TARE  and the scale will tare to net zero. To take a new pushbutton tare when in counting mode and a number of pieces (PCS) is shown on the display, press the TARE key . The scale will tare to net zero, and the display will show 0 pieces.

5.4.2.2. Preset Tare

In the Sample – Tare sequence, when the **Tare?** prompt is displayed on the terminal, enter the preset tare value using the numeric keypad then press ENTER . If the terminal is already in counting mode, a preset tare can be entered by using the numeric keypad to enter the tare value, then press TARE .

5.4.2.3. ID

If an ID value is entered in the basic weighing mode, it remains available for printing when in the Counting mode. However, within the Counting application, the ID function is used only to retrieve counting ID records.

5.4.2.4. Auto-Print

The IND246's auto-printing feature is supported by the counting application. If the feature is enabled, a demand output will be sent automatically to the assigned output port when the weight settles to no-motion above the programmed threshold weight. This is a useful feature when counting the same part in the same weight carton repeatedly. By retaining the tare and APW values, a print can automatically be generated simply by removing the previous carton of parts and placing the next carton on the scale.

5.4.2.5. Target Table Import and Export

The METTLER TOLEDO IND246 File Transfer Tool (FTT) program, included on the IND246 Resource CD-ROM, runs on a PC to exchange application files and tables with the IND246 terminal. Refer to the User's Guide of the File Transfer Tool for details.

5.4.3. Configuration

The FUNCTION key  must be programmed for Counting in setup at **Application > Function Key > Assignment** in order for this application to operate and to access the setup steps for the Counting application. When the FUNCTION key is properly programmed, the Counting branch of setup is displayed as shown in Figure 5-13.

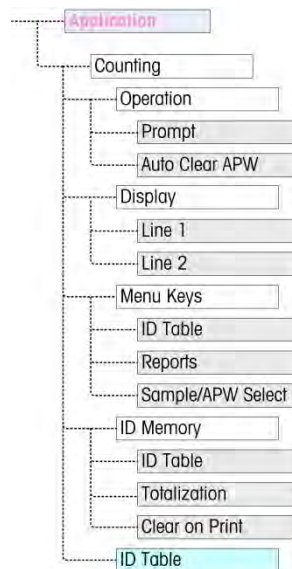


Figure 5-13: Counting Application Configuration Menu

5.4.3.1. Operation

5.4.3.1.1. Prompt

The **Prompt** setting determines the sequence in which the operator is prompted to enter the tare weight and sample quantity.

Options are **Tare-Sample** and **Sample-Tare**. The default is Tare-Sample.

5.4.3.1.2. Auto Clear APW

The **Auto Clear APW** setting determines whether the average piece weight value (APW) will be cleared when the scale returns to zero, or if the APW will be retained for the next counting sequence. Settings are **Enabled** and **Disabled** (the default).

5.4.3.2. Display

5.4.3.2.1. Line 1, Line 2

These parameters determine what is displayed on the two lower lines of the display. Both lines have the same options – **Disabled** (the default), **ID**, **Description** and **APW**.

5.4.3.3. Menu Keys

The **Menu Keys** parameters determine which functions will be accessible from the Operator Menu. Each of the keys is **Disabled** by default.

- If the feature accessed by the menu key must be enabled or configured separately, such as the ID Table, enabling the menu key will display the icon in the Operator Menu, but will not give access to the feature.

5.4.3.3.1. ID Table

When **Enabled**, the Operator will be able to access the ID Table to retrieve stored tare and APW values for a product.

5.4.3.3.2. Reports

When **Enabled**, the Operator will be able to generate a report of the records in the ID Table to view and print.

5.4.3.3.3. Sample/APW Select

When **Enabled**, the Operator will be able to switch from the sampling mode of operation to manual entry of an APW value mode when prompted for **Sample?**.

5.4.3.4. ID Memory

5.4.3.4.1. ID Table

When the **ID Table** is **Enabled**, stored tare and APW values in the ID Table can be recalled by ID for a quick counting sequence.

5.4.3.4.2. Totalization

This parameter appears only if the **ID Table** is enabled. When **Totalization** is **Enabled**, the terminal stores the total number of pieces counted and the number of transactions for each ID in the ID Table. This parameter is **Disabled** by default.

5.4.3.4.3. Clear on Print

This parameter appears only if the ID Table is enabled. Clear on Print may be **Automatic** (the default), **Manual** or **Disabled**. When **Automatic** is selected, after the ID Table report is printed, the counter and totals fields will be reset to 0. When **Manual** is selected, the Operator can choose to clear the counter and totals fields by pressing CLEAR when viewing the ID Table report. If **Disabled** is chosen, the counter and total fields cannot be reset in the Reports view of the Operator menu.

5.4.3.5. ID Table

When this branch is selected, the first record in the ID Table is displayed. Each record occupies a single screen. A blank screen indicates the ID Table is empty. The following functions are accessible from this view:

Key	Function
 ID	Opens ID NEW screen, where a new ID can be set up.
 (CLEAR)	Prompts Delete record? Press ENTER to confirm and delete the displayed record, LEFT arrow to display a message, Delete all records? Press ENTER to confirm and delete all records, LEFT arrow to return to the view without deleting.
UP and DOWN arrow keys	Move the view to the next or previous ID.
 (ENTER/PRINT)	Opens the displayed record for editing.
LEFT arrow key	Exits the ID Table view.

5.4.3.5.1. ID NEW Screen

The following fields are available when setting up a new ID. Each value is updated when the ENTER key is used to move to the next entry box.

Parameter	Function
ID	Initially displays the next available ID, from 01 to 99. This value can be edited. If the entered value is not unique, an error message displays – ID already exists . Press ENTER to clear the error; the first available ID is displayed in the entry field. Note: To exit the screen without creating a new ID, enter 00 in this field and press ENTER.
Description	Alphanumeric description associated with this ID.
APW	Average part weight, in the scale's primary weight units.
Tare	Tare value, in the scale's primary weight units. This value can be 0.00.
n	Number of times a count has been added to the totalization register for this ID.
Tot	The total number of pieces accumulated using this ID.

The following keys can be used when creating a new ID record:

LEFT arrow	Return to ID Table view.
UP and DOWN arrows	Navigate between the labels on the setup page.
ENTER	Confirm entry and move to next parameter.

5.4.4. Operating Sequences

The following sections describe operation of the counting application.

5.4.4.1. Tare – Sample Sequence

Begin with the scale empty and the terminal in the Counting application.

1. The display will prompt **Tare? Press ENTER**.
2. Press ZERO  to capture an accurate zero reference.
3. Place the empty container for the parts to be counted on the scale and press the ENTER key . If no container will be used, simply press ENTER  with nothing on the scale.
4. The weight of the container will be subtracted and the display will indicate a zero net weight. The display will prompt **Sample? Press ENTER**, with a **Sample = xx** entry box below.
5. Add the desired number of sample pieces to the scale.
6. If the displayed sample quantity is correct, press the ENTER key  to start the sampling cycle. If the sample quantity is not correct, use the numeric keypad to enter the correct sample quantity and then press the ENTER key .

7. The main display will change from showing weight to showing the piece count. As additional pieces are added to the scale, the count will increment. Place all pieces to be counted onto the scale.
8. Press PRINT  to print the resulting count. If Auto Print is enabled, the terminal will automatically trigger a demand output when it determines a no-motion condition.
9. Remove the container from the scale and the display will show a piece count equivalent to the tare weight.
10. If counting the same pieces again, place an empty container on the scale and press TARE  to tare to net zero. Additional pieces added to the container will be shown.

5.4.4.2.

Sample – Tare Sequence

Begin with the scale empty and the terminal in the Counting application.

1. The display will prompt **Sample? Press ENTER.** with a **Sample = xx** entry box below.
2. Press ZERO  to capture an accurate zero reference.
3. Add the desired number of sample pieces to the scale.
4. If the displayed sample quantity is correct, press the ENTER key . If the sample quantity is not correct, use the numeric keypad to enter the correct sample quantity and then press the ENTER key .
5. The display will prompt **Tare? Press ENTER.** with an entry box below.
6. Enter the known preset tare value of the container using the numeric keypad and then press the ENTER key . If the tare weight of the container is not known, simply press ENTER  and the tare will be entered later in the sequence.
7. The display will now show the piece count.
8. In the case that the container tare value was not known and was not entered as a preset tare in step 6 above, remove any sample pieces from the scale and place the empty container on the scale. Press the TARE key  to tare the container. The display will now show zero pieces.
9. As additional pieces are added to the scale, the count will increment. Place all pieces to be counted onto the scale.
10. Press PRINT  to print the resulting count. If Auto Print is enabled, the terminal will automatically trigger a demand output when it determines a no-motion condition.
11. Remove the container from the scale and the display will show a piece count equivalent to the tare weight.
12. If counting the same pieces again, place an empty container on the scale and press TARE  to tare to net zero. Additional pieces added to the container will be shown.