User's Guide

IND900 Series

PC for Industrial Applications

METTLER TOLEDO

IND900 Series PC for Industrial Applications

METTLER TOLEDO Service

Essential Services for Dependable Performance of Your IND9xx PC for Industrial Applications

Congratulations on choosing the quality and precision of METTLER TOLEDO. Proper use of your new equipment according to this Manual and regular calibration and maintenance by our factory-trained service team ensures dependable and accurate operation, protecting your investment. Contact us about a service agreement tailored to your needs and budget. Further information is available at www.mt.com/service.

There are several important ways to ensure you maximize the performance of your investment:

1. **Register your product**: We invite you to register your product at www.mt.com/productregistration so we can contact you about enhancements, updates and important notifications concerning your product.
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.
    a. **Installation, Configuration, Integration and Training**: Our service representatives are factory-trained, weighing equipment experts. We make certain that your weighing equipment is ready for production in a cost effective and timely fashion and that personnel are trained for success.
    b. **Initial Calibration Documentation**: The installation environment and application requirements are unique for every industrial scale so performance must be tested and certified. Our calibration services and certificates document accuracy to ensure production quality and provide a quality system record of performance.
    c. **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.
    d. **GWP® Verification**: A risk-based approach for managing weighing equipment allows for control and improvement of the entire measuring process, which ensures reproducible product quality and minimizes process costs. GWP (Good Weighing Practice), the science-based standard for efficient life-cycle management of weighing equipment, gives clear answers about how to specify, calibrate and ensure accuracy of weighing equipment, independent of make or brand.

FCC Notice

This device complies with Part 15 of the FCC Rules and the Radio Interference Requirements of the Canadian Department of Communications. Operation is subject to the following 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 A digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his or her expense.

- Declaration of Conformity may be found at http://glo.mt.com/us/en/home/search/compliance.html/compliance/.

Warnings and Cautions

- READ this manual BEFORE operating or servicing this equipment and FOLLOW these instructions carefully.
- SAVE this manual for future reference.

	**⚠ WARNING**
	ONLY PERMIT QUALIFIED PERSONNEL TO SERVICE THE TERMINAL. EXERCISE CARE WHEN MAKING CHECKS, TESTS AND ADJUSTMENTS THAT MUST BE MADE WITH POWER ON. FAILING TO OBSERVE THESE PRECAUTIONS CAN RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.
	**⚠ WARNING**
	THE IND900 STANDARD TERMINAL IS NOT INTRINSICALLY SAFE! IT MAY NOT BE USED IN AREAS THAT ARE CLASSIFIED AS POTENTIALLY EXPLOSIVE DUE TO COMBUSTIBLE OR EXPLOSIVE ENVIRONMENTS.
	**⚠ WARNING**
	THE PROTECTIVE GROUND CONNECTION MUST BE CHECKED AFTER SERVICE WORK IS PERFORMED. PERFORM THE CHECK BETWEEN THE PROTECTIVE GROUND CONTACT ON THE POWER PLUG AND THE HOUSING. THIS TEST MUST BE DOCUMENTED IN THE SERVICE REPORT.
	**⚠ 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. **TO ENSURE SAFE OPERATION AT ALL TIMES, THE DESIGN OF THE OVERALL INSTALLATION SHOULD INCLUDE PROPER SAFETY DISCONNECT EQUIPMENT SUCH AS EMERGENCY STOP SWITCHES AND POWER DISCONNECTS.** **FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN BODILY HARM AND/OR PROPERTY DAMAGE.**
	**⚠ WARNING**
	DO NOT REPLACE THE BATTERY IN THIS DEVICE WITH THE WRONG TYPE. CONNECT THE BATTERY CORRECTLY. FAILURE TO OBSERVE THIS PRECAUTION MAY RESULT IN INJURIES OF PROPERTY DAMAGE.
	**⚠ WARNING**
	BEFORE CONNECTING/DISCONNECTING ANY INTERNAL ELECTRONIC COMPONENTS OR INTERCONNECTING WIRING BETWEEN ELECTRONIC EQUIPMENT ALWAYS REMOVE POWER AND WAIT AT LEAST THIRTY (30) SECONDS BEFORE ANY CONNECTIONS OR DISCONNECTIONS ARE MADE. FAILURE TO OBSERVE THESE PRECAUTIONS COULD RESULT IN DAMAGE TO OR DESTRUCTION OF THE EQUIPMENT AND/OR BODILY HARM.
	***NOTICE***
	OBSERVE PRECAUTIONS FOR HANDLING ELECTROSTATIC SENSITIVE DEVICES.

Disposal of Electrical and Electronic Equipment

In conformance with the European Directive 2002/96/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.

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Thank you for purchasing the IND900 PC application terminal. The IND900 combines state-of-the-art technology with an optimized operating philosophy, the application areas of which are virtually without limits. Our many years of experience in this product area guarantee the reliability and long service life of your IND900 terminal.

The IND900 is a high-performance terminal that supports IDNet, SICS and SICSpro scales as well as weighing platforms using analog weighing technology. In this context, up to 4 scales can be operated metrological with the option of forming a sum scale. With its high-quality materials and high degree of environmental protection, the IND900 terminal performs reliably in even the harshest industrial settings.

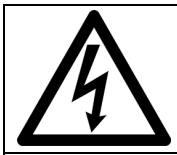
1.1. IND900 Terminal Versions

The IND900 terminal is available with the following functions and versions:

- IND930 as a compact design in a single housing
- IND970-15-HMI as a user interface with touchscreen and keyboard for connection to an IND970-ELO Box
- IND970-19-HMI as a user interface with touchscreen and keyboard for connection to an IND970-ELO Box
- IND970-ELO Box with PC technology for connection to an IND970-HMI
- Housing versions for use as a desk, panel or stand installation
- Connection of up to four scale channels and a metrological correct sum scale
- Connection of up to four analog scales with an input impedance of 80 ohms to 2,400 ohms per scale channel
- Active TFT color LED with backlighting and weight display with a maximum character height of approx. 25 mm for IND930 and approx. 38 mm for IND970-15.
- Up to 6 serial interfaces (RS232/422/485) for asynchronous, bidirectional communication and print output and for IND970-ELO Box another 3 additional PC com ports RS232
- Up to two 10/100 Base-T Ethernet interfaces (depending on the IND900 model)
- Digital I/O interface
- USB master

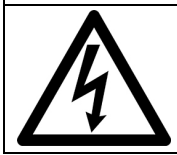
- Support for the following interface options:
  - Analog weighing cell interface
  - Digital inputs/outputs via ARM100
  - PROFIBUS (in combination with INDpro)
  - USB
  - IDNet scale interface
  - SICS/SICSpro scale interface
  - Serial communication
- Basic weighing functions such as scale selection, zero setting, taring and printing
- Use as single and multi-range scale as well as multi-interval scale
- Selectable super/sub-classification operating mode with graphics
- Graphic DeltaTrac display
- Two memory tables for use with tare or target value memory
- Unit switching, including user-defined units
- Alibi memory for up to 500,000 records
- Ten user-specific adjustable print dialogs and report printouts
- Traditional calibration with 3- and 5-point linearization

1.2. Warnings and precautions



⚠ CAUTION

ONLY AUTHORIZED METTLER-TOLEDO SERVICE TECHNICIANS MAY OPEN THIS DEVICE.



⚠ CAUTION

IN CRITICAL APPLICATIONS AND WHEN USING DISCRETE I/O AN ADDITIONAL SAFETY MECHANISM MUST BE USED.

Please read these instructions very carefully before operating the terminal for the first time.

Before plugging in the terminal, it must be ensured that the voltage listed on the model plate matches the local voltage supply. If this is not the case, the terminal must not be connected under any circumstances.

Only power supply sockets that have the correct voltage and ground conduction connection are suitable for this device. The power supply socket must be freely accessible at all times.

While the IND900 terminal may be very sturdy, it is also a precision instrument. For this reason, care should be exercised when handling and installing the terminal.

Only suitable commercially-available cleaners may be used for cleaning the device.

1.2.1. Malware Disclaimer for IND900

METTLER TOLEDO undertakes all reasonable steps to deliver the IND900 without virus or other malware infection. Malware as used herein stands for malicious software, meaning any kind of harmful, unintentional code. The production environment is permanently checked. However we can neither warrant nor guarantee absolute freedom of malware or viruses for our product over

its lifetime. Therefore you are urged to take all reasonable efforts and corrective actions to protect your system and infrastructure against malware attacks.

In particular you are advised herewith to take all necessary steps to ensure that no virus contamination, Trojan horses, worms or other harmful malware occurs in your equipment. METTLER TOLEDO cannot accept responsibility for any loss or damage sustained as a consequence of any malware transmission. METTLER TOLEDO does not warrant that our system will operate error free or without interruption, or in combination with other software, or that all program defects are correctable.

Malware protection for PC based scales should be managed centrally in your network environment by using firewalls, proxy servers and corresponding tools. Network administrators shall limit inbound and outbound traffic to certain protocol sets such as HTTP or FTP. Administrators shall also restrict unwanted or unauthorized network traffic using filters in IP addresses and MAC addresses.

To limit vulnerability of the IND900, the operating system must be maintained regularly by installing the most recent updates and patches.

Please note that due to the severe impact of virus scanners on overall system performance and real time availability of the processor in a Windows-based system, we do not generally recommend installing a virus scanner, nor do we recommend any particular type of protection software. METTLER TOLEDO does not test any anti-virus solutions on its products but does strongly recommend that network administrators identify and install the best anti-virus solution for their particular needs based on their IT policies and system configuration, among other things.

- Do not overload the operating system with virus scanner or other background processes. Take care that processor load remains below 70%.

1.2.2. Special directories in mass storage

Some directories in the mass storage of the IND900 are located required for the proper functioning of the system. It is very important that the content of these directories is not changed. Do not add, edit or delete any files in the following directories

- IND900Weigh
- Mettler-Toledo
- Service
- Backup
- IND900Totalization
- IND900Service
- MTA
- Templates
- Restore
- IND900Com

1.3. Operating environment

The following must be considered when selecting the installation site:

- Select a stable, vibration-free surface
- Ensure that no extreme temperature fluctuations occur and that the terminal is not exposed to direct sunlight
- Avoid any draft (e.g. from fans or an air-conditioning system)
- Readjust the terminal after all major changes to the geographical position (recalibration)

1.3.1. Temperature and Humidity

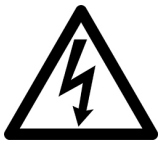
The IND900 terminal can be operated within the temperature and relative humidity ranges listed in chapter 1.9 Technical Data in Table 1-1. The terminal can be stored at temperatures from –20 °C to +60 °C (–4 °F to +140 °F), at 10 % to 85 % relative humidity, non-condensing.

1.3.2. Protection from the Environment

The housing variants of the IND930, IND970-15 and IND970-19 for desk, panel and stand design as well as the IND970 ELO Box meets the requirements of IP69k. The versions for control panel installation meet the requirement for IP69k at the front.

NOTICE
IF THE DEVICE IS USED OTHER THAN AS DESCRIBED IN THIS MANUAL, THE PROTECTION PROVIDED MAY BE IMPAIRED.

1.3.3. Hazardous areas

	**⚠ WARNING**
	THE IND900 STANDARD TERMINAL IS NOT INTRINSICALLY SAFE! IT MAY NOT BE USED IN AREAS THAT ARE CLASSIFIED AS POTENTIALLY EXPLOSIVE DUE TO COMBUSTIBLE OR EXPLOSIVE ENVIRONMENTS.
	**⚠ CAUTION**
	ONLY AUTHORIZED METTLER-TOLEDO SERVICE TECHNICIANS MAY OPEN THIS DEVICE.

The standard version of the IND900 terminal cannot be operated in areas that have been classified as potentially explosive according to the National Electrical Code (NEC) due to combustible or explosive environments. Contact your authorized METTLER TOLEDO representative if you need information about applications in hazardous areas.

1.3.4. FCC Notification

This corresponds to section 15 of the FCC regulations and the radio interference changes of the Canadian Communication Ministry. Its operation is subject to the following conditions: (1) This device must not cause any radio interference, and (2) the device must be capable of tolerating all received radio interference, including such disturbances that, under certain circumstances, negatively influence operation.

This device was checked and according to section 15 of the FCC regulations is within the limit values for a Class A digital device. These limit values ensure protection from radio interferences if the device is operated in a commercial environment. This device generates, uses and can radiate radio frequency energy. Improper installation and use can result in disruptions of the radio communication. The operation of this device in a residential area probably will result in radio interference, and appropriate measures to correct the problem must be undertaken at the user's expense.

1.4. Chemical Resistance

The front film of the IND900 touchscreen consists of a durable polyester film with a good resistance to alcohol, diluted lyes, esters, hydrocarbons, ketones and standard household cleaning agents.

In accordance with DIN 42115 part 2, it is resistant to the following chemicals when exposed to them for more than 24 hours without visible changes:

Ethanol Cyclohexanol Glycol Isopropanol Glycerine Methanol	Acetaldehyde Aliphatic hydrocarbons Gasoline Toluene Xylene Benzene	Hydrochlorofluorocarbons Perchlorethylene 1.1.1.Trichloroethane Trichloroethylene Ethyl acetate Diethyl ether
Acetone Methyl ethyl ketone Dioxane Acetonylacetonate	Sulfuric acid <50 % Acetic acid <50 % Phosphoric acid <30 % Hydrochloric acid <10 % Nitric acid <10 % Sulfuric acid <10 % Tetrahydrofuran	Sodium hypochlorite <20 % Hydrogen peroxide <25 % Green soap Detergent Fabric softener
Ammonia <2 % Soda lye <2 % Alkali carbonate Bichromate Prussiate of potash Silver nitrate 20 % Brake fluid	Drilling emulsion Diesel oil Varnish Paraffin oil Castor oil Silicone oil Turpentine oil substitute	Saturated salt solution water

The front film is **not** resistant to the chemicals listed below:

Concentrated mineral acids Concentrated alkaline lyes High pressure steam above 100 °C	Benzyl alcohol Methylene chloride Chlorinated detergents

The front membrane is not suitable for long-term exposure to direct sunlight.

1.5. Inspection and Checklist for Contents

Check the contents and inspect the supply immediately upon delivery. If the shipping container is damaged upon arrival, check the contents for damage and, if necessary, submit a damage claim to the transport agency. If the container is not damaged, remove the IND900 terminal from the protective packaging; note how it was packaged and check all components for damage.

If the terminal must be shipped again, the original packaging should be reused. The IND900 terminal must be correctly packed to ensure safe transportation.

The following components are included:

- IND900 terminal
- Quick Guide
- Documentation CD
- Possibly a bag with parts, depending on the terminal configuration

1.6. Dimensions

The following drawings show the dimensions in millimeters of the IND900 in its different versions.

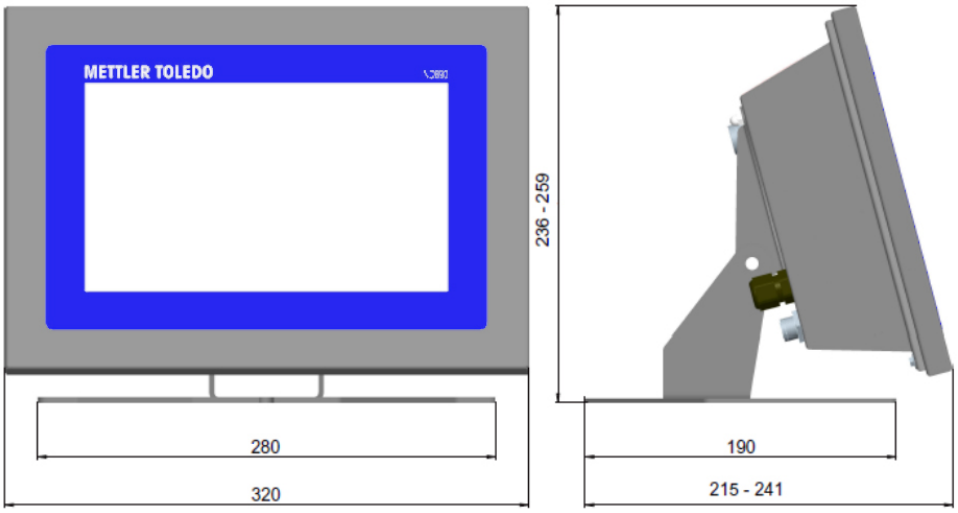


Figure 1-1: Dimensions of IND930, Desk/Panel Version

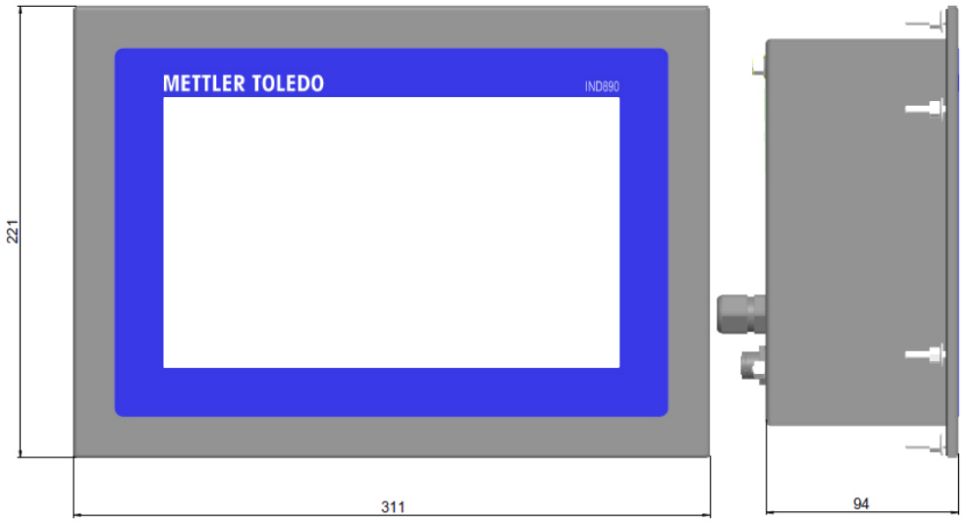


Figure 1-2: Dimensions of IND930, Panel Mount

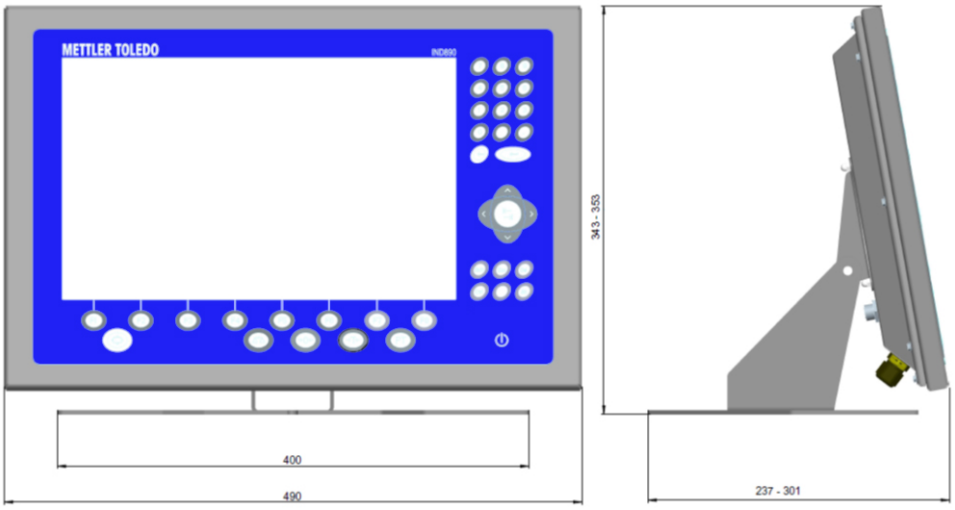


Figure 1-3: Dimensions of IND970-15. Desk/Panel Installation

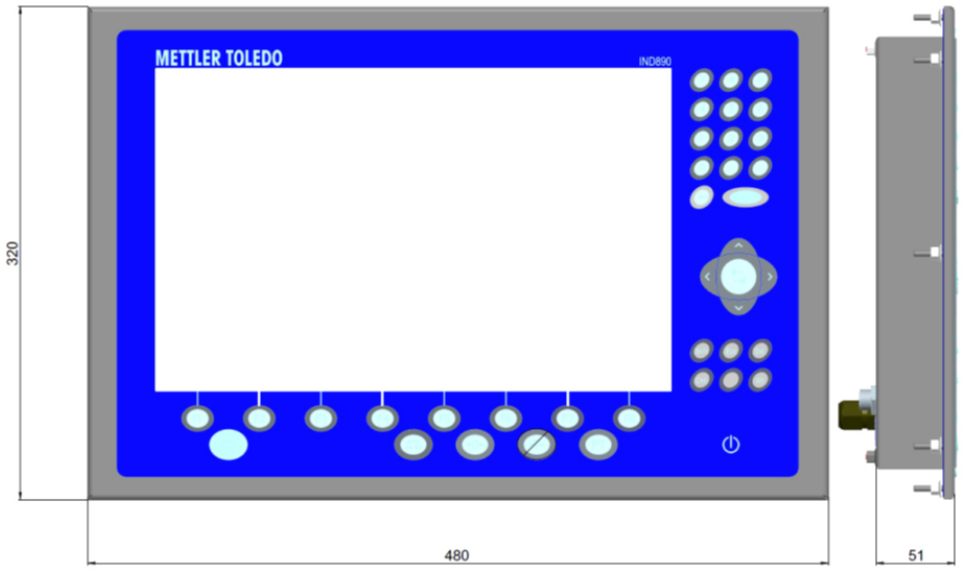


Figure 1-4: Dimensions of IND970-15, Panel Mount

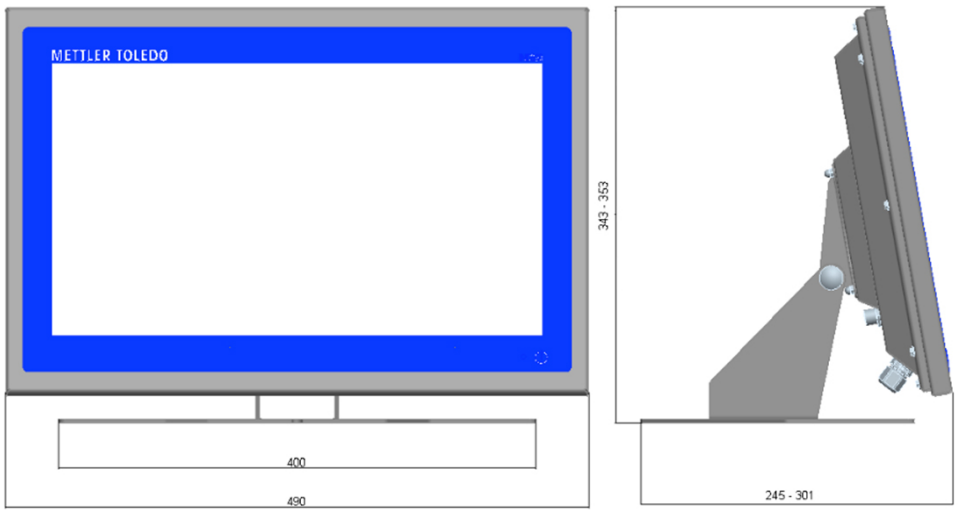


Figure 1-5: Dimensions of IND970-19, Desk/Panel Version

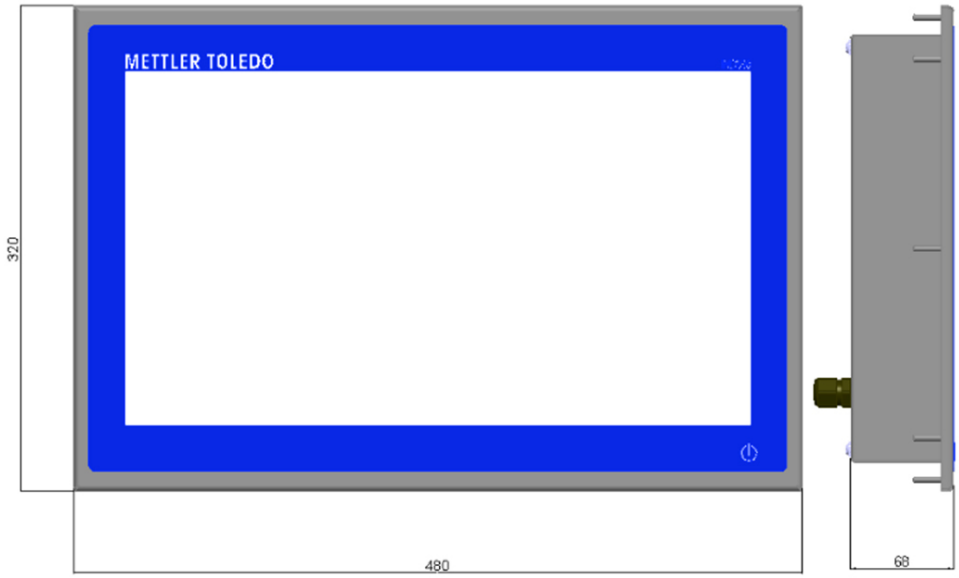


Figure 1-6: Dimensions of IND970-19, Panel Mount

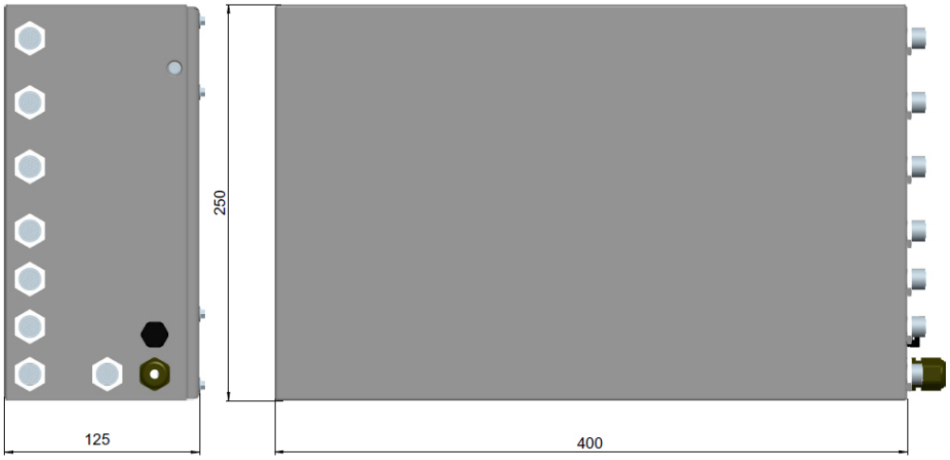


Figure 1-7: Dimensions of IND970 ELO Box

1.7. Technical data

The IND900 terminal's specifications are listed in Table 1-1.

Table 1-1: IND900 Technical Data

IND900 Technical Data	
Housing type	Desk/panel/stand installation, stainless steel housing AISI 304 / 1.4301, DIN X5 CrNi 1810
	Control panel installation version, stainless steel housing AISI 304 / 1.4301, DIN X5 CrNi 1810
Maximum housing dimensions (H × W × D)	Desk, panel and stand version IND930: 259 mm × 320 mm × 241 mm Desk, wall and stand version IND970-15 und IND970-19 353 mm × 490 mm × 301 mm IND970 ELO Box: 250 mm × 125 mm × 400 mm

IND900 Technical Data	
	Control panel installation IND930: 221 mm × 311 mm × 94 mm Control panel installation IND970-15-HMI: 320 mm × 480 mm × 51 mm Control panel installation IND970-19-HMI: 320 mm × 480 mm × 68 mm
Net weight	IND930-Desk = 4.7 kg IND930-Panel = 3.9 kg IND970-15 / -19 HMI Desk = 9.7 kg IND970-15 / -19 HMI Panel = 7.5 kg IND970 ELO Box = 5.2 kg (Depends on type and configuration)
Gross weight (With packaging = shipping weight)	IND930-Desk = 5.5 kg IND930-Panel = 4.5 kg IND970-15 / -19 HMI Desk = 11.4 kg IND970-15 / -19 HMI Panel = 8.5 kg IND970 ELO Box = 6.3 kg
Type of protection (EN40050)	The housing variants of the IND930, IND970-15 and IND970-19 for desk, panel and stand design as well as the IND970 ELO Box, meet the requirements of IP69k. The versions for control panel installation meet the requirement for IP69k at the front. Hence, the IND900 is dust-proof and splash-proof and suitable for high-pressure and steam cleaning.
Ambient temperature	Running: -10 °C - +40 °C for scales of approval class III 0 °C - +40 °C for scales of approval class II Storage: -20 °C to +60 °C (–4 °F to 140 °F)
Maximum relative humidity	-10 °C to +40 °C (14 °F to 104 °F), at 10 % to 85 % relative humidity, non-condensing
Ambient conditions according to EN 61010	Indoor use only Pollution degree 2 Overvoltage category II Max. installation height 2,000 m AMSL
Hazardous Areas	The IND900 terminals cannot be operated in hazardous areas
Power supply	100-240 V AC, +10 % / - 15 %; 50/60Hz Current consumption: IND930: 650 mA – 275 mA IND970-15 / -19 650 mA – 275 mA IND970 ELO Box: 750 mA – 375 mA
	Country-specific power cable
Display	Active TFT color LED with backlighting and weight display with a maximum character height of approx. 25 mm for IND930, approx. 38 mm for IND970-15, and approx. 44 mm for IND970-19. Supports display of up to four connected scales.
Weight display	Display resolution: 300,000 digits for analog scales Display resolution for IDNet scales, SICS and SICSpro scales depends on the weighing platform used.
Scale types	Analog, IDNet, SICS, SICSpro

IND900 Technical Data		
Data for connecting analog scales	Min. load cell impedance:	80 ohms
	Max. load cell impedance:	2,400 ohms
	Sensitivity:	2…3 mV/V
	Max. resolution:	10,000 e 300,000 d
	Min. increment:	0.26 µV/e 0.026 µV/d
	Load cell supply voltage:	3.3 V
	Max. cable length:	100 m
	Typical stabilization time:	0.5 s
Number of scales	Up to four scale channels operating simultaneously Maximum of 4 scales can be displayed simultaneously. Important: In Japan, a maximum of 3 IDNet or Analog scale interfaces may be connected.	
Analog/digital refresh rates	Internal	Analog: >366 Hz
	IDNet:	depends on the weighing platform
	SICS:	depends on the weighing platform
	SICSpro:	depends on the weighing platform
Keypad	IND930:	None; the terminal is operated exclusively via the display using the touchscreen.
	IND970-15:	Action point membrane keypad, 38 keys with numeric keypads, navigation keys, function keys and scale function keys
	IND970-19:	Only ON/OFF key; the terminal is operated exclusively via the display using the touchscreen.
Communication	**Serial interfaces** Standard: Ethernet 10/100 Base-T **Protocol** Serial inputs: ASCII characters, ASCII commands for CTPZ (Cancel, Tare, Print, Zero), SICS (stages 0, 1, 2 and 3) Serial outputs: Request with up to ten configurable print dialogs, report printout, interfaces with external ARM100 input/output modules	
Approvals	EC conformity CE marking with declaration of conformity – Certification for EC Directive 90/384/EEC; 93/68/EEC; EN 45 501; OIML R76; NTEP-compliant – Electrical safety EC Directive 73/23/EEC; 93/68/EEC; CAN/CSA-C22.2 No. 61010-1-04, UL Std. No. 61010-1 (2nd Edition) approved Electromagnetic Compatibility EC Directive 89/336/EEC; 92/31/EEC; 93/68/EEC; EN 61000-6-3, EN 61000-6-2	

1.8. Main Board

The main board of the IND900 terminal features connections for microprocessor, main memory, battery, Ethernet, USB and serial communication.

1.9. Interface Controller Board

The interface controller board (ICB) features 6 freely configurable ports (RS232, RS422, RS485, USB and scale interfaces). These ports are bidirectional and can be configured for

different functions, e.g. demand output, SICS, ASCII command input (C, T, P, Z), ASCII character input, report printout or connection to an ARM100 module.

1.10. Weighing Platforms

The IND900 supports analog, IDNet, SICS and SICSpro weighing platforms. A maximum of four scales (including mixed types) can be connected to an IND900.

- **Important**: In the case of IND900 devices for use in Japan, the scale interfaces IDNet or analog scale can use a maximum of 3 interfaces per device.

1.10.1. Weighing platform with analog weighing cells

The IND900 supports scale types with an analog weighing technology via the analog weighing cell interface. The terminal can operate up to four scale channels, each with an input impedance of between 80 and 2,400 ohms.

1.10.2. IDNet™ weighing platform

The IND900 supports the newer T-brick version of a precision weighing platform, via the IDNet scale interface.

1.10.3. SICS/SICSpro weighing platform

The IND900 terminal supports the (high-precision) scales from METTLER TOLEDO that use the SICS communication protocol. These scales feature the brand names METTLER TOLEDO Excellence, X-Base/platforms, WM/WMH/WMS, scales of series 4 (BBx4xx, IND4xx) and scales of series PBK9 and PFK9. SICS/SICSpro scales are connected to the IND900 terminal using serial interfaces. With optional interface cards installed, each terminal can support up to four SICS/SICSpro scales. Depending on the type of SICS/SICSpro scale connected, different configuration settings are available on the setup screens of the IND900 terminal.

1.11. Options

The following additional options are available for the IND900:

- Serial interfaces (RS232/425/485)
- USB interfaces
- Digital inputs/outputs (4I/O)
- Digital inputs/outputs (via ARM100 module)
- PC com ports RS232 (only IND970 ELO Box)
- Scale interfaces for analog scales, IDNet, SICS or SICSpro
- Different cables for connecting the interfaces
- Floor stand
- Calibration set

The scale connections as well as the additional interface options are implemented via six internal option slots in the IND900. Different options that are required for the respective

application can be combined, but no more than a total of six. Furthermore, two additional USB interfaces can be installed in the IND970-15-HMI.

1.11.1. Serial interfaces

Additional communication cards offer RS232, RS422 or RS485 communication at speeds from 1200 to 57600 baud. A maximum of 6 serial communication modules can be installed.

Moreover, a set of three PC com ports RS232 can be installed for the IND970 ELO Box. The voltage can be loaded with a maximum of +5V 300mA, +12V 150mA.

- **IMPORTANT**: External systems should always use software handshaking with the terminal. Be sure that a program communicating with the terminal waits for a response after every command before sending a new command. Sending a command before receiving a response may result in data loss or interfaces, which stop communicating!

1.11.2. USB interfaces

Additional communication cards enable the connection of USB devices according to USB standards 1.1 and 2.0. A maximum of 3 USB communication modules can be installed. Each USB connection has a maximum load rating of 500 mA. However, for each IND900 the total may not exceed 600 mA.

1.11.3. Digital inputs/outputs

- **IMPORTANT**: The IND900 terminal can use **either** its internal optional DIO boards **or** external ARM100 modules, but **not both**.

1.11.3.1. Optional Digital inputs/outputs (4I/O)

The IND900 can be equipped with one or two optional digital Input/Output boards, installed in positions X5 and X6.

Each 4I/O-890 provides 4 digital inputs and four digital outputs. Their characteristics are described in Appendix C.

Refer to Appendix A, **Installation**, for connector pin assignments.

1.11.4. PLC Interface

An optional PROFIBUS interface is available.

1.12. Display and keyboard

The IND900 is equipped with an active color TFT display with backlighting. Resolutions and sizes are as follows:

- IND930 – 1280 x 800 pixels, 10.1" (25.7 cm)
- IND970-15 – 1280 x 800 pixels, 15.4" (39.1 cm)
- IND970-19 – 1280 x 800 pixels, 18.5″ (47.0 cm).

The weight information can be displayed in a multitude of formats, including single- or multi-scale display with or without tare window.

Figure 1-8 and Figure 1-9 show the positions of keys and screen display items in the IND970-15.

Figure 1-8: IND970-15 Fascia

Figure 1-9: IND970-15 Windows Function Keys, Detail

The IND930 (Figure 1-10) does not have a membrane keypad, but it is operated in the same way via touchscreen.

Figure 1-10: IND930 Fascia

The IND970-19 (Figure 1-11) has only an ON/OFF switch. The terminal is operated exclusively using the touchscreen. A computer mouse or similar pointing device can also be connected to the standard USB port.

Figure 1-11: IND970-19 Fascia

All IND900 models feature an integrated touchscreen and can be operated exclusively via this screen.

In the display layout, the area at the very top is reserved for the system toolbar. It can display general data as well as status icons, which are enabled or disabled in setup.

Next is the weight display with all the relevant weighing information. The middle section of the display is reserved for status messages and special applications. The bottom section contains the areas reserved for DeltaTrac, and the softkeys are arranged underneath.

8 softkeys can be configured to enable a variety of integrated functions of the IND900, ranging from the setting of time and date to access to specific memory tables, and including special scale functions of the IND900 and its application PACs.

In the IND970-15 only, the numeric keypad is used for entering data. The numeric keys are located at the top right side of the front panel of the terminal (Figure 1-9). Alphanumeric data can be entered via the softkey or by using an external USB keyboard, or scanned in from a barcode reader or other external device.

Eight function keys are arranged underneath the screen. The operator can use these keys to navigate through the setup options in the menu structure and within setup and application screens.

The IND970-19 (Figure 1-11) has only an ON/OFF switch. The terminal is operated exclusively using the touchscreen. A computer mouse or similar pointing device can also be connected to the standard USB port.

2 Operation

This chapter covers
- Security
- Display operation
- Description of the navigation interface
- Home screen
- Weight window
- Backlighting and screen saver
- Basic functionality
- Direct access to alibi memory
- Browsing tables
- Starting an application

The IND900 is a user-friendly and technically sophisticated weighing terminal that excels with its large variety of application options and intuitive touchscreen operation.

While reading this manual and operating the terminal, keep in mind that various functions or softkeys may not have been enabled for your installation. Hence, the menus pictured in the manual may differ from terminal to terminal and depending on setup and configuration.

This document contains instructions for executing typical weighing processes with the IND900 terminal.

2.1. Security

The IND900 supports the use of a user name/password for configuration security on four levels. To define the security levels assigned to specific parameters during setup, refer to chapter 3, **Configuration**.

- **Administrator** – An administrator account has unrestricted access to all areas of the operating system and setup. There can be several administrator accounts. The primary administrator account cannot be deleted. If logged in under this primary administrator account, it is possible to create, manage and delete additional user accounts.

  If a calibration set is installed, certain metrologically relevant parameters can be changed only after removing the calibration screw and pressing the W&M switch (refer to the following section).

  After configuring an additional administrator, you should take care to remember the password. If the password is changed or forgotten, only the primary administrator account can access the complete setup menu. Ensure that unauthorized persons do not have access to the password.

- **Supervisor** – Access is identical to an **Administrator**'s, but a Supervisor cannot change metrologically significant parameters.
- **Operator** – A default user account is predefined. This is particularly useful for locations with validation requirements. An Operator can view, but not change, setup parameters.

The user identified as a default user is automatically logged in after switching on the IND900 or after the Logout of another user. Depending on the access right of the logged-in user, setup menus are displayed only or they are displayed and can be changed. In addition, each user is assigned only certain softkeys and operating functions.

If a login fails, the terminal displays an error message. Pressing OK clears the message and the terminal again shows the user account screen.

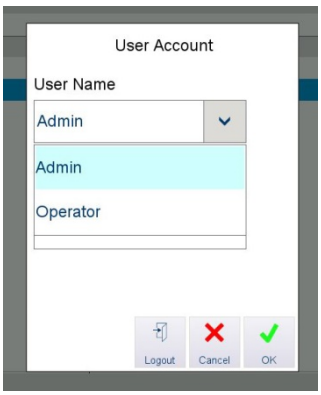


Figure 2-1: User Login

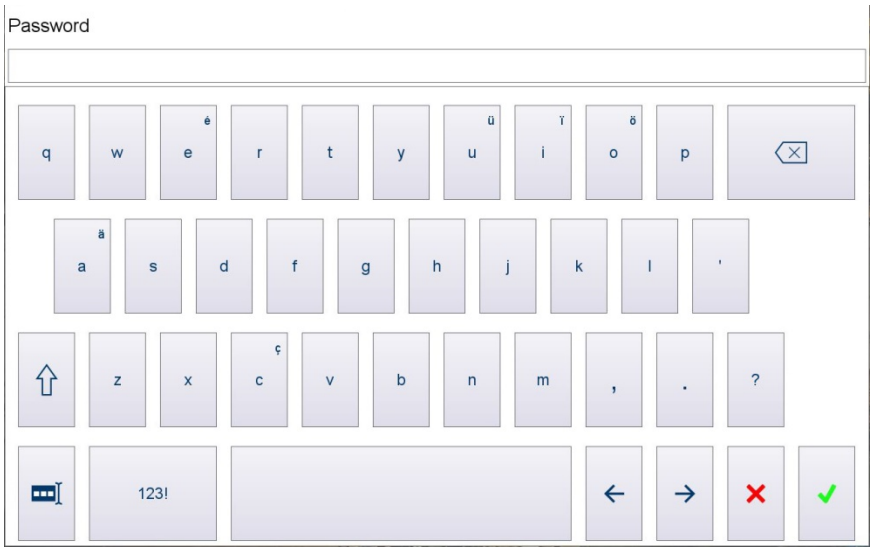


Figure 2-2: Password Entry Screen

2.1.1. Calibration Screw

For calibrated operation, the IND900 must be equipped with a calibration set, the calibration screw must be screwed in and the paper seal must be attached and undamaged. Only after removing the calibration screw that is secured against manipulation by the paper seal – and therefore damaging the paper seal – and pressing the W&M switch does a user who is logged in with administrator security level have access to the metrologically relevant parameters of the connected scales.

For a recalibration, the calibration screw must be screwed in again, the locking mark must be replaced and W&M Approval Mode must be enabled in setup of the scales. Figure 2-3 shows the calibration screw applied to the rear of the device (IND930) or to the ELO-Box (IND970-15/-19), with and without the paper seal.

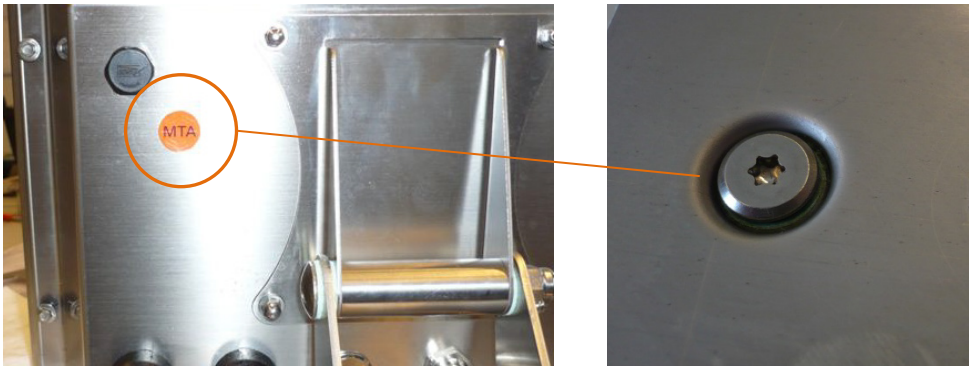


Figure 2-3: Calibration Screw, Before and After Removing the Paper Seal

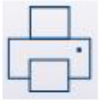
2.2. Display Operation

2.2.1. Softkeys and Symbols

Softkeys use graphical, self-explanatory symbols for identification. Table 2-1 shows the available symbols and their functions, which are subdivided according into categories according to their use.

Even though softkeys are visible, their functions are not always available to the user.

Table 2-1: Softkey Symbols and Functions

Symbol	Designation	Explanation
	Display Alibi Memory	Display contents of the Alibi Memory Table, if it is enabled.
	Clear	Clear a tare value.
	Preset Tare	Open a dialog permitting entry of tare value.
	Print	Send the current transaction to a connected printer.
	Switch Scales	Cycle through available scales. Scales are selected in continuous sequence, Scale 1, Scale 2, Scale 3, Scale 1…
	Switch Units	Toggle the weight display between primary and secondary units or If **Unit Roll** is enabled, cycle through all available units.

Symbol	Designation	Explanation
	Tare	Set current scale weight as tare value.
	Enhanced display	Expand weight value to display one more decimal place.
	Zero	Set scale weight to zero, if scale is within zero range as configured in setup.

2.3. Description of the Navigation Interface

When navigating applications and configuring the IND900 terminal, the following interface elements are used:

- Navigation keys (IND970-15)
- Softkeys
- An optional external keyboard
- Scale function keys (IND970-15)
- Numeric or alphanumeric input windows

Figure 2-4 and Figure 2-5 show the positions of keys and screen display items in the IND970-15.

- On-screen elements are common to all three terminal variants. They are labeled only in Figure 2-4.

Figure 2-4: IND970-15 Fascia

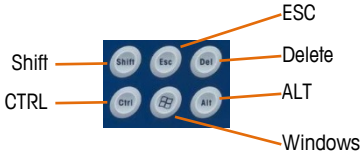


Figure 2-5: IND970-15 Windows Function Keys, Detail

The IND930 (Figure 2-6) does not have a membrane keypad, but it is operated in the same way via touchscreen.

Figure 2-6: IND930 Fascia

The IND970-19 (Figure 2-7) has only an ON/OFF switch. The terminal is operated exclusively using the touchscreen. A computer mouse or similar pointing device can also be connected to the standard USB port.

Figure 2-7: IND970-19 Fascia

2.3.1. Navigation Keys

The navigation keys (for IND970-15 only, refer to Figure 2-5) provide additional navigation options in addition to the touchscreen if this is supported by the application. For example, the central tab key allows jumping to the next input field in tables or the left/right arrow keys allow moving the cursor when an input dialog is open.

Preference should, however, be given to operating via touchscreen since it is more intuitive and faster.

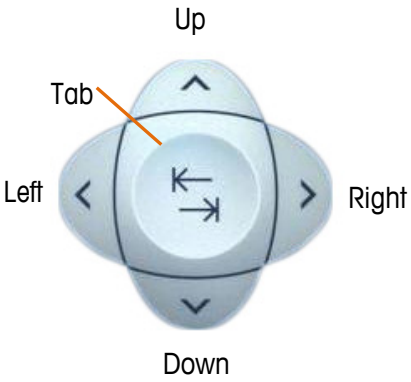
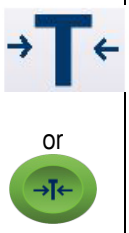
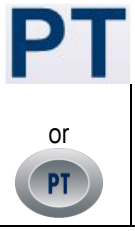


Figure 2-8: Navigation Keys

2.3.2. Scale Function Keys

The four scale function keys (see Figure 2-4) are on the touchscreen in all models, and on the membrane keypad in the IND970-15. The softkeys can be assigned individually to the different operators in softkey setup – refer to the previous section.

Table 2-2: Scale Function Keys

Softkey/key	Explanation
	**Switch Scale** If several scales are connected to the terminal, this button allows users to change between scales, including the sum scale if one is configured.
	**Zero** If the scale platform or the weighing platform is empty, the terminal should display zero. The gross zero reference is recorded during the calibration. Pressing the Zero key enters a new gross zero reference point if the weight is in the zero range.
	**Tare** Tare is the weight of an empty container. Tare is generally used to determine the net weight of the content of a container. The Tare key is pressed when an empty container is on the scale. The terminal acquires the tare value and displays zero as the net weight. The weight display shows NET and a small box appears just above the weight display, where the tare value, tare type and tare unit are displayed (if configured; refer to 2.6.3, **Tare**). When the container is loaded, the terminal shows the net weight of the content. To delete the preset tare value, touch **Clear** C.
	**Preset Tare** If the weight of the empty container is known, the tare value is directly entered by touching Preset Tare PT and entering a value. The terminal then displays the net weight of the container content. To delete the preset tare value, touch **Clear** C.

- The subsequent text references only the softkeys and not the corresponding keys on the IND970-15 membrane keypad. Note that they have the same function as the softkeys but only if their function is enabled in setup.

2.3.3. Numeric Entry

Numeric entries can be made directly via the membrane keypad (IND970-15 only), and also via an external keyboard.

Preference should be given to the entry via touchscreen, where the numeric entry can have the following maximum display options, depending on permissible values and functions:

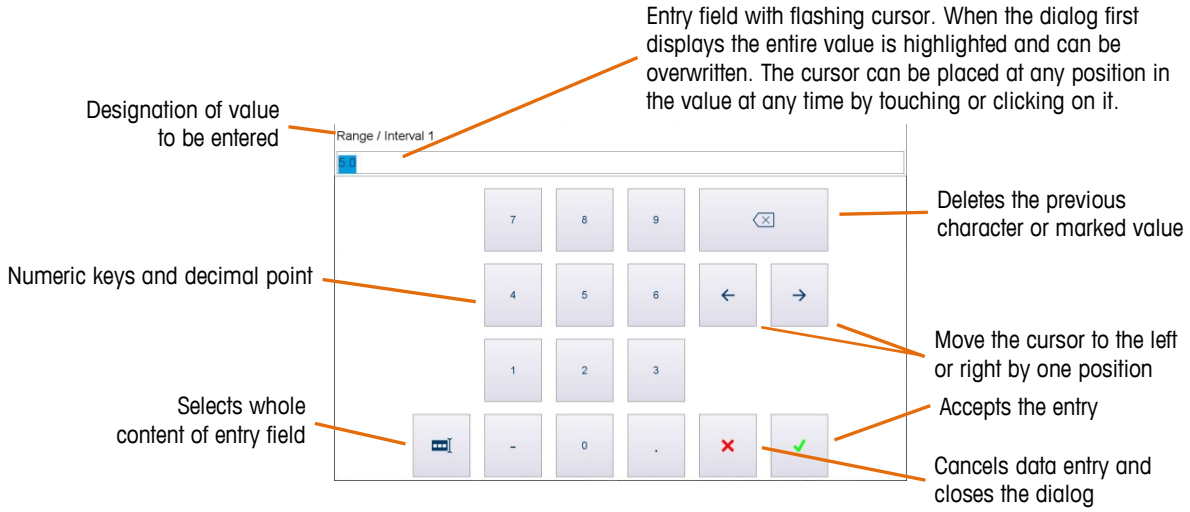


Figure 2-9: Numeric Entry Keypad

2.3.4. Alphanumeric Entry

Alphanumeric entries can also be made using an external keyboard.

Input via touchscreen is made using three easily switchable keyboard layouts. Its functions are otherwise identical to those of the numeric entry.

The keys ABC123!, abc and %@& (at lower left of the keyboard displays shown in and Figure 2-10) can be used to switch the keyboard to display to upper or lower case letters, or special characters.

Figure 2-10 shows the sequence of screens which appear as the keys displayed at left are touched.

Figure 2-10: Accessing Alternative Keyboard Layouts

2.3.5. Screen Adjustment Key

In the IND970-15, the screen adjustment key can be used to adjust the screen.

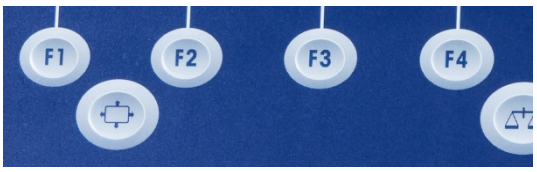


Figure 2-11: Screen Adjustment Key, IND970-15

To access the setting menu, the adjustment key must be pressed **and held** throughout the procedure.

To confirm and save settings, simply release the adjustment key.

- If no entry is made for approximately 5 seconds, even while the adjustment button is pressed the setting menu will close and any changes will be saved.

2.3.5.1. Example: Setting Screen Brightness

To adjust the brightness of the screen:

1. **Press and hold** the screen adjustment key.
2. Press F1 to enter setup.
3. Press F4 to move focus to the right, to the display brightness tab.
4. Press F2 F2 twice to select brightness and enter the adjustment mode.
5. Use F3 to decrease the brightness and F4 to increase it.
6. Once the brightness is satisfactory press F2 to confirm the setting, and release the screen adjustment key to save the setting and exit the menu.

- For the initial commissioning of the IND970-15 in the base state (i.e., not from within setup), press and F2 at the same time to start the **Auto Setup** procedure and adjust the screen and ELO Box to each other. During this process, the display may shake a little. Afterwards, the screen and ELO Box are tuned to each other. This adjustment only needs to be made once.

2.3.6. Switching On and Off and Restart

The device can be switched on and off (shut down), placed in standby or restarted as follows:

	IND930	IND970-15/-19
Switching on	Insert the power plug; the IND900 starts up automatically.	Insert the power plug. The power LED flashes. Press the On/Off key until a beep sounds. The IND900 starts up and the power LED is lit constantly.
Switching off (shutdown)	Select Shut Down from the system menu.	

- Only after the IND900 has been completely shut down or a confirmation message appears may the power plug be pulled out or the voltage supply disconnected.

2.4. Home Screen

Fig. 2-10 shows the home screen, from which the operator has access to the softkeys.

Figure 2-12: Weighing Operation Home Screen

The home screen contains:

- **Status bar** — System menu access; system messages; login status; language selection icon; time and date
- **Metrology Line** — Cyclical display of current metrology settings, in upper area of weight window
- **Weight window** — Weight with current units, center of zero, gross/tare indication; tare value and type, scale number, scale parameters, approval class and other application-specific weighing data.
- **Softkeys** — Symbols and names for the active functions available to the user. The **>** symbol indicates that additional softkeys are available.

2.4.1. Color Schemes

The IND900 display can be changed to suit varying lighting conditions. Three options appear under the main menu at upper right of the home screen:

Figure 2-13: Color Scheme Menu Options

2.4.1.1. Bright Light Mode

In Bright Light Mode, screen colors are simplified and contrast is enhanced for easy readability in brightly-lit environments.

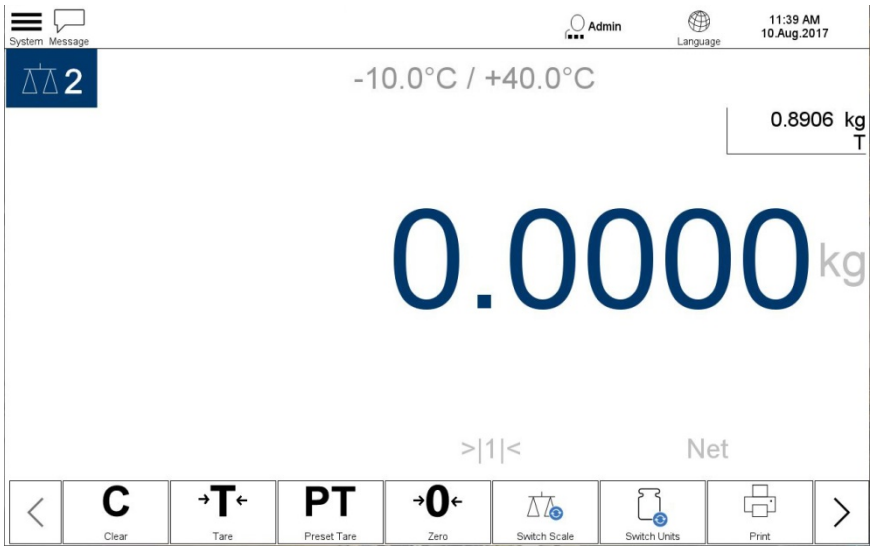


Figure 2-14: Bright Light Mode

2.4.1.2. Low Light Mode

In Low Light Mode, the screen colors are inverted for easy readability in darker environments.

Figure 2-15: Low Light Mode

2.4.1.3. Standard Mode

The Standard Mode should provide good visibility in most typical lighting environments. With the exception of the Figures immediately above, the screen images in this manual show the screen in this mode.

2.4.2. Display Size Options

In Setup at **Terminal I Display I Text & Graphics Size**, text and graphics can be set to appear Small, Medium or Large. These settings modify the way configuration and other dialogs appear.

Smaller settings permit more elements to displayed at once, but are best used on larger (15″ or 19″) displays.

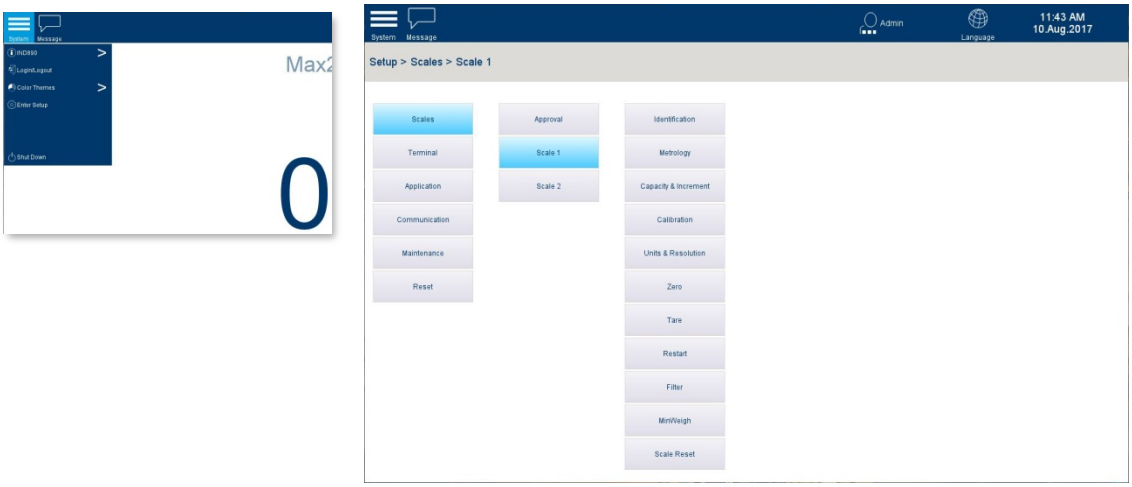


Figure 2-16: Text and Graphics, Small

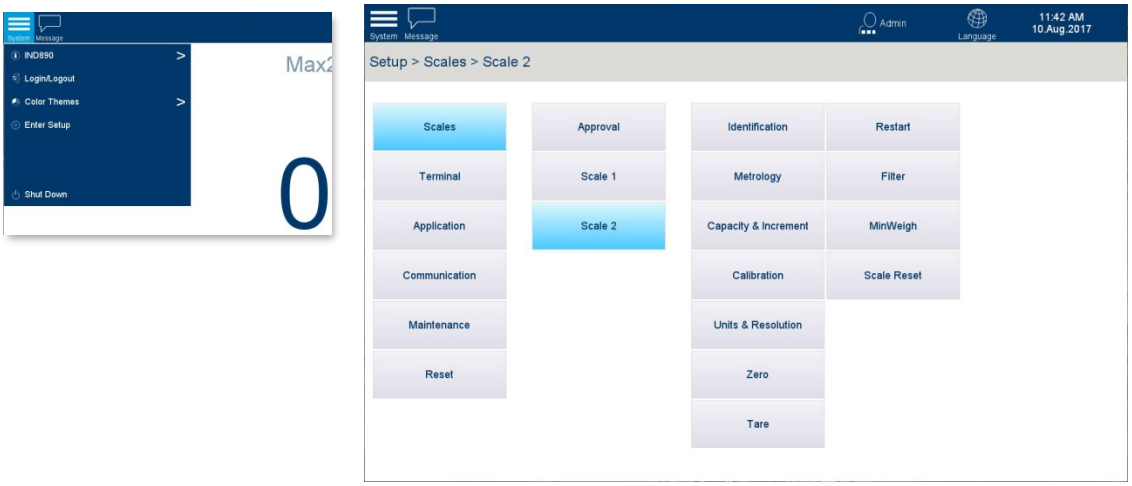


Figure 2-17: Text and Graphics, Medium

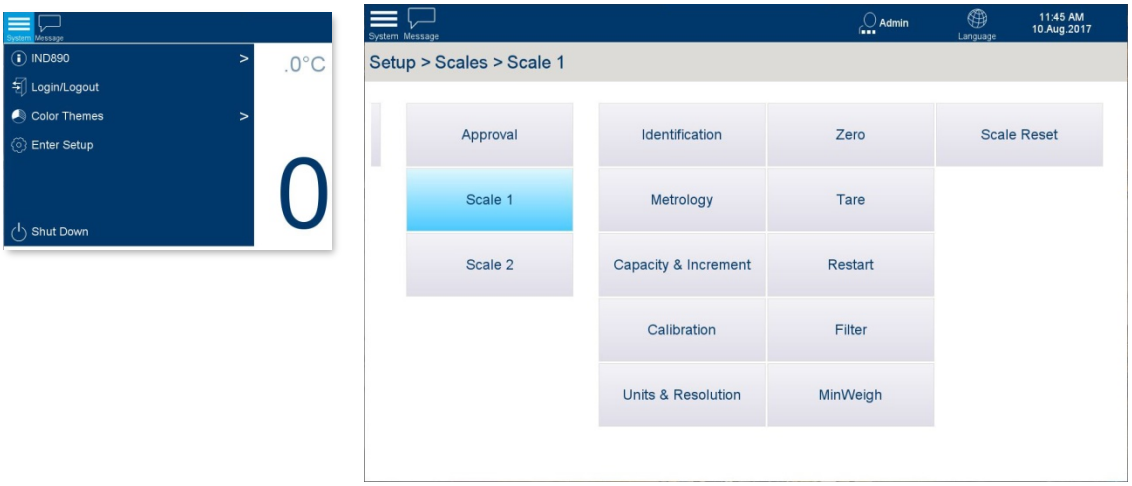


Figure 2-18: Text and Graphics, Large

2.4.3. Screen Elements

When weighing, measured data which is always displayed, or displayed only in W&M Approval Mode, is always visible with the weight value(s) of the connected scales.

2.4.3.1. X10 Display

For test purposes, the weight value can be displayed at a higher resolution with the x10 softkey. In W&M Approval Mode, the adjustment persists **only** while the softkey is touched. When x10 is active, the weight value cannot be printed, the weight value is displayed in orange, and an indication is shown at the bottom of the weight display area.

Figure 2-19: Standard Weight Display

Figure 2-20: Expanded weight display

2.4.3.2. Metrological Information and Approval

Metrological information is displayed in the top center part of the weight display area. Depending on the selected scale type and the approval status, information is presented in rotation, each display lasting about 5 seconds. Displayed information may include:

- Accuracy class
- Maximum values
- Minimum loads
- Verification data
- Increment
- Permitted temperature range

For Multi-Interval or Multi-Range scales, the measured data of all weighing ranges is also displayed in rotation; for Multi-Range scales this includes the range number. Table 2-3 shows examples of information that might appear in this rotation.

2.4.3.2.1. Unapproved Terminal

Figure 2-21 shows the range display cycle in an unapproved terminal, together with the corresponding weight displays. In this case, the terminal is configured as follows:

Range 1: 1 kg, 0.0001 kg resolution

Range 2: 6 kg, 0.005 kg resolution

Note the range indicators >|1|<, >|2|<, at the bottom of the display:

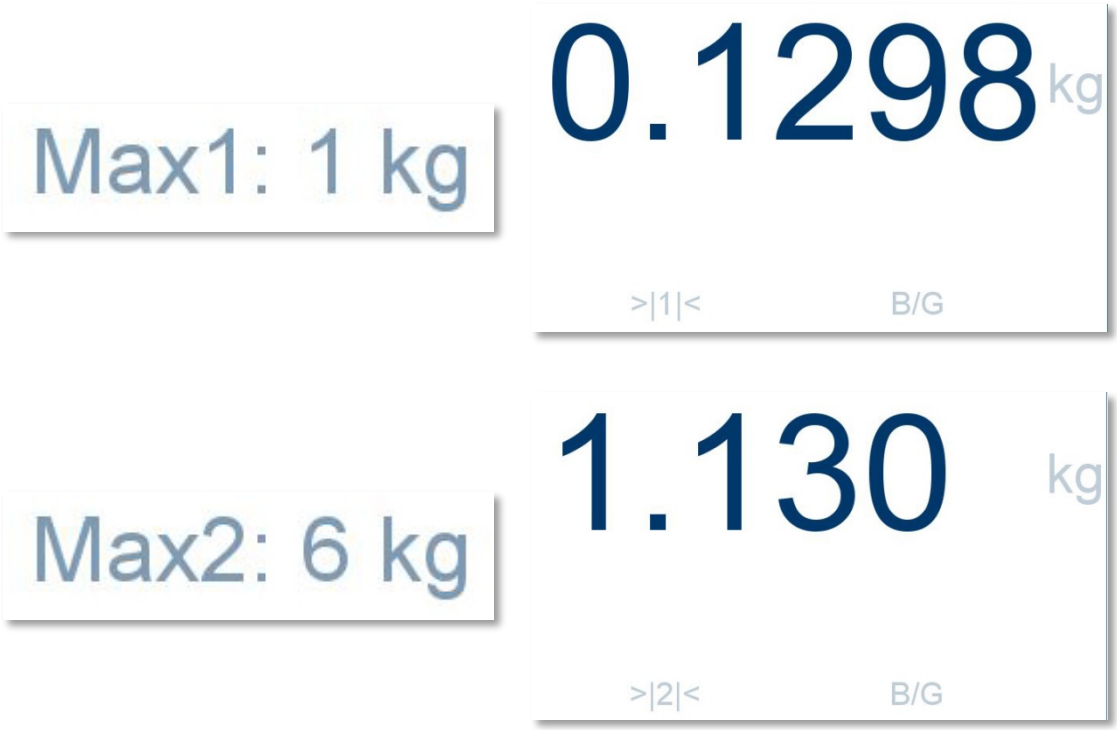


Figure 2-21: Unapproved Multi-Range, Multi-Interval Terminal Display

2.4.3.2.2. W&M Approval Procedure

To set a terminal to approved mode, a scale must be connected to the IND900 terminal:

1. Login as administrator – enter a valid user name and password, and touch OK to confirm.
   - Unscrew verification screw on the rear side of the device and press the verification switch with a pen (diameter approx. 2mm).
   - A message "Scale Lock Button pressed" appears.
2. Enter Setup and, for each scale to be approved, access **Scale *n* | Metrology**.
3. Select verification class "II"
4. Touch **Save** to confirm the selection.

2.4.3.2.3. W&M Approved Terminal

When the terminal is approved, the metrology indicator appears in the system line.

Figure 2-22: Metrology Icon in System Line

Figure 2-23 shows the metrological data display for a terminal in W&M Approved mode, calibrated with a single range and single interval. Note that a minimum weight value and the interval value are also displayed in this case:

Figure 2-23: Approved Terminal Metrology Display

Table 2-3: Examples of Displayed Data for Multi-Interval and Multi-Range Scales

Scale Type	Sequence of Displayed Data
Multi-Interval	"Max 3,000/6,000/15,000 kg" ➔ "Min 0.020 kg" ➔ "e = 0.001/0.002/0.005 kg" ➔ Max 3,000/6,000/15,000 kg" ➔ …
Multi-Range	"Max1 3,000 kg / Max2 6,000 kg / Max3 15,000" ➔ "Min1 0.020 kg / Min2 0.040 kg / Min3 0.100 kg" ➔ "e1 = 0.100 kg / e2 = 0.002 kg / e3 = 0.005 kg" ➔ " Max1 3,000 kg / Max2 6,000 kg / Max3 15,000" ➔ …

In the special case of e ≠ d (Class II, e.g. e=10d), both values are displayed; otherwise, only increment d (not certifiable) or only verification interval e (certifiable) is shown. In these cases, the additional display digit is also shown smaller.

The weight window is hidden only during configuration (when Setup is accessed) and during (alpha)numeric entries.

Touch the Metrology icon in the system line, or select **System I Metrology**, to display information about the terminal's configuration. Note the **Scale Lock** parameter, which indicates that the terminal is in approved mode. Refer also to section 2.6.7 on page 2-24.

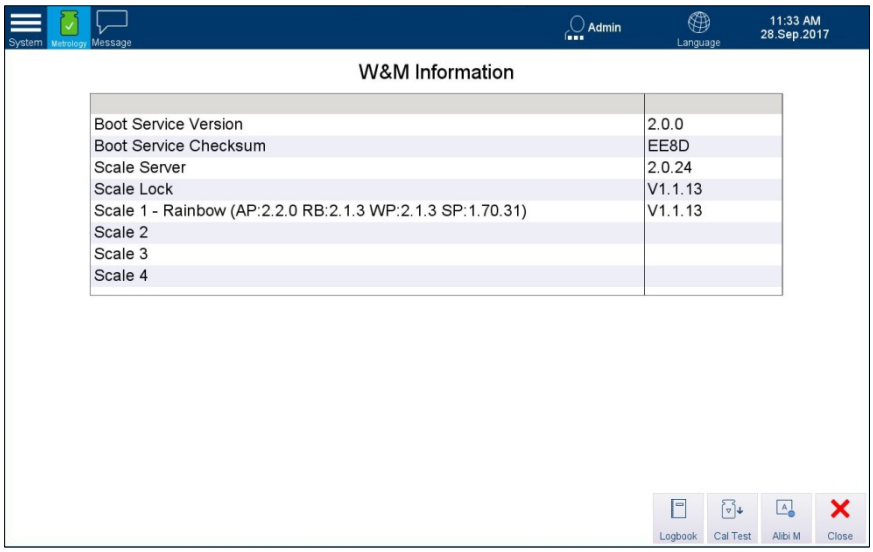


Figure 2-24: W&M Information Display

Touch the Logbook, Cal Test or Alibi M button to display the Scale Log Table, the calibration test screen and the Alibi Memory table respectively.

2.4.3.3. Message Area

Touch the message icon to view a list of current messages. Three types of information appear here to inform the operator of the scale and terminal status and any failures that occur:

	**Information**	Information about the completion of scale functions such as zero and startup.
	**Error**	Indication of a failure such as the absence of a scale ("No scale connected") or a violation of the resolution class.
	**Warning**	Warning of a condition such as an uncalibrated scale, or alert that a scale lock button has been pressed.
	**Metrology**	Indicates that the terminal is in W&M approved mode.
	**Metrology**	Indicates that the terminal was in W&M approved mode, but a change has been made. Two conditions will trigger the display of this icon: • An unpaired scale or scales are connected • The W&M switch has been pressed

2.5. Backlighting and Screen Saver

After a period of minutes configured in setup at **Terminal I Display**, the backlight will switch off and/or a screen saver will appear.

To exit the screen saver and/or switch the backlighting on, press any key on the terminal or an optional external keyboard. This first touch or keystroke does not perform the function usually associated with the respective key.

The screen saver is also exited and/or the backlighting enabled if an interface command arrives, or when the scale is deflected at least 30 increments.

2.6. Basic Functionality

This section contains information about the basic functionality of IND900. Access **Setup** to configure these functional areas.

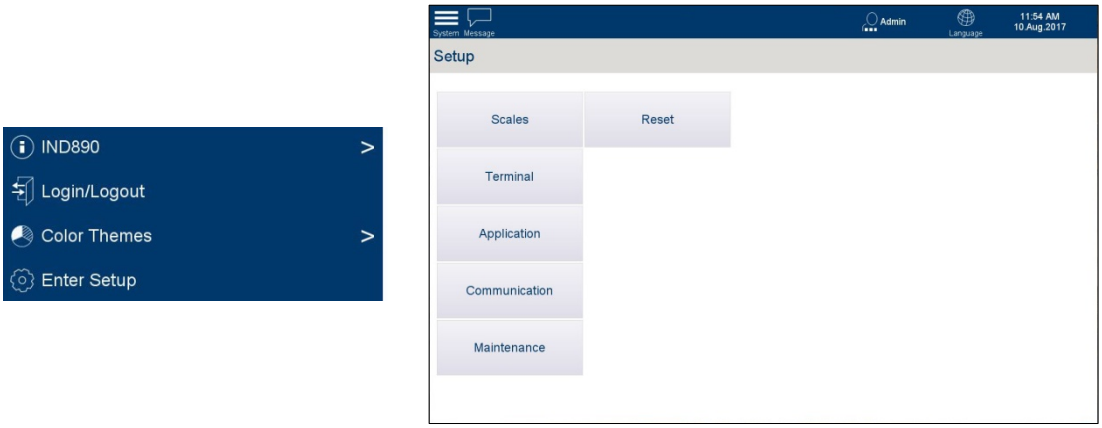


Figure 2-25: Accessing Setup

Additional functional areas that apply specifically to application software available for the IND900 are discussed in the respective application **Users Guides**. The basic functions discussed in this section include:

- Selecting a scale
- Tare
- Zero
- Tare
- Changing the unit
- IDNet class II
- Printing
- MinWeigh®
- Recalling terminal information
- Time and date
- Direct access to alibi memory
- Viewing tables
- Starting an application

Setup can be accessed by touching the system menu and then touching **Enter Setup**. Once in setup, touching a block expands its subordinate blocks.

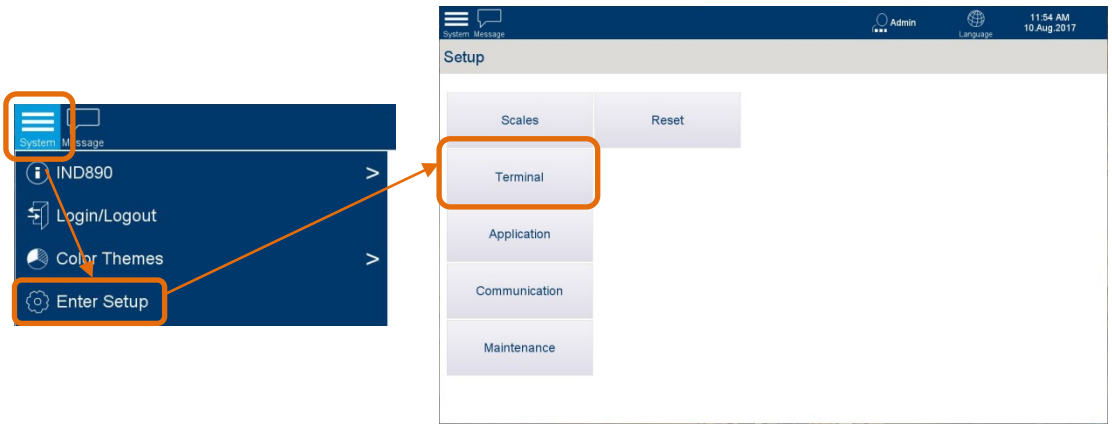


Figure 2-26: Accessing a Setup Page

2.6.1. Selecting a Scale

The **Switch Scale** softkey is used to change between weighing platforms if multiple platforms are configured for the IND900. It determines which scale is identified as active and is controlled by the scale function keys (**Zero** →0←, **Tare** →T←, **Preset Tare** PT).

2.6.2. Zero

The zero function is used for setting or resetting the initial zero reference point of the IND900. There are three types of zero:

- Auto Zero (Automatic Zero Maintenance)
- Power Up Zero
- Push Button Zero

2.6.2.1. Automatic Zero Maintenance

When the **Auto Zero** function (Automatic Zero Maintenance - AZM) is enabled, the scale can compensate for small weight changes and re-establish the center of zero by itself. If the scale is not moving, it performs small adjustments at the current zero value within the AZM operating range (adjustable by scale type from 0.0 to 9.9 divisions, with a default value of 0.5) to adjust the weight display to true zero. If scale weight is outside the programmed AZM range, this function does not work.

AZM also includes a **Blank Under Zero** parameter. This value, by default 20 divisions, blanks the weight display when scale weight falls further below zero than the configured number of divisions.

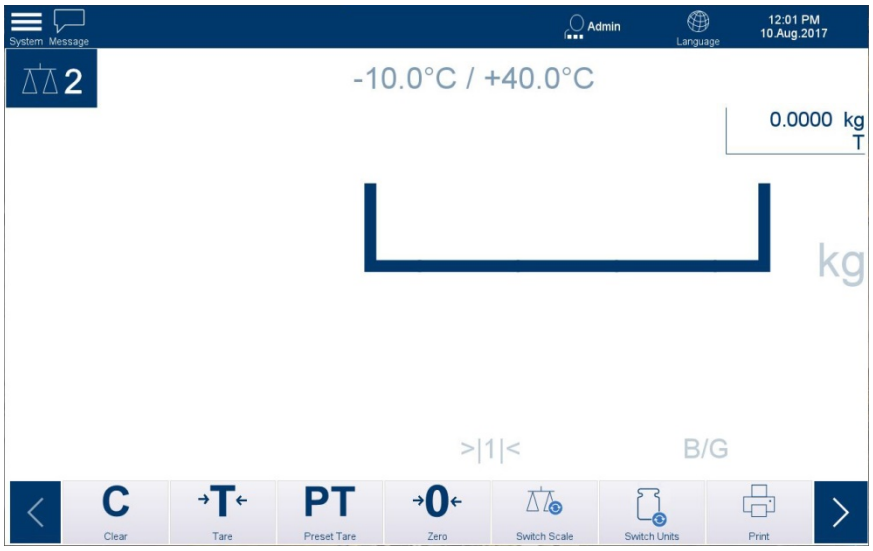


Figure 2-27: Display Showing Blank Under Zero

2.6.2.2. Power Up Zero

With Power-up zero, the IND900 terminal can acquire a new zero reference point when it is powered on. If motion is detected while performing the zero process during power up, the terminal continues to check for a stable (no-motion) state until zero can be set.

Power-up zero can be disabled (reset at switch-on) or enabled (restart at switch-on), and a range above and below calibrated zero can be configured. The range is programmable from

0% to 100% of the capacity and can include a positive range as well as a range below calibrated zero. The default range is +18% to -2%.

2.6.2.3. Push Button Zero

The Push button zero function (semi-automatic) can be executed by pressing the scale function key ; and by touching the **Zero** softkey.

Although it is available as a softkey, **Zero** can also be disabled for individual scales. In this case, the softkey will remain, but an error message will display when it is touched.

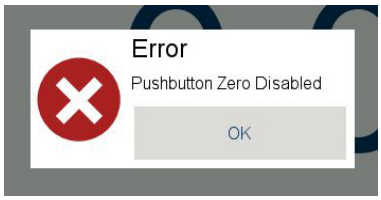


Figure 2-28: Error Message – Pushbutton Zero Disabled

The range for all types of semi-automatic zero is selectable from 0% to 100% of scale capacity, with plus or minus tolerance either from the calibrated zero point (if **Power-up zero** is disabled) or from the initial zero setting point (if **Power up zero** is enabled).

2.6.3. Tare

Tare is the weight of an empty container. A tare value is deducted from the gross weight value to give the net weight value of the material without its container. The tare function can also be used to determine the net value of the material added to or removed from a package.

The tare value can be displayed together with the net weight. The operation of this secondary display is defined in setup under **Terminal I Display I Auxiliary Display**.

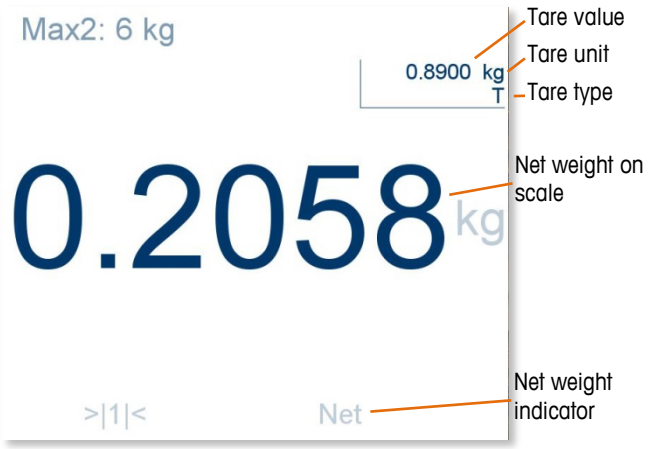


Figure 2-29: Tare Display

The IND900 allows the following tare types and the processes:

- Pushbutton Tare
- Chain Tare
- Clear Tare
- Auto Clear
- Preset Tare
- Manual Clear

2.6.3.1. Pushbutton Tare

If enabled, the **Tare** softkey can be used to initiate a semi-automatic tare determination. When the softkey is touched, the IND900 attempts to perform a tare. If this process is successful, the display changes to a zero net weight value and the previous weight on the scale is stored as the tare value, as in Figure 2-29. The display shows the net mode identifier below the main weight display.

A tare value cannot be determined if the scale is moving. If motion is detected when a pushbutton tare command is issued, the IND900 waits for stability (no motion). As soon as stability is achieved, the pushbutton tare command is executed.

2.6.3.2. Preset Tare

A Preset Tare can be entered manually by making a numerical entry, or received from a peripheral device. The tare preset value may not exceed the capacity of the scale. The data entered is assumed to have the same units as the currently displayed value. Movement on the scale does not affect the entry of tare preset values.

To enter a tare value manually, first touch the **PT** softkey and (or press the Preset Tare scale function key PT), then either enter the value via the numeric keypad or capture it directly from the weight display. The tare process is then executed as for a Pushbutton Tare, but the tare type display field will show **PT** to indicate that a preset tare value is in use.

The preset tare can be entered in a free format. If the value entered does not match the decimal point of the display value or the display interval, the tare value is rounded to the next display interval, and the decimal point is adjusted so that it matches the gross weight.

A tare preset value of less than 1.0 can be entered without the leading zero (to the left of the decimal point). However, when this value is later displayed, stored or printed, the leading zero will be included. For example, a preset tare entry of .05 will displayed as 0.05.

Tares are not additive. If a preset tare has already been defined and another preset tare value is entered, the new preset tare replaces the existing value. The replacement tare can be greater or smaller than the original tare value.

2.6.3.3. Automatic Tare

The IND900 can be configured so that a tare value is automatically determined (Automatic Tare) once the weight on the scale exceeds a programmed tare threshold weight. The Automatic Tare function can be configured as enabled or disabled in setup. If this function is enabled, the display changes to a zero net weight value when the weight exceeds the threshold. The

Auto Tare process requires a **Tare Threshold Weight** to be set. When the weight on the scale exceeds the tare threshold weight and no motion occurs, the terminal automatically performs a tare operation.

Use the Clear softkey **C** to clear the automatic tare.

- **Motion Check** – A motion check is possible to control the renewed triggering of the Auto Tare function. If this function is disabled, the Auto Tare trigger is reset as soon as the weight falls below the reset value. If this function is enabled, the weight must set to a state without motion below the reset threshold before the next Auto Tare can be initiated.

Two conditions may hinder the Automatic Tare function:

- **Motion** – No Auto Tare value can be determined if the scale is in motion. If a motion is detected after exceeding a tare threshold weight, the IND900 waits for a state without motion.
- **Auto Tare disabled** – Auto Tare can be configured as enabled or disabled in setup.

2.6.3.4. Clear Tare

Tare values can be cleared manually or automatically.

2.6.3.4.1. Manual Clear

Tare values are manually cleared by touching the **Clear** softkey C. A motion on the scale does not affect the manual clearing.

If Pushbutton Zero is enabled, the tare value is also cleared by touching the **Zero** softkey →0←.

2.6.3.4.2. Auto Clear

The IND900 can be configured so that the tare value is automatically cleared when the weight returns to a value below a programmable threshold, or after a print command has been issued. When the tare value is cleared, the display returns to gross weighing mode.

Auto Clear is enabled or disabled in setup. If Auto Clear is enabled, a **Clear Threshold Weight** must be configured. This is the gross weight below which the IND900 will automatically clear the tare value automatically

2.6.4. Changing Units

For locations and applications that use multiple units of measure, the IND900 supports changing between different units. The **Switch Units** softkey toggles between the primary units (the main units of measure) and alternative units (secondary units).

When the **Switch Units** softkey is touched, the display changes from the primary unit to the secondary unit, the secondary unit's designator appears beside the weight value, and the decimal place is adjusted according to the conversion.

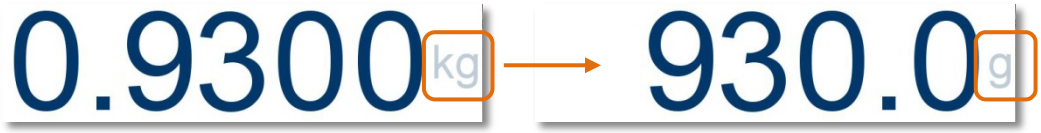


Figure 2-30: Unit Switching

2.6.5. IDNet Class II

If the capacity and increment of an IDNet weighing platform with approval class II are configured appropriately, the IND900 shows a weight value whose last digit is displayed in a smaller font.

Figure 2-31: Weight Display for Calibration Class II IDNet Weighing Platform

2.6.6. MinWeigh®

Certain branches of industry, such as the pharmaceutical and food industries, want to ensure that the selected scale is suitable for a particular weighing task. One method to ensure this is to define and monitor a minimum weighing value (MinWeigh®) under which certain weighing equipment may not be used.

The IND900 compares the current net weight with the programmed MinWeigh value. If the MinWeigh function is enabled and the net weight is greater than or equal to the MinWeigh value, all device functions behave normally. However, if the scale weight is below the configured value, the weight is displayed in the color selected in setup and the MinWeigh icon flashes in the lower left of the weight display area. In the example below, MinWeigh is set to 0.0003 kg and the weight value color is set to **red**.

Figure 2-32: MinWeigh Enabled, Weight Below Threshold

MinWeigh configuration is explained in chapter 3, **Configuration**.

2.6.7. Recalling Terminal Information

To access the system information options, touch the System Menu icon, then select **IND900**.

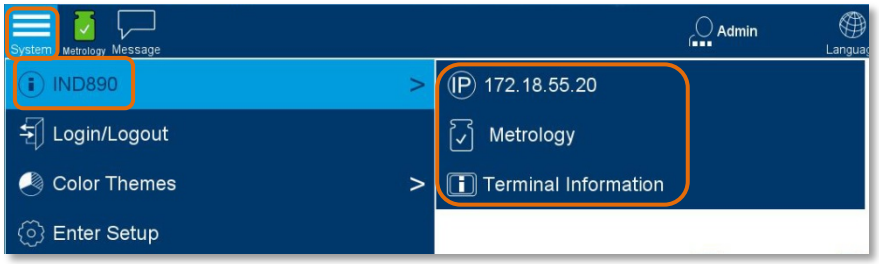


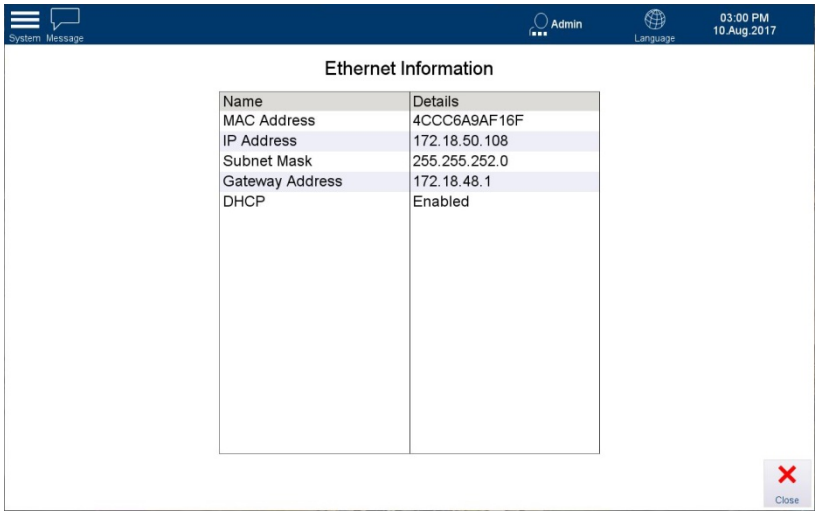
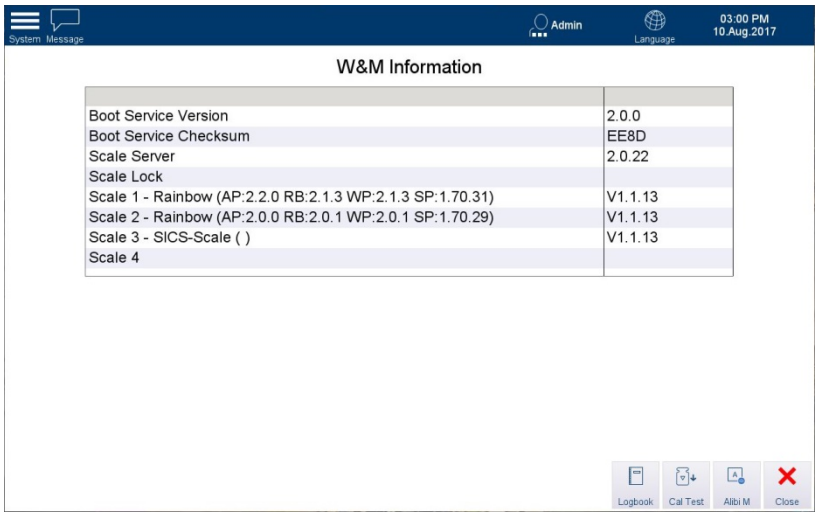
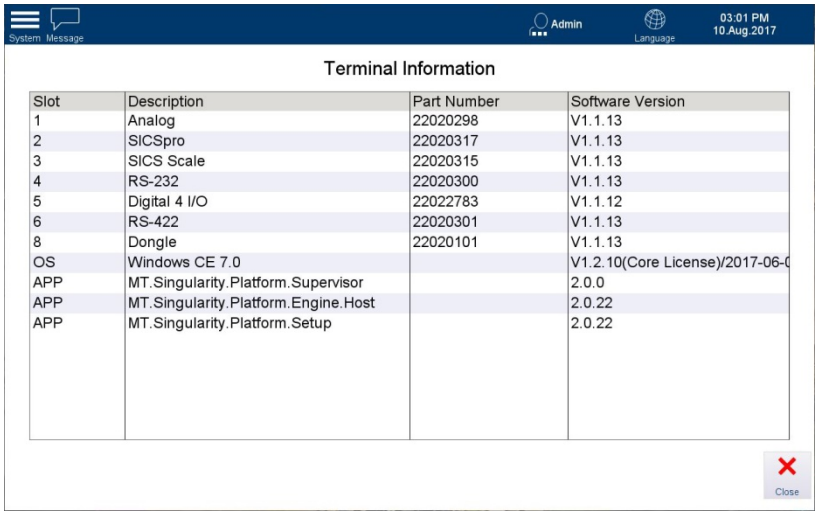
Figure 2-33: Accessing System Information

Touching one of the specific elements (refer to Table 2-4) allows to access information about this topic and also to print out this specific information.

- To enable a printout you must setup a connection using the assignment "Reports" in **Setup I Communication I Connections**.

Touch the softkey Close to close each menu and return to the home screen.

Table 2-4: Information Menu Topics

Softkey	Explanation
IP 0.0.0.0	Displays information about the Ethernet connection, if any, including MAC Address, IP Address, Subnet Mask, Gateway Address and DHCP status. Shows 0.0.0.0 if no IP address is assigned. 
Metrology	Displays information about weights and measures approvals, 
Terminal Information	Displays information about the terminal's hardware and software configuration. 

2.6.8. Time and date

Time and date are used for time stamps in error and transaction logs and for initiating service events. Time and date are displayed at the top right on the status bar if this is configured accordingly in setup.

Access **Setup I Terminal I Region I Set Time and Date** and **…Region I Time and Date Format** to configure the terminal. These values include hours, day, month and year. When the time is set, the seconds are set to 0.

Although the format for time and date is selectable in setup according to the local usage, the format of the time stamp in log files cannot be changed. They are always defined as follows:

- **Date**: YYYY/MM/DD (e.g. 20 July 2017 is the date 2013/07/20 in the fixed format)
- **Time**: HH:MM:SS using the 24-hour format (e.g. 10:01:22 PM is the time 22:01:22 in the fixed format).

2.6.9. Direct Access to Alibi Memory

Alibi memory makes it possible meet the legal obligation for recording data for legal applications without the need to archive paper documents.

The alibi memory automatically assigns a consecutive transaction counter value to each weighment. This counter value appears on the printout, together with the gross, net and tare weights, date and time of each transaction, and additional data depending on the configuration in setup.

Alibi memory entries are made, for example, following the interface commands "S", "SX" and "SR" (as soon as the weight value is constant), or after initiating calibration-relevant printouts (**Print** softkey ), or after the automatic transmission of the resting weight value to external devices.

The alibi memory can be displayed in different ways:

- Touch the **Alibi Memory**  softkey.
- Access the System Menu, select **IND900** and then **Metrology**, and touch the **Alibi Memory** softkey
- If authorized, select **Setup I Application I Memory I Alibi Table**. From this location, the contents of the Alibi Memory can be exported to a file. Refer to chapter 3, **Configuration**.

2.6.9.1. Alibi Table

Touch **Alibi Table** to display the current contents of the alibi memory.

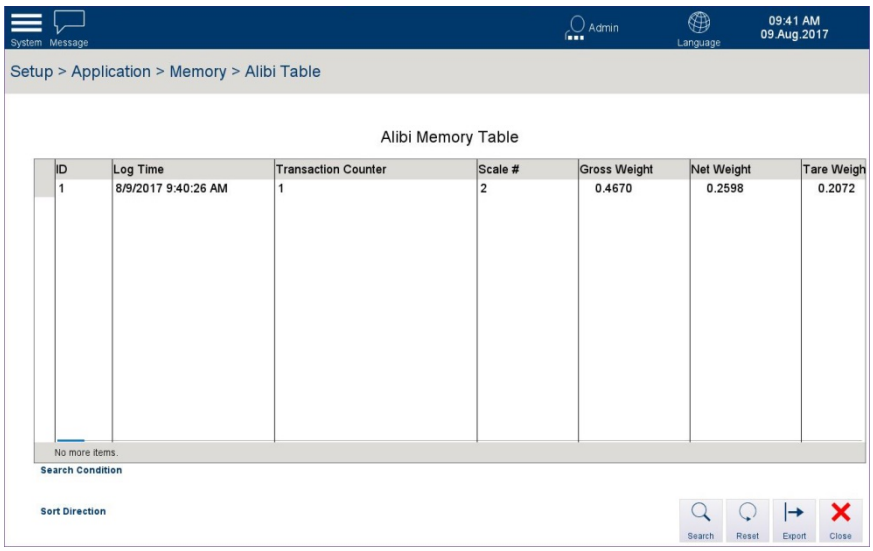


Figure 2-34: Alibi Table View

- To turn pages in the table, move a finger up or down on the touchscreen. To scroll to the left or right, move a finger in the horizontal direction on the touchscreen. During scrolling, entries in the table are not highlighted.
- The principle of the alibi memory is that it logs transaction information which cannot be changed. This information always contains:
  - Record number (1 to 500,000)
  - Date and time stamp
  - Transaction counter value
  - Gross, net and tare weights and the weight unit
  - MinWeigh status

Any of the following actions will generate an alibi record:

- Touching the **Print** softkey
- Print request triggered by a PLC

2.6.9.2. Search

The search function is used to find and a subset of alibi memory items based on a variety of parameters. Once the search is complete, the results can be exported either locally, to the terminal, or to a connected USB memory device.

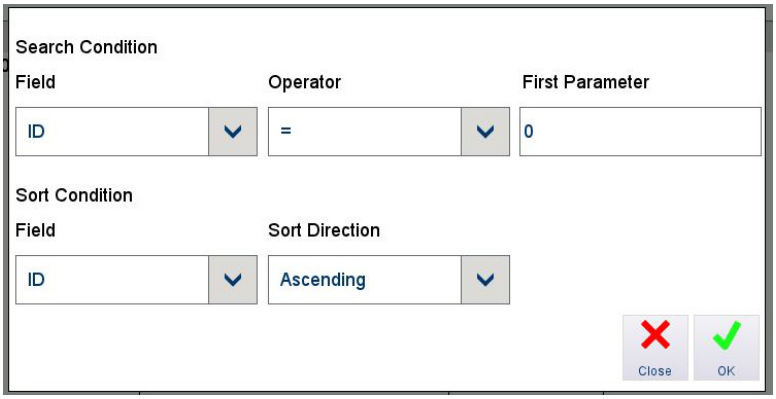


Figure 2-35: Search Options

Search 

Touch to open the Search Options dialog, shown above.

Search Condition

Field Select a field from the drop-down list.

Operator Use the **Operator** search field to select how the data should be compared:

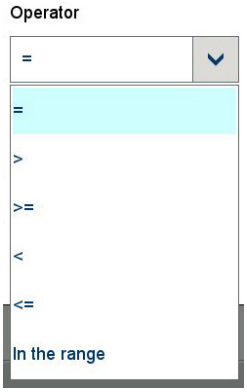


Table 2-5: Comparison Field Operators

Operator	Comparison	Operator	Comparison
<	Less than	<>	Not equal
<=	Less than or equal to	>=	Greater than or equal to
=	Equal (default)	>	Greater than
In the range	Displays an additional field to define the start and end of a range of records to display.		

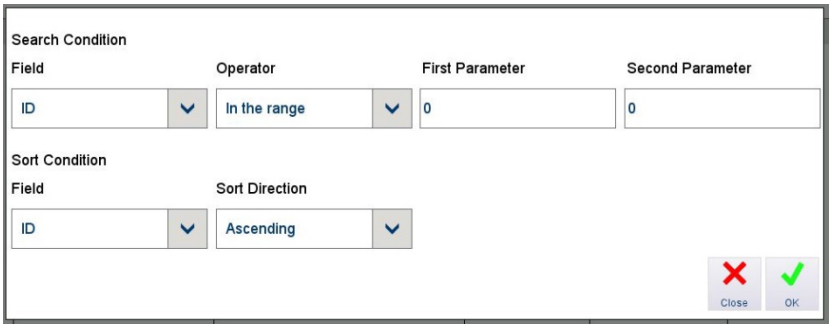


Figure 2-36: Operator Range Options

First Parameter Touch this field to display a numeric entry screen where a value for the selected field can be entered.

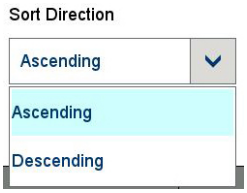
When **Operator is In the range**, this parameter defines the start of the range.

Second Parameter When **Operator is In the range**, this field appears, and defines the end of the range.

Sort Condition

Field Touch this field to display a drop-down list (like the one shown above for the Search Condition field) showing fields that are available as sort conditions. The results will be sorted by the selected field in the order chosen below.

Sort Direction Touch this field to set the order in which search results will be displayed, based on the Field condition selected above:



2.6.9.3. Reset

Reset 

This function resets the table search parameters without further confirmation.

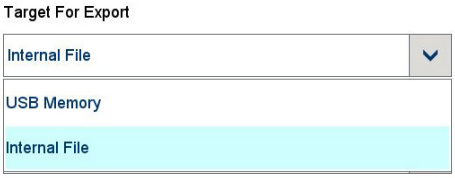
2.6.9.4. Export

Export

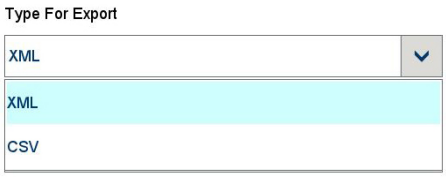
This function allows the contents of the Alibi Memory Table, or the results of a Search, to be saved either to the terminal itself, or to a connected USB memory device.

Touch **Export** to open the screen shown below:

Target for Export Touch to display a drop-down list showing options for saving the exported file.



Type for Export Touch to display a drop-down list showing options for the format of the exported file. Options are **.xml** (Extensible Markup Language) and **.c9 sv** (comma-separated values):



Export File Name Touch this field to open an alphanumeric entry screen where an alternative file name can be assigned to the export. By default the file name includes the terminal type, the date in YYYY-MM-DD-TTTT format. In the example show above, this is IND900_2017_08_09_1013, indicating year 2017, eighth month, 9th day at 10:13am.

2.6.9.5. Close

Close

2.7. Browsing Tables

2.7.1. Method

To browse a table:

1. Access the table
2. Touch the **Search** softkey  .
3. Fill out the search conditions – the Field by which to search, the Operator to apply to the field's contents, and the Parameter to which the Field is to be compared.
4. Fill out the sort conditions – the Field by which the data should be sorted, and the order (ascending or descending) in which to search it.
5. Table 2-6 lists the operators that can be selected for the search conditions.

Table 2-6: Operators for Table Searches

Symbol	Comparison
=	Equal (default)
>	Greater than
>=	Greater than or equal to

Symbol	Comparison
<	Less than
<=	Less than or equal to
n/a	In the range

6. Touch OK  to initiate the search.

2.8. Starting an Application

Depending on the use, the IND900 can be equipped with a customer-specific or a standardized functional application. Unless it has already been done, this must first be enabled and then configured as required in Setup at **Application I Auto Start Application**. A drop-down list will display available applications. The selected application will start automatically when the terminal is turned on.

3 Configuration

To protect the IND900's configuration settings, users can be assigned different access rights.

In the terminal's default configuration (i.e. no passwords set up), all setup windows can be accessed, parameters changed and data entered.

More information about security and setting up users and passwords can be found in the **Security** section of chapter 2, **Operation**.

3.1. Elements of the Main Screen

Figure 3-1 indicates the location and function of the various elements of the IND900 main screen.

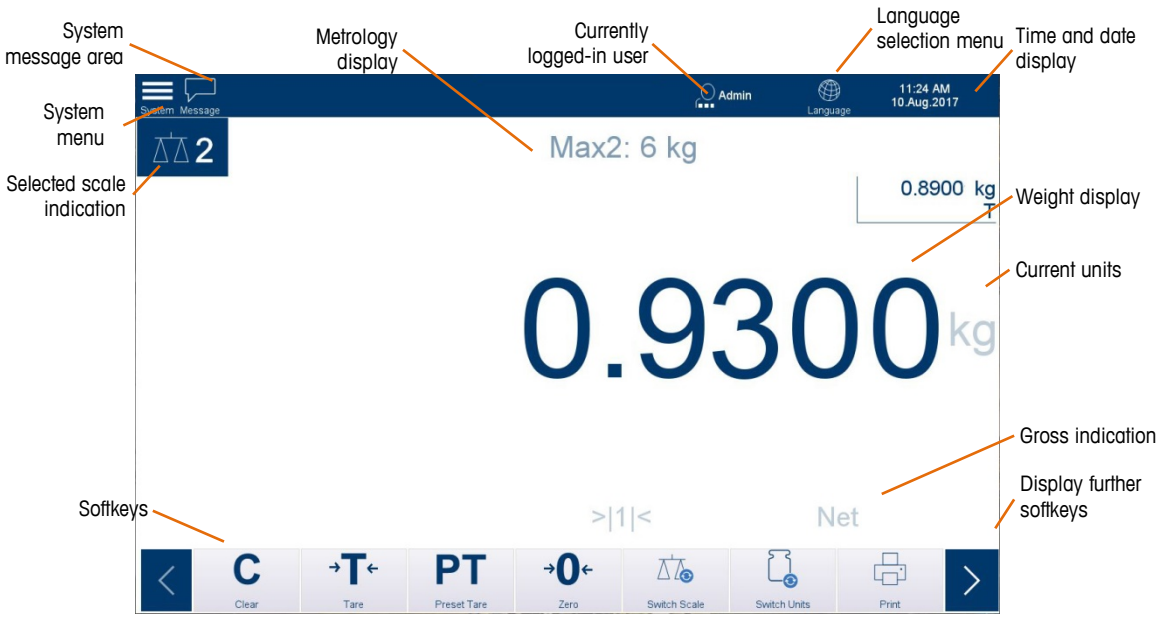


Figure 3-1: IND900 Main Screen

Figure 3-2: Tare Display

Figure 3-3: Additional Softkeys

3.2. Interacting with the HMI

3.2.1. User Log-In

In the System menu, touch **Login/Logout**.The User Account dialog will appear. Touch the **User Name** field to display the drop-down list of configured users, and select the desired user.

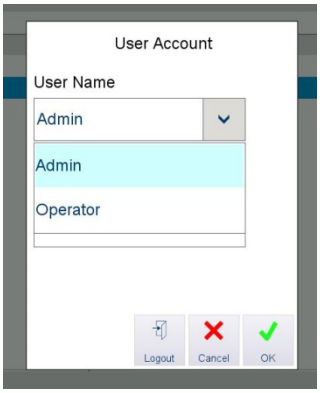


Figure 3-4: User Account Dialog Showing User Options

If setup has been password protected, the Password field will be available.

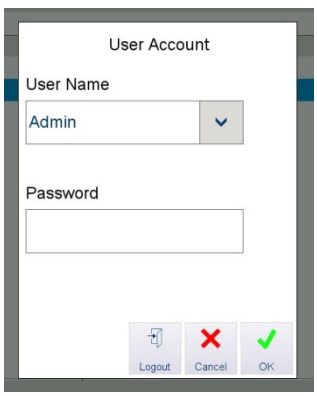


Figure 3-5: User Account Dialog Showing Password Field

The alphanumeric Password entry screen will appear. Use the keyboard to enter the password.

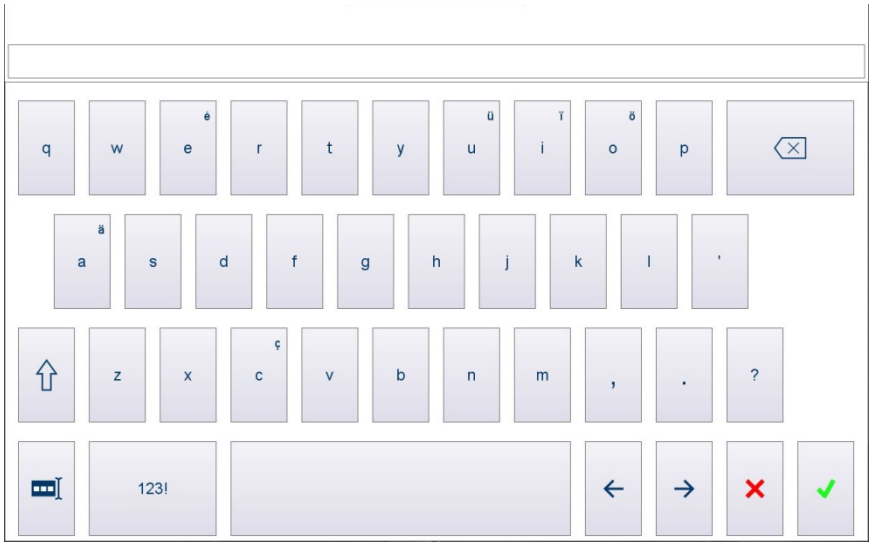


Figure 3-6: Password Entry Screen

- The key at lower left selects the entire contents of the Password field at the top of the keyboard, making it easy to delete a password.
- The password is case-sensitive ("BROWN" is not identical with "brown").

Touch the check mark at lower right of the keyboard. Once the name and password input is complete, touch **OK**. The **User Account** dialog will close..

3.2.2. Entering and Exiting Setup

To enter setup, touch the System icon at upper left.

Figure 3-7: Home Screen with System Options Displayed

Touch **Enter Setup**. The Setup screen will appear.

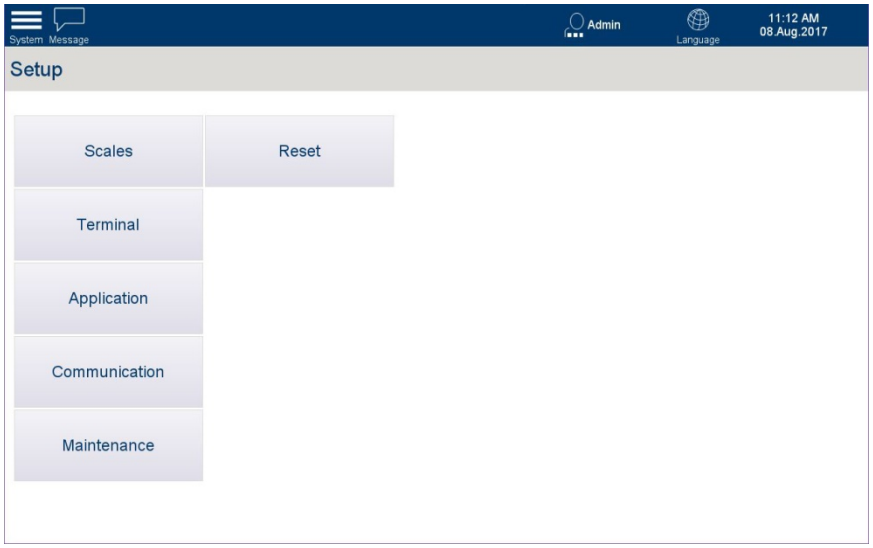


Figure 3-8: Main Setup Screen

The main Setup screen shows the five available submenus, each of which can contain further submenus. The various setup screens allow data to be accessed and parameters viewed, input or changed, to customize the terminal's functions as required.

Scale	Configure connected scales, and a sum scale.
Application	Configure settings for a standard application, or for a customer-specific application.
Terminal	Configure settings for the terminal itself, such as display and user settings.
Communication	Configure built-in interfaces, network settings and printouts.
Maintenance	Primarily reserved for METTLER TOLEDO Service engineers. Run tests and diagnostics, perform data backups, and restore data from a backup.

3.2.3. Numerical Data Entry

Touch the numeric buttons to enter a number into the field at the top of this screen. To delete numbers, either touch the backspace button, or touch the field selection button to select the whole value, then touch the backspace button to delete it.

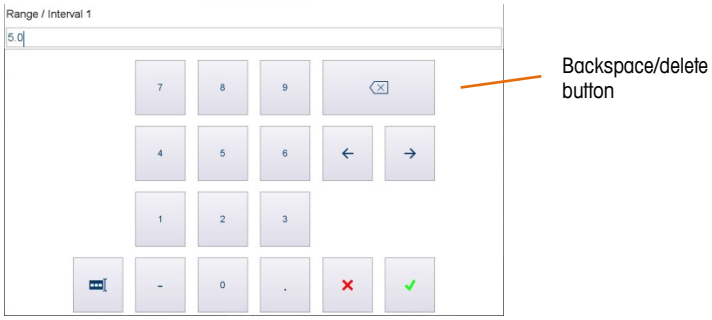


Figure 3-9: Typical Numerical Data Entry Screen

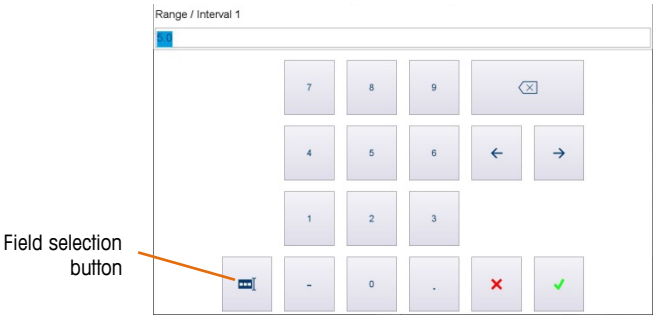


Figure 3-10: Use of the Selection Key

Touch × to close the screen without changing the value, or ✓ to confirm the change and exit the screen.

3.2.4. Reset

The Reset option is available from the main setup screen. Touch **Reset** to display the screen shown below. Select which parts of the terminal's configuration are to be restored to their default values.

- Users with an **Admin**-level login can reset all configuration settings and clear all calibration and metrological data. Users with a **Supervisor**-level login can reset configuration settings, but cannot clear metrologically significant and calibration data.

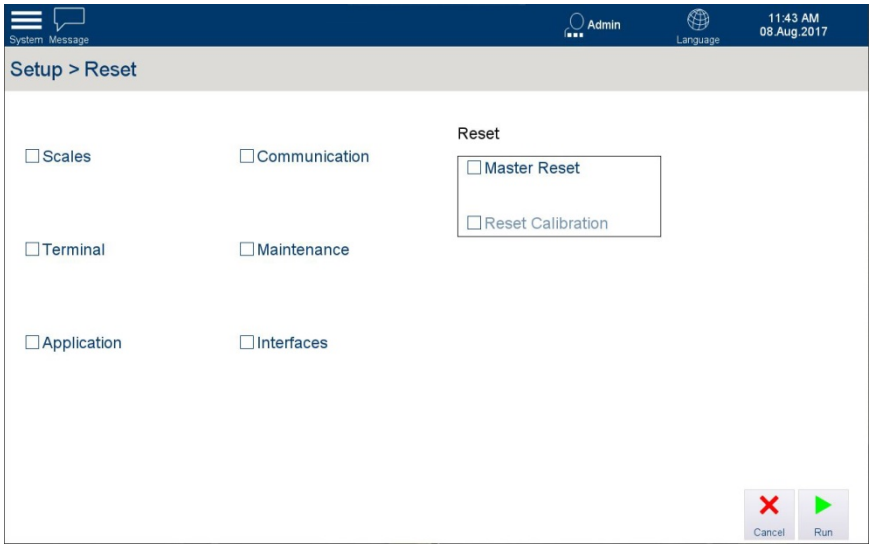


Figure 3-11: Reset Screen

Touch **Master Reset** to reset all parameters except calibration data. When **Master Reset** is checked, the **Reset Calibration** option becomes available. Select it to remove calibration data.

When the items to be reset have been selected, touch **Run** to proceed, or **Cancel** to return to the main setup screen.

3.3. Scale Configuration

- If the W&M switch is in the "Approved" position, parameters included in the Scales submenus can be viewed but not modified.
- After changing parameters in the Scales menu we recommend a restart of the terminal.

Touch **Scale** in the main setup screen. The scale options will appear, including **Approval** and **Scale 1** to **Scale *n*,** depending on how many scale interfaces are installed.

- Many of the menu items listed here can be modified only if the user is logged in as the administrator.

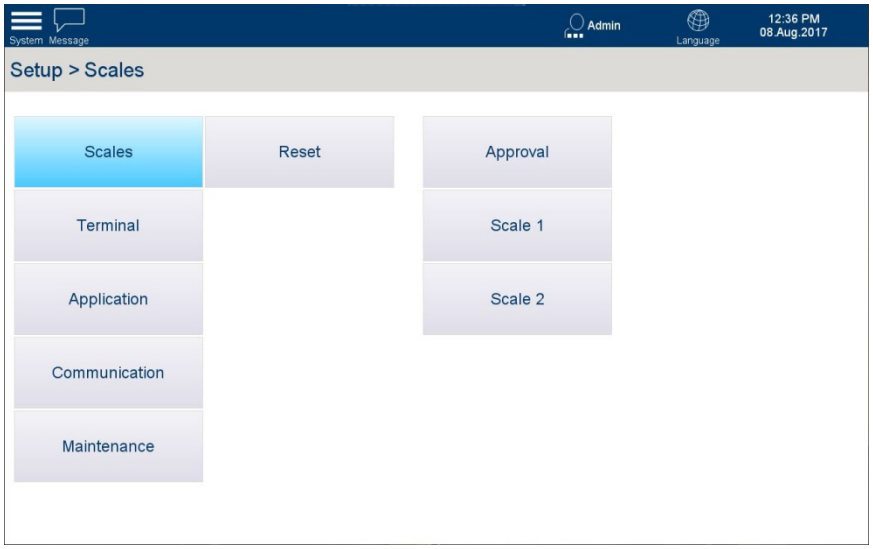


Figure 3-12: Scale Setup Page

3.3.1. Approval

3.3.1.1. Approval Type

Touch Approval to view the scales approval screen. To set the selected scale to an approved status, touch the Approval Type field to display its options and select the type of approval.

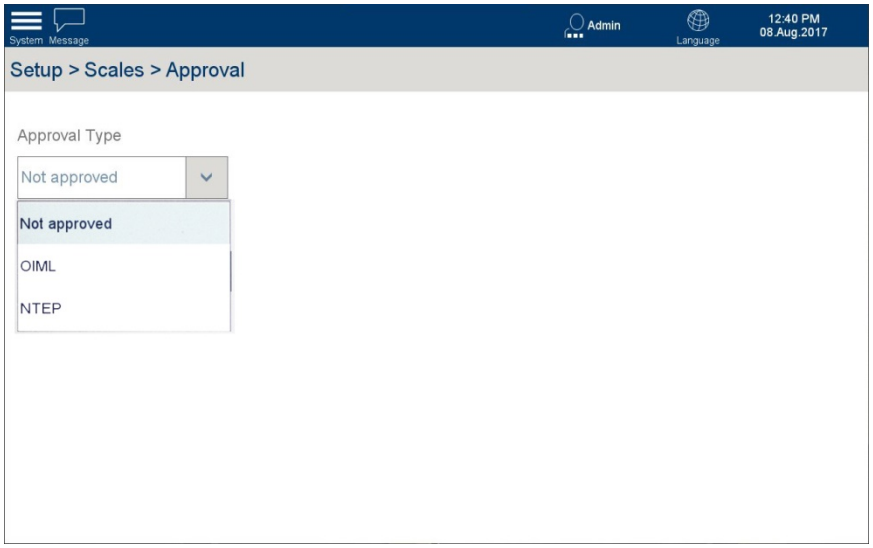


Figure 3-13: Scale Approval Selection Screen

When an **Approval Type** has been selected, the metrology indicator appears in the system bar , and the settings in the **Approval** page are greyed and cannot be changed.

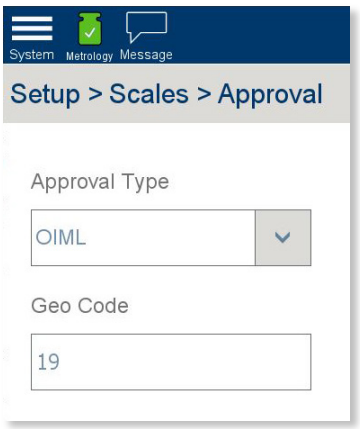


Figure 3-14: Approval Type Set

To modify the Approval setting, the metrology switch inside the terminal must be pressed. The setting is then returned to **Not Approved**, and the metrology indicator is displayed in orange with an exclamation mark in place of the check mark .

3.3.1.2. Geo Code

Touch Geo Code to open the numeric entry dialog.

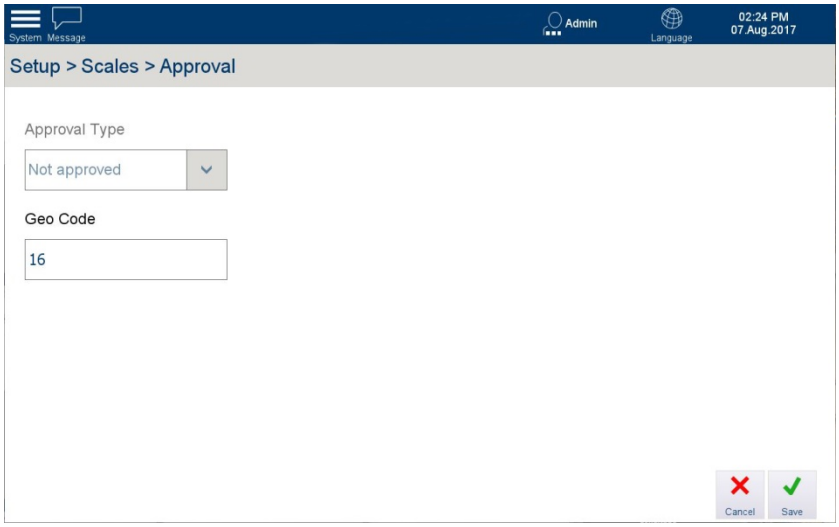


Figure 3-15: Setting Geo Code

Figure 3-16: Entering a Geo Code

Enter the code and touch . If an invalid code is entered, the system will display the **Geo Code** field with a red background.

3.3.2. Scales 1 - 4

Touch Scale *n* to display options available for that scale. Note that options will differ depending on the type of scale interface selected.

- Not all parameters may be available for all scale types. For example, options vary for analog scales, IDNet scales, SICS scales and SICSpro scales.

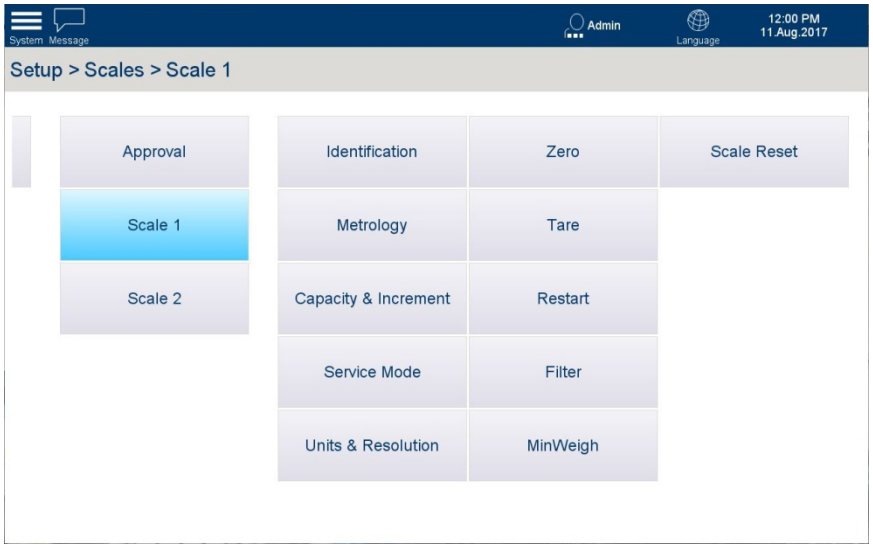


Figure 3-17: Scale Options, IDNet Scale Type

Figure 3-18: Scale Options, non-IDNet Scale Type

3.3.2.1. Approval

To configure a scale for metrologically approved operation, set the **Approval Type** in this screen. In addition, the **Geo Code** must be set to ensure that the scale's performance is optimized for its geographical location. Geo codes are listed in Appendix E.

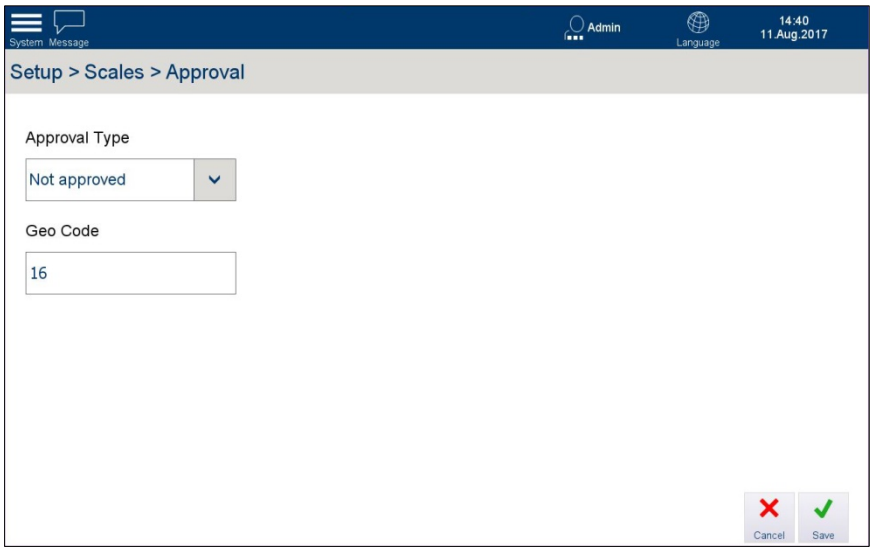


Figure 3-19: Approval Configuration Screen

3.3.2.2. Scale n

Not all parameters may be available for all scale types. For example, options vary for analog scales, IDNet scales, SICS scales and SICSpro scales.

3.3.2.2.1. Identification

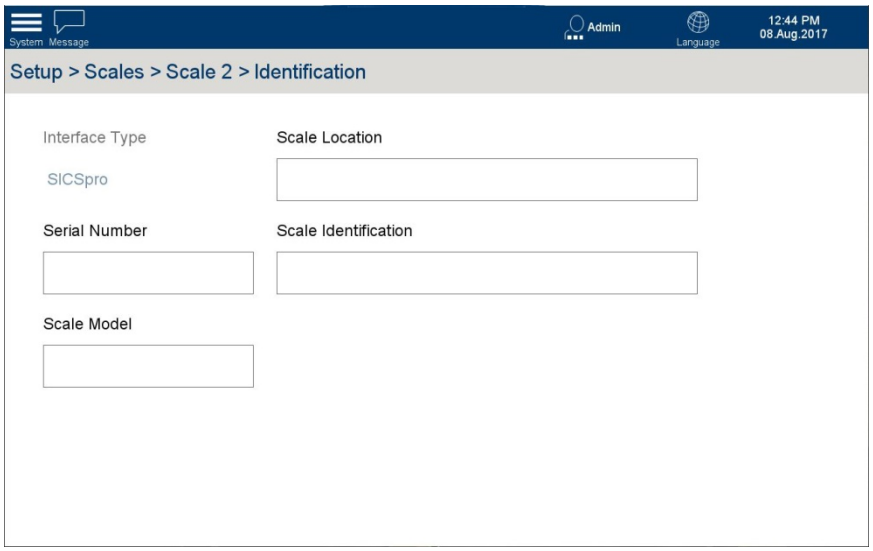


Figure 3-20: Scale Identification Screen

The following items appear on this screen:

Scale Type

When the terminal is switched on, connected scales are recognized, and their respective type/s displayed in the menu item. The following types are currently available:

- IDNet scale
- Analog scale
- SICS Scale
- SICSpro Scale

Serial Number

If no serial number is displayed, the serial number of the weighing platform can be entered by touching this field to open an alphanumeric entry screen.

Scale Model
Scale Location
Scale Identification

These fields can be modified. Touch a field, make the entry using the alphanumeric entry screen, and touch ✓ to confirm the entry. The Location and Identification fields can be used to indicate the placement and function of the connected scale, such as 'Goods Receiving.'

3.3.2.2.2. Metrology

The Metrology screen is used to configure the scale for approved use.

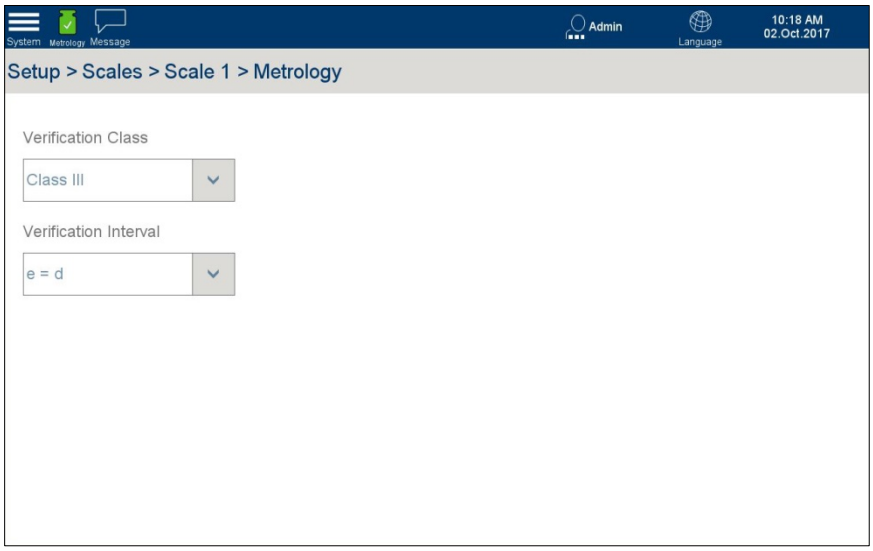


Figure 3-21: Metrology Options

The approved verification class and interval display on this screen. These fields are read-only, and are populated by the scale base.

3.3.2.2.3. Capacity & Increment

Figure 3-22: Scale Capacity and Increment Screen

The **Capacity & Increment** setup menu is used to make various weighing-specific settings.

For IDNet scales, the parameters set in the scales are displayed and changes must be made under the Service mode menu item.

For SICS scales, the parameters are displayed, but changes can be made only on the scale itself.

Parameters are not displayed for SICSpro scales.

Scale Type
Lever Ratio
These fields appear for certain SICSpro scales only. The **Scale Type** field allows the scale base type to be selected. Once the selection is made, the **Lever Ratio** for that type is automatically displayed. It is also possible to define a **Custom** scale type, for which the lever ratio can be set using the appropriate field.

Base Unit
The primary unit of measure is selected from g, kg, t, lb and oz.

Range Configuration
Determines the number of ranges or intervals. Options are:

- Single Range
- Multi-Range 2
- Multi-Interval 2
- Multi-Range 3
- Multi-Interval 3

Range 1, Range 2, Range 3
For each range, enter a capacity and an increment.

3.3.2.2.4. Calibration (non-IDNet scales only)

Figure 3-23: Scale Calibration Options, Non-IDNet Scales

Zero

- This procedure is used only when it is necessary to capture zero separately from the calibration process.

Figure 3-24: Zero Calibration Screen

Zero + Span

This is the standard method for calibrating a scale. From this screen, a calibration sequence can be run, which captures both the zero and the span for the selected scale. If multiple ranges or intervals are enabled, the **Zero + Span** Procedure will include steps to capture them.

Capture Span

- This procedure is used only when it is necessary to capture span separately from the calibration process.

Figure 3-25: Capture Span

3.3.2.2.5. Service Mode (IDNet scales)

For IDNet scales, all the above settings can be configured on each scale base using its Service Mode.

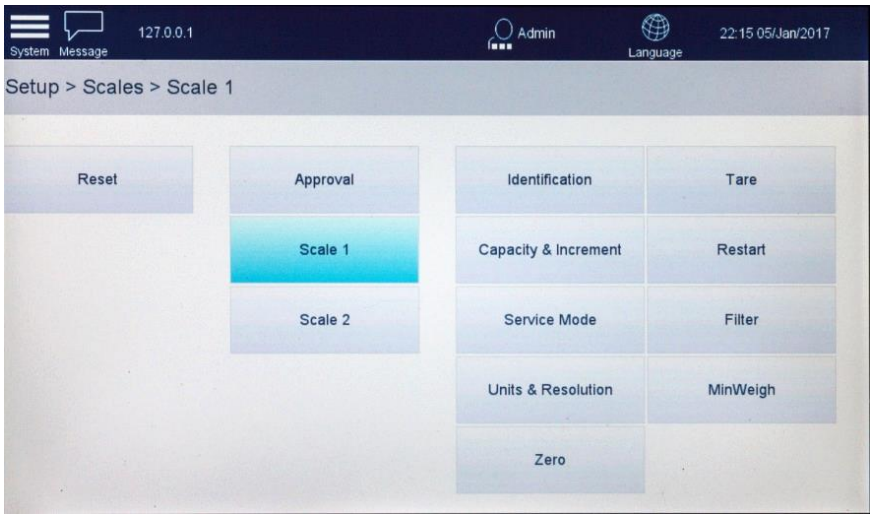


Figure 3-26: Scale Calibration Options, Non-IDNet Scales

Touch **Service Mode** to view a screen displaying scale **Status** and **Scale Message**.

Figure 3-27: Service Mode, Initial Screen

Touch **Run**  to enter Service Mode and cycle through the options it offers. Once the mode is running, the Status message changes to **Active**.

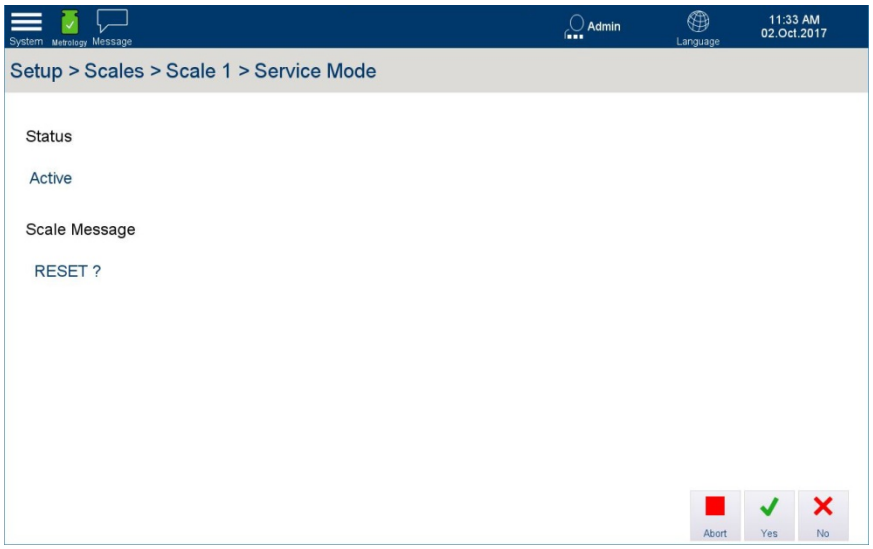


Figure 3-28: Service Mode Active

At each step, three options are available:

	**Abort**	Changes status message to **Finishing**, then closes Service Mode and returns to the screen shown in Figure 3-27, with a status **Finished**.
	**Yes**	Displays current value for parameter, or enters sub-sequence of items. For instance, touching **Yes** when NATION is displayed shows, first, the current setting for **Nation**. Touch **Yes** again to confirm that value, or **No** to cycle through all the nation options.
	**No**	Moves to next parameter without displaying current parameter's value.

Scale base calibration items appear in sequence in Service Mode, including all the items that, for non-IDNet scales, appear under **Scale *n* Calibration**.

Service Mode functions are detailed in the documentation for each IDNet scale base.

3.3.2.3. Units & Resolution

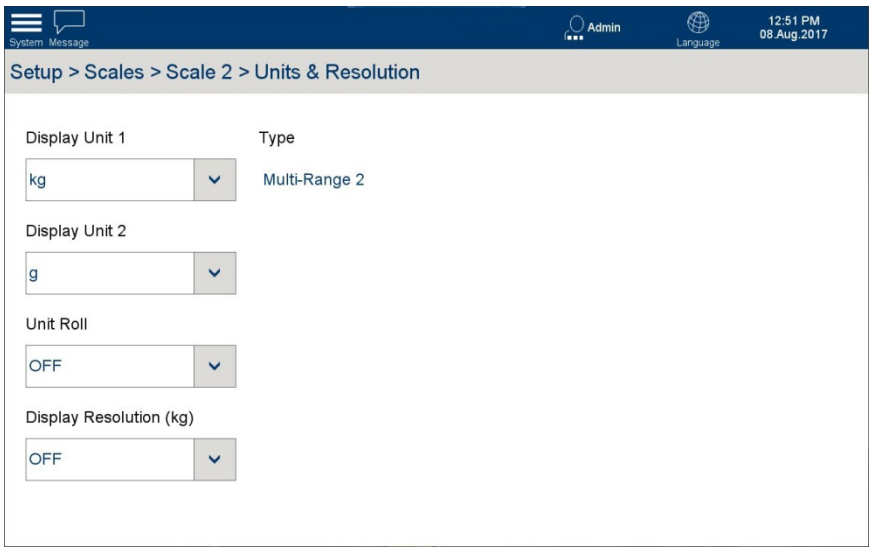


Figure 3-29: Units & Resolution Options

The following items appear on this screen:

Display Unit 1
Display Unit 2

Select a first and second display unit from Gram, Kilogram, Metric Ton, Pound, Ounce.

Unit Roll

When ON, the Switch Units softkey cycles through all available units, rather than toggling between primary and secondary units.

Display Resolution

Touch **Display Resolution** to show the options:

- 0.0001
- 0.0002
- 0.0005
- Off
- 0.002
- 0.005
- 0.01

- When Display Resolution is set to any value other than **OFF**, and the terminal is put into Weights and Measures certified mode and sealed, this function is automatically set to **OFF**.

3.3.2.4. Zero

3.3.2.4.1. AZM & Display

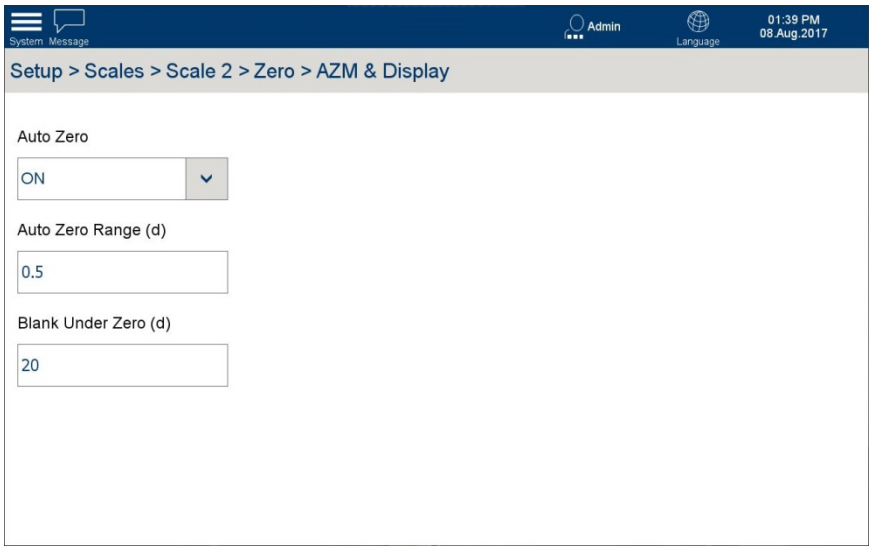


Figure 3-30: AZM & Display Options

The following items appear on this screen:

Auto Zero Can be set as ON or OFF.
Auto Zero is a method used to correcting the zero point automatically when the scale is unloaded. It compensates for the drift due to the condition of weighing cells and electronics, or the deposition of material residues on a scale platform.

Blank Under Zero (d) This parameter sets the negative weight value at which the underload bar will be displayed. Once the weight value is within the specified range, the underload bar is not displayed.

3.3.2.4.2. Zero Ranges

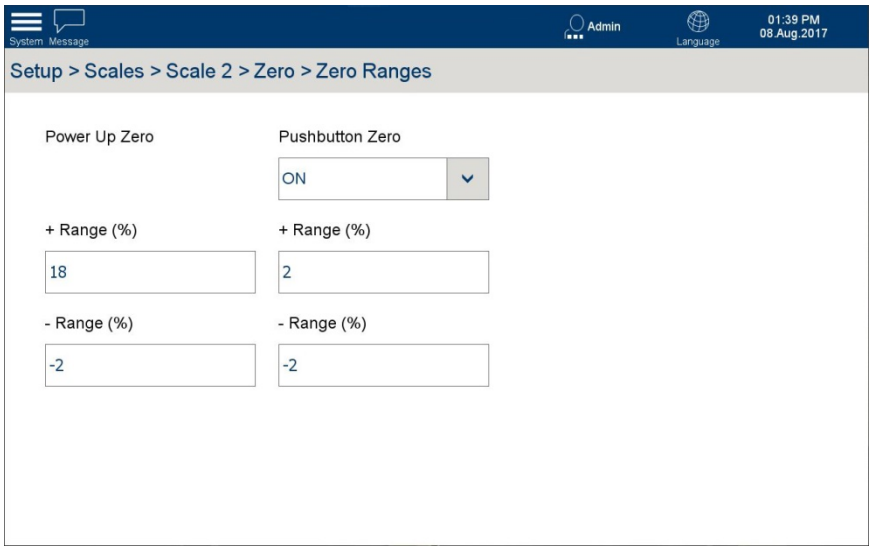


Figure 3-31: Zero Range Options

The Zero ranges options permit the push button zero function to be enabled or disabled, and ranges to be set for zeroing to the original zero point of the scale.

The following items appear on this screen:

+ Range (%)
- Range (%)
When **Power Up Zero** is **On**, it is necessary to specify a range around the scale's original zero within which the power up zero can be applied.
If for instance the + range for power up zero is set to 2%, power up zero can be performed only if the weight value on the scale is less than or equal to 2% of the scale capacity above the original zero point.

- If **Power Up Zero** is **Enabled** and the weight on the scale is outside the zero range, the display shows the overload display until the weight has been taken off and the zero point can be determined.

Pushbutton Zero
If **Push Button Zero** is **On**, the **Zero** softkey can be used to zero the scale.

+ Range (%)
- Range (%)
If **Push Button Zero** is **On**, it is necessary to define a positive and a negative range above and below the zero point of the scale, to determine when the pushbutton zero can be applied.
If for instance the + range for push button zero is set to 2%, a push button zero can be performed only if the weight value on the scale is less than or equal to 2% of scale capacity above the original zero point.

3.3.2.5. Tare

The tare function is used to subtract the weight of an empty container from the gross weight on the scale, in order to determine the net weight of the contents. Tare is aborted if the scale has not achieved stability by the time the timeout expires.

Figure 3-32: Tare Options

3.3.2.5.1. Types

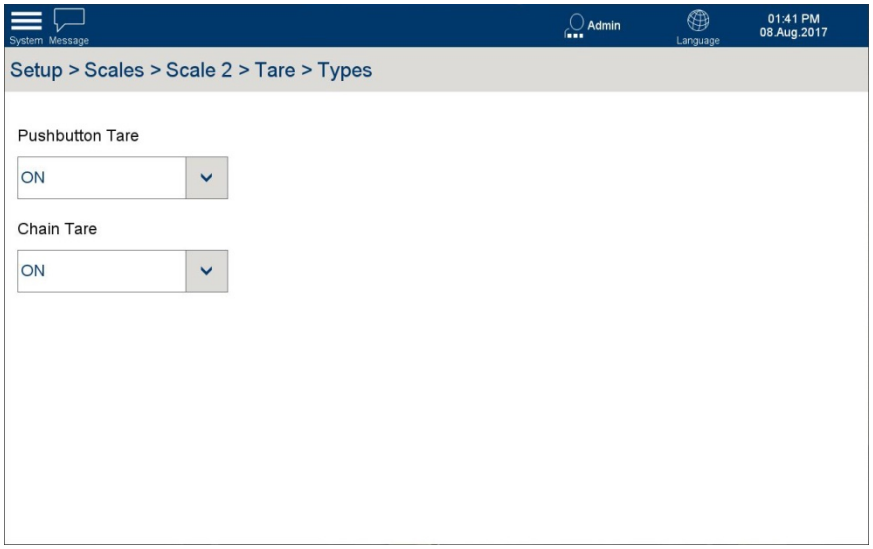


Figure 3-33: Tare Type Options

The IND900 offers a variety of tare options.

Pushbutton Tare When Pushbutton Tare is enabled, the **Tare** softkey on the home screen is functional. Touch this softkey to create a tare value based on an empty container on the scale. The terminal then shows a zero weight and indicates that it is Net mode. When the container is filled, the terminal shows the net weight of the contents.

Chain Tare When Chain Tare is ON, it is possible to take multiple tares in sequence by touching the **Tare** softkey – for example, when filling multiple similar containers on a pallet. Once one container is filled, touch **Tare** again to reset the scale to Net zero.

3.3.2.5.2. Auto Tare

If Auto Set Tare is ON, the tare weight is determined automatically as soon as a container on the scale exceeds a specified threshold value, and the scale has achieved stability.

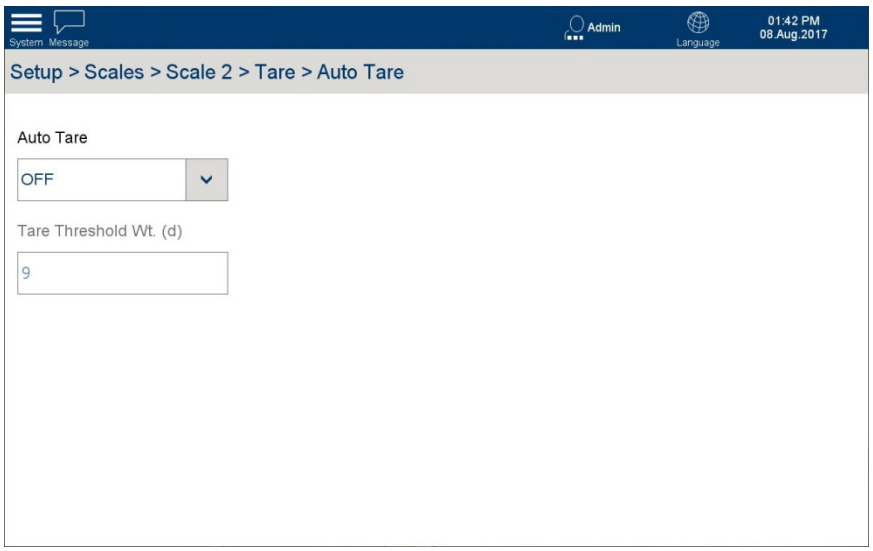


Figure 3-34: Auto Tare Options

The following items appear on this screen:

Auto Tare	Options are OFF and ON.
Tare Threshold Wt. (kg) **Reset Threshold Wt. (kg)**	If Auto Tare is ON, the tare weight is determined automatically as soon as a container on the scale exceeds a specified threshold value, and the scale has achieved stability. When **Auto Set Tare** is **On**, a further screen of options allows the definition of various conditions under which an auto tare will be applied. If the weight on the scale exceeds the Tare Threshold Wt. and then achieves stability, the terminal automatically tares the active scale. If the weight on the scale platform falls below the **Reset Threshold Weight**, the terminal, depending on the programming of the motion check, automatically resets the Auto tare trigger. The next time the weight exceeds the tare threshold weight, the scale is automatically tared again. The reset threshold weight must be less than the tare threshold weight.
Motion Check	Options are OFF and ON. Set Motion Check to ON to prevent an Auto Tare reset from being performed while the scale is still in motion. When this setting is enabled, the scale must return to a value less than the reset value and detect stability in order to reset the Auto tare trigger.

3.3.2.5.3. Auto Clear

This screen allows Auto Clear Tare to be enabled or disabled, and to configure the conditions under which a tare will be cleared automatically.

The following items appear on this screen:

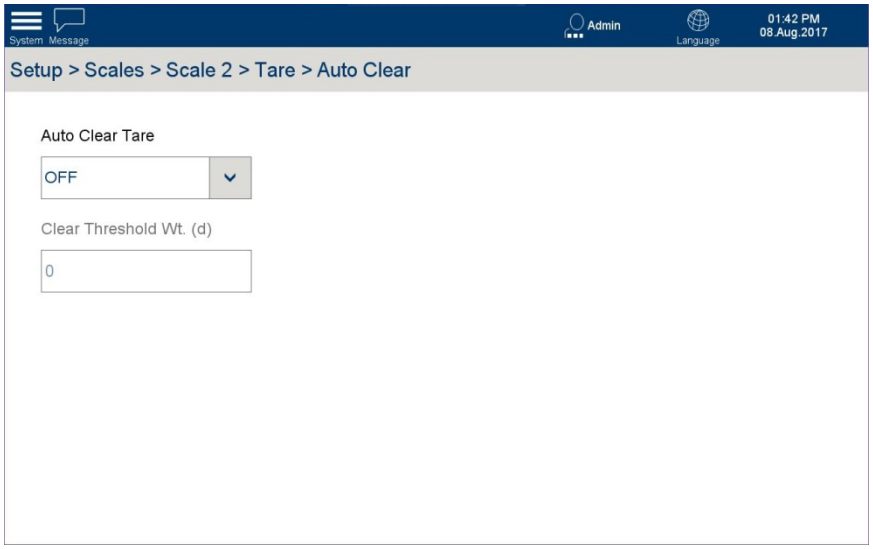


Figure 3-35: Auto Clear Tare Options

Auto Clear Tare	Options are OFF and ON. Set Auto Set Tare to ON to clear the tare value automatically when the scale returns below a specified threshold weight.
Clear Threshold Wt. (kg)	If the gross weight falls below the clear threshold weight, the terminal automatically clears the tare values for the active scale, and returns to gross mode.
Motion Check	When Motion Check is ON, auto clear tare is performed only when the scale has settled to stability.

Power Up Tare — When Power Up Tare is ON, tare values are cleared automatically when the terminal is powered up.

3.3.2.6. Scale Reset

Under some circumstances it may be necessary to reset a scale without making any terminal-wide changes using the Setup I Reset screen.

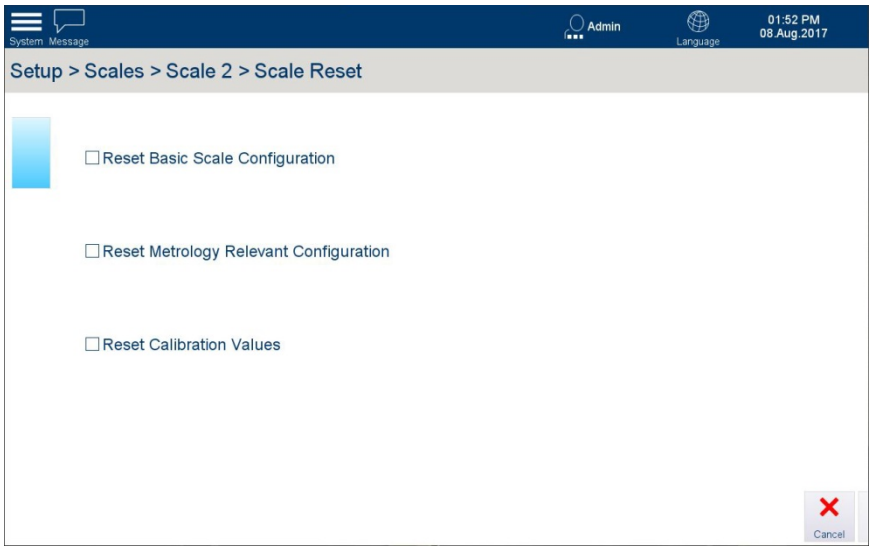


Figure 3-36: Scale Restart Options (Non-IDNet Scales)

The following items appear on this screen:

Reset Basic Scale Configuration — This function is available to any user with a Supervisor-level login or higher. It resets all non-metrological and non-calibration settings for the active scale.

Reset Metrology Relevant Configuration

Reset Calibration Values — These functions are available only to users with an Admin-level login. They reset the selected scale to an unapproved, pre-calibration state.

3.3.2.7. Filter

The IND900 terminal is equipped with multi-stage filters, which can be set to a variety of conditions. These filters differ depending on the type of scale that is connected. The more severe the filtering, the longer the display will take to reach equilibrium.

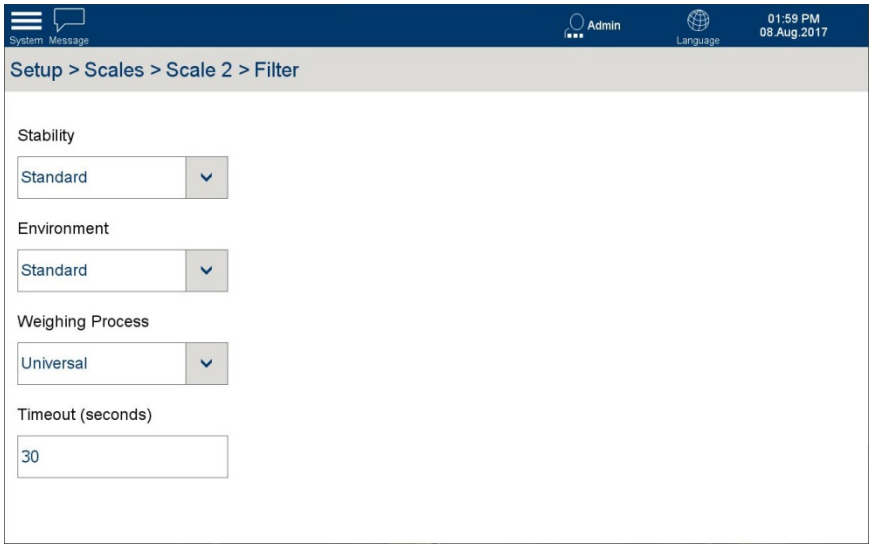


Figure 3-37: Scale Filter Options

3.3.2.7.1. Stability

The stability filter specifies when the scale should designate a weight as still "in motion" or as "stable". When this "stable" designation has been achieved, the weight values are printed out and logged; if it is not achieved, they are not. The speed of the scale and reproducibility of the weighing results are affected by the various settings.

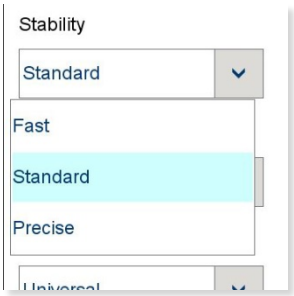


Figure 3-38: Scale Filter Options, Stability

Fast	Quick display, good reproducibility
Standard	Balanced
Precise	Slow display, very good reproducibilty

3.3.2.7.2. Environment

Touch the **Environment** selection field to open a dialog where environmental conditions at the workplace can be specified.

Figure 3-39: Scale Filter Options, Environment

The three options – **Stable**, **Standard** and **Unstable** – describe different conditions in which the weighing system might be functioning.

3.3.2.7.3. Weighing Process

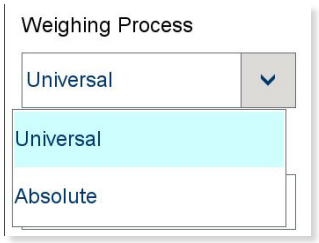


Figure 3-40: Scale Filter Options, Weighing Process

3.3.2.8. MinWeigh

MinWeigh can be set to **On** or **Off**. When it is on, the terminal compares the current net weight with a MinWeigh value. If the net weight is equal to or greater than the MinWeigh value, all terminal functions behave normally. If the current net weight is less than the MinWeigh value, the weight value is shown in the color set as the **Weight ValueColor** (either **None** or **Default Color**, which is red) and the MinWeigh icon flashes at the lower left of the weight display area.

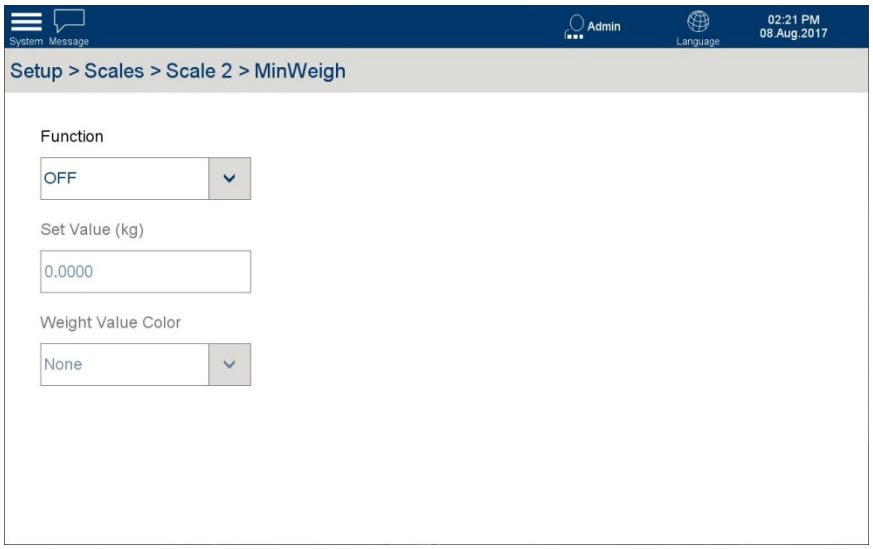


Figure 3-41: Scale MinWeigh Options

When **Function** is set to ON, the two other fields become available.

Set Value (kg) Determines the weight below which MinWeigh is active.

Display Colors **Red** or **None**. If Red is selected, the main weight display will be shown in red when the MinWeigh condition is met.

3.4. Terminal

The terminal options allow the terminal to be customized with information such as a name, a set of users, and regional information.

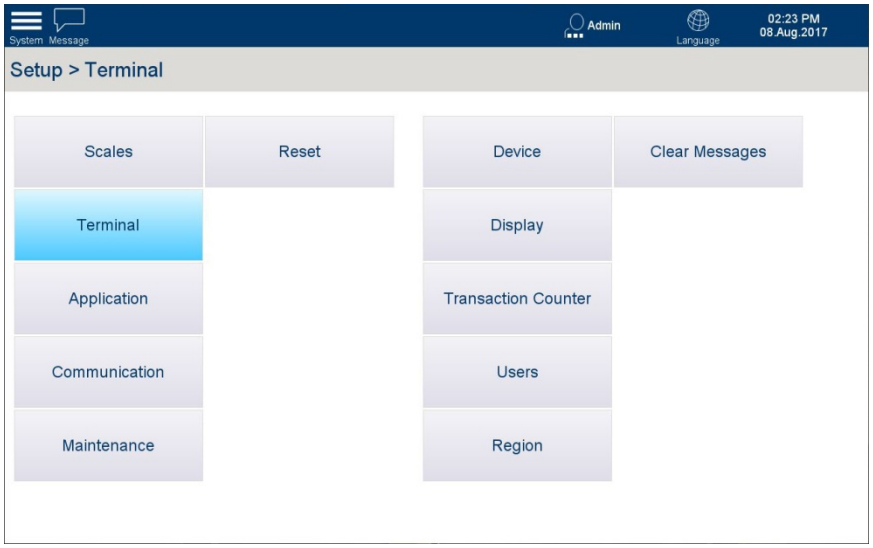


Figure 3-42: Terminal Options

3.4.1. Device

From this screen, three terminal IDs can be configured, together with the serial number of the terminal. Beeper behavior can also be configured.

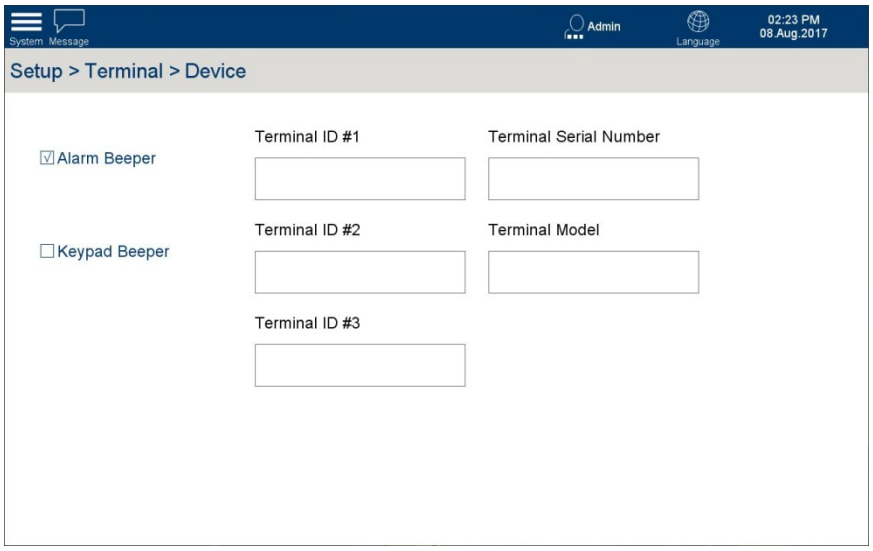


Figure 3-43: Device Settings

Alarm Beeper	Enables or disables the beeper. When enabled, the beeper sounds to indicate when the terminal displays a message in the Message Center of the system bar.
Keypad Beeper	Enables or disables the beeper that sounds to confirm a keypress.
Terminal ID#1, #2, #3	Touch each field to open an alphanumeric entry screen where up to 30 characters of information can be entered to designate the terminal's identity and function.

Terminal Serial Number Touch the field to open an alphanumeric entry screen where the terminal's serial number can be entered.

The serial number is preset in the factory and matches the serial number on the model plate of the terminal. We recommend that this number should not be changed.

3.4.2. Security Options

Refer to Appendix D, **Security Configuration**.

3.4.3. Display

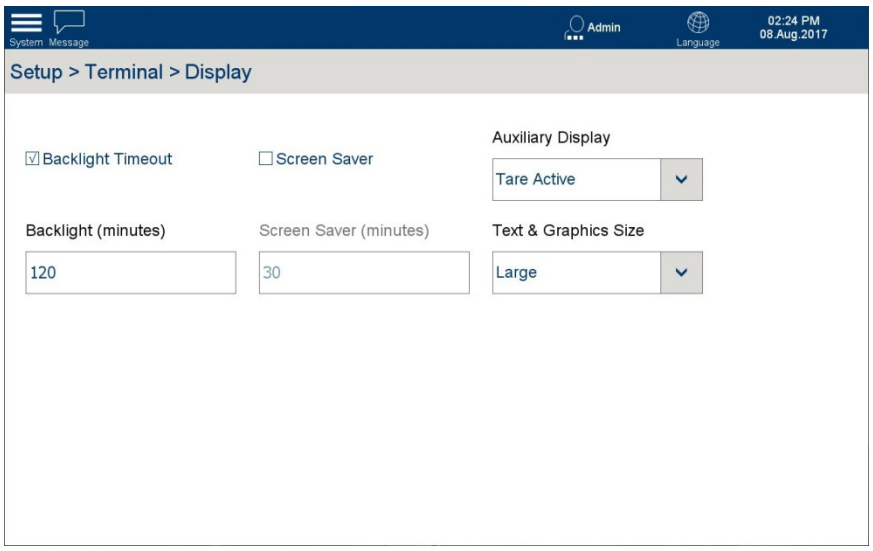


Figure 3-44: Display Options

- If the terminal is in Weights and Measures Approved mode, the backlight and screen saver will activate on if gross weight is zero.

Backlight Timeout Check this box to enable the backlight timeout.

Backlight (minutes) Enter a value, in minutes, after which the display backlight will turn off, if the Backlight Timeout box is checked.

Screen Saver Touch to enable the screensaver.

Screensaver (minutes) Enter a value, in minutes, after which the screensaver will display, if the Screen Saver box is checked.

Auxiliary Display Touch to view the drop-down list of options:

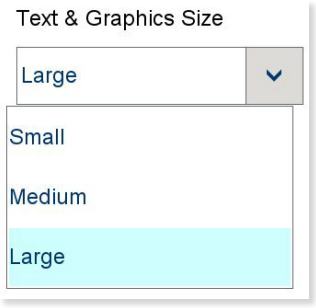
Never Tare value is not displayed above the main weight display.

Tare Active Tare value is shown when the terminal is in net mode.

Tare Always Tare value is shown

Figure 3-45: Tare Display when Auxiliary Display is set to Tare Always

Text & Graphics Size The IND900 offers scalable graphics and text sizes, to suit user's preferences.Touch to view the drop-down list of options:



3.4.4. Transaction Counter

The transaction counter is a seven-digit counter which counts the overall number of transactions performed at the terminal. When the value reaches 1,499,999, at the next transaction the counter resets to 1. The transaction counter is displayed in the table view of the alibi memory.

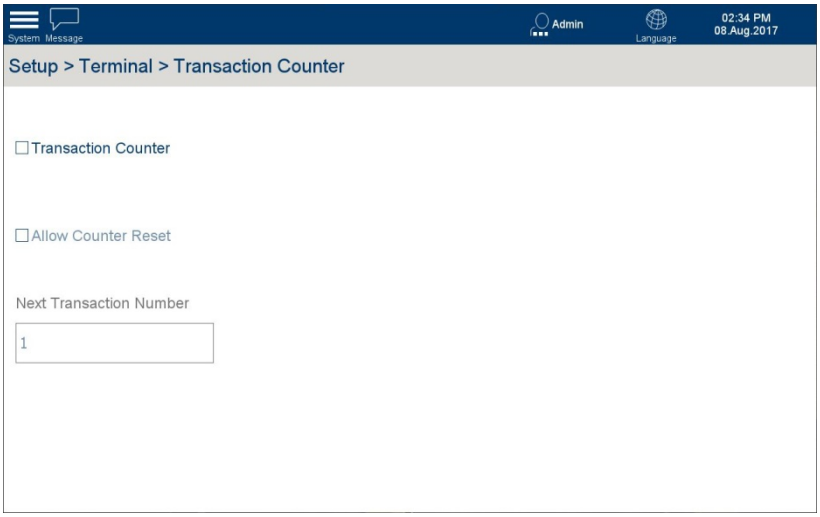


Figure 3-46: Transaction Counter Options

Transaction Counter — This check box enables or disables the transaction counter.

Allow Counter Reset — When the Transaction Counter is enabled, this check box is used to enable or disable manual reset of the transaction counter.

Next Transaction Number — If the transaction counter is enabled, and counter resets are allowed, this field can be used to enter the number from which the new transaction sequence should start.

3.4.5. Users

The IND900 terminal is preconfigured with two user names: **Admin** and **Operator**.

By default, no passwords are assigned to users. A password should be assigned by the factory for Admin- and Supervisor-level users. Unless a password is assigned, there is no protection against entering Setup and making changes to the terminal's configuration. All functions in the terminal, except those for which a password must be entered, are available to all users.

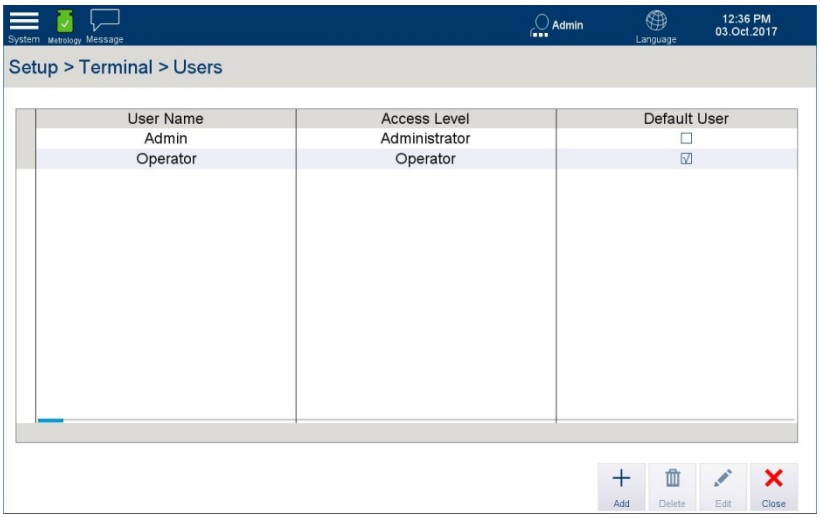


Figure 3-47: Users Table Display

3.4.5.1. Adding or Editing Users

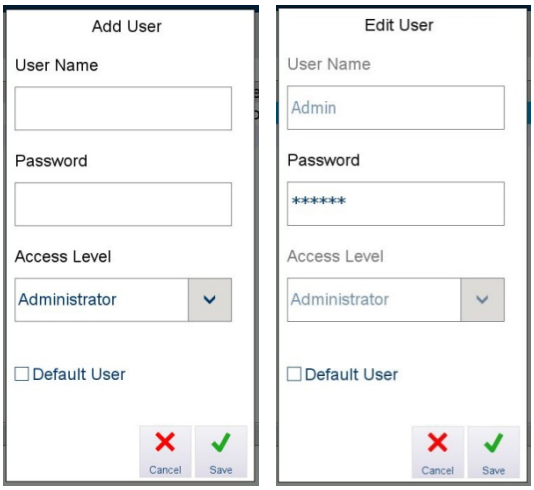


Figure 3-48: Add User and Edit User Dialogs

User Name In the **Add User** or **Edit User** screen, touch the User Name field to open an alphanumeric screen like the one shown bew.

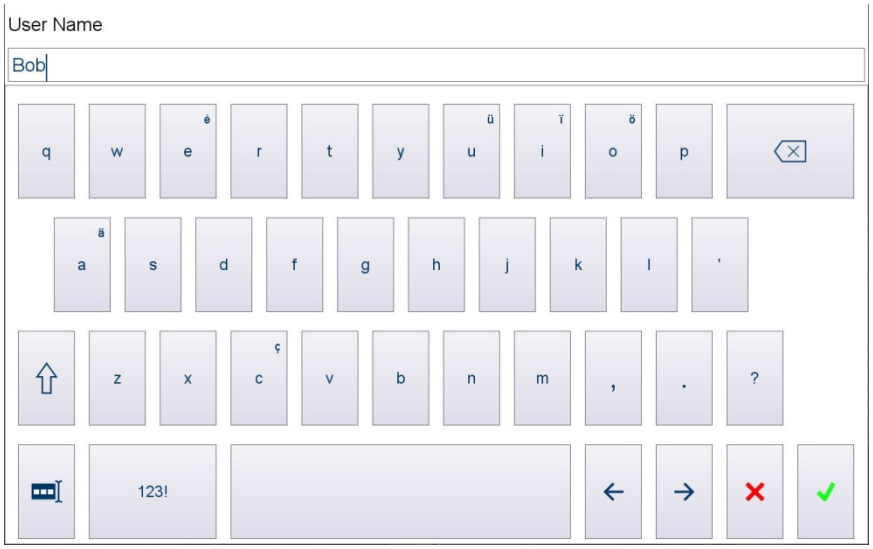
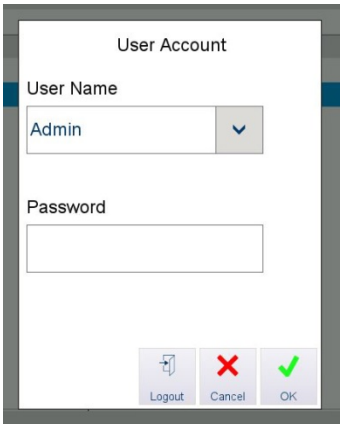


Figure 3-49: User Name Entry Screen

Password In the **Add User** or **Edit User** screen, touch the Password field to open an alphanumeric entry screen like the one shown above.

Depending on the access level for the user who is logged in, the Setup menu is displayed as read-only or allows changes. In addition, each user is assigned only certain softkeys and operating functions.

If a password is assigned to the selected user, access to Setup is protected and a User Account dialog will appear when is selected:



Access Level The individual levels have the following rights:

Administrator An administrator has unrestricted access to all areas of the operating system and setup. Multiple administrators may exist. The primary administrator account cannot be deleted. A user logged in under this primary administrator accountcan create, manage and delete additional user accounts.

- When an administrator password is configured, take care to remember it. If the password is changed or forgotten, only the primary administrator account can access the complete setup menu. Ensure that unauthorized persons do not have access to the password.

Supervisor Can access all setup features and parameters, except metrological information.

Operator A standard user account is predefined. This is particularly useful for locations with validation requirements. The user is assigned the security level with the most restrictions. Operators can see, but not modify, items in the setup menu.

Default User Check this box to indicate which user which should be logged in automatically at system start-up. Only one user can be the default, and this user cannot have a password.

The default user typically has very restricted rights. However, all users always have access to the **Login** dialog which, with a correct user name and password, allows access to higher level of rights.

3.4.5.2. Users Table Options

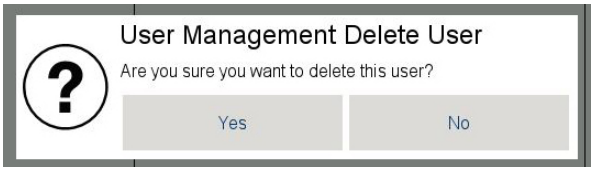
Add 

Create a new user. Touch Add to open the Edit User dialog shown above. Note that a user can only add a new user at their own login level or below. For instance, a Supervisor can add a new Supervisor or Operator, but not a new Administrator.

Delete 

- The primary Administrator account cannot be deleted.

A confirmation message displays:



Select **Yes** to confirm the deletion.

Touch **No** to leave the message and keep the user.

Edit 

- A user name can be edited by a user at the same login level or higher. The user can, however, be deleted and entered afresh. The primary Administrator account cannot be edited.

Touch **Edit**. As when creating a new user, the access level, the password, the type of user and the logoff time can all be modified.

Close 

Exit Users Table view and return to Terminal options.

3.4.6. Region

Here, the terminal's language, time and date can be configured.

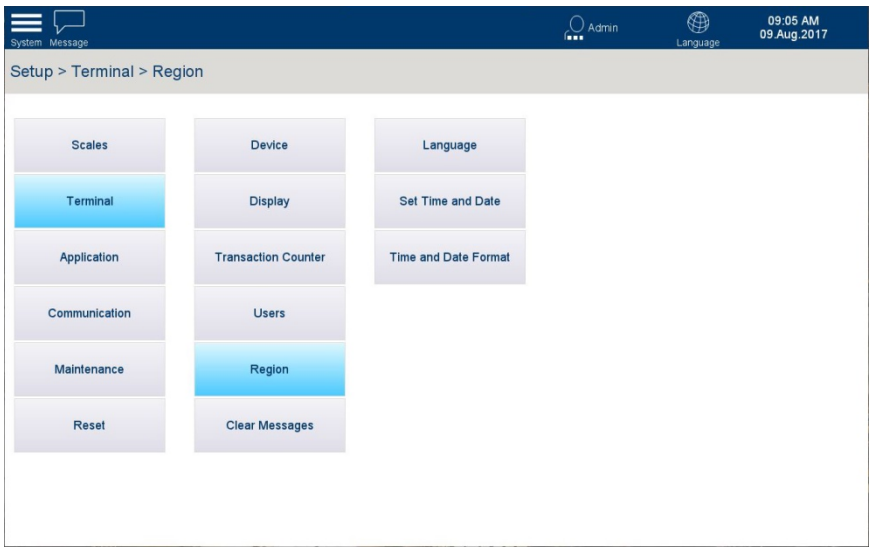


Figure 3-50: Terminal Region Options

3.4.6.1. Language

Touch **Language** to open the Language configuration screen.

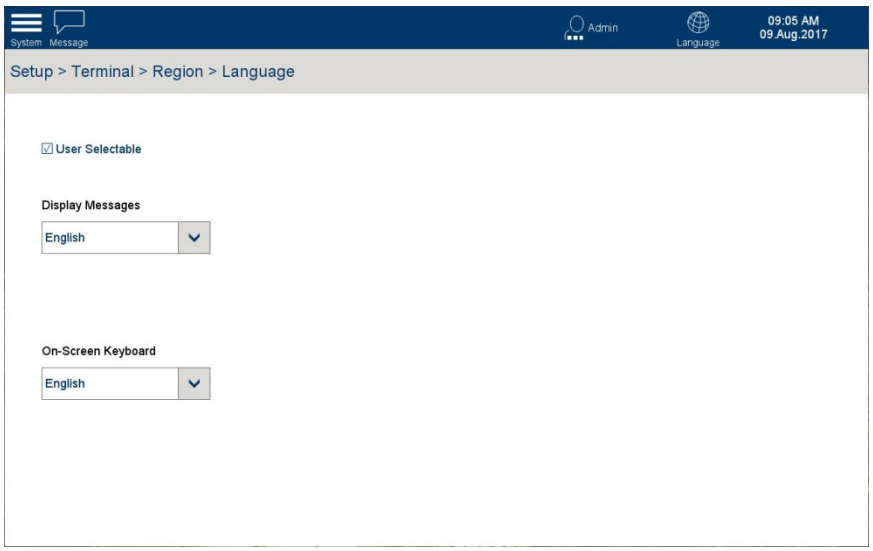


Figure 3-51: Language Options Screen

User selectable When checked, the Language icon displays in the system bar, allowing users to change the terminal's language.

The change is effective immediately without requiring a terminal restart. This setting does not change the terminal's default language.

Display Messages

Select the language to use for messages shown on the display.

On-Screen Keyboard

Select the type of keyboard required.

3.4.6.2. Set Time and Date

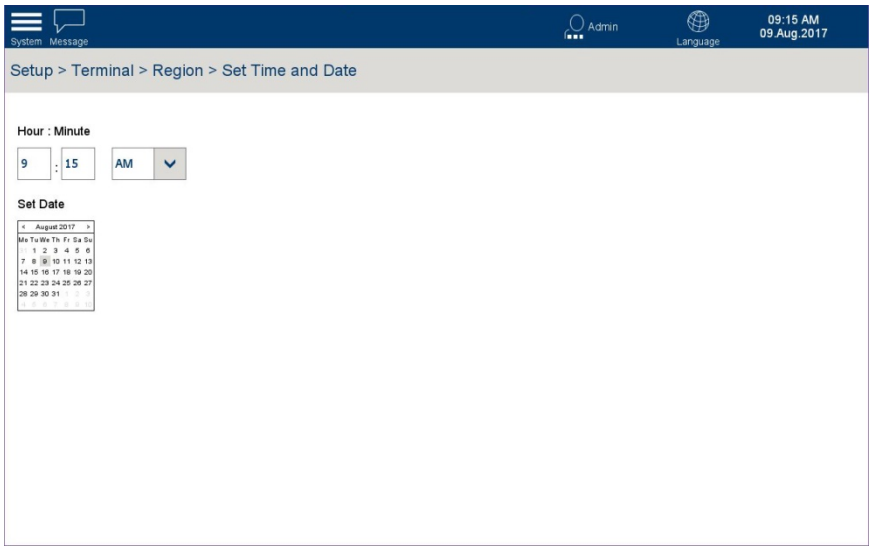
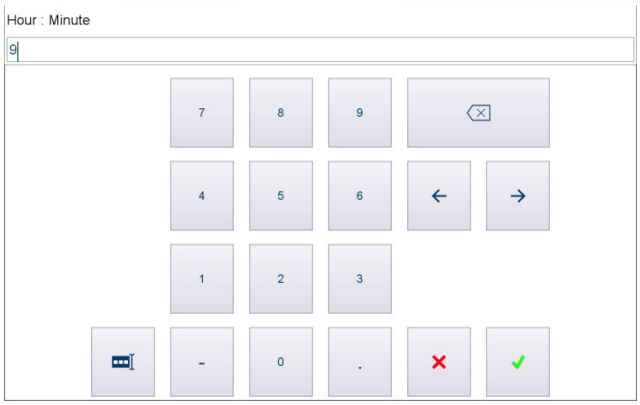


Figure 3-52: Set Time and Date

Use Network Data Time — In a network-connected terminal, check this box to set the terminals' time by the network time.

Time Zone — If **Use Network Data Time** is checked, touch this field to select the correct time zone for the terminal.

Hour : Minute — Touch the **Hour** and **Minute** fields to display a numeric dialog in which the current time can be set.:



AM/PM — This field is available if **Time and Date Format** is **not** set to **Use 24 hour clock** (Refer to section 3.4.6.3, below). Touch this field to display a drop-down list, and select either AM or PM.

Set Date Touch the calendar. From the calendar display which displays, touch the current date to select it:

3.4.6.3. Time and Date Format

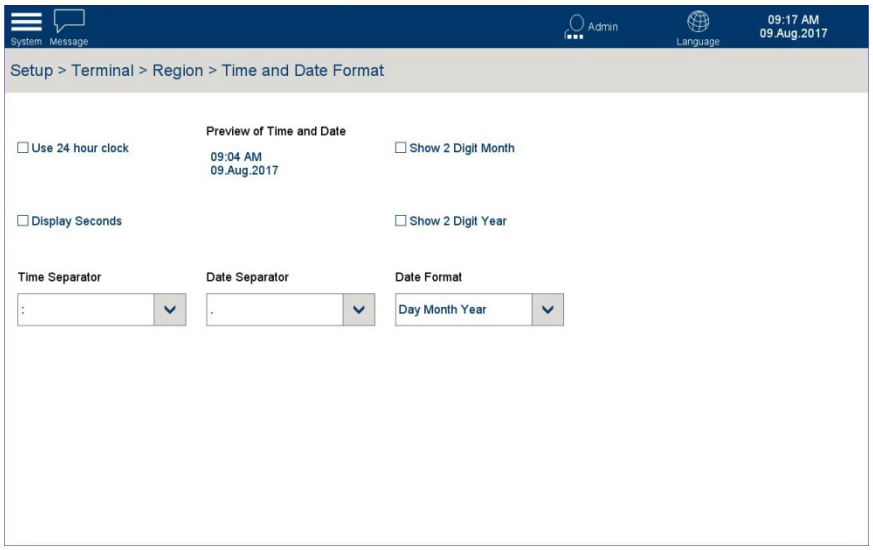


Figure 3-53: Time and Date Format Options

Use 24 hour clock Check this box to display the time in 24-hour format. If this box is checked, the AM/PM option in the **Set Time and Date** screen ~~does~~ is not available.

Display seconds Check this box to display seconds in the on-screen time display.

Time Separator Touch this field to display the separator options – **:** (colon) or **.** (period).

[Preview of Time and Date] Displays time and date as they will appear on screen with the currently selected format.

Show 2 Digit Month Check this box to display month as a two-digit value (e.g. 01 instead of Jan.).

Show 2 Digit Year Check this box to display year as a two-digit value (e.g. 17 instead of 2017).

Date Format Touch this field to select the sequence of elements in the date display. Options are:

- Day Month Year
- Month Day Year
- Year Month Day

3.4.7. Clear Messages

Touch **Clear Messages** to display a confirmation screen with a message **Press Run to clear all messages from the system bar**.

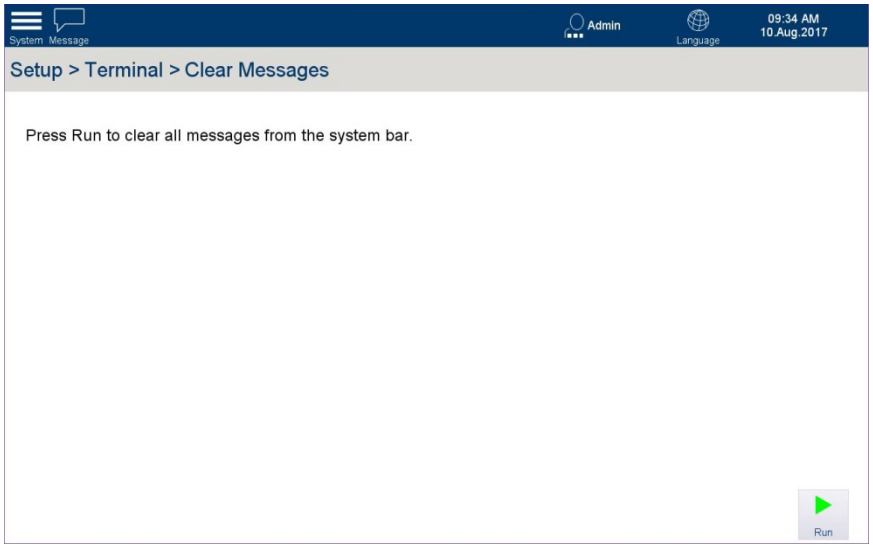


Figure 3-54: Clear Messages Confirmation Screen

Touch **Run** to perform this action.

3.5. Application

The Application screen allows the terminal's alibi memory to be configured, searched and exported, and an installed application set to run automatically at start-up.

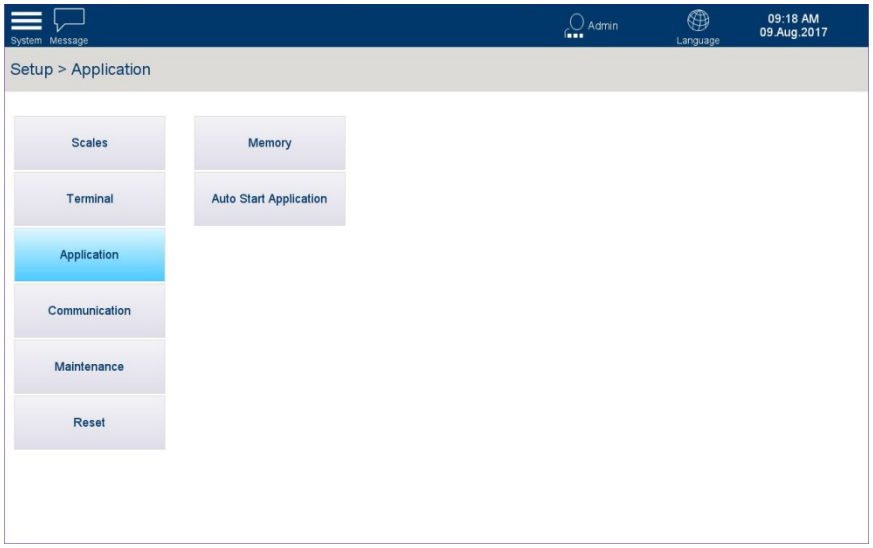


Figure 3-55: Application Options

3.5.1. Memory

The Memory options allow the alibi memory to be enabled, and its accumulated records displayed, searched, exported and cleared.

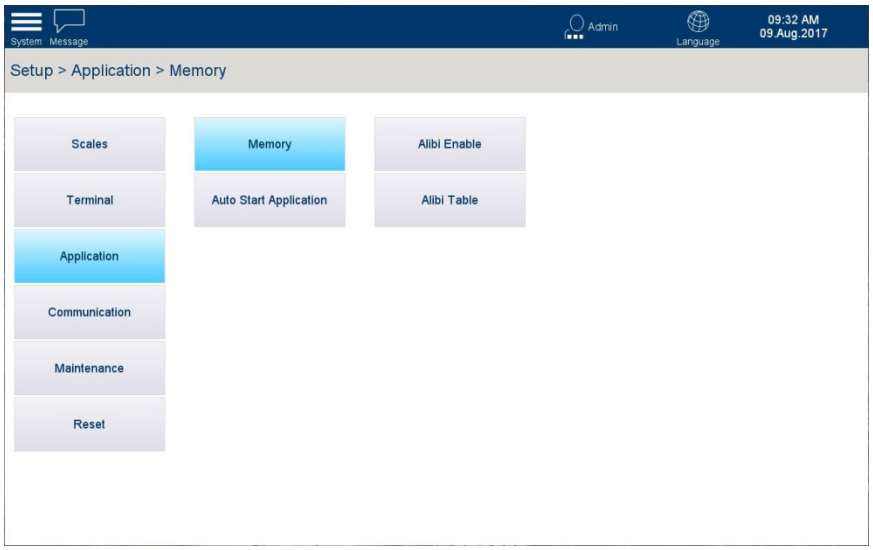


Figure 3-56: Memory Options

3.5.1.1. Alibi Enable

Touch **Alibi Enable** to access the check-box which enables or disables the **Alibi Memory Table**. When this box is checked, the terminal will collect log entries and store them in the alibi table.

The alibi memory functions as a FIFO file which overwrites the oldest record when it has reached its maximum size. The alibi memory can record 500,000 transactions before it starts to overwrite the oldest transactions. When the alibi memory is 75% full, a warning message

appears which shows the status. A further message is displayed when the file is 90% full. The alibi memory continues to save records until the file is 100% full, after which each additional record overwrites the current oldest record.

Further particulars of the alibi memory can be found in Chapter 2, **Operation**.

- If the IND900 terminal is set to "Approved", the alibi memory can be enabled or disabled only if the W&M (metrology) switch is off.

3.5.2. Auto Start Application

Touch **Auto Start Application** in the **Application** options screen to open the screen shown below.

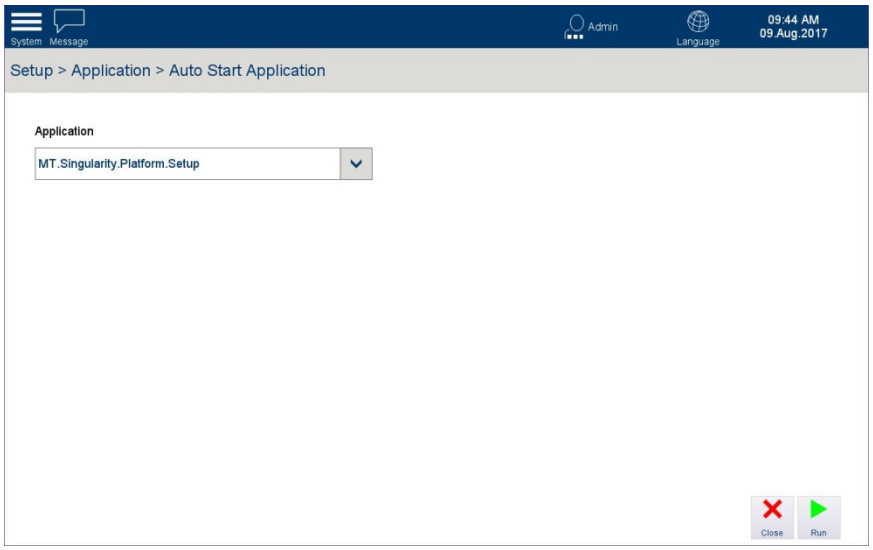


Figure 3-57: Auto Start Application Screen

Touch the Application field to display a list of installed applications. Select an application to start automatically when the terminal is turned on. It is only possible to start one application at a time.

- Application settings are detailed in the **User's Guide** provided with the Application PAC, if one is installed.

3.6. Communication

The Communication options allow the terminal's interfaces and connections to be configured.

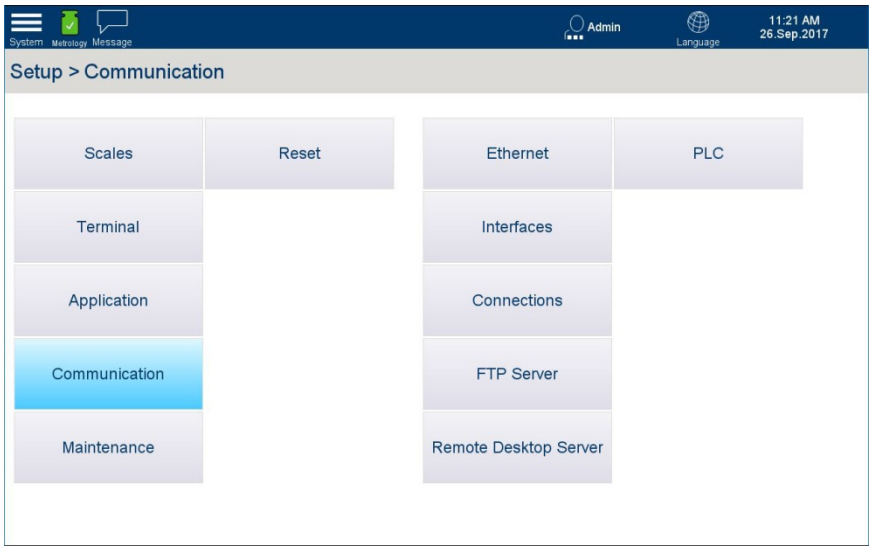


Figure 3-58: Communication Options

3.6.1.1. Ethernet

This screen is used to configure the terminal's Ethernet connection. Ethernet is available for TCP/IP transmission of data and to perform FTP transfers.

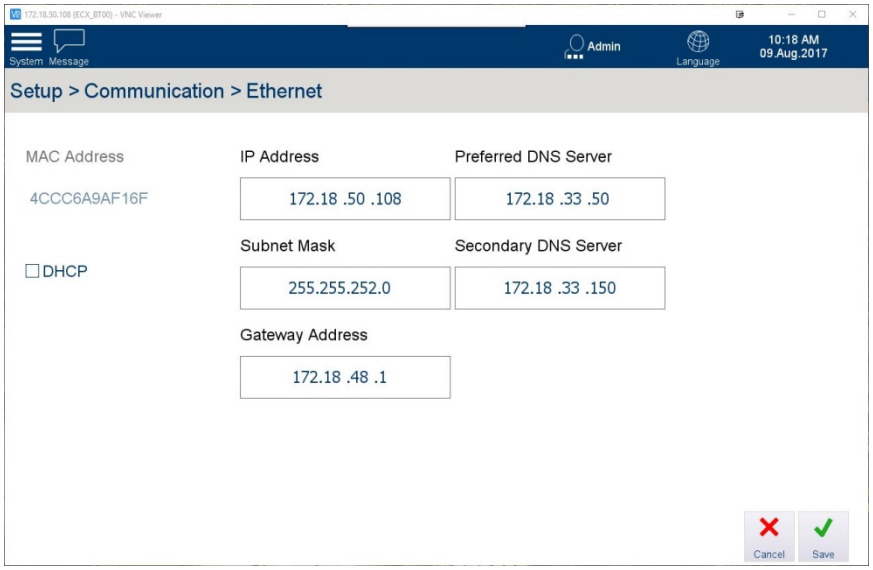


Figure 3-59: Ethernet Options, DHCP Disabled

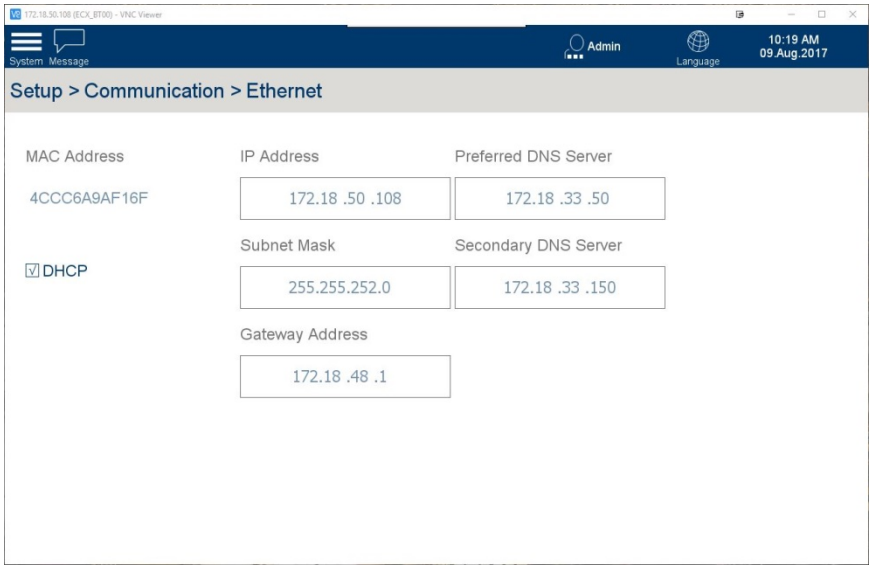


Figure 3-60: Ethernet Options, DHCP Enabled

MAC Address — The Media Access Control (MAC) address is displayed, but cannot be changed.

DHCP — If DHCP is checked, the IP address, subnet mask and gateway address of the network will be assigned to the terminal automatically. These fields are then write-protected.

If DHCP is Off, these addresses must be entered manually into the following fields.

IP Address
Preferred DNS Server
Subnet Mask
Secondary DNS Server
Gateway Address

Touch each field to open an alphanumeric entry screen in which the information can be entered.

3.6.1.2. Interfaces

This screen displays a table which lists interface hardware present in the IND900, together with their key parameters.

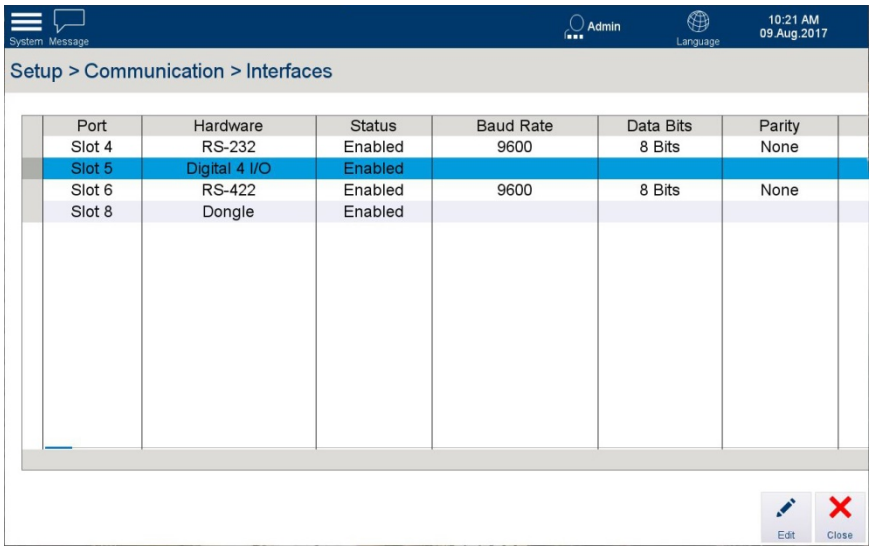


Figure 3-61: Interface Table

3.6.1.2.1. Edit

Touch **Edit** to edit the interface selected in the table, above. The contents of this screen will vary depending on the type of interface selected.

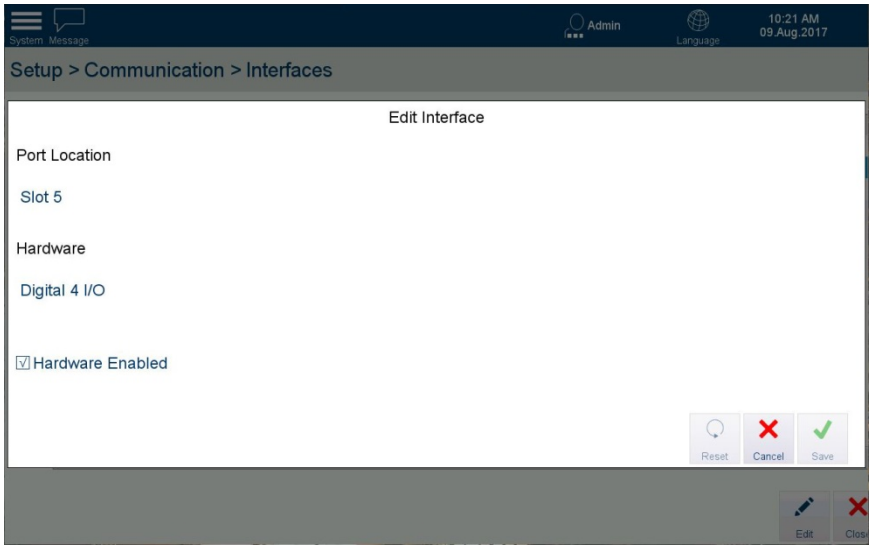


Figure 3-62: Interface Editing Screen – Scale Interface

For the scale interface, information is displayed and cannot be modified.

For communication ports, more parameters are displayed.

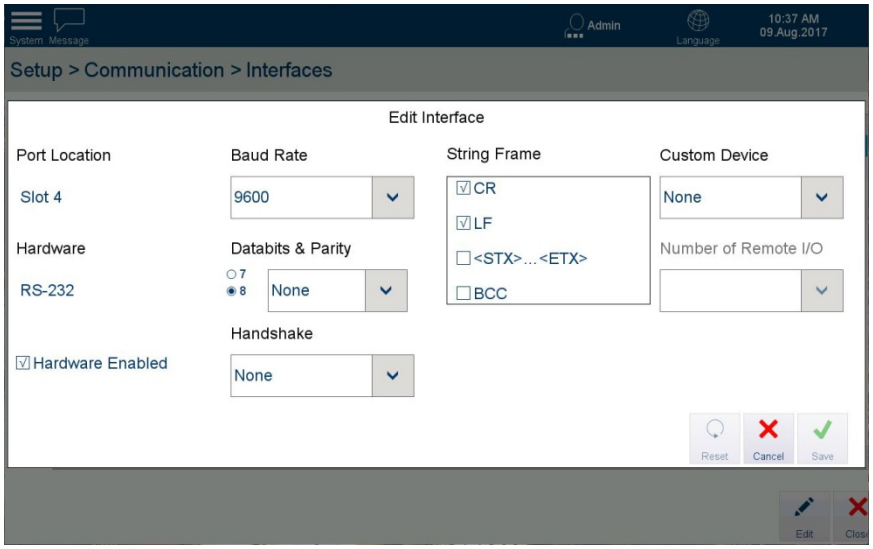


Figure 3-63: Interface Editing Screen – Serial Port

Port Location
Hardware

Displays the option card hardware installed at the selected port location inside the IND900 terminal. This information is displayed but cannot be modified. The IND900 has 7 ports – 6 for scale and option boards and a 7th used for the metrology switch.

The Hardware column indicates which option cards are installed

Hardware Enabled

Installed hardware can be enabled or disabled by checking or clearing this box.

Baud Rate

This drop-down list includes the following options:

2400, 4800, 9600 (the default), **19200, 38400 and 57600**

Databits & Parity

Data bits may be set to **7** or **8**, and Parity to **None** (the default value), **Even** or **Odd**.

Handshake

None is the default value. For certain communication interfaces, this can be set to **Xon-Xoff Protocol**.

String Frame

Check boxes to determine what, if any, strings frame the output data. The default is **CR** and **LF**; **<STX>…<ETX>** and **BCC** may also be selected.

Custom Device

Sets parameters for communication with an external device. The default value is **None**. The other option is **GA46** (thermal printer).

3.6.1.3. FTP Server

The FTP Server can be enabled or disabled using a check box. Its port is displayed but cannot be modified. When FTP Server is enabled, an Admin-level user can log in using their user name and password.

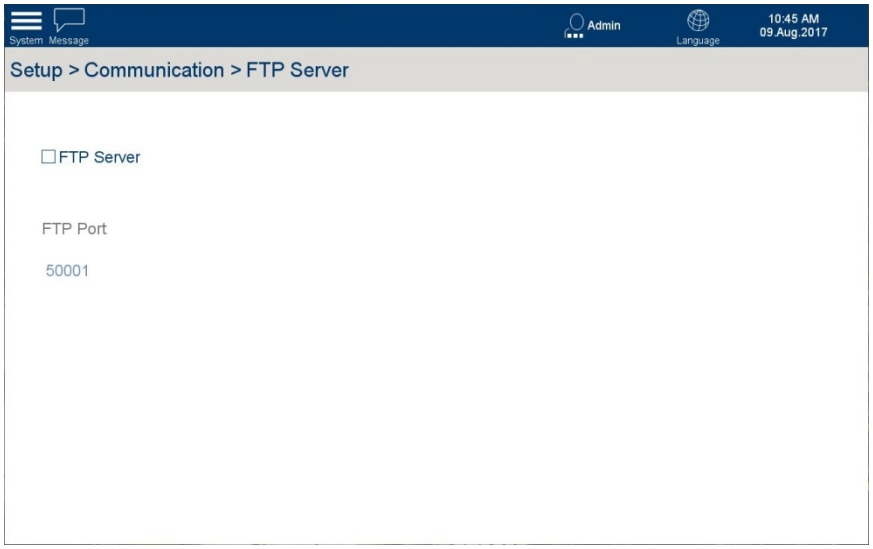


Figure 3-64: FTP Server Screen

3.6.1.4. Remote Desktop Server

The Remote Desktop Server can be enabled or disabled using a check box.

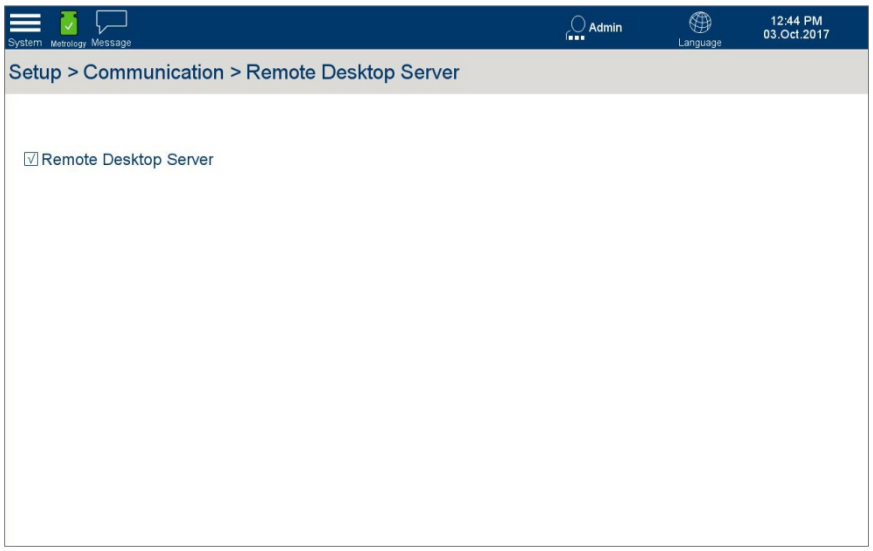


Figure 3-65: Remote Desktop Server Setup Screen

3.6.1.5. PLC

The PLC menu includes two options – **Data Format**, and **PROFIBUS** (currently the only PLC interface available for IND900).

Figure 3-66: PLC Menu Options

3.6.1.5.1. Data Format

The Data Format options are determined by the type of PLC interface – in this case, only PROFIBUS is available.

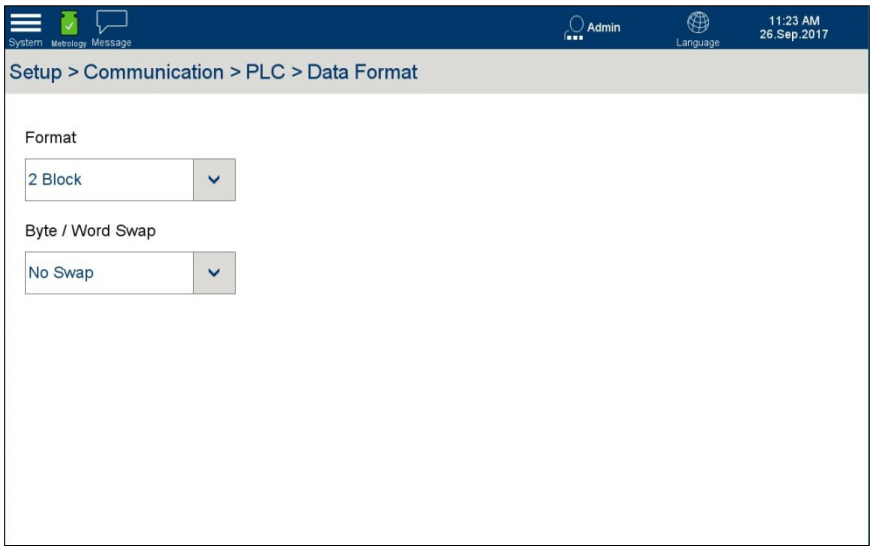


Figure 3-67: PLC Data Format Settings

Format

Data format options are 1, 2, 4 and 8 blocks, selected from the Format drop-down list.

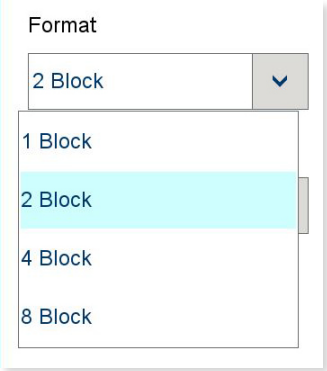


Figure 3-68: PLC Data Format Options

Byte / Word Swap

In order to conform to the PLC's requirements, the order of data can be selected from the **Byte/Word Swap** drop-down list.

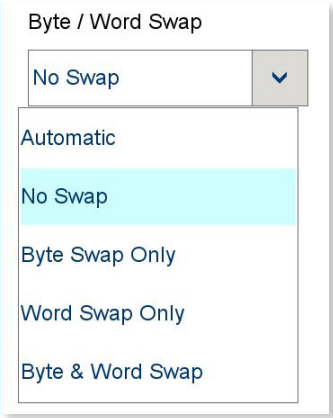


Figure 3-69: PLC Byte/Word Swap Options

3.6.1.5.2. PROFIBUS

The PROFIBUS screen simply permits the terminal's PLC node address to be set.

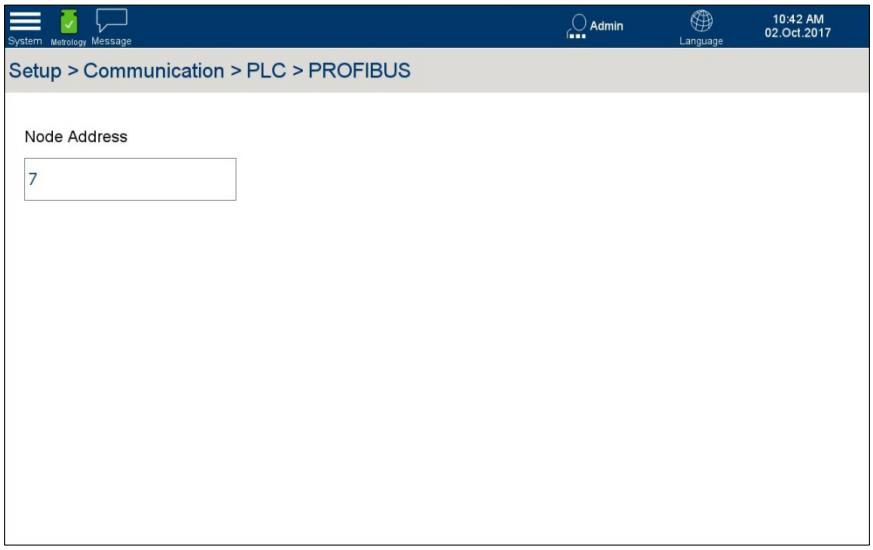


Figure 3-70: PROFIBUS Setup Screen

Touch the **Node Address** field to open the numeric entry dialog.

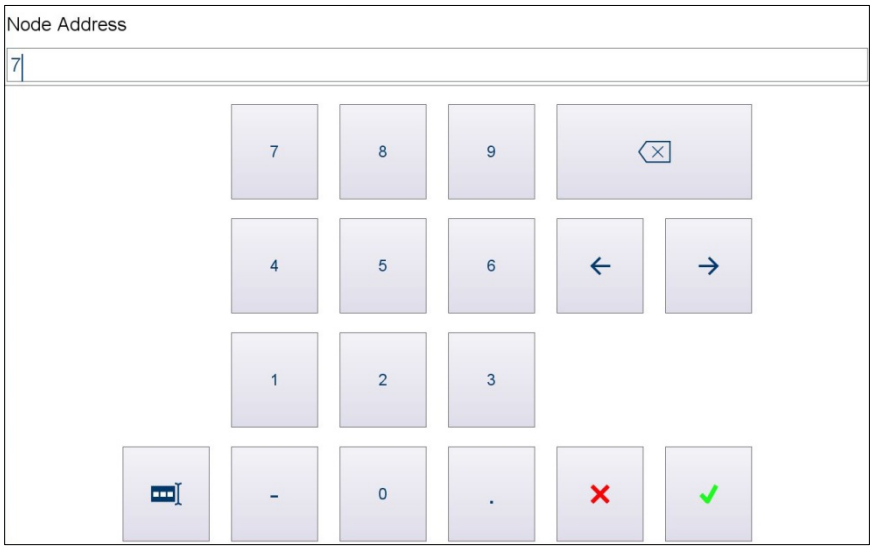


Figure 3-71: Node Address Entry Dialog

3.7. Maintenance

In the main Setup screen, touch **Maintenance** to display the **Maintenance** options.

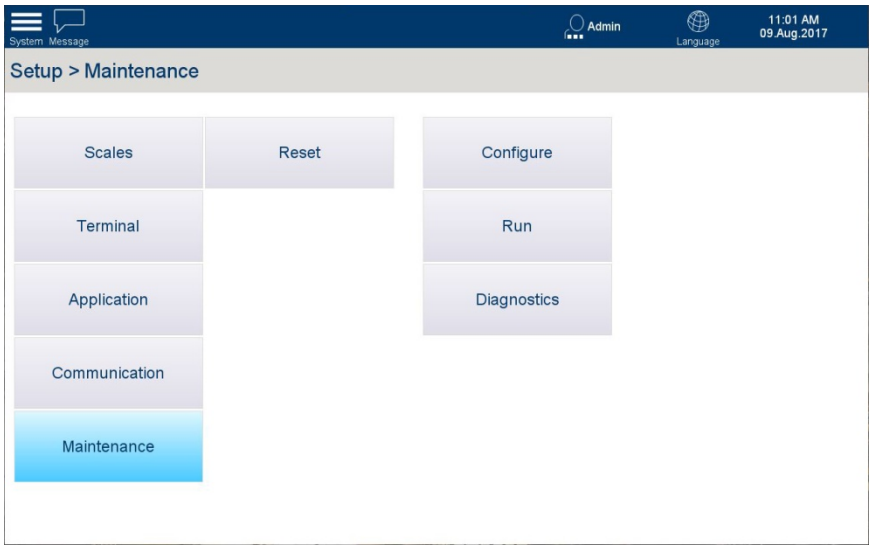


Figure 3-72: Maintenance Options

3.7.1. Configure

Touch **Configure** to display the **Maintenance Configuration** options.

Depending on which logs are enabled, th the following options may appear on this screen:

- Enable Logs
- Change Log
- Maintenance Log
- Error Log

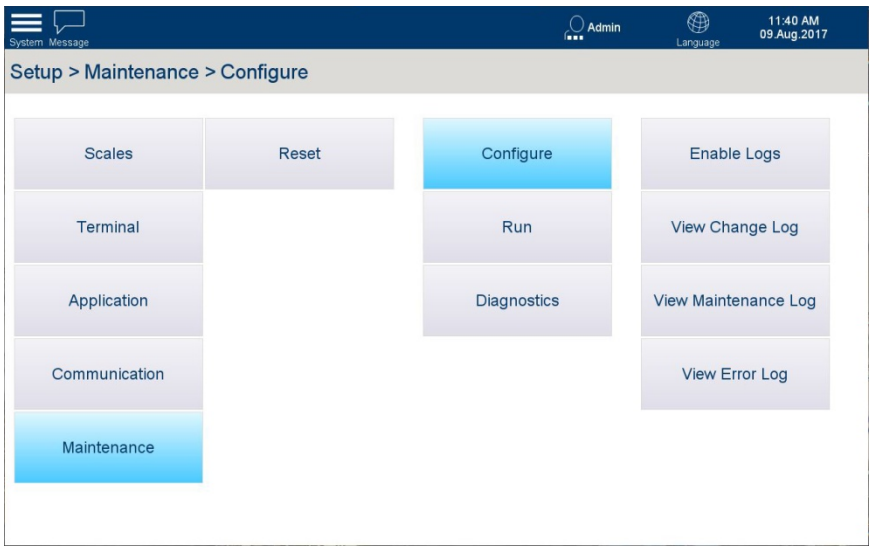


Figure 3-73: Maintenance Configuration Options

3.7.1.1. Enable Logs

This screen allows each of the three logs to be enabled or disabled:

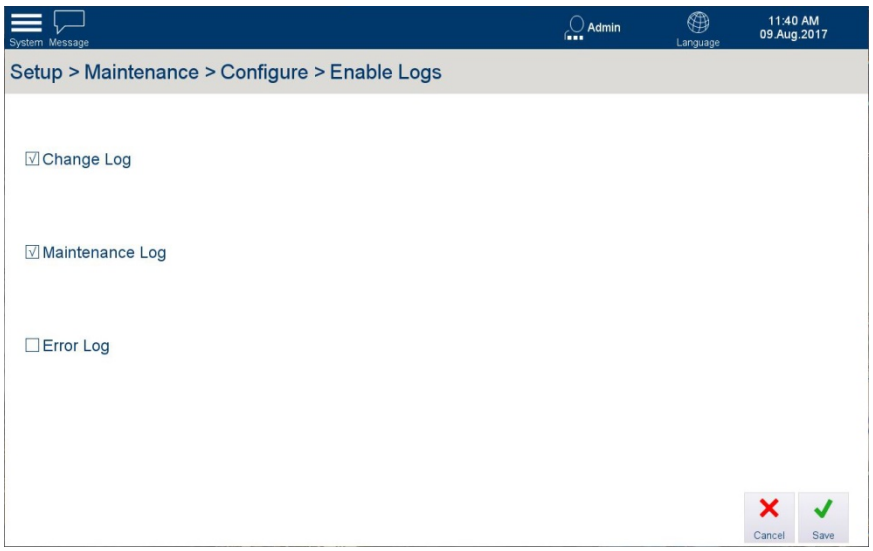


Figure 3-74: Enable Logs

- The **Cancel** and **Save** buttons appear only when a change has been made (a box checked or cleared).

3.7.1.2. Log Search and View Functions

3.7.1.2.1. Search Options

Each of the Log Table view screens includes a Search function. Touch the **Search** softkey to display the **Search Condition** dialog:

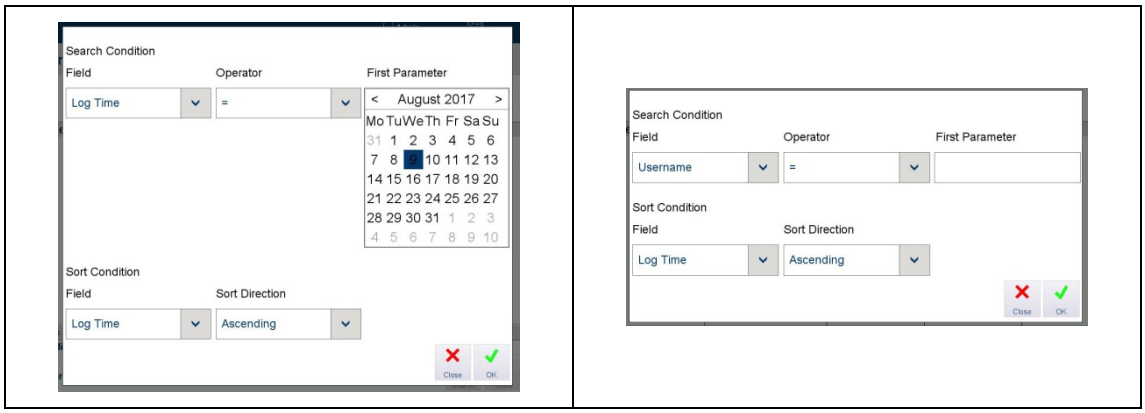


Figure 3-75: Search Condition Dialogs – Log Time (left) and User Name (right)

If the search condition involves text entry, a keyboard screen like the one shown in Figure 3-49 will display.

Enter the desired **Field**, **Operator**, and **Sort Condition** settings.

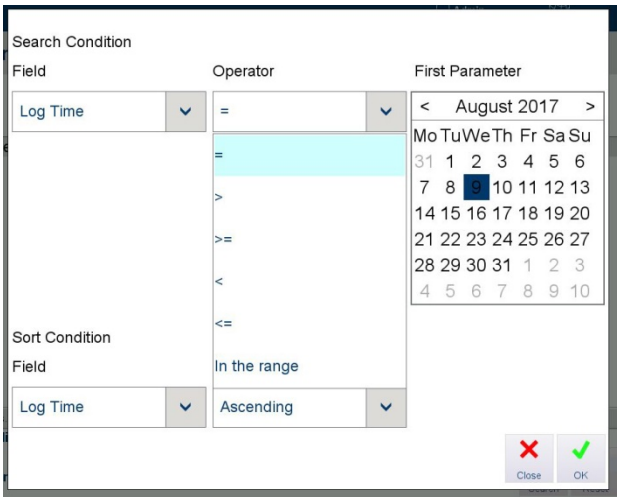


Figure 3-76: Search Dialog Operator Options

Table 3-1: Comparison Field Operators

Operator	Comparison	Operator	Comparison
<	Less than	<>	Not equal
<=	Less than or equal to	>=	Greater than or equal to
=	Equal (default)	>	Greater than
In the range	Displays an additional field to define the start and end of a range of records to display.		

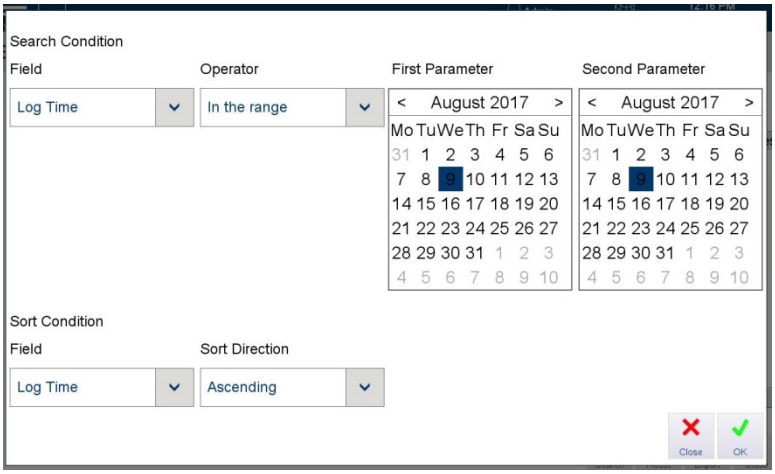


Figure 3-77: Operator Range Options

In the case shown in Figure 3-77, a subset of available records is displayed.

3.7.1.2.2. Reset Search

This function resets the table search parameters without further confirmation.

3.7.1.2.3. Export

The entire contents of the log, or a selected (searched) subset of them, can be exported either to an internal file, or to an external USB device. Touch **Export** to display the Export dialog.

- Target options are an **Internal File**, or an attached **USB Memory** device.
- The file can be exported in either **.xml** or **.csv** (comma-separated values) format.
- The default file name indicates the terminal's name, the date (YYY_MM_DD) and time (HHMM).

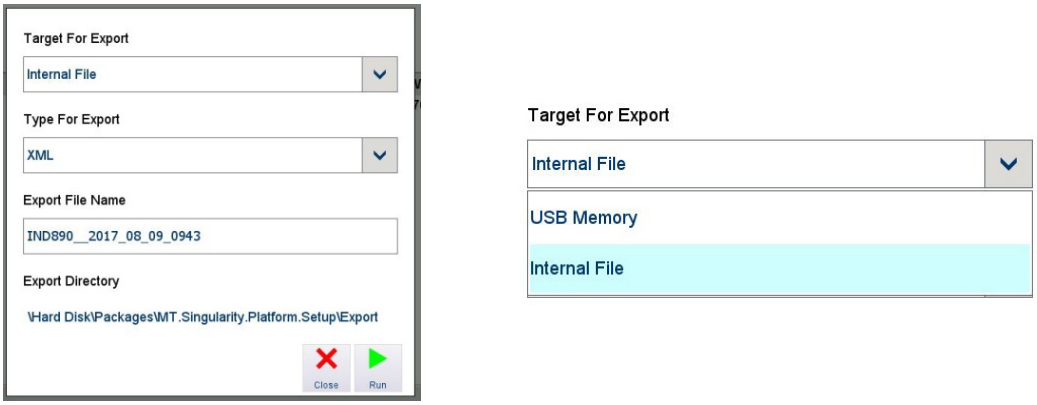


Figure 3-78: Record Export Dialog

Touch **Run** to export the results, or **Close** to return to the log table view screen.

3.7.1.2.4. Close

Touch **Close** to exit the table and return to the **Maintenance** options view.

3.7.1.3. Change Log

The Change Log saves a record of all changes made to the IND900 configuration. Recorded items include functions such as software updates, calling up Service mode, and calibration of the touchscreen. The log also records whether or not the respective action was successful.

The log can record 32,000 records before the oldest records are overwritten.

Touch the screen and drag to scroll to the right and view further columns. Figure 3-79 shows a composite view with all available columns displayed.

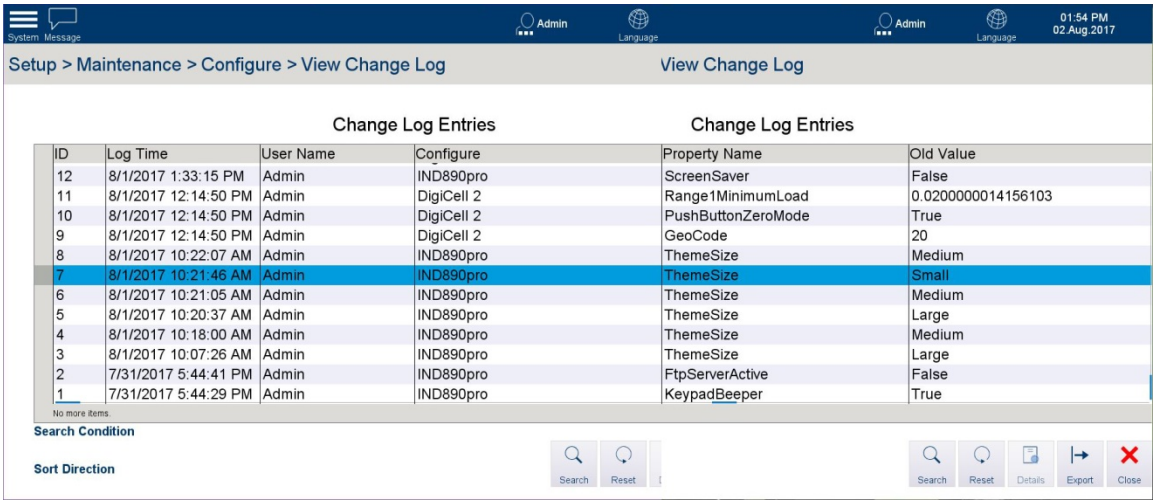


Figure 3-79: Change Log Table View.

- ID
- Log Time
- User Name
- Configure
- Property Name
- Old Value
- New Value

3.7.1.3.1. Search, Reset, Details, Export

For Search, Reset and Export, refer to section 3.7.1.2, **Log Search and View Functions**, above.

Touch the Details button to display more information about a selected record.

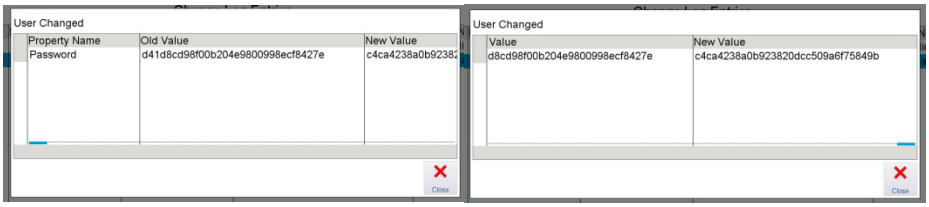


Figure 3-80: Change Log Record Detail Displayed

3.7.1.4. Maintenance Log

The Maintenance Log saves a record of all service procedures that are performed on the IND900. Recorded items include functions such as software updates and calibration of the touchscreen. The log also records whether or not the respective action was successful.

The log can record 32,000 records before the oldest records are overwritten.

The Maintenance Log has columns for

- Log Time
- Username
- Channel
- Even
- Description
- Status
- Cell

Touch the screen and drag to scroll to the right and view further columns.

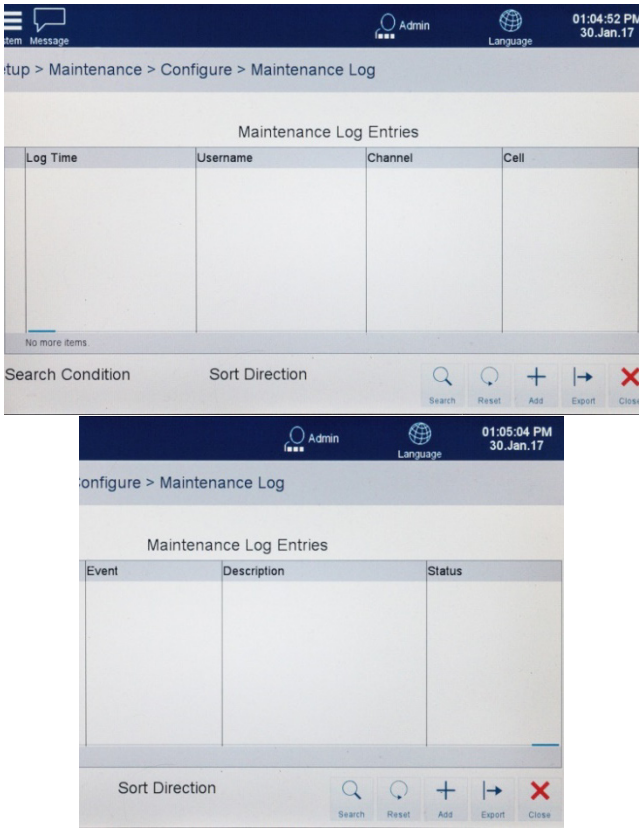


Figure 3-81: Maintenance Log View

- To turn pages in the log, move a finger up or down on the touchscreen. To scroll to the left or right, move a finger in the horizontal direction on the touchscreen.

3.7.1.5. Error Log

The Error Log has columns for

- Log Time
- Username
- Severity
- Error Code
- Detail

Touch the screen and drag to scroll to the right and view further columns.

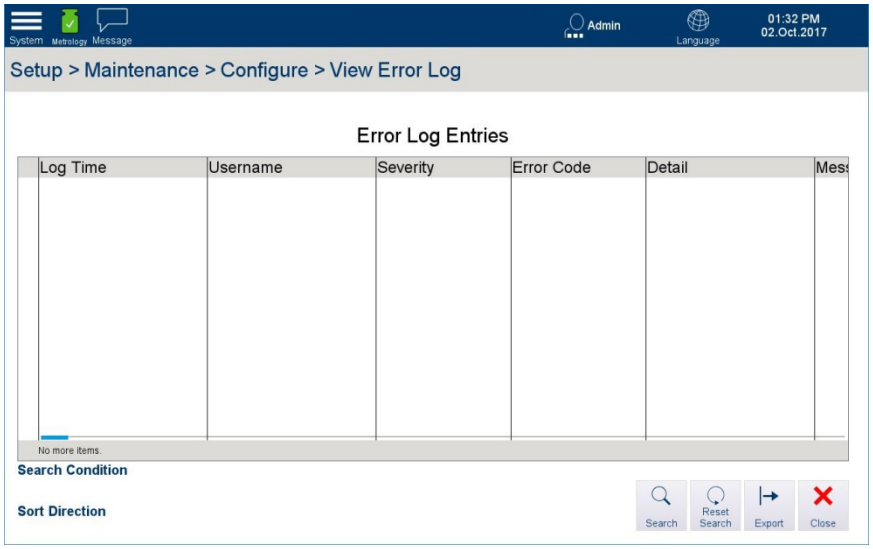


Figure 3-82: Error Log Table View

When it is enabled, the Error Log records all errors that occur in the system. It can record 32,000 records before the oldest records are overwritten.

3.7.1.5.1. Search

Refer to section 3.7.1.2, **Log Search and View Functions**, above.

3.7.1.5.2. Reset

This function resets the table search parameters without further confirmation.

3.7.2. Run

The **Run** screen shows options for

- Backup
- Restore
- Software Update

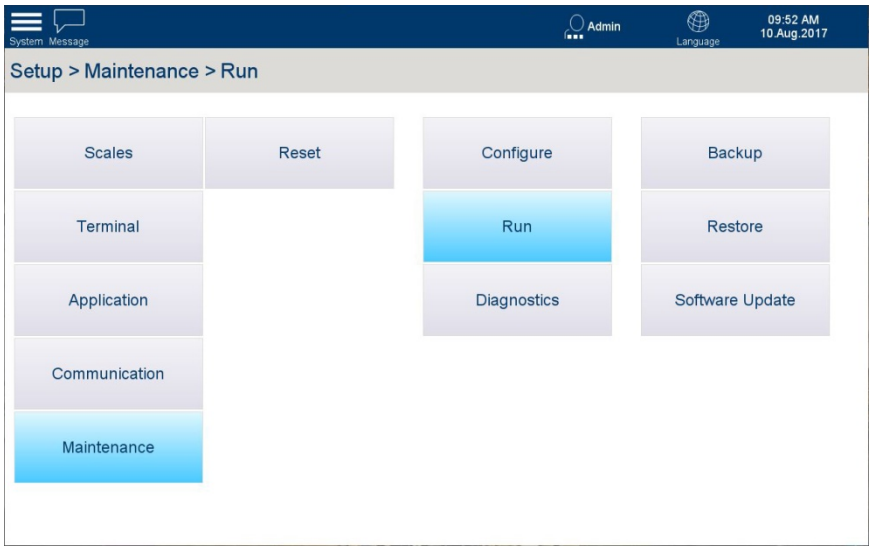


Figure 3-83: Maintenance Run Options

3.7.2.1. Backup

The **Backup** screen displays options for the target location in which to save the backup (**Internal File** or attached **USB Memory** device), the file name for the backup. The default file name includes the terminal's name, the date (YYY_MM_DD) and time (HHMM).

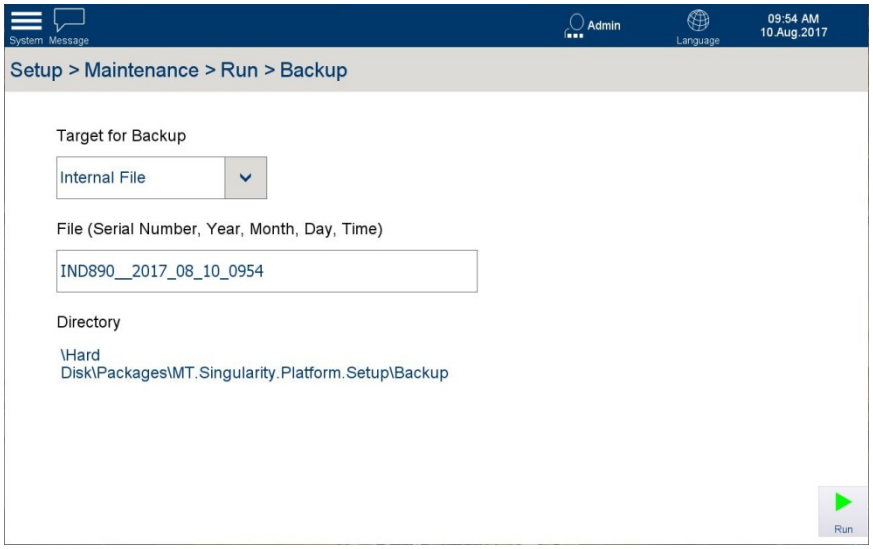


Figure 3-84: Backup Options Screen

The **Directory** location for an internal backup is displayed, but cannot be changed.

Touch **Run** to perform the backup, or **Close** to return to the **Maintenance I Run** options screen.

3.7.2.2. Restore

The **Restrore** screen displays options for the source from which to restore the backup (**Internal File** or attached **USB Memory** device), and entry of the file name for the backup.

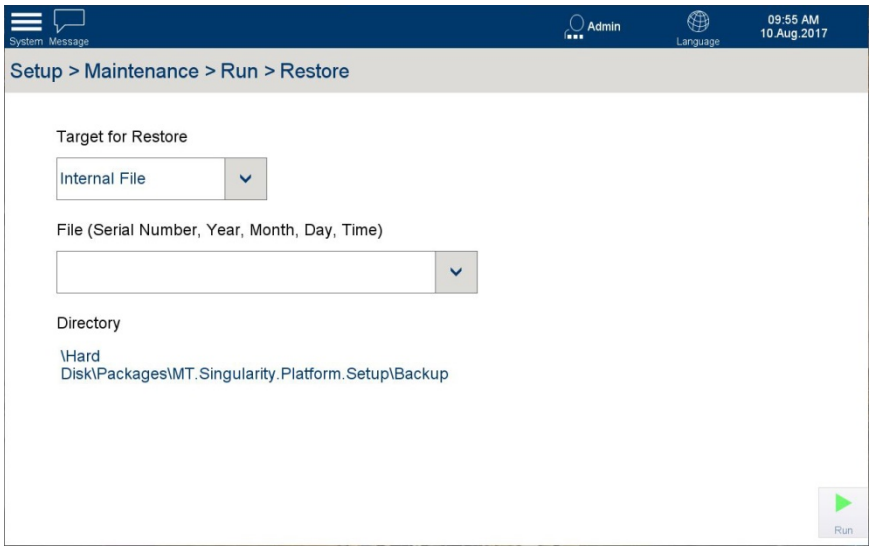


Figure 3-85: Restore Options Screen

The **File** dropdown list will show all files of the correct type stored in the location selected under **Target for Restore**.

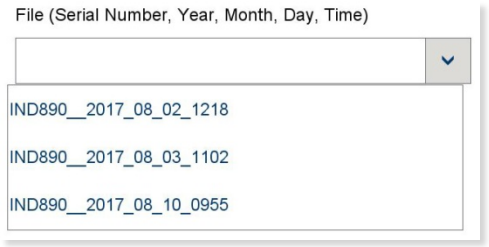


Figure 3-86: Restore File List

The **Directory** location for internal backup files is displayed, but cannot be changed.

Touch **Run** to perform the restore, or **Close** to return to the **Maintenance I Run** options screen.

3.7.2.3. Software Update

The Software Update screen displays options for the update source (**Internal File** or attached **USB Memory** device), and the name of the File in which the update is stored. The **File** dropdown list will show all files of the correct type stored in the location selected under **Source**.

To update the software of an installed IND900, an upgrade package file with an **.IPK** extension is required.

- Install only package files that you have received directly from METTLER TOLEDO by download. Package files of unknown source or package files sent by e-mail may be corrupted!

The IND900 performs a check on all components received in a package file, and terminates the installation process with an error message (such as checksum validation failed) in the event of inconsistencies.

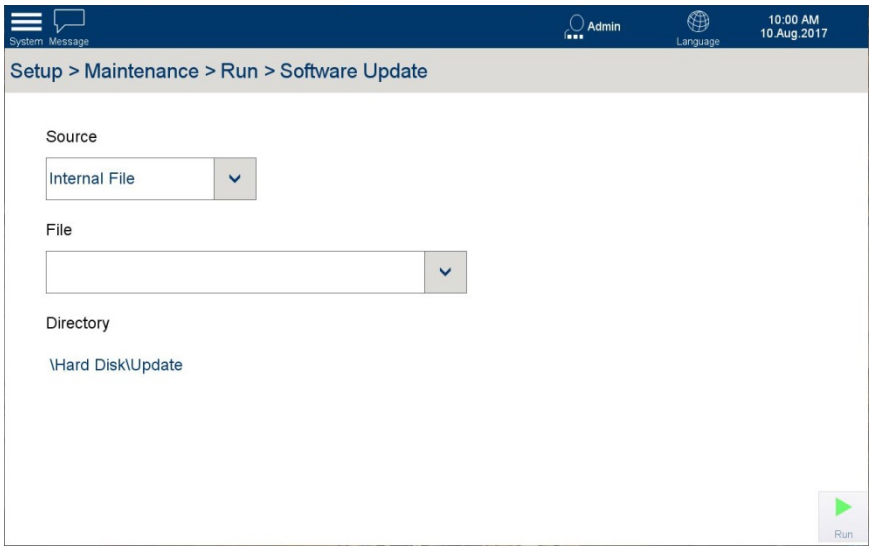


Figure 3-87: Software Update Screen

Touch **Run** to perform the update, or **Close** to return to the **Maintenance I Run** options screen.

A Default Settings

This appendix covers
- Factory Default Settings
- Default Template

The factory default settings and the associated access rights for the setup parameters of the IND900 terminal are listed in the following tables.

A.1. Factory Default Settings

- Parameters labeled for **Scale *n*** are common to Scales 1, 2, 3 and 4.
- <on> and <off> refer to parameters configured using a check-box.

Setup function	Default value	Access right
Setup I Scales I Scale *n* I Identification		
Interface type	Display only <depending on the weighing platform connected: IDNet, SICS, SICSpro or analog>	
Serial Number	<Serial number of the weighing platform connected>	
Scale Model	Optional text field	
Scale Location	Optional text field	
Scale Identification	Optional text field	
Setup I Scales I Scale *n* I Metrology		
Verification Class	<depends on connected weighing platform>	
Verification interval	E = d	
Setup I Scales I Scale *n* I Capacity & Increment		
Base Unit	kg	
Range Configuration	Single Range	
Range / Interval 1 (kg)	6.0 / 0.001	
Range / Interval 2 (kg)	60.0 / 0.02	
Range / Interval 3 (kg)	60.0 / 0.05	
Setup I Scales I Scale *n* I Calibration		
<depends on connected weighing platform>		
Setup I Scales I Scale *n* I Units & Resolution		
Display Unit 1	kg	
Display Unit 2	g	

Setup function	Default value	Access right
Unit Roll	OFF	
Display Resolution (kg)	OFF	
Setup I Scales I Scale *n* I Zero I AZM & Display		
Auto Zero	On	
Auto Zero Range (d)	0.5	
Blank Under Zero (d)	20	
Setup I Scales I Scale *n* I Zero ranges		
Power Up Zero + Range (%)	18	
Power Up Zero – Range (%)	-2	
Pushbutton Zero	ON	
+ Range (%)	2	
– Range (%)	-2	
Setup I Scales I Scale *n* I Tare I Types		
Pushbutton Tare	ON	
Chain Tare	ON	
Setup I Scales I Scale *n* I Tare I Auto Tare		
Auto Tare	OFF	
Tare Threshold Wt. (d)	9	
Setup I Scales I Scale *n* I Tare I Auto Clear		
Auto Clear Tare	OFF	
Clear Threshold Wt. (d)	0	
Setup I Scales I Scale *n* I Restart		
Restart Zero	OFF	
Restart Tare	OFF	
Setup I Scales I Scale *n* I Filter		
Stability	Standard	
Environment	Standard	
Weighing Process	Universal	
Timeout (seconds)	30	
Setup I Scales I Scale *n* I MinWeigh		
Function	OFF	
Set Value (kg)	0.00	
Weigh Value Color	None	
Setup I Terminal I Device		
Alarm Beeper	<on>	
Keypad Beeper	<on>	

Setup function	Default value	Access right
Terminal ID #1, #2, #3	<blank>	
Terminal Serial Number	<blank>	
Terminal Model	<blank>	
Setup I Terminal I Display		
Backlight Timeout	<on>	
Backlight (minutes)	120	
Screen Saver	<off>	
Screen Saver (minutes)	30	
Auxiliary Display	Tare Active	
Text & Graphics Size	Large	
Setup I Terminal I Transaction Counter		
Transaction Counter	<off>	
Allow Counter Reset	<off>	
Next Transaction Number	1	
Setup I Terminal I Users		
(Default User)	Operator	
Setup I Terminal I Region I Language		
User Selectable	<on>	
Display Messages	English	
On-Screen Keyboard	English	
Setup I Terminal I Region I Time and Date Format		
Use 24 hour clock	<off>	
Display Seconds	<off>	
Time Separator	:	
Date Separator	.	
Show 2 Digit Month	<off>	
Show 2 Digit Year	<off>	
Date Format	Day Month Year	
Setup I Application I Memory I Alibi Enable		
Alibi Memory Table	<on>	
Setup I Application I Memory I Auto Start Application		
Application	MT.Singularity.Platform.Setup	
Setup I Communication I Ethernet		
DHCP	<on>	
IP Address	0. 0. 0. 0	
Subnet Mask	0. 0. 0. 0	

Setup function	Default value	Access right
Gateway Address	0. 0. 0. 0	
Preferred DNS Server	0. 0. 0. 0	
Secondary DNS Server	0. 0. 0. 0	
**Setup	Communication	Interfaces**		
Displays system hardware		
**Setup	Communication	FTP Server**		
FTP Server	<off>	
**Setup	Communication	Remote Desktop Server**		
Remote Desktop Server	<off>	
**Setup	Maintenance	Configure	Enable Logs**		
Change Log	<on>	
Maintenance Log	<off>	
Error Log	<on>	
**Setup	Maintenance	Run	Backup**		
Target for Backup	Internal File	
File (Serial Number, Year, Month, Day, Time)	<Terminal Serial Number followed by current date and time>	
Directory	< Display only: Saved file location>	
**Setup	Maintenance	Run	Restore**		
Target for Restore	Internal File	
File (Serial Number, Year, Month, Day, Time)	<Terminal Serial Number followed by current date and time>	
Directory	<Display only: saved file location>	
**Setup	Maintenance	Run	Software Update**		
Source	Internal File	
File	<Select file from drop-down list of update files>	
Directory	\Hard Disk\Update	
**Setup	Maintenance	Diagnostics	Network Test**		
IP Address	0 .0 .0 .0	
**Setup	Maintenance	Diagnostics	Serial Port Loopback Test**		
Port	<Depends on system hardware>	
**Setup	Maintenance	Diagnostics	DIO Test**		
Port	<Depends on system hardware>	

B Communication

This appendix covers
- Physical ports
- Access to terminal data
- Protocols and data structures
- Reports

This document describes the physical ports available on the IND9xx. The logical connections that can be defined for using the physical connections are described in detail, and the available communication modes, commands and protocols are explained.

B.1. Physical ports

B.1.1. Serial

The IND9xx supports up to 6 optional serial interfaces. All 6 ports on the Interface Controller Board can optionally accept an RS232- (TXD, RXD and GND with XON/OFF handshake), RS422 or RS485 interface.

The RS422 interface is a four-wire interface designed for point-to-point communication.

The serial interfaces can be configured in the setup. The following settings are available:

- 7 or 8 ASCII databits
- Parity bit none, even or odd
- 1 or 2 stop bits
- Baud rate from 300 to 57600

The software handshake XON/XOFF can be enabled for controlling the data flow. If a receiving device (normally a printer) is receiving information from an IND9xx terminal and cannot accept any more data into its buffer, it sends an ASCII XOFF character (13 h), which requests the IND9xx terminal to stop sending data for a short period, until the buffer is empty again.

When the device is once again ready to receive data, it sends an ASCII XON character (11h), which requests the IND9xx terminal to start sending data again. This procedure can be repeated by the receiving device as often as necessary.

B.1.2. Ethernet

The Ethernet port of the IND9xx permits connection to an Ethernet network. It can be used for the following functions:

- Access to released data
- SICS protocol
- Continuous output of data
- FTP
- Software updating

B.1.2.1. Ethernet Port

The IND9xx has an Ethernet interface which allows the IND9xx to be connected to a LAN network. The Ethernet port of the IND9xx supports the Auto-Negotiation function, half or full duplex, 10 or 100 Mbps.

B.1.2.2. Cables

There are two types of Ethernet cables: Patch cables and crossover cables. Patch cables allow a PC to be connected to a hub or network. The IND9xx can be connected to a PC using two patch cables and a hub. In order to connect the IND9xx to a hub, a special Ethernet cable with an M12 plug is necessary.

The simplest method of connecting a PC to the IND9xx via an Ethernet connection is by using an Ethernet "crossover" cable (Figure B-1). A crossover cable is taken directly from the PC Ethernet port to the IND9xx Ethernet port - no hub and no network is necessary. If no crossover cable is available, the connection can be established using two patch cables and a hub (Figure B-2).

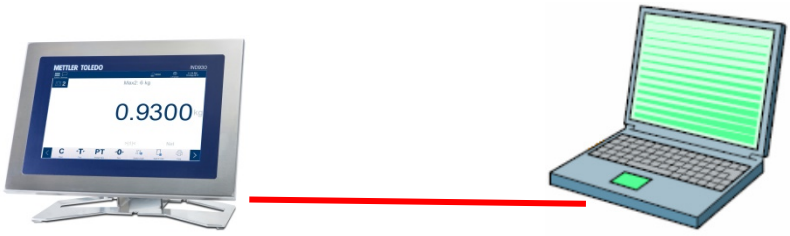


Figure B-1: Crossover Cable Connecting IND9xx to a PC

Figure B-2: Patch Cables Connecting IND9xx to a PC

B.1.2.3. IP Address Setup

The IP address of the IND9xx is assigned automatically by a DHCP server, or it can be configured manually in the IND9xx.

For manual configuration of the IP addresses, these must be configured both on the IND9xx and also on the PC, as follows:

1. Check the IP address and subnet mask of the IND9xx, and make a note of the IP address and subnet mask for the PC configuration. (Information about network configuration can be found in the **Communication I Networks** section of Chapter 3, **Configuration**.)
2. The PC and the IND9xx should have the same subnet mask.
3. The PC and the IND9xx must have a unique IP address. The IP addresses must match if the subnet mask is 255, but must differ if the subnet mask is 0. Refer to the example in Table B-1 and Figure B-3 (below).

Table B-1: IP Address Configuration Example (Hub Configuration)

IP address of the IND9xx	192	168	0	1
Subnet mask	255	255	255	0
IP address of the PC	192	168	0	2

IND9xx setup

IP address: 192.168.0.1

Subnet mask: 255.255.255.0

PC setup

IP address: 192.168.0.2

Subnet mask: 255.255.255.0

Figure B-3: IP Address Hub Configuration Example

4. Click in Windows on **Start | Settings | Network** connections (Figure B-4).

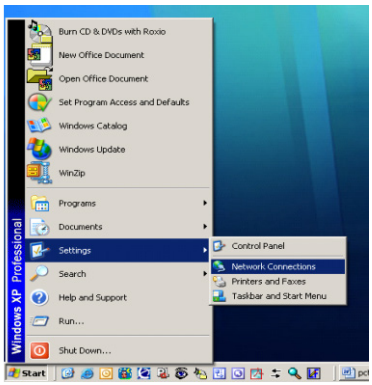


Figure B-4: Accessing Network Connections

5. The screen shown in Figure B-5 appears.

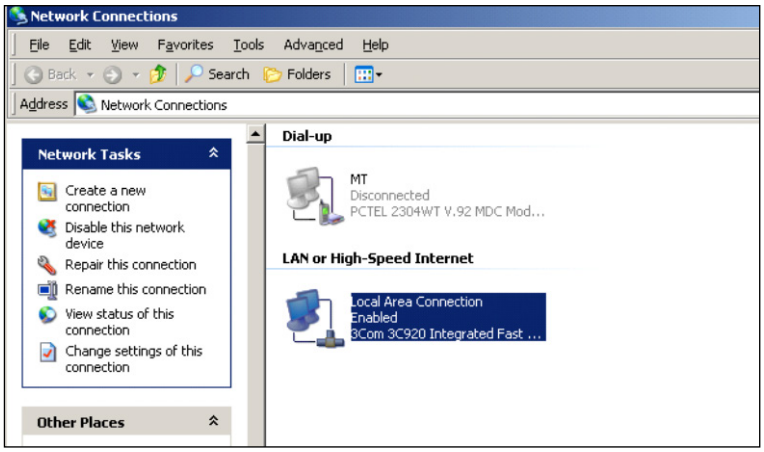


Figure B-5: Network Connections Screen

6. Right-click on the LAN connection and select "Properties".
7. In the **Properties** field (Figure B-6), select **Internet Protocol (TCP/IP)** and click on the **Properties** button. The **Internet Protocol (TCP/IP) Properties** window now appears (see Figure B-6, right).

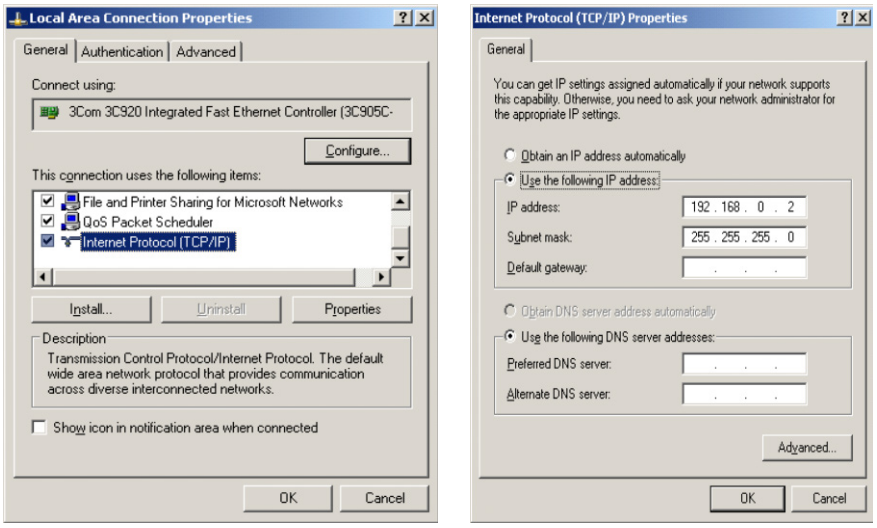


Figure B-6: LAN Connection Properties (left) and Internet Protocol Properties (right) Dialogs

8. Normally Obtain an IP address automatically is highlighted. Enable Use the following IP address.
9. Enter the IP address and subnet mask settings for the specific PC.
10. Click on the OK button.

- After breaking the connection to the IND9xx and before reestablishing the connection to the normal network connection of the PC, consider resetting the **Internet Protocol (TCP/IP) Properties** back to **Obtain an IP address automatically**, or to whatever setting was previously active.

B.1.3. USB

The internal USB port can be used for firmware updates, and for backing up and restoring the system configuration files.

B.2. Access to Terminal Data

B.2.1. FTP Ports

B.2.1.1. FTP Connection Setup

Windows Explorer should be used to set up an FTP connection with the IND9xx.

- The InSite program can also be used for the transmission of files to and from the terminal. Information about the functions and capabilities of the InSite program can be found in its Help system.

B.2.1.1.1. Establishing an FTP connection with Internet Explorer

You can establish an FTP connection to the IND9xx with Internet Explorer as follows:

1. Open Internet Explorer and enter the terminal address in the address line (see the example in Figure B-7).

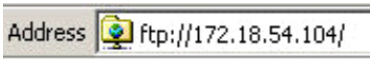


Figure B-7: Terminal's FTP Address

2. Select the option "Log in as..." in the context menu. Enter a valid user name and a valid password and click on the LOG IN button.
3. Internet Explorer then displays the directory structure of the IND9xx (Figure B-8).

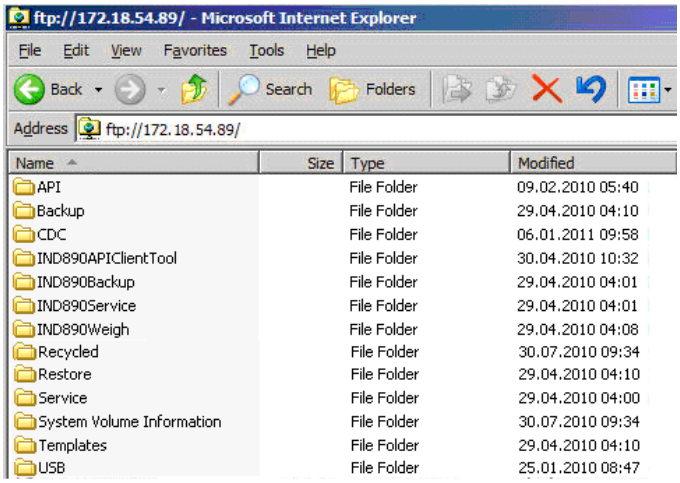


Figure B-8: Internet Explorer FTP Window

4. Now files can be copied to and from the terminal, by dragging or by cutting and pasting.
5. After completing the file transfer, close the Internet Explorer window to terminate the FTP session.

B.3. Protocols and data structures

B.3.1. Serial interface parameters

The IND9xx supports up to 6 optional serial interfaces. All 6 ports on the Interface Controller Board can optionally accept an RS232- (TXD, RXD and GND with XON/OFF handshake), RS422 or RS485 interface.

All serial interfaces can be configured as RS232-, RS422- or RS485 interfaces. If a serial interface is configured as RS422, the transmission line is "On" even if no data is being transmitted. This operation corresponds to the standard operation of an RS422 port, but differs from the function of many METTLER TOLEDO legacy terminals.

The settings for the serial interfaces can be configured in setup mode. The following settings are available:

- 7 or 8 ASCII databits (optional)
- 0 or 1 parity bit (none, even or odd)
- 1 stop bit

The baudrate can be configured from 2400 to 57600 Baud.

To control the data flow, the IND9xx terminal uses the software handshake (XON/XOFF handshake). If a receiving device (normally a printer) is receiving information from an IND9xx terminal and cannot accept any more data into its buffer, it sends an ASCII XOFF character (13 h), which requests the IND9xx terminal to stop sending data for a short period, until the buffer is empty again.

When the device is once again ready to receive more data, it sends an ASCII XON character (11h), which requests the IND9xx terminal to start sending data again.

The XON/XOFF handshake is the only type of data flow control supported by the IND9xx terminal.

The IND9xx terminal supports two different data task modes – demand mode (such as SICS) and continuous mode.

In addition to the Standard Interface Command Protocol (SICS – see next chapter), IND9xx also supports – yet with limitations - the MMR (Mettler MultiRange) protocol used in older terminals, like ID7, IND690 or ID30.

However, for reinstallations, the MMR protocol should no longer be used!

C GEO Codes

The GEO code feature provided in the IND9xx terminal permits calibration readjustment due to changes in elevation or latitude without reapplying test weights. This adjustment assumes a previously accurate calibration was done with the GEO code set properly for that original location and that the GEO code for the new location can be accurately determined. The procedure for using this feature is as follows.

C.1. Original Site Calibration

1. Use the GEO code chart (Table C-1) on the following pages to determine the GEO code for the current altitude and location at which the scale will be calibrated.
2. Enter that GEO value into the GEO code parameter in setup at **Scale I Calibration**.
3. Immediately after entering the GEO code, perform a zero and span adjustment using accurate test weights.
4. Exit the setup menu tree.
5. The scale can now be used in its new location.

C.2. New Site GEO Code Adjustment

When a terminal is to be reinstalled at a different geographic location, gravitational and altitude changes can be accounted for by following these steps. Note that this procedure is not necessary if an on-site recalibration is performed.

1. Use the GEO code chart (Table C-1) on the following pages to determine the GEO code for the new altitude and location at which the scale will be used.
2. Enter that GEO value into the GEO code parameter in Setup at **Scale I Calibration**.
3. Immediately after entering the GEO code, exit the setup menu tree. DO NOT perform a normal calibration.

The calibration has now been adjusted for the differences in gravity from the original site of calibration to the new site of use.

Using the GEO code value for calibration adjustment is not as accurate as re-applying certified test weights and re-calibrating the scale in a new location.

Table C-1: GEO Adjustment Values

Latitude North or South, in Degrees and Minutes	Height Above Sea Level, in Meters										
	0	325	650	975	1300	1625	1950	2275	2600	2925	3250
	325	650	975	1300	1625	1950	2275	2600	2925	3250	3575
	Height Above Sea Level, in Feet										
	0	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660
	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660	11730
0° 0'–5° 46'	5	4	4	3	3	2	2	1	1	0	0
5° 46'–9° 52'	5	5	4	4	3	3	2	2	1	1	0
9° 52'–12° 44'	6	5	5	4	4	3	3	2	2	1	1
12° 44'–15° 6'	6	6	5	5	4	4	3	3	2	2	1
15° 6'–17° 0'	7	6	6	5	5	4	4	3	3	2	2
17° 10'–19° 2'	7	7	6	6	5	5	4	4	3	3	2
19° 2'–20° 45'	8	7	7	6	6	5	5	4	4	3	3
20° 45'–22° 22'	8	8	7	7	6	6	5	5	4	4	3
22° 22'–23° 54'	9	8	8	7	7	6	6	5	5	4	4
23° 54'–25° 21'	9	9	8	8	7	7	6	6	5	5	4
25° 21'–26° 45'	10	9	9	8	8	7	7	6	6	5	5
26° 45'–28° 6'	10	10	9	9	8	8	7	7	6	6	5
28° 6'–29° 25'	11	10	10	9	9	8	8	7	7	6	6
29° 25'–30° 41'	11	11	10	10	9	9	8	8	7	7	6
30° 41'–31° 56'	12	11	11	10	10	9	9	8	8	7	7
31° 56'–33° 9'	12	12	11	11	10	10	9	9	8	8	7
33° 9'–34° 21'	13	12	12	11	11	10	10	9	9	8	8
34° 21'–35° 31'	13	13	12	12	11	11	10	10	9	9	8
35° 31'–36° 41'	14	13	13	12	12	11	11	10	10	9	9
36° 41′–37° 50′	14	14	13	13	12	12	11	11	10	10	9
37° 50′–38° 58′	15	14	14	13	13	12	12	11	11	10	10
38° 58′–40° 5′	15	15	14	14	13	13	12	12	11	11	10
40° 5′–41° 12′	16	15	15	14	14	13	13	12	12	11	11
41° 12′–42° 19′	16	16	15	15	14	14	13	13	12	12	11
42° 19′–43° 26′	17	16	16	15	15	14	14	13	13	12	12
43° 26′–44° 32′	17	17	16	16	15	15	14	14	13	13	12
44° 32′–45° 38′	18	17	17	16	16	15	15	14	14	13	13
45° 38′–46° 45′	18	18	17	17	16	16	15	15	14	14	13
46° 45′–47° 51′	19	18	18	17	17	16	16	15	15	14	14
47° 51′–48° 58′	19	19	18	18	17	17	16	16	15	15	14

Latitude North or South, in Degrees and Minutes	Height Above Sea Level, in Meters										
	0	325	650	975	1300	1625	1950	2275	2600	2925	3250
	325	650	975	1300	1625	1950	2275	2600	2925	3250	3575
	Height Above Sea Level, in Feet										
	0	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660
	1060	2130	3200	4260	5330	6400	7460	8530	9600	10660	11730
48° 58′–50° 6′	20	19	19	18	18	17	17	16	16	15	15
50° 6′–51° 13′	20	20	19	19	18	18	17	17	16	16	15
51° 13′–52° 22′	21	20	20	19	19	18	18	17	17	16	16
52° 22′–53° 31′	21	21	20	20	19	19	18	18	17	17	16
53° 31′–54° 41′	22	21	21	20	20	19	19	18	18	17	17
54° 41′–55° 52′	22	22	21	21	20	20	19	19	18	18	17
55° 52′–57° 4′	23	22	22	21	21	20	20	19	19	18	18
57° 4′–58° 17′	23	23	22	22	21	21	20	20	19	l9	18
58° 17'–59° 32'	24	23	23	22	2\2	21	21	20	20	19	19
59° 32'–60° 49'	24	24	23	23	22	22	21	21	20	20	19
60° 49'–62° 9'	25	24	24	23	23	22	22	21	21	20	20
62° 9'–63° 30'	25	25	24	24	23	23	22	22	21	21	20
63° 30'–64° 55'	26	25	25	24	24	23	23	22	22	21	21
64° 55'–66° 24'	26	26	25	25	24	24	23	23	22	22	21
66° 24'–67° 57'	27	26	26	25	25	24	24	23	23	22	22
67° 57'–69° 35'	27	27	26	26	25	25	24	24	23	23	22
69° 5'–71° 21'	28	27	27	26	26	25	25	24	24	23	23
71° 21'–73° 16'	28	28	27	27	26	26	25	25	24	24	23
73° 16'–75° 24'	29	28	28	27	27	26	26	25	25	24	24
75° 24'–77° 52'	29	29	28	28	27	27	26	26	25	25	24
77° 52'–80° 56'	30	29	29	28	28	27	27	26	26	25	25
80° 56'–85° 45'	30	30	29	29	28	28	27	27	26	26	25
85° 45'–90° 00'	31	30	30	29	29	28	28	27	27	26	26

METTLER TOLEDO Service

To protect your METTLER TOLEDO product's future:

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

We invite you to register your product at www.mt.com/productregistration so we can contact you about enhancements, updates and important notifications concerning your product.

www.mt.com
For more information

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