User Manual

IND400

Weighing Terminal

METTLER TOLEDO

METTLER TOLEDO Service

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 will provide you with information tailored to your specific needs. Additionally, you will receive promotions that you as a METTLER TOLEDO product owner can benefit from at your convenience.

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.

- **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.
- **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.
- **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.

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

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

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

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

IC Notice

This device contains license-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's license-exempt RSS(s). Operation is subject to the following two conditions:

(1) This device may not cause interference.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur excempt de licence contenu dans la présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) L'appareil ne doit pas produire de brouillage ;

(2) L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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

Avis : Pour répondre à la IC d'exposition pour les besoins de base et mobiles dispositifs de transmission de la station, sur une distance de séparation de 2 cm ou plus doit être maintenue entre l'antenne de cet appareilet les personnes en cours de fonctionnement. Pour assurer le respect, l'exploitation de plus près à cette distance n'est pas recommandée. L'antenne(s) utilisé pour cet émetteur ne doit pas être localisés ou fonctionner conjointement avec une autre antenne ou transmetteur.

For indoor use only.

Caution:

1) The device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

2) For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;

3) For devices with detachable antenna(s), the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p limits specified for point-to-point and non-point-to-point operation as appropriate;

And DFS(Dynamic Frequency Selection) products that operate in the bands 5250-5350MHz, 5470-5600MHz, and 5650-5725MHz.

Avertissement:

1) Le dispositif fonctionnant dans la bande 5150-5250 MHz est réservé uniquement pour une utiisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;

2) Le gain maximal d'antenne permis pour les dispositifs avec antenne(s) amovible(s) utilisant les bandes 5250-5350 MHz et 5470-5725 MHz doit se conformer à la limitation P.I.R.E.;

3) Le gain maximal d'antenne permis pour les dispositifs avec antenne(s) amovible(s) utilisant la bande 5725-5850MHz doit se conformer à la limitation P.I.R.E spécifiée pour l'exploitation point à point et nonpoint à point, selon le cas.

Les produits utilisant la technique d'attenuation DFS (sélection dynamique des fréquences) sur les bandes 5250-5350 MHz, 5470-5600 MHz et 5650-5725MHz.

Safety Instructions

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

Compliance information

National approval documents, e.g. the FCC Supplier Declaration of Conformity, are available online and/or included in the packaging. ▶ www.mt.com/ComplianceSearch

Manuals download

Please use the link ▶ www.mt.com/IND400-downloads or scan the QR code below to download more manuals.

Feedback

We always strive to provide high-quality information and value your feedback. If you find ambiguous information or mistakes in this manual, please do not hesitate to let us know by e-mail.

▶ feedback.manuals.Industry@mt.com

NOTICE

1. **Use the device only for weighing in accordance with its corresponding user manual. Any other type of use and operation beyond the limits of technical specifications is considered as not intended.**
2. **The device is for indoor use only.**
3. **Avoid plastic covers over the equipment. The protection cover used must be officially approved by METTLER TOLEDO.**
4. **Replacing equipment components with non-original parts can lead to performance losses and property damage. Use only original or compatible spare parts and accessories from METTLER TOLEDO.**
5. **Be certain that the communication circuits are wired exactly as shown in the installation section of its corresponding user manual. If the wires are not connected correctly, the equipment or interface board may be damaged.**
6. **Avoid direct exposure to sunlight.**

⚠ WARNING

1. **The mains connection of the power supply unit must be made by a professional electrician authorized by the owner and in accordance with the respective terminal diagram, the accompanying installation instructions as well as the country-specific regulations.**
2. **Before service, disconnect power from this device.**
3. **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

1. **Only permit qualified personnel to service the equipment. Exercise care when making checks, tests and adjustments that must be made with power on. Failure to observe this precaution could result in bodily harm and/ or property damage.**
2. **Ensure proper equipotential grounding of the equipment, mounting accessories, and the scale base.**
3. **If the keyboard, display lens or enclosure is damaged, the defective component must be repaired immediately. Remove power immediately and do not reapply power until the display lens, keyboard or enclosure has been repaired or replaced by qualified service personnel. Failure to do so could result in bodily harm and/or property damage.**
4. **Only the components specified in the user manual can be used in this device. All equipment must be installed in accordance with the installation instructions detailed in the user manual. Incorrect or substitute components and/or deviation from these instructions can impair the instrinsic safety of the equipment and could result in bodily injury and/or property damage.**
5. **For continued protection against shock hazard, connect to properly grounded power source only. Do not remove the grounding connection.**
6. **When this equipment is included as a component part of a system, the resulting design must be reviewed by qualified personnel who are familiar with the construction and operation of all components in the system and the potential hazards involved. Failure to observe this precaution could result in bodily harm and/ or property damage.**
7. **All equipment must be installed in accordance with the installation instructions detailed in its corresponding user manual. Deviation from the instructions can impair the intrinsic safety of the equipment and void the agency approval.**
8. **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.**

⚠ WARNING

1. **Keep the equipment away from processes that generate high charging potential such as electrostatic coating, rapid transfer of non-conductive materials, rapid air jets, and high pressure aerosols.**
2. **Observe precautions for handling electrostatic sensitive devices.**

In conformance with the European Directive 2012/19/EU on Waste Electrical and Electronic Equipment (WEEE), this equipment may not be disposed of in domestic waste. This also applies to countries outside the EU, per their specific requirements.

Please dispose of this equipment 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 equipment. Should this equipment be passed on to other parties, the content of this directive must also be passed on to the other party.

Table of Contents

1 Introduction

1.1 Presentation

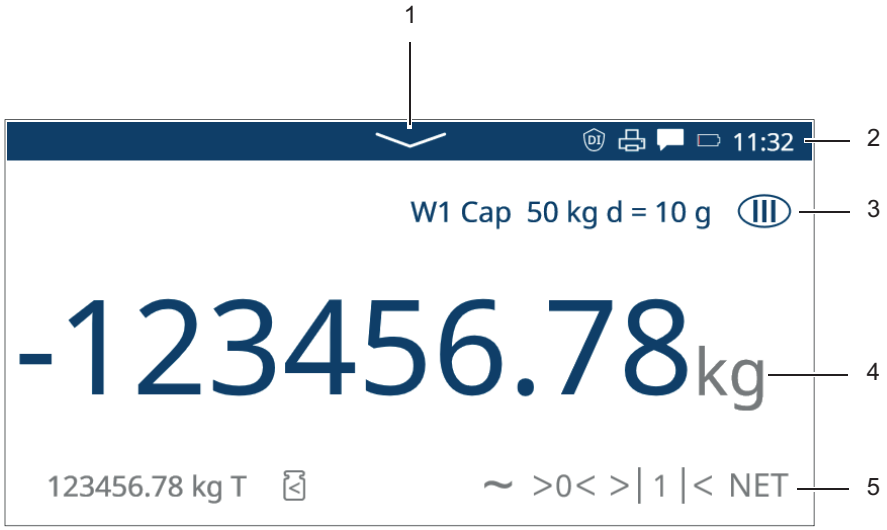
IND400 is a transaction weighing terminal with touchscreen and additional hardkeys for better operation, e.g. when working with gloves.

IND400 provides one scale interface and up to two optional data interfaces.

1.1.1 Device overview

1 Touchscreen
2 Softkeys
3 On/Off key
4 Hardkeys to operate the softkeys
5 Hardkeys

1.1.2 Main screen



1	Quick setting menu access button	2	System bar
3	Metrology line	4	Weight value and unit
5	Status line		

System bar

In the system bar the following symbols can be displayed:

	APR320 / APR220 printer connected		Message box status
	Battery status, for versions with battery only	**hh:mm**	Time

Status line

In the status line the following symbols can be displayed:

>0<	Center of zero	*	Calculated weight value, e.g. in animal weighing
B/G	Gross weight	T	Indicates the current tare weight
NET	Net weight	PT	Indicates the current tare preset
~	Stability monitor		When blinking: MinWeigh error
>|1|< >|2|< >|3|<	Current weighing range/interval, for multiple range / multi-interval scales only	.05	Indicates that the weight display is in a higher resolution

1.1.3 Hard and softkeys

Hardkeys

The following hardkeys are available:

On/Off key

Zero

Clear

Print / transfer data

Tare

Softkeys

In the basic weighing application the following softkeys are available, separated in up to 3 softkey ribbons.

Select application

Information

Pretare

Open transaction table

Higher resolution

Open tare table

Switch unit

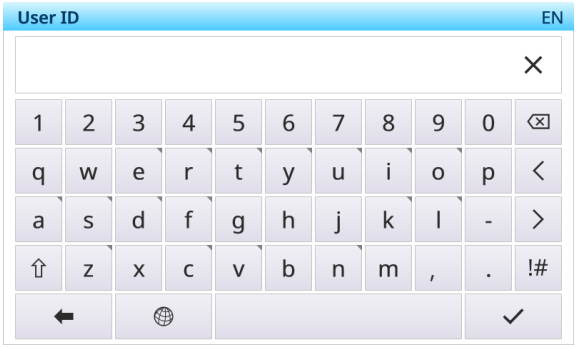
Open basic setup

1/2 Scroll to the next softkey ribbon

Open Quick setting menu

Input of text or numbers

When an input of numbers or text is required, touch the corresponding input field and a keypad is displayed on the screen.



Input of special characters

– For special characters touch and hold a character, e.g. "a".

➡ The available variants of the character "a" are displayed.

1.1.4 Data integrity

IND400 is available as versions without and with the Data Integrity feature.

IND400 enables the activation of enhanced data integrity software features through a licensed activation process. These functionalities are fully aligned with ALCOA++ principles, ensuring compliance with FDA CFR21 Part 11, cGMP, and relevant WHO regulations for electronic data requirements.

The Data Integrity features of IND400 guarantee the integrity of weighing data throughout its entire life-cycle through robust functionality:

- User Definition
- User Role Definition
- Local Password Policy
- SHA-256 Data Encrypted memory
- SHA-256 Data Encrypted export
- PDF format export
- Data Integrity Report
- Electronic Batch Report
- Audit trail log
- Electronics signature

Data Integrity on the IND400 is working with the following applications:

- Basic Weighing
- Over/under checkweighing
- Manual Filling/Dosing
- Totalization
- Classification

Data Integrity is not available for the Animal Weighing, Counting, and Remote SQC applications.

For operation with data integrity refer to [Working with Data Integrity ▸ Page 48], for data integrity settings refer to [Application -> Data Integrity ▸ Page 113].

1.2 Quick setting menu

Open the Quick setting menu

Touch the swipe-down softkey in the system bar or softkey to open the following menu:

Show battery status (Only available in battery version)

Show Wi-Fi status

- Display current user
- Open login/logout

- Display current language
- Open user language setting

30/Mar/2022
15:24:55

Date and time in the format defined in the Terminal setup

Open message box

Open setup, refer to [Configuration ▸ Page 97]

Activate/deactivate a printer

Open information menu, see [Info/log features ▸ Page 21]

Activate/deactivate Wi-Fi

Set the brightness of the display

Message box

- Depending on the last message and the message box status, there are different icons on the system bar to open the message box.
- Messages are classified with the following icons:

Failure

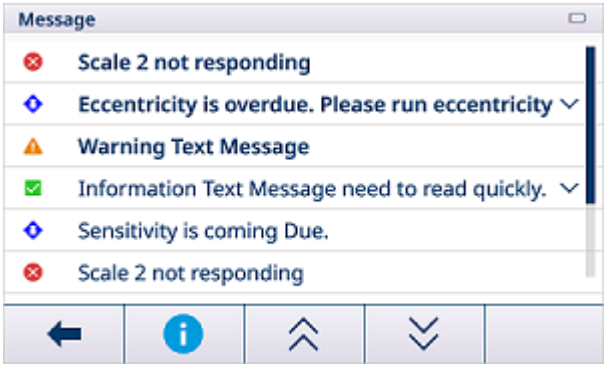
Out of specification

Maintenance required

Normal condition

Alarm

No new message since the last recall of the message box

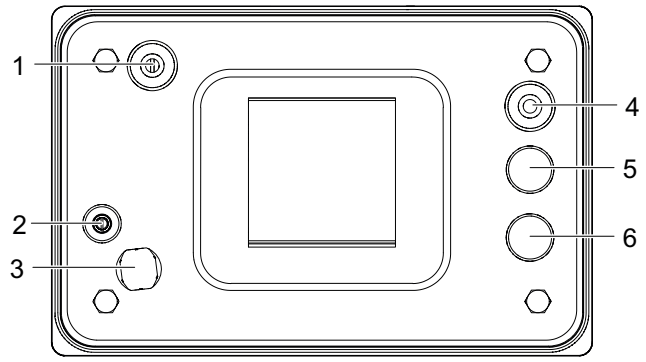


Leave the Quick setting menu

– Touch ⌒ in the bottom line to leave the Quick setting menu.
  ➡ The main screen is displayed.

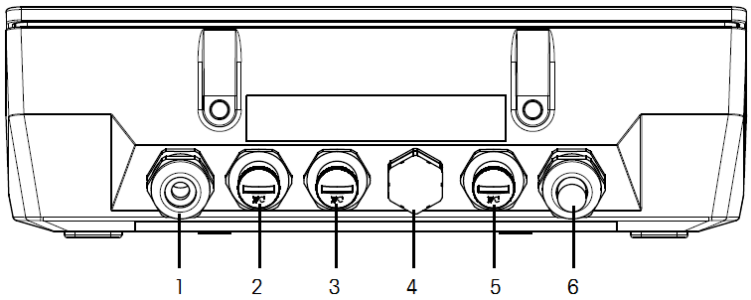
1.3 Connection Ports

Stainless Steel Version



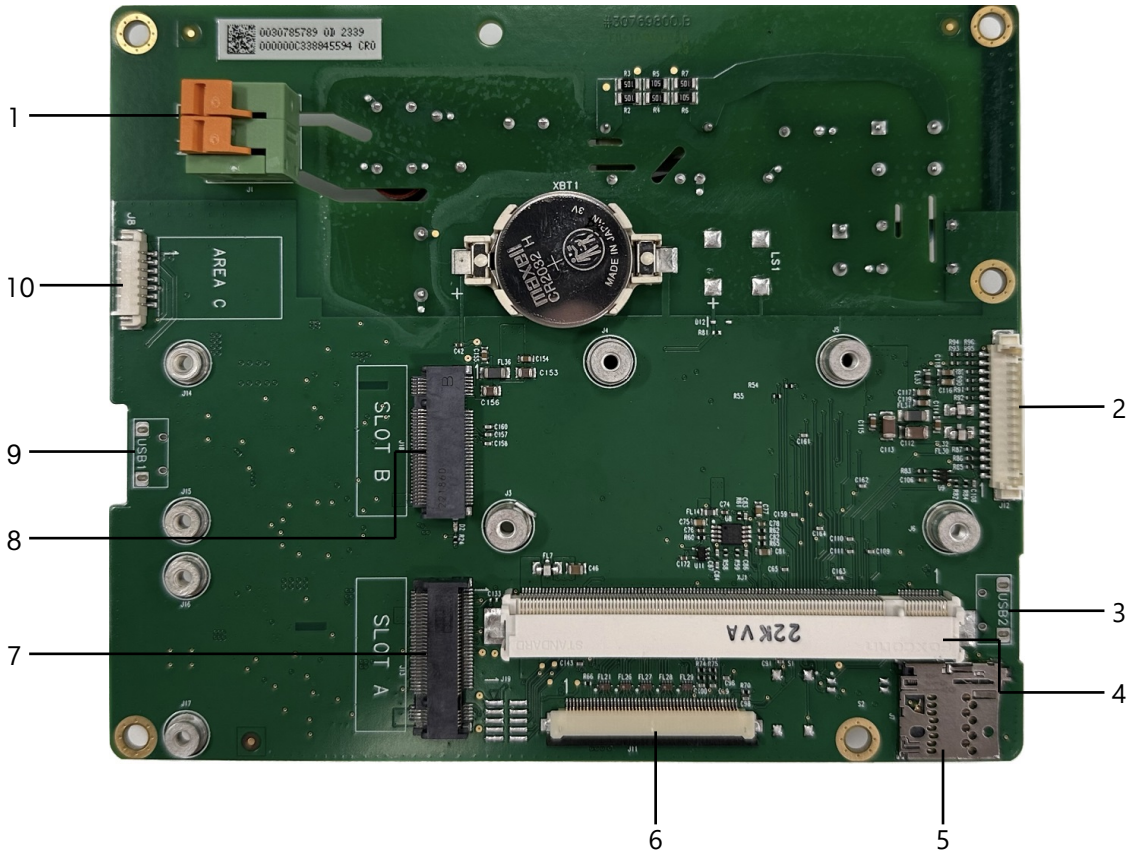
1	Scale interface	2	Metrology sticker/screw
3	Pressure compensation valve	4	Power supply
5	Optional data interface	6	Optional data interface

Aluminum Die Cast Version



1	Power supply	2	Optional data interface
3	Optional data interface	4	Pressure compensation valve
5	Optional data interface	6	Scale interface

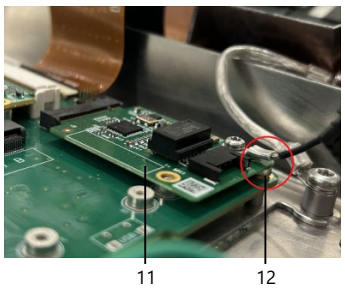
1.4 Base Board connections, ports and switches



1	Power supply	2	Scale board interface
3	USB 2 (Host only available in Aluminum Die Cast version)	4	Core board interface
5	MicroSD card slot	6	HMI interface
7	Option board interface A	8	Option board interface B
9	include 'OTG' for USB 1	10	RS232 with 5V

Note

One screw (12) of the Base Board is covered by the Ethernet Board (11). When replacing the Base Board, the Ethernet Board (11) has to be removed first.



1.5 Commissioning

1.5.1 Selecting the location

NOTICE

Risk of heat dissipation

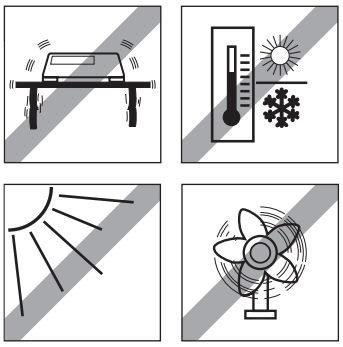
– When installing the weighing terminal, ensure that the unit is at least 10 cm away from the wall and other devices.

NOTICE

Limited cable lengths for approved weighing systems

– For approved weighing systems, a cable length of 30 m between weighing terminal and weighing platform as well as between weighing terminal and external devices (like printer, PC, etc.) must not be exceeded.

The correct location is crucial for the accuracy of the weighing results.



1 Select a stable, vibration-free and, if possible, a horizontal location for the weighing platform.
   ➡ The ground must be able to safely bear the weight of the fully loaded weighing platform.
2 Observe the following environmental conditions:
   ➡ No direct sunlight
   ➡ No strong drafts
   ➡ No excessive temperature fluctuations

1.5.2 Weighing platform connection

Analog weighing platforms

– Call the METTLER TOLEDO service technician to connect an analog weighing platform to the weighing terminal.

Weighing platforms with digital scale interface

– Connect the weighing platform connector to the weighing terminal.

- You can disconnect the weighing platform from the weighing terminal of an approved weighing system without violating the approval.
  If another weighing platform is connected to the weighing terminal, the system is not approved.
  If the weighing platform of the approved system is connected again, the approval is valid again.
- If you have connected a non-approved weighing platform and want to have the system approved, call the METTLER TOLEDO service technician.

1.5.3 Power supply connection

⚠ WARNING

Risk of electric shock!

1 Before connecting the power supply, check whether the voltage value printed on the label corresponds to your local system voltage.
2 Do not, under any circumstances, connect the device if the voltage value on the label deviates from the local system voltage.
3 Make sure the weighing platform has reached room temperature before switching on the power supply.

– Plug the power plug into the power socket.

➡ For the startup procedure, refer to [Switching on/off ▸ Page 18].

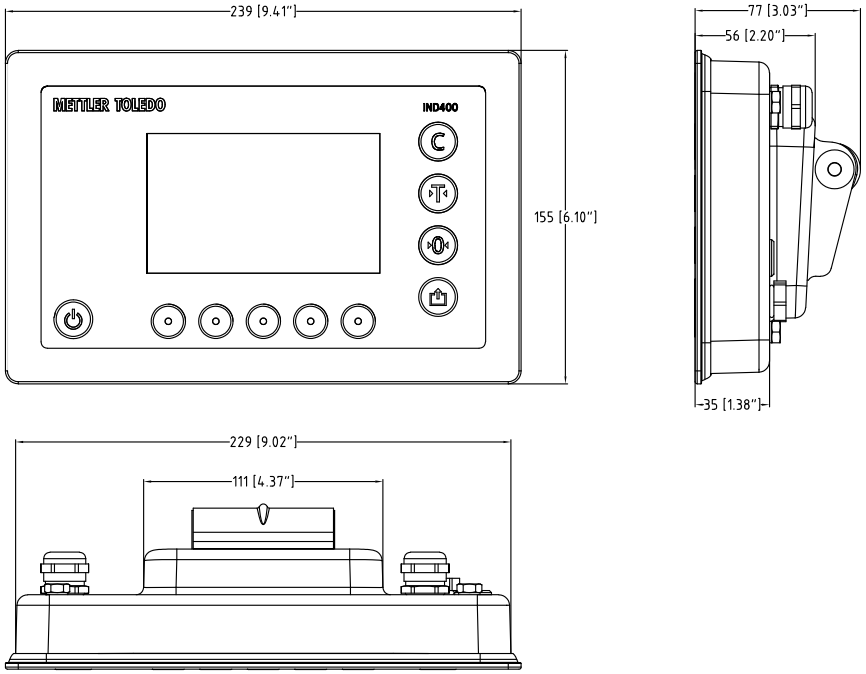
1.6 Technical data

Housing	Stainless steel, Aluminum die cast
Display	High resolution touch graphic display, 5'', 800 x 480 px
Keypad	Membrane keyboard
Protection type	Stainless steel: IP68 / IP69K
	Aluminum die cast: IP65
Net weight (only IND400) / Gross weight (IND400 with package)	2 kg / 2.5 kg
Package size	351 x 221 x 202 mm
Power supply connection	Wide range power supply 100 - 240 V
Mains supply voltage fluctuations	-15% - +10%
Ambient conditions	• Application: Indoor use only • Altitude: Up to 2,000 m • Temperature range Class III: –10 ... 40 °C / 14 ... 104 °F • Overvoltage category: II • Pollution degree: 2 • Humidity range: 10 to 95 % relative humidity, non-condensing
W & M approvals	**Analog** • USA: NTEP Class III/IIIL 10,000d • Canada: Class III/IIIHD 10,000d • Europe: OIML Class III/IIII 10,000d • CPA: IND400 SS Analog, Class III 10,000e, 0.3µV/e **Digital (POWERCELL, SICSpro)** • USA: NTEP Class II 100,000d; Class III/IIIL 10,000d • Canada: Class II 100,000d; Class III/ IIIHD 10,000d • Europe: OIML Class II 100,000d; Class III/IIII 10,000d
Scale interface	Analog, SICSpro, POWERCELL (up to 12 POWERCELL PDX)
Data interfaces	RS232, RS485, USB OTG, DIO, Wi-Fi (2.4G/5.8G), Ethernet (100 Mbps), USB host (Alum only)
Cable length for approved weighing systems	For approved weighing systems, a cable length of 30 m between weighing terminal and weighing platform as well as between weighing terminal and external devices (like printer, PC, etc.) must not be exceeded. Installation outside of buildings is not allowed.
Electrical Parameters of Analog Scale Interface	• Impedance: 40 Ohm to 3,000 Ohm • Excitation: 5 V • Sensitivity: 2 mV/V or 3 mV/V • Max. resolution: 10,000 e (OIML) • Min. verification interval: 0.3 µV/e

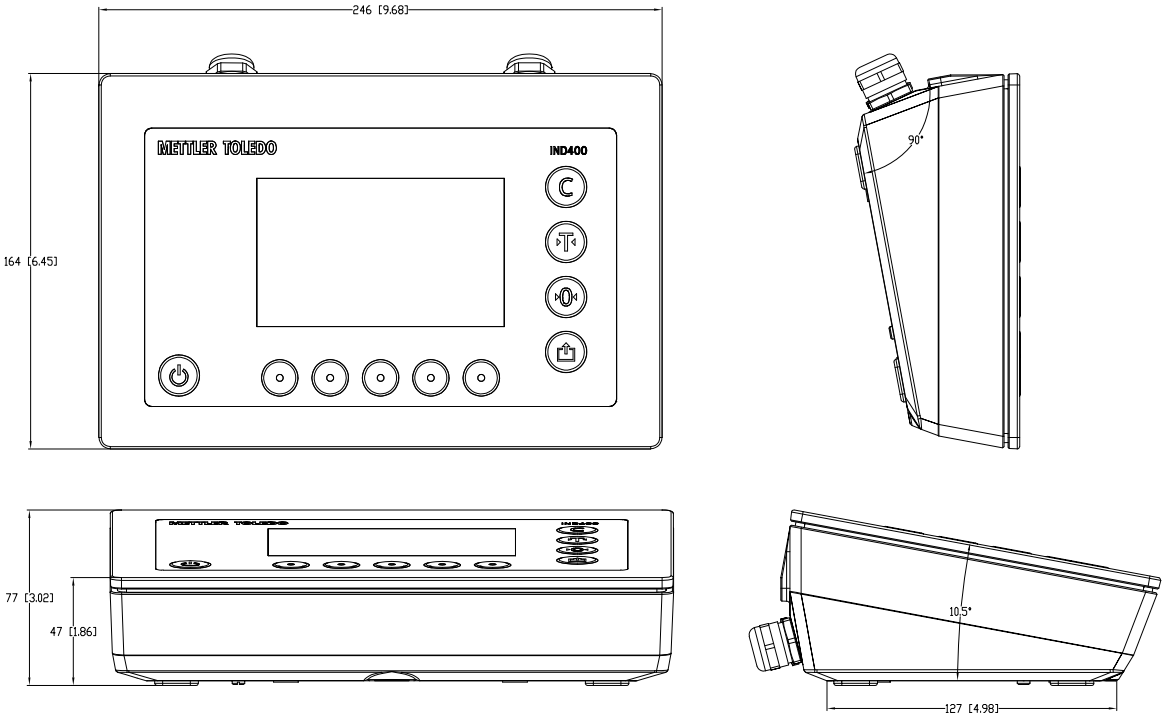
Dimensions

The physical dimensions for the IND400 terminal are shown in the figures below in mm [inch].

Stainless Steel version



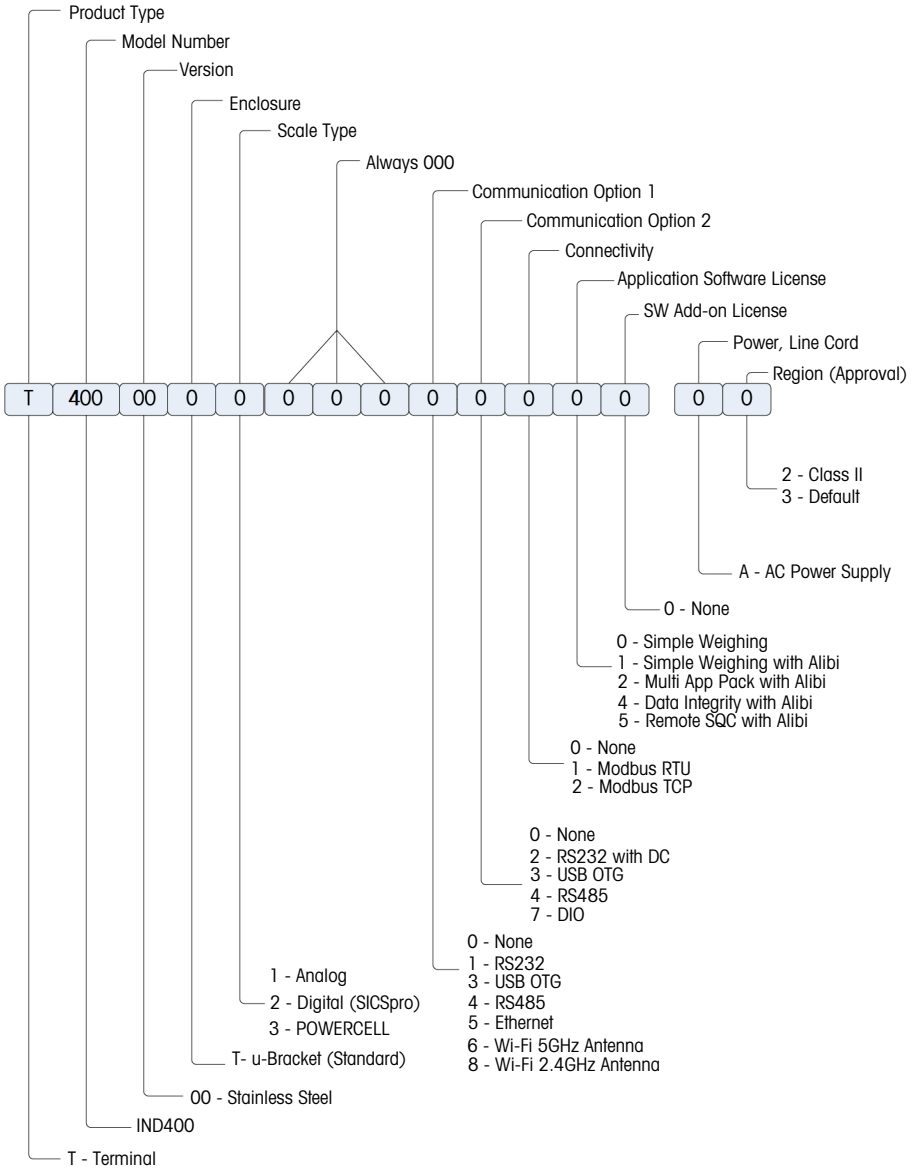
Aluminum Die Cast version



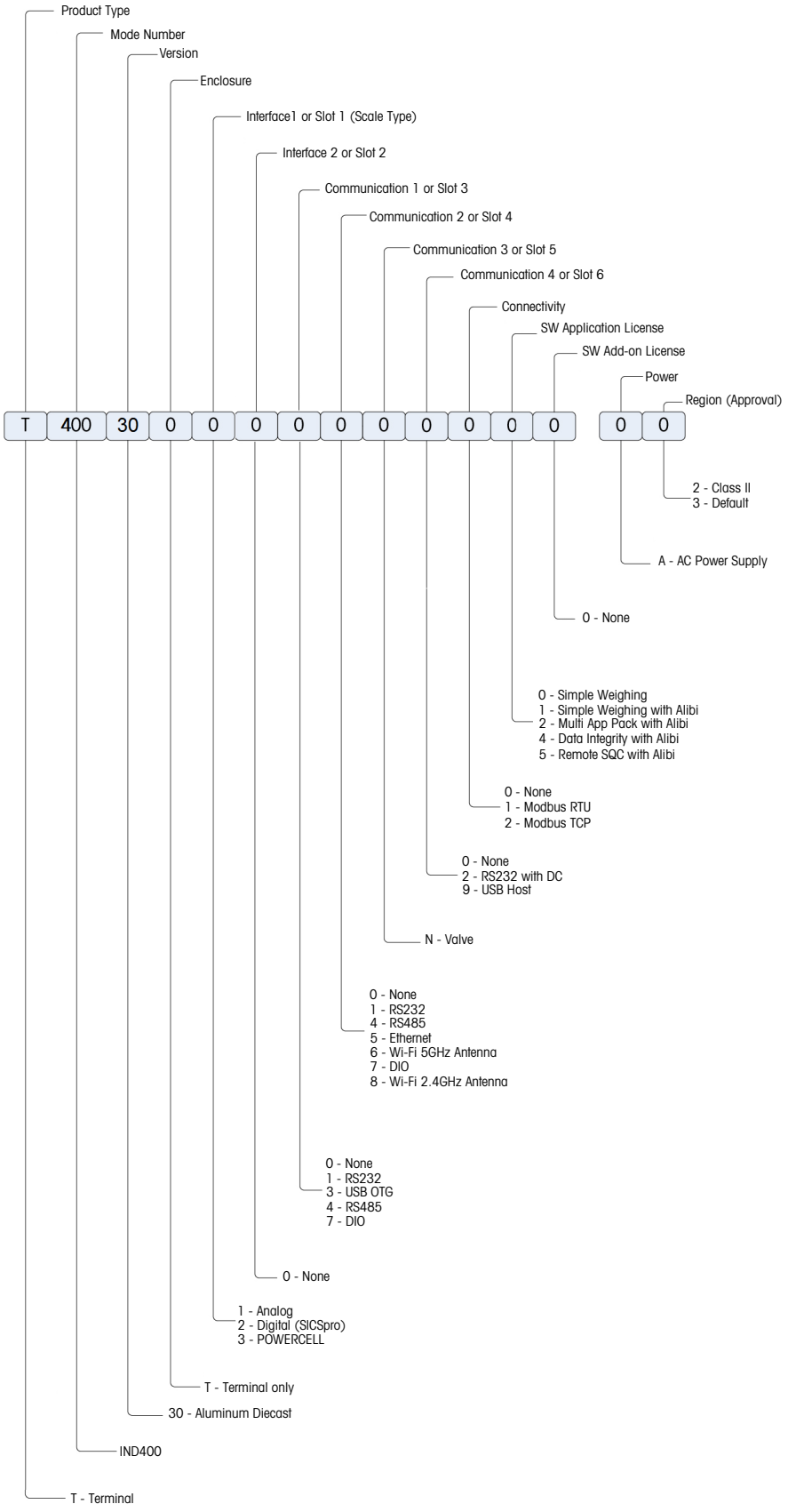
1.6.1 Type designation code

The following figure shows the configuration options for the terminal.

Stainless Steel Version



Die Cast Version



2 Operation

2.1 Non-weighing operation

2.1.1 Switching on/off

Switching on

– Press ⏻.
  ➡ For a few seconds the device shows a start-up screen with relevant device data.

Note

For approved weighing systems a countdown is running for warming up.

Switching off

– Press and hold ⏻ for approx. 2 seconds.
  ➡ The device is switched off.

Note

- If the power is disconnected by unplugging the power supply when the terminal is in the power-on state, the terminal will automatically power on when the power is reconnected after about 3 seconds.
- If the power is disconnected by first pressing ⏻ and then unplugging the power supply, the terminal can be started by pressing ⏻ when power is reconnected within 2 minutes, while the terminal will automatically power on when power is reconnected after 2 minutes.

2.1.2 Login / logout

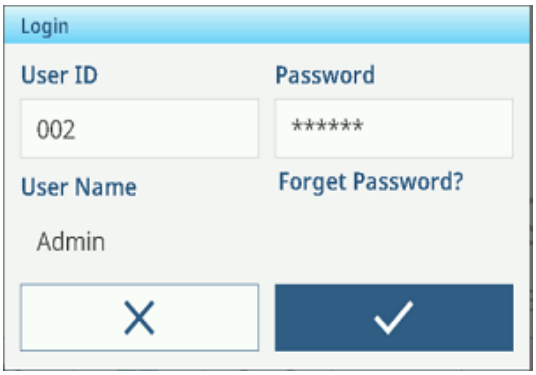
When starting the device or after a logout, the default operator with User ID "005" is logged in.

Users have to be created in the setup, refer to [Terminal -> User Management ▸ Page 115].

Login

To login other than as default operator proceed as follows:

1 Open the Quick setting menu, refer to [Quick setting menu ▸ Page 9].
2 Touch symbol 👤.
  ➡ You are asked if you want to log out.
3 Touch symbol ⎋.
4 Confirm the logout of the default operator with ✓.
  ➡ The window to enter User ID and password is displayed.
5 Enter your User ID and password and confirm with ✓.
  If the Admin password is forgotten, see [Forgetting the Password ▸ Page 20].
  ➡ The new user is logged in and the main screen is displayed.



Logout

1 Open the Quick setting menu, refer to [Quick setting menu ▸ Page 9].
  ➡ Below the symbol 👤 the name of the current user is displayed.
2 Touch symbol ⎋.
  ➡ A safety prompt is displayed.
3 Confirm the logout with ✓.
  ➡ The current user is logged out and the default operator is logged in.

2.1.3 Login / logout with Data Integrity

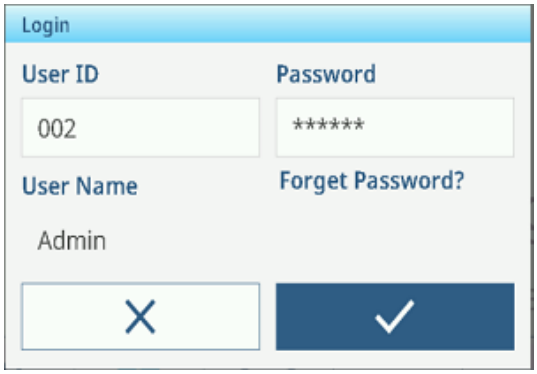
When starting the device or after a logout, the default user "Viewer" is logged in. This user has no access rights, except viewing the weight.

Users have to be created in the setup, refer to [Terminal -> User Management ▸ Page 115].

Login

To login proceed as follows:

1 Open the Quick setting menu, refer to [Quick setting menu ▸ Page 9].
2 Touch symbol .
   ➡ The window to enter User ID and password is displayed.
3 Enter the User ID and password and confirm with ✓. If the Admin password is forgotten, see [Forgetting the Password ▸ Page 20].
   ➡ The new user is logged in and the main screen is displayed.



Note

When you are logging in for the first time, you are asked to change your password.

Logout

1 Open the Quick setting menu, refer to [Quick setting menu ▸ Page 9].
2 Touch symbol .
3 Touch symbol .
   ➡ A safety prompt is displayed.
4 Confirm the logout with ✓.
   ➡ The current user is logged out and the default user "Viewer" is logged in.

Note

In the Data Integrity application, the Viewer remains logged in as a view-only mode. In this state, the user can read the weight value and view the serial number in IND400, but no operations can be performed. Any operations require logging in with an account first.

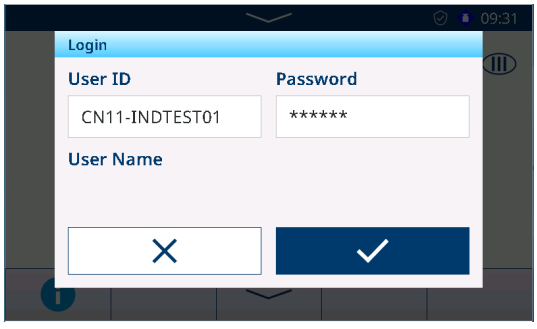
2.1.4 Login as Domain User

With the LDAP feature, IND400 supports login as a domain user to realize centralized user management, enhanced security, etc. within an organization.

Before the domain user logs in, ensure that the following conditions are met:

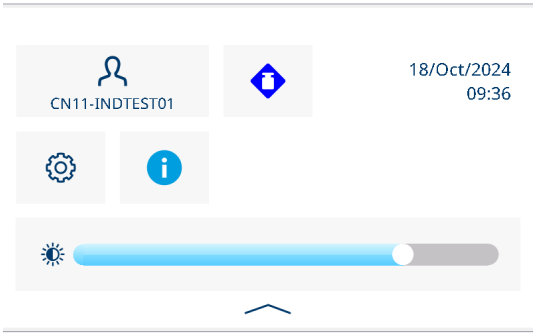
- The network communication is established via Wi-Fi or Ethernet.
- The LDAP feature is enabled and configured. See [Communication -> LDAP Client ▸ Page 135]
- The LDAP certificate is imported into terminal. See [Communication -> Certification Management ▸ Page 136]
- The role defined locally is mapped to the domain user's LDAP group. See [Role Mapping to LDAP's DN ▸ Page 117].

1 Open the Quick setting menu. Refer to [Quick setting menu ▸ Page 9].
2 Touch the symbol .
   ➡ The window to enter User ID and password is displayed.



3 Enter the User ID and password and confirm with ✓.

➡ The domain user is logged in and the main screen is displayed.

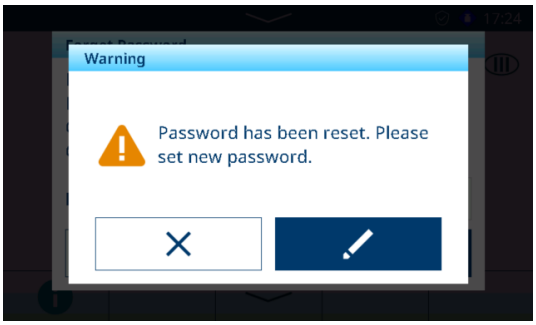


2.1.5 Forgetting the Password

Forget the Admin Password

002 is the default Admin user with an empty password. Once the password is changed, it must be well kept.

- **Solution**: Enter 002 on the login screen and click Forgot Password? to reset the password via OTP. See MT Service login with one-time-password (OTP)
  - Upon the response code input, click the softkey in the pop-up window to set a new password.



Forget the Common User Password

Solution: Log in the terminal with a higher access level to reset the user's password in the User Definition page. See [Terminal -> User Management -> User Definition ▸ Page 117].

2.1.6 Data Tables

IND400 has three types of data table. The table that follows indicates details of each type of the data table.

Type	Description	Table Name	Capacity (Max. number of records)
Log	• It is a kind of read-only data table. • Terminal generates the data rows and user roles can search, read, and print tables. • Supervisor, QA and Admin roles can clear these log tables.	Calibration Log	10,000
		Event Log	60,000
		Error Log	5,000
		Change Log	5,000
		Maintenance Log	5,000
		Audit Log (for IND400 with Data Integrity only)	• Software version 1.XX.YYYY: 300,000 • Software version 2.XX.YYYY and higher: 1,000,000
Configurable	• This kind of data tables are used to store data used in some applications. • These data are the dynamic configuration for the applications. • The Supervisor or Admin can maintain while the Operator can recall data of these data tables.	Target Table	5,000
		Tare Table	
		Material Table	

Type	Description	Table Name	Capacity (Max. number of records)
Transaction	• This kind of data tables record the data results generated by different applications.	Alibi Table	300,000
		Transaction Table	

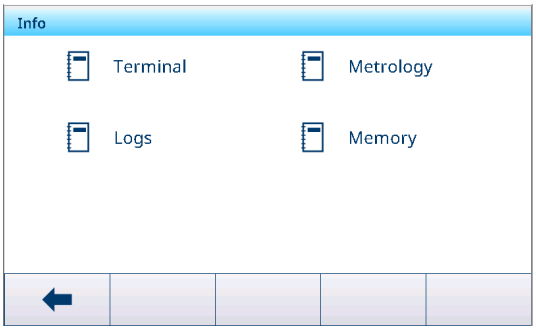
Note

- The data export formats for the Transaction Table and Audit Log are CSV and PDF, while all other table records is only available in CSV format.
- If DI is active, all logs only can reset(delete all) by master reset.

2.1.6.1 Info/log features

Touch ⓘ in the Quick setting menu to gain access to the following information:

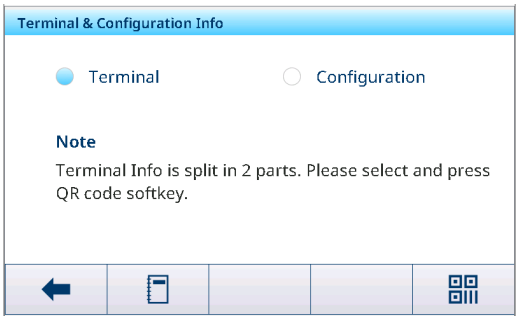
– Touch the desired information category.



Terminal Info

In case you want to contact the METTLER TOLEDO service, a QR code can be displayed with information relevant for a service technician.

- Either select Terminal or Configuration.
- Touch softkey to show a QR code, which helps to simplify the basic information collection.



Content list of QR code for Terminal:

1. Service information which can be edited in menu setting
2. Service phone number which can be edited in menu setting
3. Serial number of the terminal
4. Terminal firmware version
5. Smart5 error code

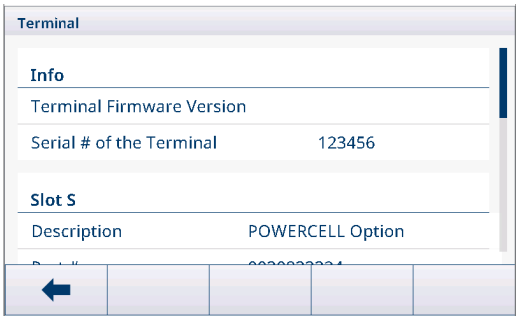
Content list of QR code for Configuration:

1. Configuration (Includes all options with the corresponding firmware version)
2. Interface configuration (e.g., configuration of RS232, RS422/485, Ethernet)

- For detailed information on the device touch softkey .

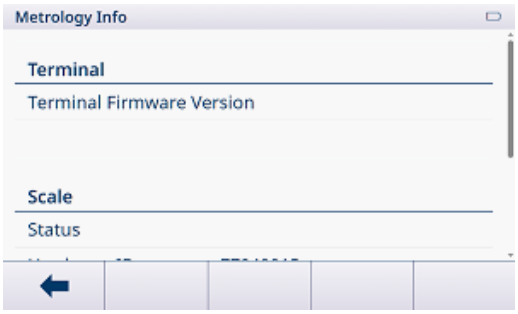
Content list of Terminal Info.:

1. Terminal Firmware Version
2. Serial Number of the Terminal
3. Configuration (Includes all options with the corresponding firmware version)

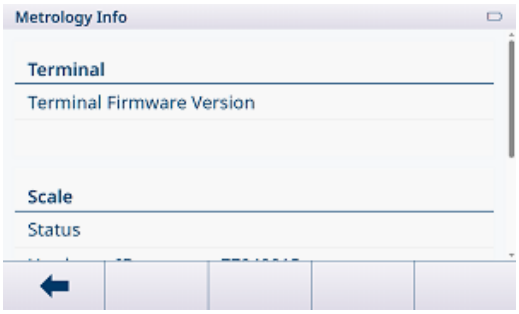


Metrology Info (for approved scales only)

Analog Scale - Display 1

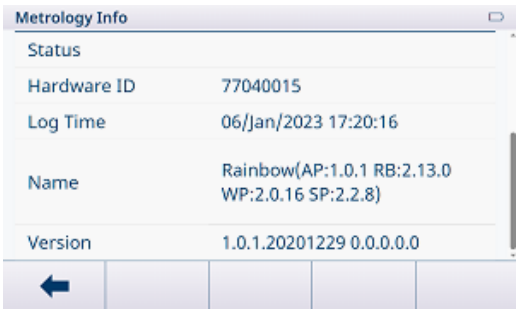


SICSpro Scale - Display 1



Analog Scale - Display 2

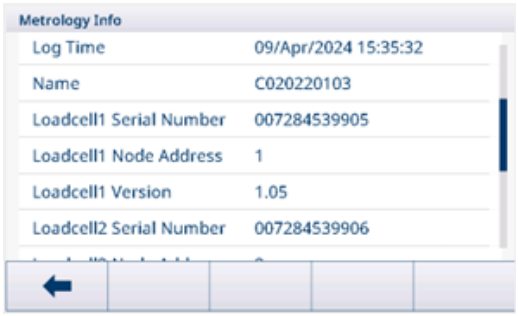
SICSpro Scale - Display 2



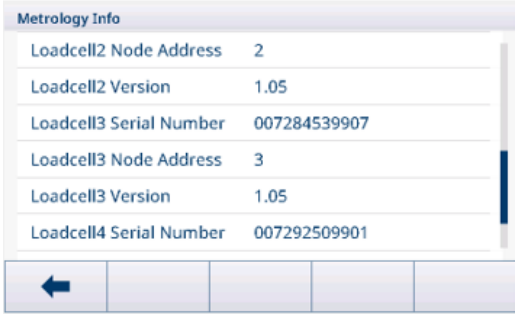
Powercell Scale

Display 1

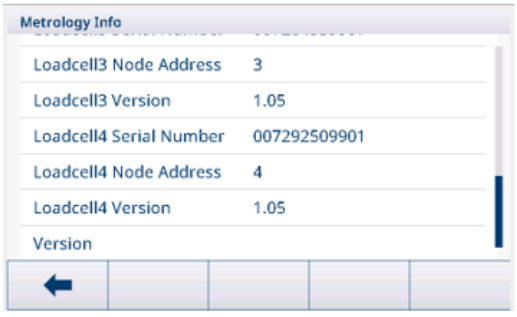
Display 2



Display 3



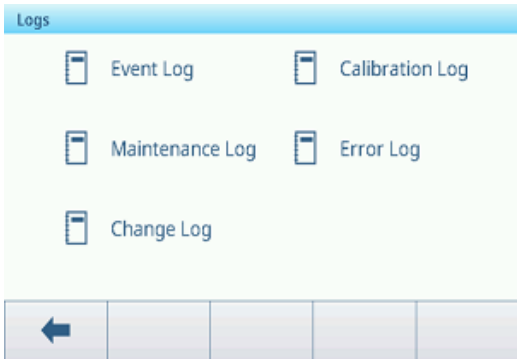
Display 4



Note

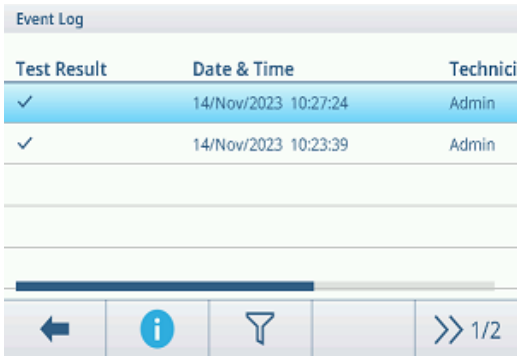
- The Name display in Metrology Info is the same as the Serial Number display in Setup -> Scale -> Identification.
- After scale, sensor or weighing board replacement in legal metrology applications, it is crucial for users to first set Approval as None in the Scale -> Metrology page, and then set the correct Approval type again to ensure the Log Time information is authentic and effective.
- Breaking the seal and removing the sealing the screw is also required to enable the scale menu to reset LFT parameters.

Logs



User can select a log to display the respective log records.

Event Log

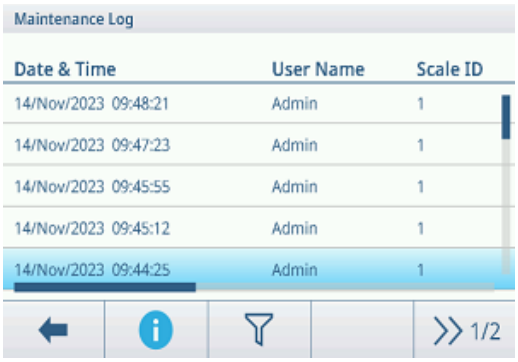


The Event Log records all planned actions from routine tests, including Calibration, Sensitivity, Eccentricity, and Repeatability, etc.

Calibration Log

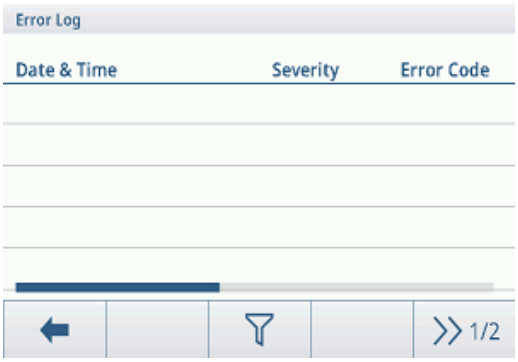
In the Calibration Log, all calibration actions are reported.

Maintenance Log



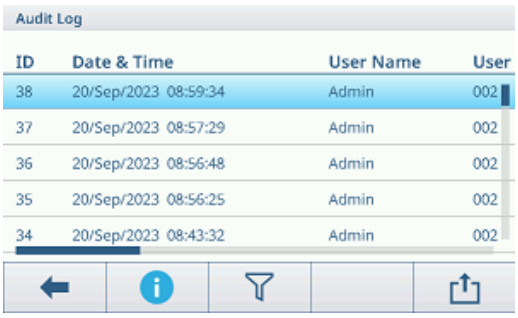
In the Maintenance Log, all maintenance actions are reported.

Error Log



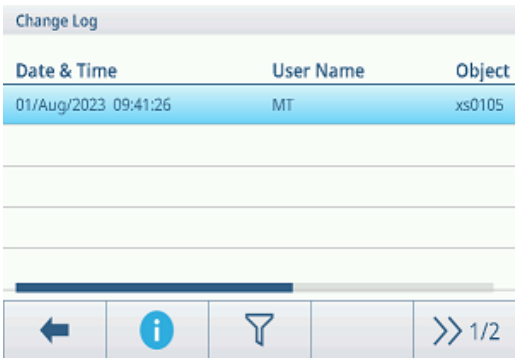
In the Error Log, all errors are reported.

Audit Log (for IND400 with Data Integrity only)



In the Audit Log, user operations are reported.

Change Log



In the Change Log, all changes on the device are reported.

Additional actions in the logs

Highlight the log record then press the Info button to display detailed information.

Filter the logs by the respective heads of columns, e.g. Date, Technician
For more details refer to [Filtering logs and tables ▸ Page 26]

Export data to a computer/printer
For more details refer to [Importing/exporting data ▸ Page 28]

Reset data

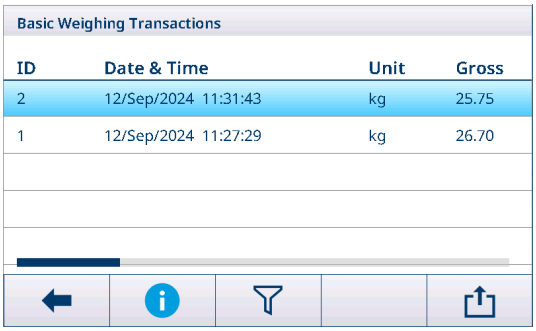
Note

All data will be deleted.

2.1.6.2 Recalling the transaction table

Each transaction is stored in the application-specific transaction table.

– Touch softkey .
  - ➡ The last weighing transactions are displayed.
  - ➡ Swiping horizontally will show the complete information on the transactions.
  - ➡ Swiping vertically will show further transactions.



The following information is stored for each transaction in the Basic Weighing application:

ID	Serial number of the transaction
Date & Time	Date and time of the transaction
Unit	Weight unit of the transaction
Gross	Gross weight
Tare	Tare weight
Net	Net weight
Tare Type	"PT" for a tare preset, otherwise blank
Scale #	
Material ID	ID of the selected material
Material Description	Description of the selected material
ID1 ... ID3	Identifications
User Name	Name of the user logged in

In the transaction table the following operations are available:

Show the above information for the selected transaction

Filter transactions, see [Filtering logs and tables ▸ Page 26]

Print transaction, only if an APR320 / APR220 printer is connected

Transfer transaction

Reset the transaction table

Note

When working with data integrity, additional fields regarding review status and reviewer are shown. Transferring the transaction table is possible for reviewed data only. For more information refer to [Working with Data Integrity ▸ Page 48].

2.1.6.3 Recalling the Alibi log file

If requested by national regulations, the Alibi memory is available to trace all weighing activities on the scale. Each printout is automatically stored in the Alibi memory with the mandatory data. Up to 300,000 data records can be stored in the Alibi memory.

1 Open the Quick setting menu and touch ⚙.
2 Select Applications -> Memory -> Alibi Table.
   ➡ The Alibi records of the last weighings are displayed.
   ➡ Swipe horizontally to see the complete information on the transactions.
   ➡ Swipe vertically to see further records.

The following information is stored for each transaction:

ID	Serial number of the log
Date & Time	Date and time of the transaction
Unit	Weight unit of the transaction
Gross	Gross weight
Net	Net weight
Tare	Tare weight
Scale #	For IND400: always "1"
Tare Type	"PT" for a tare preset, otherwise blank
User Name	Name of the user logged in

In the Alibi table the following operations are available:

Show the above information for the selected Alibi record

Filter Alibi records, see [Filtering logs and tables ▸ Page 26]

Print Alibi log file, with an APR320 / APR220 printer connected

Transfer Alibi log file

Reset the Alibi log file

Note

When working with data integrity, transferring the Alibi log file is possible for reviewed data only.

2.1.6.4 Filtering logs and tables

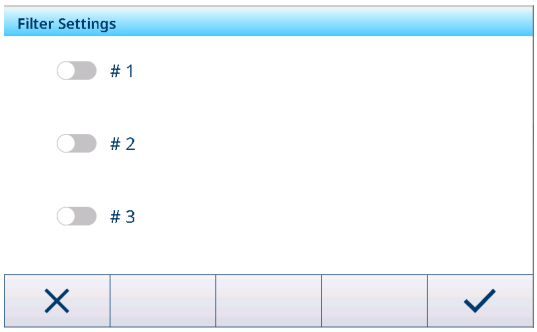
When filtering logs and tables you can combine up to three filter settings.

You can filter by all parameters of the current log or table.

Activate a filter

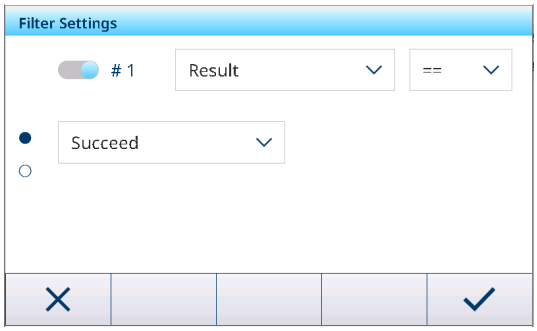
1 Select a log or a table.
2 Touch softkey ▽.
   ➡ A window to activate up to three filter settings is displayed.

3 Activate a filter setting.
4 For the next steps refer to the following examples.



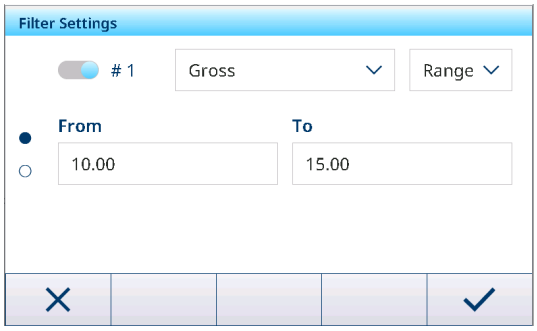
Example 1:
Searching for successful results, e.g. in the Calibration log

1 Select the parameter you want to search for, e.g. Result.
2 Select an operator, e.g. ==.
Possible operators: ==, <, <=, !, > >= or a range
3 Enter or select the searched parameter value.
4 If desired, swipe to the next filter setting and proceed as described in the examples.
5 When all filters are set, confirm the current filter settings with softkey ✓.
➡ The results are displayed in the respective log.



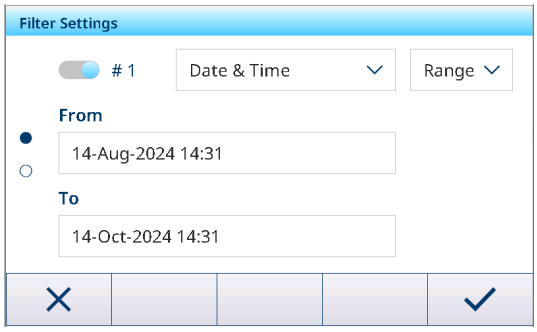
Example 2:
Searching for gross weights in the range of 10.00 to 15.00 kg, e.g. in the Transaction table

1 Select the parameter you want to search for, e.g. Gross.
2 Select an operator, e.g. Range.
Possible operators: ==, <, <=, !, > >= or a range
3 Enter the range values in the field From and To.
4 If desired, swipe to the next filter setting and proceed as described in the examples.
5 When all filters are set, confirm the current filter settings with softkey ✓.
➡ The results are displayed in the respective table.



Example 3:
Searching for all weighings in a time range, e.g. in the Alibi log

1 Select the parameter you want to search for, e.g. Date & Time.
2 Select an operator, e.g. Range.
Possible operators: <, <=, !, > >= or a range
3 Enter the range values in the filed From and To.
As default the current time is entered.
4 If desired, swipe to the next filter setting and proceed as described in the examples.
5 When all filters are set, confirm the current filter settings with softkey ✓.
➡ The results are displayed in the respective log.



Display of the filtered results

When the filtered results are displayed, there are new softkeys available.

Indicates a filtered list.
To edit the filter settings touch this softkey.

To delete the filter settings and show the complete list touch this softkey.

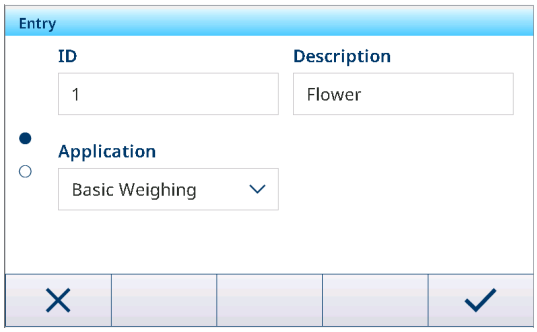
2.1.6.5 Editing tables

When opening a table, the following additional softkeys are available:

	Search for a specific entry in the table, refer to [Filtering logs and tables ▸ Page 26]
+	Add a new entry to the table
	Edit the selected table entry
	Delete the selected table entry
	Reset the table. All data will be deleted. **Note** Only available for IND400 without Data Integrity. For IND400 with Data Integrity, a reset to clear tables can only be done in the [Maintenance -> Reset ▸ Page 147].

Adding/editing a table entry, e.g. in the material table

1 In the table view, touch softkey + or mark a table entry and touch softkey .
   ➡ The (first) page where you can enter data is displayed.
2 Enter or change the displayed data.
3 If applicable, swipe to the next page to enter/change further data.
4 When finished with entering all data, confirm the table entry with softkey ✓.
   ➡ The stored table entry can be selected for further use.



2.1.6.6 Importing/exporting data

Using the import/export function via setup items or via softkeys / allows you to edit lists or tables on an external computer or to transfer lists or tables from one device to another.

Importing data

Setup item	Description	Possible settings / comments
Device	Select the device from which the data will be imported	• Internal File The SD card is installed inside the terminal. To store data on the SD card for importing, users should contact METTLER TOLEDO Service for assistance. • USB Mass Memory After the USB drive is plugged into the USB port, users can access the data in the IND400 directory.

Setup item	Description	Possible settings / comments
Type	Select data type, for importing templates only	• ASCII Naming convention: CSV file with name started with "ASCII_Printout_Template" • Label Naming convention: PRN file with name started with "Label_Printout_Template[n]", [n] = 01 … 10
Path	Path where the data to be imported has to be stored	Ensure that the data to be imported is stored in the correct folder

Exporting data

Setup item	Description	Possible settings / comments
Device	Select the device where the data will be exported to	• Internal File The SD card is installed inside the terminal. To acquire the data exported to the SD card, users should contact METTLER TOLEDO Service for assistance. • USB Mass Memory After the USB drive is plugged into the USB port, users can export the data to the specific IND400 directory.
Type	Select data type, for importing templates only	• ASCII Naming convention: CSV file with name started with "ASCII_Printout_Template" • Label Naming convention: PRN file with name started with "Label_Printout_Template[n]", [n] = 01 … 10
Path	Path where the exported data will be stored	Ensure that the indicated folder is existent

2.1.7 Verification test

The weighing instrument is verified if:

- The accuracy class is displayed in the metrological line.
- The approval readability is shown as "e = readability".
- The validity is not expired.

The weighing instrument is also verified if:

- The metrological line shows "Approved scale".
- Labels with the metrological data are placed near the weight display.
- The securing seal is not tampered with.
- The validity is not expired.

Note

The period of validity is country-specific. It is in the owner's responsibility to renew verification in due time.

Analog scale (Strain gauge scale)

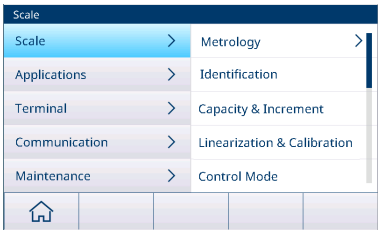
Analog scale (Strain gauge scale) use a Geo code to compensate gravitational influence. The manufacturer of the weighing instrument uses a defined Geo code value for verification.

1 Check if the Geo code in the instrument corresponds with the Geo code value defined for the user's location.
   - ➡ The Geo code is displayed in the [Metrology setup ▸ Page 98].
   - ➡ The Geo code value for location is shown in the [Table of Geo code values ▸ Page 154].
2 Call the METTLER TOLEDO service technician if the Geo code values do not match.

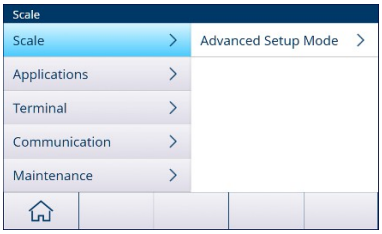
Screen display of broken sealing

When the sealing is broken, the screen will automatically open the Scale menu. The actual menu display depends on the user access right. The screen displays below are under Admin access level.

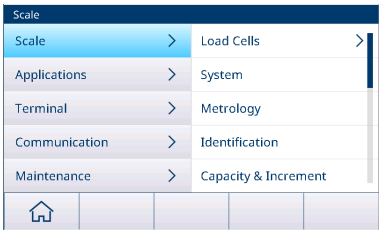
Analog scale



SICSpro scale



POWERCELL scale



2.1.8 Selecting language

IND400 supports the configuration of two types of languages. One is the terminal language and the other is the user language.

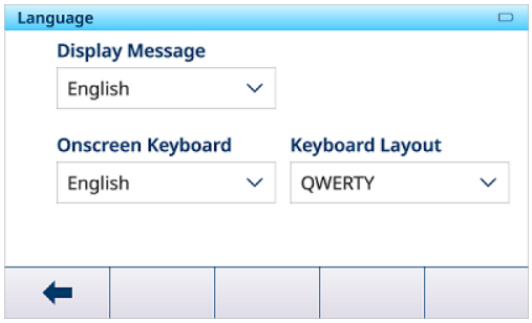
Terminal Language

Terminal language is set by the Display Message choice. This language is used for the following scopes.

- The font used in PDF export
- The user language of MT technician and Viewer
- The terminal language corresponding to SICS command M15

1 Open the page for language setting in the path: **Terminal** > **Device** > **Region** > **Language**.

2 Modify the language in the field **Display Message**. For more information about language setting, see [Terminal -> Device -> Region ▸ Page 113].



User Language

The user management function of IND400 allows user definition, in which a specific language for screen display can be selected for a single user.

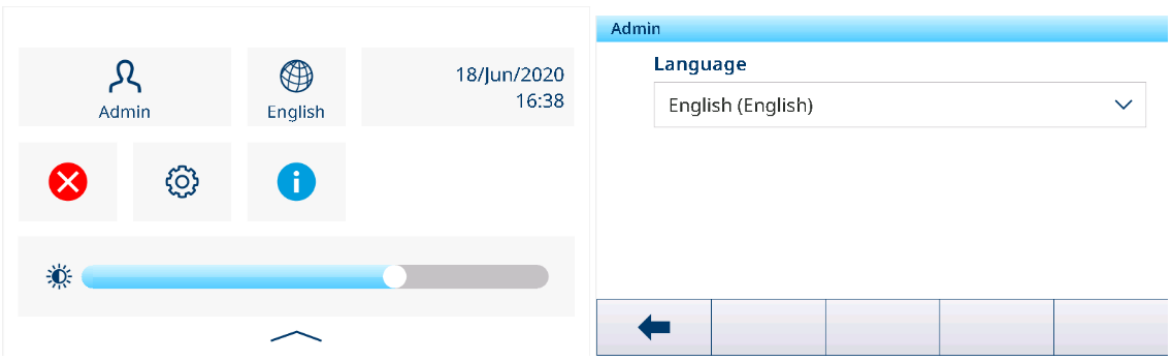
The user language, which affects the display language and input method layout for all terminal interfaces, can be configured in both the quick setting menu and the advanced menu.

Via Quick setting menu

- The user is logged in.

1 Open the Quick setting menu. See [Quick setting menu ▸ Page 9]

2 Touch to open the user language page.



3 Use the dropdown list to change language of the currently logged-in user.

Via Advanced menu

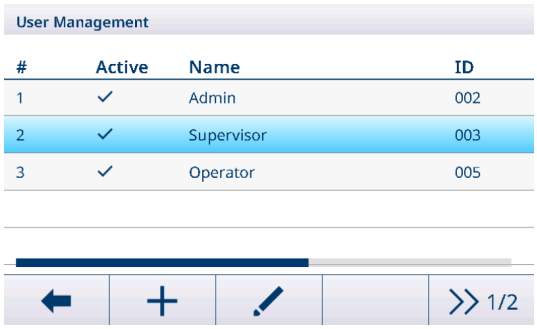
In this method, language of both the currently logged-in user and all users with a role level lower than the currently logged-in user can be modified.

1 Open the menu for language setting in the path: **Terminal** > **User Management** > **User Definition**.

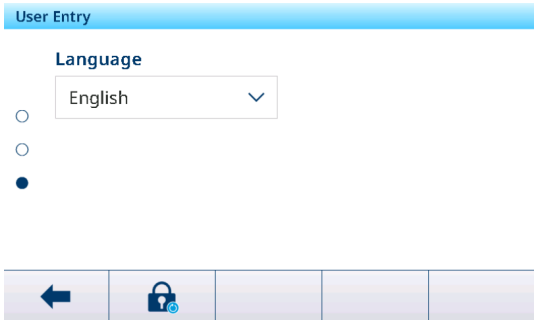
2 Mark the user for language setting.

➡ As the currently logged-in user is **Admin**, the language of both the **Supervisor** and **Operator** can be modified.

3 Touch the softkey ✎ to open the editing page.



4 Modify the language of a specific user in the third page. For more information about language, see [Terminal -> User Management -> User Definition ▸ Page 117].



2.1.9 Transferring file via VNC

Only the emVNC from SEGGER supports file transfer. METTLER TOLEDO recommends users to download the latest version from SEGGER website for use.

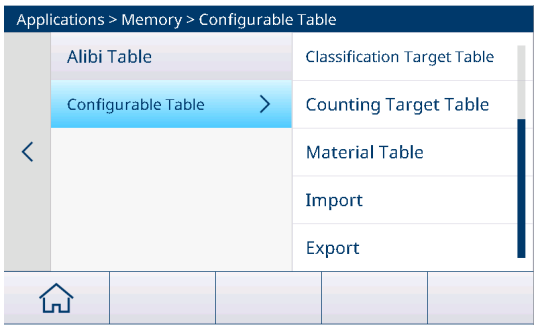
– Connect IND400 to computer by VNC. See [Communication -> VNC Server ▸ Page 129] about how to enable **VNC Server**.

Export file

1 In the indicator menu, locate the data or files for export in the path: **Applications** > **Memory**.

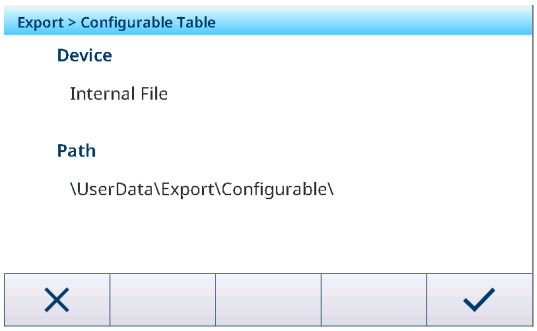
2 Select the data or files for export (**Alibi Table** or **Configurable Table**), and export them with the "Internal File" setting for the device setup item. Click **Export**.

3 Confirm and start the export with ✓.

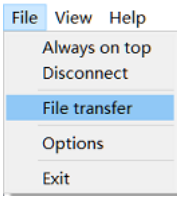


➡ The data or files are exported to SD card.

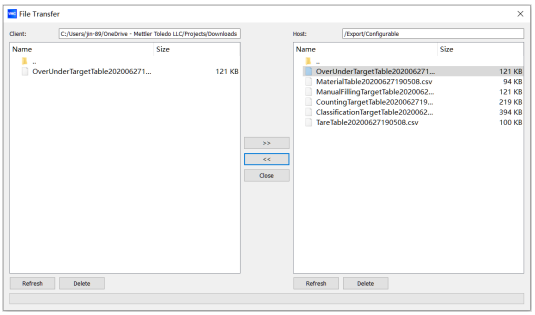
4 Click File in the VNC window and select File Transfer in the pop-up list.



5 Click the left arrow button to move selected files to the specified folder shown on the PC.



➡ VNC file transfer retrieves the files exported by the indicator.

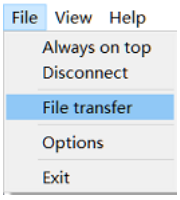


Import file

- The data or files for import are saved in computer.

1 Click File in the VNC window and select File Transfer in the pop-up list.

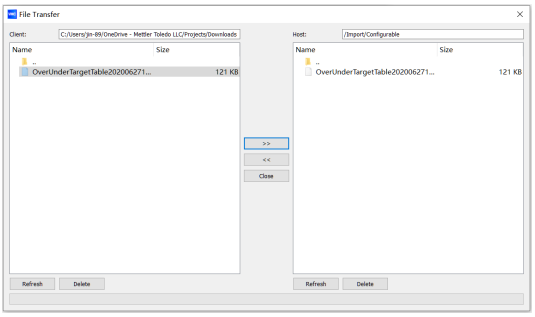
2 Click the left arrow button to copy the highlighted files from the PC to the folder shown on the Indicator SD card.



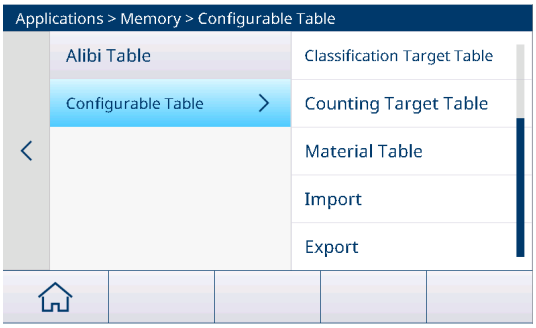
3 Click the close button to exit File Transfer mode.

4 On the indicator, open the menu **Applications** > **Memory**.

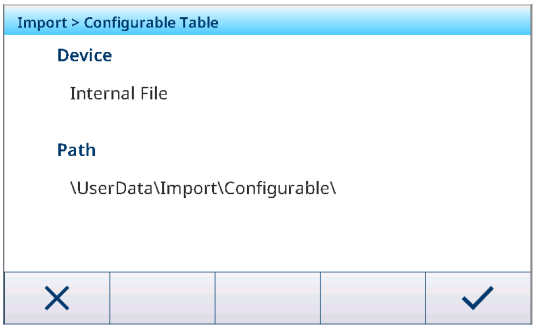
5 Select the location for data import (**Alibi Table** or **Configurable Table**) and click **Import**.



6 Confirm and start the import with ✓.



➡ The data is imported from the files sent via VNC.



2.1.10 Wi-Fi Module Setup via Webserver

The section introduces how to upload corporate security certificates, adjust settings like radio band and upgrade module FW using the internal webserver.

- The **Configuration Page** and the **AP** functions are enabled. See WLAN Setting.

1 Find the network **MT-AP- XXXXXXXXXXX** on the computer and connect to it with password "PASSWORD".

➡ **Note** The network name is the same as the default SSID name shown on the Network Setting page.

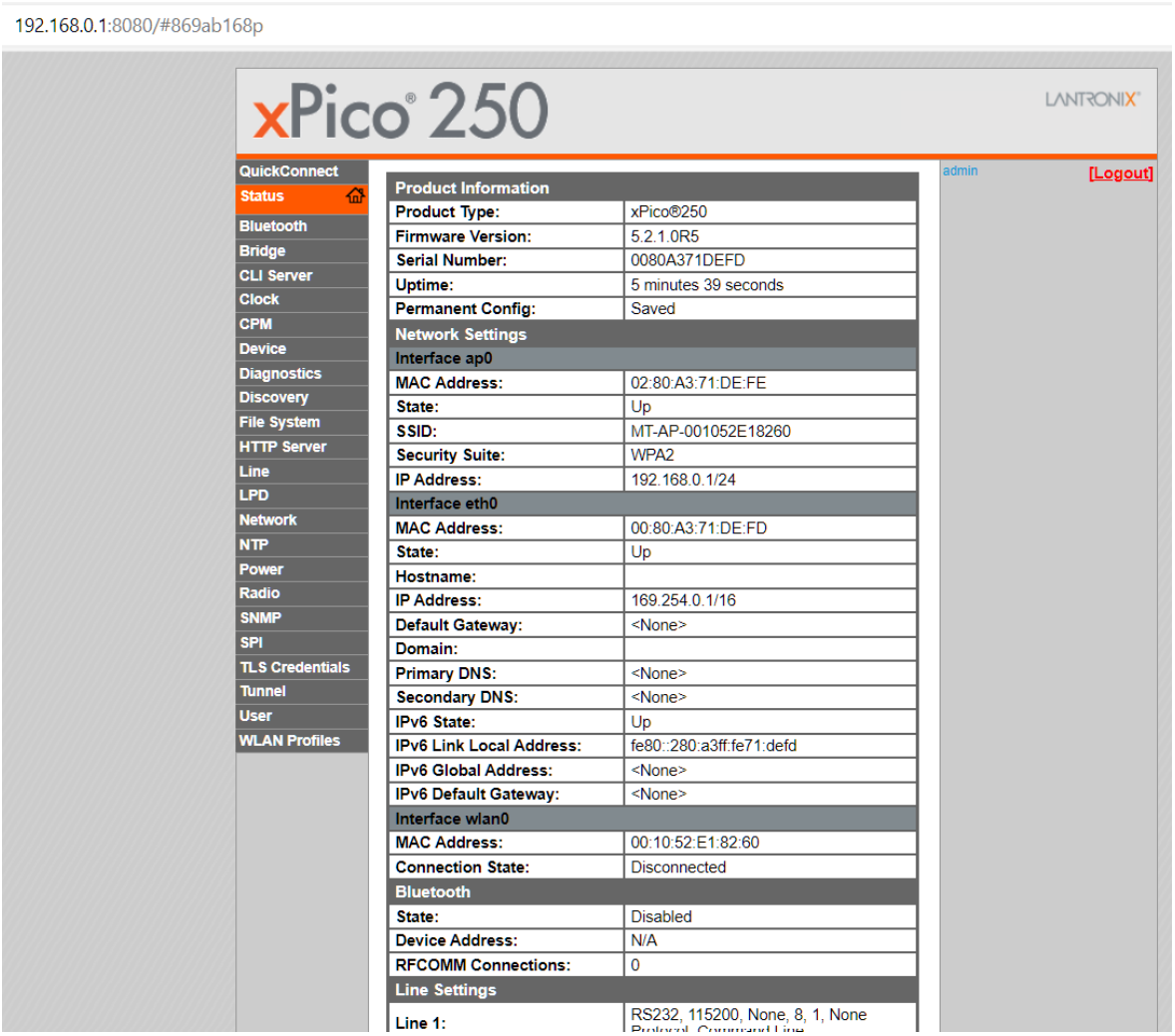
2 By using the PC webbrowser, type IP **192.168.0.1:8080** in the address bar.

➡ **Note** The IP Address is the same as shown on the Network Setting page.

3 Log in to the webpage.

➡ User name = admin

➡ Password = PASSWORD



➡ The webpage is opened.

2.1.10.1 Installing Certificates on xPico 250

1 Log in to the webpage xPico 250. See [Wi-Fi Module Setup via Webserver ▸ Page 33].

2 Go to the **TLS Credentials** page and click the softkey **Manage** in the page.

3 Enter a name for the new credential and click the softkey **Submit**.

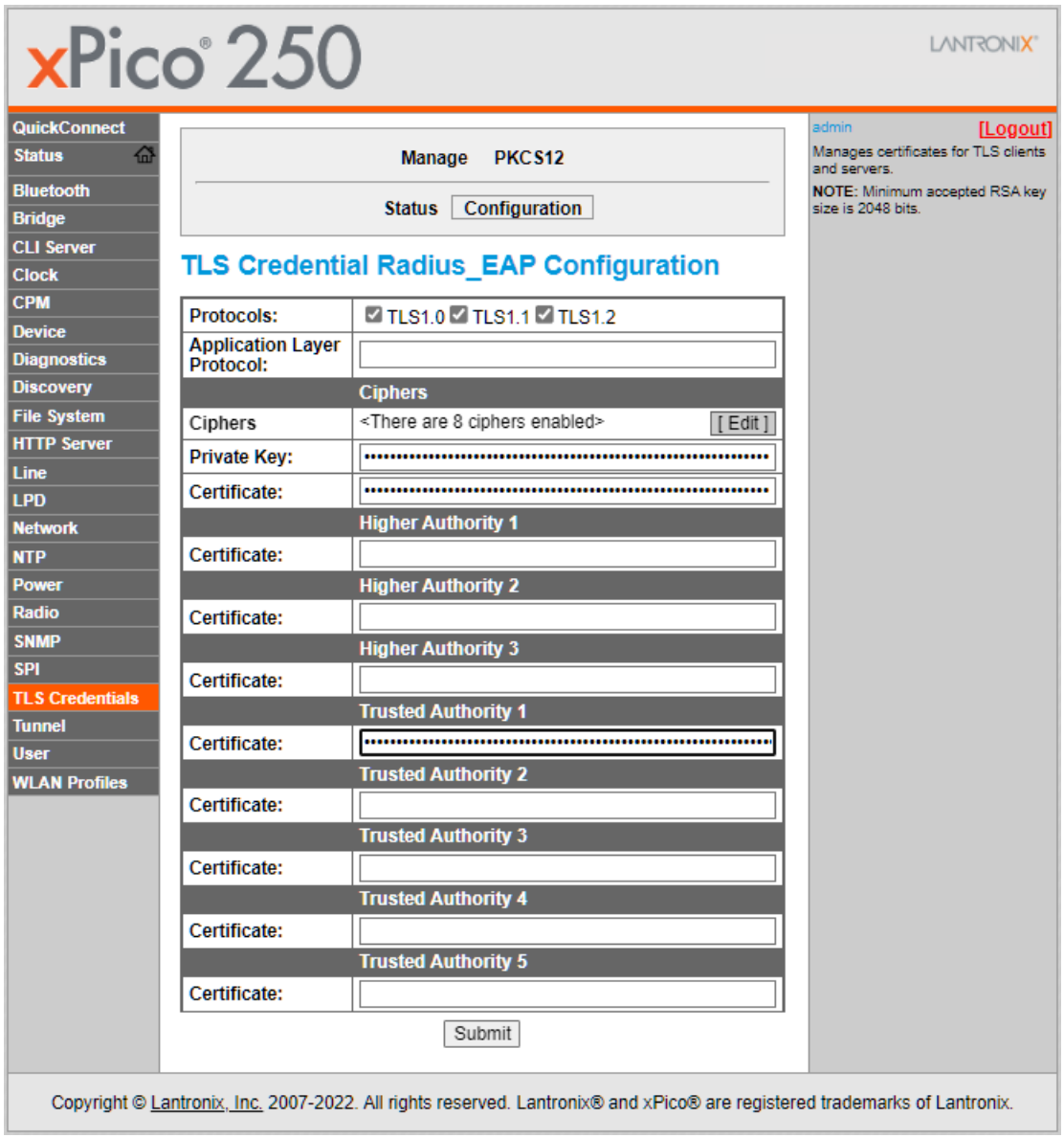
4 Click the newly created credential name.

➡ The configuration page shows.

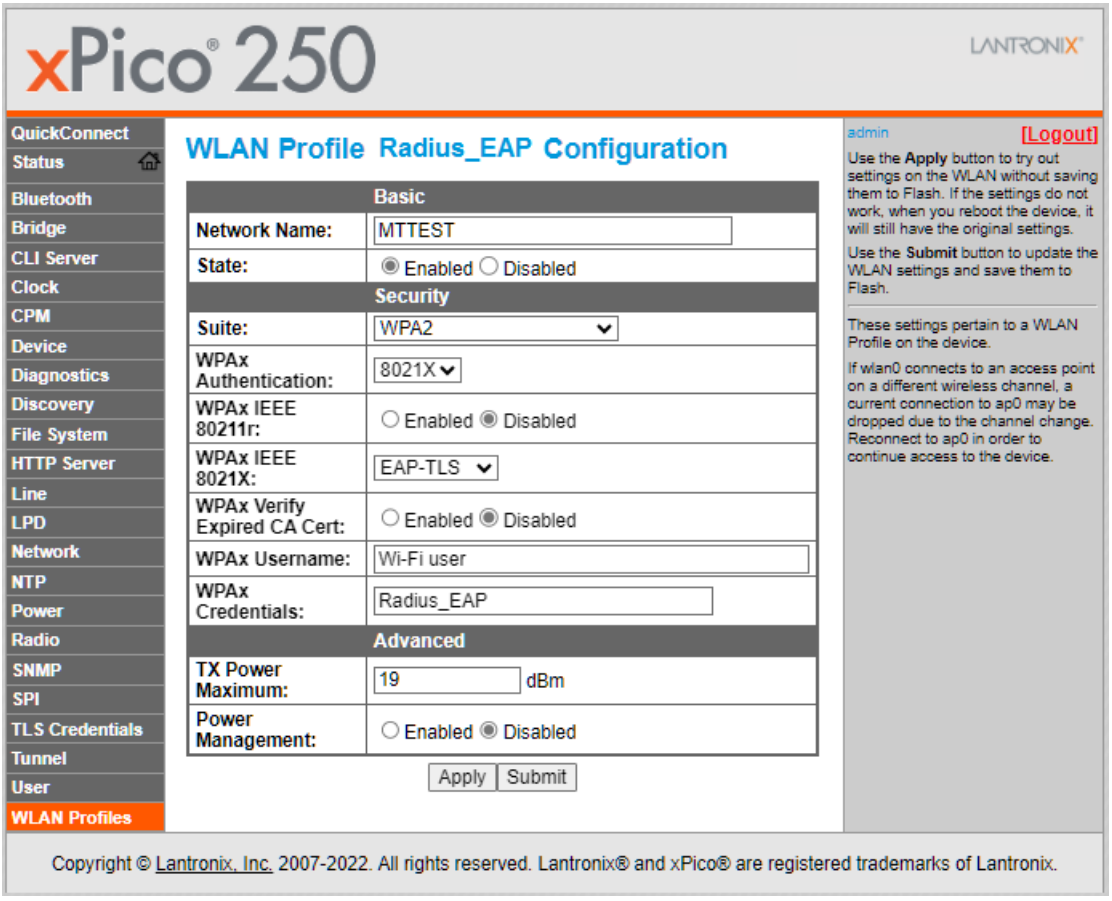
5 Click the softkey **Configuration**.

6 In the configuration page, enter the contents of the PEM format certificate, private key and trusted authority (CA) certificate into the respective fields and click the softkey **Submit**.

Note PEAP does not require a TLS credential. However, to have the xPico 250 validate the RADIUS server's certificate, a TLS credential, which includes a Trusted Authority (CA) certificate must be created. A TLS credential, which does not include a Trusted Authority (CA) certificate, causes the xPico 250 to bypass validation of the RADIUS server's certificate.



7 Go to the **WLAN Profiles** page and click on the profile created for IAS authentication.



8 Select **8021X** in the field **WPAx Authentication**.

9 Select **EAP-TLS** in the field **WPAx IEEE 80211r**.

10 Enter the name of the TLS credential in the field **WPAx Credentials** for authentication.

Note As mentioned above, PEAP does not require a TLS credential to complete authentication. If validation of the RADIUS server's certificate is desired, a TLS credential containing a Trusted Authority (CA) certificate must be configured. If no TLS credential is configured for a WLAN profile using PEAP, the validation of the RADIUS server's certificate is bypassed.

11 Click the softkey **Apply** to try out the settings on the WLAN without saving them to Flash.

12 Click the softkey **Submit** to update the WLAN settings and save them to Flash.

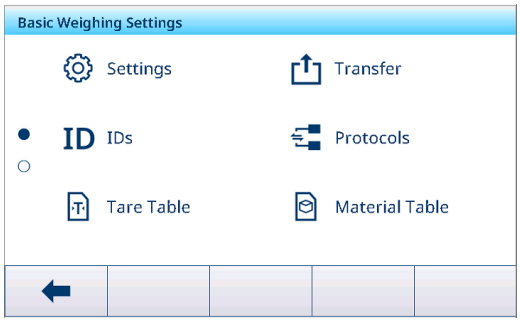
For more information about enterprise Wi-Fi encryption, refer to the below websites:

- InfiniShield Security - xPico 200 Series
- Network Interfaces - xPico 200 Series

2.2 Basic weighing operation

2.2.1 Basic weighing settings

Touching softkey ⚙ opens the Basic Weighing Settings menu.



Note

For more settings swipe the screen.

⚙	Settings	Basic weighing application settings.
	Transfer	Settings for transferring the data to a computer or printer, see also [How to set up a printer ▸ Page 41].
ID	IDs	Setup of the identifications.
	Protocols	Setup of protocols.
T	Tare Table	Setup of the tare table for frequently used known tare values.
	Material Table	Setup of the material table for frequently used weighing materials.
	Barcode Reader	Setup of a barcode reader, see also [How to set up a barcode reader ▸ Page 43].
I/O	Discrete IO	Setup of Discrete IO, see also [Communication -> Discrete IO ▸ Page 127].
⚙	Advanced Settings	Open setup, refer to [Configuration ▸ Page 97].

Note

For more information on how to edit tables refer to [Editing tables ▸ Page 28] and [Filtering logs and tables ▸ Page 26].

Settings

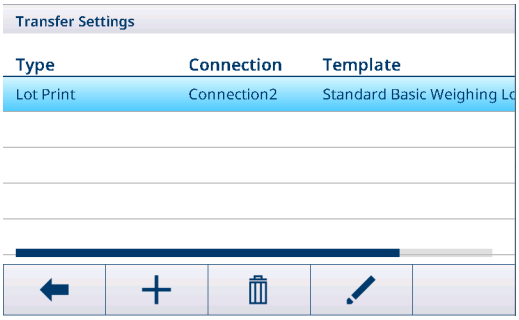
The following setup items are available via the ⚙:

Setup item	Sub items		Description
Save & Transfer	Manually		Saving and transferring a transaction has to be confirmed manually by using the tansfer key .
	Automatic		Saving and transferring a transaction takes place automatically.
	Clever Print		• Saving and transferring the last stable weight above the Threshold when the display weight returns below the Threshold. • Use correct and consistent deviation for all application tables.
		Threshold (kg)	• Range: 0 - Capacity • Default value: 9d

Setup item	Sub items		Description
Material Change	None		The Material Change function is disabled.
	Deviation +/-		To detect a change in weight, a specific deviation is required.
		Deviation (d)	• Range: 9 – 99 • Default value: 30
	Return to Zero (<9d)		Print is only triggered when the gross weight is below 9 d.

Transfer

A list of the existing transfer settings is displayed.



To create/edit a transfer setting the following setup items are available:

Setup item	Sub items	Description
Type	Lot Print	Manual data output to the printer with .
	Demand Continuous	Ongoing output of all weight values via the interface.
Instant Print	Enable/disable	Manual data output of the current weight value (either stable or not) to the printer with .
Connection	None	No transfer/print out.
	Connection 1 ... Connection #	Select/edit a connection. • COM – COM1, COM2, ... • Mode – Print • Print Type – ASCII Printer – Smart Printer (For more information, please refer to Smart Printer manuals.) – Label Printer • Length – 1 ... 100 characters
Template	Basic Weighing Lot Standard	Predefined template for Basic Weighing results.
Copies		Enter the number of copies of the printout.

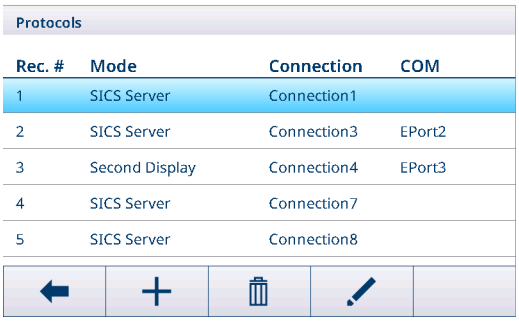
IDs

Defining up to three IDs for assignment to weighing transactions.

Setup item	Sub items	Description
ID1 ID2 ID3	Enable/disable (default)	If enabled, the ID softkey is available to enter identification data for the transaction.
	Title	Enter the title (name) of the ID. The maximum length of title is 40 bytes.

Protocols

A list of the existing protocol settings is displayed.



To create/edit a protocol the following modes are available:

- SICS Server
- Input Template
- Demand Mode
- Transfer
- SICS Continuous
- Second Display
- PM
- Parameter Server
- Toledo Continuous-W
- Post
- Remote Display
- PSCP
- Toledo Continuous-C
- DigiTol
- Reference Balance
- Modbus RTU / Modbus TCP

Note

Sub items depend on the selected mode.

Tare Table

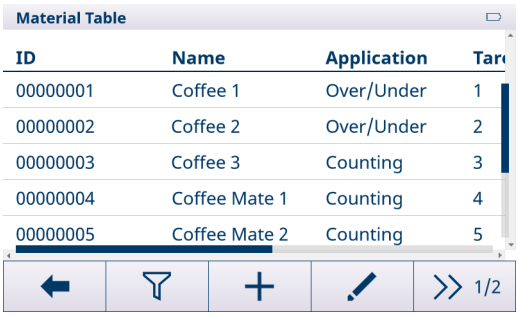
A list of the stored tare values is displayed.

To create/edit a tare value the following setup items are available:

Setup item	Description
ID	Tare Weight ID: Numeric (0-5000 max)
Tare Value	Weight value of the tare weight Either enter the weight value numerically or weigh the container. **Weighing the container**  1 Place the container on the scale. ➡ At the bottom right the weight on the scale is displayed (Live Weight). 2 Touch softkey ›T‹ to save the displayed weight as tare weight.
Unit	Unit of the tare value.
Description	Description of the tare weight (Up to 40 characters).

Material Table

A list of the existing materials is displayed.

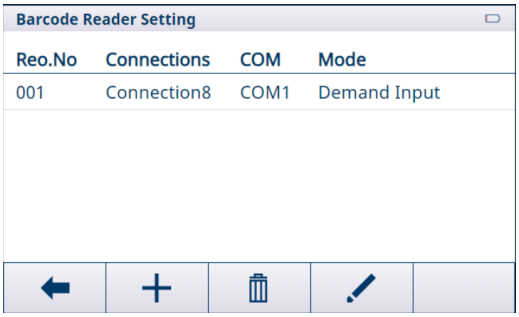


To create/edit a material the following setup items are available:

Setup item	Description
ID	Material ID: Numeric (Max length: 15 characters).
Description	Material Name: Text (Max length: 40 characters).
Application	Select the application for which the material will be used. **Note** If a material is used for several applications you need to save the material for each application. Only materials assigned to the current application can be selected in the application's material table.
Tare ID	If the material is always used in combination with a specific tare weight stored in the tare table, enter the corresponding tare ID.
Target Type	Select the target type, for Over/Under, Manual Filling/Dosing, and Counting applications only.
Target ID	Enter the corresponding target ID, for Over/Under, Manual Filling/Dosing, and Counting applications only.

Barcode Reader

An overview of the existing barcode reader settings is displayed.



To create/edit a barcode reader setting the following setup items are available:

Setup item	Sub items	Description
COM		COM port where the barcode reader is connected.
Mode	Input Template	Fixed setting for a barcode connection.
Preamble Length	• Range: 0 … 20 (characters) • Default value: 0	The barcode may contain additional data before the relevant data (preamble) and behind (postamble). – Enter the number of characters of preamble, (relevant) data and postamble.
Data Length	• Range: 1 … 99 (characters) • Default value: 1	
Postamble Length	• Range: 0 … 20 (characters) • Default value: 0	

Setup item	Sub items	Description
Assignment	None (defaut) Keypad Preset Tare Tare ID ID1 … ID 3 Target ID Material ID	Select the item to be entered via barcode scanner.
Termination character	None, SOH, STX, ETX, EOT, ENQ, ACK, BEL, BS, HT, LF, VT, FF, CR (default), SO, SI, DLE, DC1, DC2, DC3, DC4, NAK, SYN, ETB, CAN, EM, SUB, ESC, FS, GS, RS, US	Select the termination character used by the connected barcode scanner. For standard definition of these characters, see [Control Characters ▸ Page 166].

Discrete IO

With a Discrete IO option board, terminal can provide the specific Input / Output signal for users to better identify the status of Basic Weighing and start the process by digital input.

Note: In Basic Weighing, users can only select the Application as General.

2.2.1.1 How to set up a printer

Note

To initiate a printout via the transfer key, a printer has to be connected on the COM1 (RS232).

Step 1: Setting up the connection

1 In the setup go to Communication -> Connection.
2 Select the following:
   - COM = COM1
   - Mode = Transfer
   - Print Type = ASCII Printer - for an ASCII printer
   - Print Type = Smart Printer - for the METTLER TOLEDO APR220 printer
   - Print Type = Label Printer - for a label printer
3 For further connection settings refer to [Communication -> Connection ▸ Page 123].

Step 2: Setting the communication parameters

1 In the setup go to Serial -> COM1 (RS232).
2 Ensure that the communication parameters (Baud Rate, Parity, Handshake) of the weighing terminal and the printer are the same.
3 For further parameter settings refer to [Communication -> Serial ▸ Page 125].

Step 3: Checking the printer templates

Note

The device offers 10 predefined templates and the possibility to create your own templates. Templates are related to the weighing application.

1 In the setup go to Communication -> Templates.
2 Check if a suitable template is available. If not, create your own template, refer to [Communication -> Template ▸ Page 119].

Step 4: Setting up the application specific printout

Note

When working with several weighing applications, the printout for each weighing application has to be set up separately.

Transfer is defined separately for each application and can use the same connected printer previous defined in the communication menu. Each application can use its own standard or custom output template.

1 Leave the setup.
2 Select a weighing application.
3 Touch softkey to open the application settings.
4 Touch **Transfer**.
5 Select a transfer setting or make a new transfer setting using the connection set up in Step 1 and the application specific templates.
6 For further transfer settings refer to [Basic weighing settings ▸ Page 37].
7 Leave the application settings.

Result

After Steps 1 to 4 have been finished, touching the transfer key will initiate a printout on the connected printer.

2.2.1.2 How to operate label print

IND400 is able to download the Label Templates from a third-party label designer software, and then does the keyword substitution and sends the whole template to a printer over Ethernet or RS232. It can manage up to 10 label templates.

Step 1: Setting up the connection

1 In the setup go to Communication -> Connection.
2 Select the following:
   - COM = COM1
   - Mode = Transfer
   - Print Type = Label Printer
3 For further connection settings refer to [Communication -> Connection ▸ Page 123].

Step 2: Setting the communication parameters

1 In the setup go to Serial -> COM1 (RS232).
2 Ensure that the communication parameters (Baud Rate, Parity, Handshake) of the weighing terminal and the printer are the same.
3 For further parameter settings refer to [Communication -> Serial ▸ Page 125].

Step 3: Edit a label template externally

The label templates are edited outside of IND400.

1 If a terminal variable needs to be added into the certain position of the label template, insert the specific Template Keyword into the corresponding position. See [IND400 Weighing Variables ▸ Page 120].
2 Note the format of the keyword.
3 Note name of the label template file, which should be named as "Label_Printout_Template[n]". [n] = 01 … 10

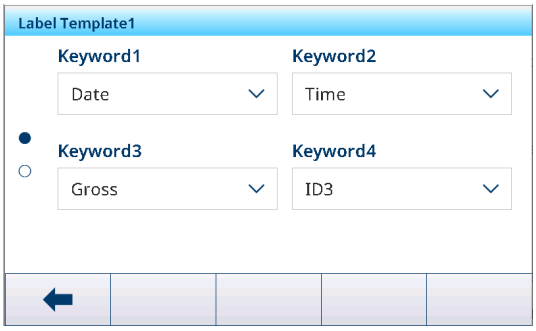
```
^Q102,3
^W100
^H8
^P1
^S4
^AD
^C1
^R0
~Q+0
^O0
^D0
^E16
~R255
(L
Dy2-me-dd
Th:m:s
AZ1,576,216,1,1,0,0,<?Date/>
AZ1,576,285,1,1,0,0,<?Time/>
AZ1,576,322,1,1,0,0,<?String2/>
AZ1,576,460,1,1,0,0,<?Gross/>
AZ1,576,522,1,1,0,0,<?ID3/>
AZ1,576,653,1,1,0,0,<?String1/>
(E
```

Example: Label template of APR430/530 with print language in EZPL format

Step 4: Importing the label template into terminal and editing

1 Import the label template into IND400 via **Internal File**, USB, or VNC.
See [Importing/exporting data ▸ Page 28] and [Transferring file via VNC ▸ Page 31]
2 In the page Communication -> Templates, edit the keywords of the imported template with the softkey </> and select a weighing application.
3 In the Transfer page of the **Basic Weighing Settings** menu, select the imported label template in the field Template.

➡ Touch the transfer key to initiate a printout on the connected printer.



2.2.1.3 How to set up a barcode reader

Note

IDs and a preset tare can be scanned with a barcode reader with serial or USB connection cable.

Step 1: Setting up the connection

1 In the setup go to **Communication** -> **Connection**.
2 Select the following:
For a serial connection: COM = COM1 … COM4
For a USB connection: COM = USB (HID)
Mode = **Input Template**
3 Enter the required data limits and select the input assignment, e.g. an ID.
4 For further connection settings, refer to [Communication -> Connection ▸ Page 123].

Note

Alternatively, the barcode reader can be set up in the application settings, refer to [Basic weighing settings ▸ Page 37].

Step 2: Setting the communication parameters

1 In the setup go to Serial -> COMx.
2 Ensure that the communication parameters (Baud Rate, Parity, Handshake) of the weighing terminal and the barcode reader are the same.
3 For further parameter settings, refer to [Communication -> Serial ▸ Page 125].

Result

When the specific input is required, e.g. an ID, this can be entered via barcode.

See also

Communication -> Template ▸ Page 119

2.2.2 Straight weighing

1 Place the weighing sample on the scale.
2 Wait until the stability monitor ~ disappears.
3 Read the weighing result.

2.2.3 Switching units

The device offers up to three display units. It is possible to switch between these weight units.

– Touch .
➡ The weight value is displayed in the next unit.

Possible units depend on the active scale and the local Weights and Measures regulations.

2.2.4 Zeroing / Center of Zero

Zeroing

Zeroing corrects the influence of slight changes on the load plate or minor deviations from the zero point.

- The zero function is only available within a limited weighing range.
- After zeroing the scale, the whole weighing range is still available.

Manual

1 Unload the scale.
2 Press →0←.
➡ Zero appears in the display, >0< appears in the status line.

Center of Zero

Automatic

- For OIML approved scales, the Center of Zero is always activated. The default zero range is 0.5 d.
- In case of non-approved scales, the Center of Zero can be deactivated in the setup or the zero range can be changed.

2.2.5 Weighing with tare

2.2.5.1 Taring a container

– Place the empty container on the scale and touch →T←.
➡ The zero display appears.
➡ In the status line, the tare weight with symbol T and the symbol NET are displayed.
➡ The tare weight remains stored until it is cleared or a new tare weight is set.

2.2.5.2 Clearing the tare

– Press C.
➡ The symbol NET disappears, the gross weight and the symbol B/G appear on the display.

If the Auto Clear Tare function is activated in the Scale setup, the tare weight is automatically cleared as soon as the scale is unloaded.

2.2.5.3 Clearing the tare automatically

A tare weight is automatically cleared when the scale is unloaded.

Prerequisite

The Auto Clear Tare function is activated in the Scale setup.

The tare weight must be above than the clear threshold.

2.2.5.4 Automatic taring

If you place a weight on an empty scale, the scale is tared automatically and the NET symbol is displayed.

Prerequisite

The Auto Tare Mode is activated in the Scale setup.

The weight to be tared automatically, e.g. packaging material, must be heavier than the tare threshold.

2.2.5.5 Chain tare

The chain tare functionality is used to allow the user to tare different containers without first clearing the active tare value.

Example

- A 300g container is put on the platform and tared.
- 200g material is put into the container.
- Another container of 300g is put on the platform while the first container is still on the platform.
- Now the user puts some material into the new container and therefore wants to tare the whole weight on the platform.
- The user only needs to press the tare key again.

Practical operation

1 Place the first container or packaging material on the scale and press ›T‹.
   ➡ The weight of the packaging is automatically saved as tare weight, the zero display appears.
   ➡ In the status line the tare weight with T symbol and the NET symbol are displayed.
2 Load the sample and read/print out the result.
3 Place the second container or packaging material on the scale and press ›T‹ again.
   ➡ The total weight on the scale is saved as new tare weight, the zero display appears.
   ➡ In the status line the total tare weight with T symbol and the NET symbol are displayed.
4 Load the sample in the second container and read/print out the result.
5 Repeat steps 3 and 4 for further containers.

2.2.5.6 Tare preset

For established container weights the tare weight can be entered numerically or via SICS command. Thus, you do not have to tare the empty container.

The entered tare weight is valid until a new tare weight is entered or the tare weight is cleared.

Tare preset with numeric entry

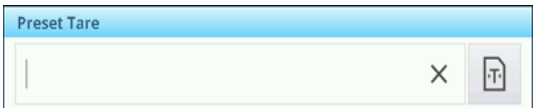
1 Touch PT and enter the known tare weight.
   ➡ The weight display shows the negative tare weight.
   ➡ In the status line the tare weight with PT symbol and the NET symbol are displayed.
2 Place the full container on the weighing platform.
   ➡ The net weight is displayed.

Tare preset with tare table

Note

To setup the tare table refer to [Basic weighing settings ▸ Page 37].

1 Touch **PT**.
2 Touch on the top right.
   ➡ The list of stored tare values is displayed.
3 Mark the desired tare value.
   ➡ For filtering the tare table refer to [Filtering logs and tables ▸ Page 26].
4 Touch ✓ to load the tare value.
   ➡ The weight display shows the negative tare weight.
   ➡ In the status line the tare weight with PT symbol and the NET symbol are displayed.
5 Place the full container on the weighing platform.
   ➡ The net weight is displayed.



Tare preset with SICS command from a connected computer

1 Enter the known tare weight on the computer using the SICS command TA_Value_Unit.
   ➡ The weight display shows the negative tare weight.
   ➡ In the status line the tare weight with PT symbol and the NET symbol are displayed.
2 Place the full container on the weighing platform.
   ➡ The net weight is displayed.

2.2.6 Using the material table

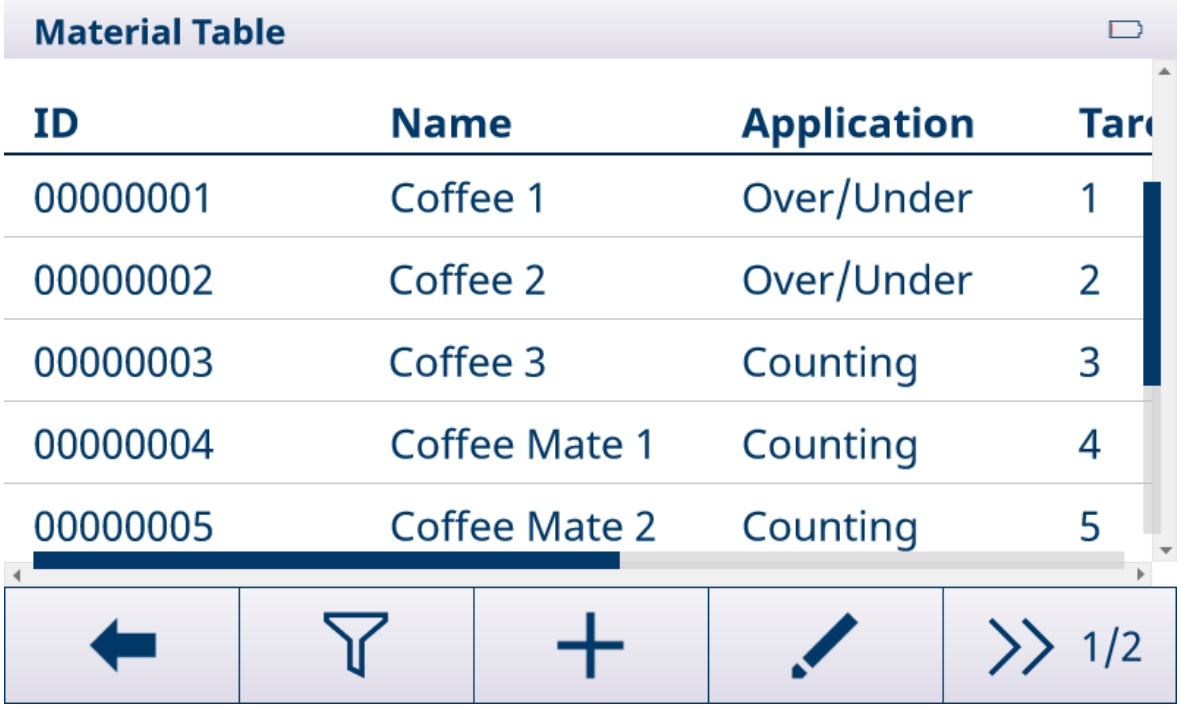
Materials including their tare weights can be stored in the material table.

Note

- To setup the material table refer to [Basic weighing settings ▸ Page 37]
- Only materials assigned to the current application can be recalled.

For each material the following information is stored:

- Numerical ID
- Name
- Tare ID
- Target Type (for Over/Under, Manual Filling/Dosing applications)
- Target ID (for Over/Under, Manual Filling/Dosing applications)
- Value of the tare weight
- Unit of the tare weight
- Alphanumerical description of the tare weight



1 Touch .
   ➡ The list of stored materials and symbols for editing are displayed.
2 Mark the desired material.
   ➡ For filtering the material table refer to [Filtering logs and tables ▸ Page 26].
3 Touch ✓ to load the material.
   ➡ If a tare ID is assigned to the material the weight display shows the negative tare weight. In the status line, the tare weight with PT symbol and the NET symbol are displayed.

The recalled material is valid until a new material is selected or the material is cleared.

Clearing a material

– Touch softkey C.
   ➡ The material and the tare value (if included) are cleared.

2.2.7 Working in a higher resolution

The weight value can be displayed in a higher resolution continuously or when required.

– Touch .
   ➡ The weight value is displayed in grey and in a resolution that is at least 10x higher.
   ➡ In the status line the symbol is displayed.

- With approved weighing platforms the higher resolution is displayed for 5 seconds.
- With non-approved weighing platforms the weight value is displayed in a higher resolution until is touched again.
- In approved mode, the printing and transferring function is disabled in the higher resolution display. In non-approved mode, it allows to print in higher resolution and the weight data is marked with *.

2.2.8 Printing/transferring results

If a printer or host is connected, weighing results and other information can be printed out or transferred to a computer.

– Press .

➡ The data defined in the application specific output template is transferred to the host.

- The printout content can be defined in the Application setup.
- When Alibi Memory is enabled: transaction results are saved in the Alibi (approved) /Transaction (non-approved) table.

2.2.9 Working with identifications

Up to 3 identifications with up to 40 alphanumeric characters or 20 Chinese characters can be assigned to weighing series. Identifications can also be printed out in the protocols. If, for example, a customer name and a batch number are assigned, you can easily identify which batch was weighed for which customer.

Prerequisite

- In the Application setup at least one ID is enabled.

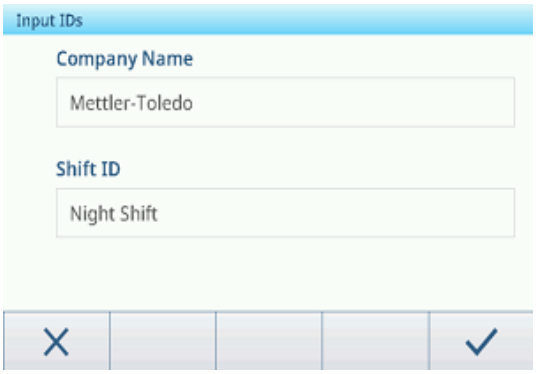
Procedure

1 Touch softkey ID.

➡ The required identifications are displayed.

2 Enter the required identifications and confirm with ✓.

➡ The defined identifications are assigned to the following weighings until the identifications are cleared or new identifications are set.



2.2.10 Working with Data Integrity

For Data Integrity settings refer to [Application -> Data Integrity ▸ Page 113].

Data generation without Electronic signature

■ Electronic signature is disabled

1 Login to the terminal.

2 Perform a weighing operation.

3 When the weight value is stable, press the transfer key .

➡ The weight record is stored in both alibi and transaction table and transferred out in the selected template, if configured.

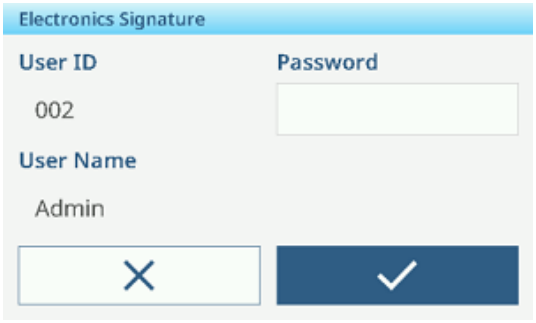
➡ The terminal is ready for the next transaction.

Data generation with Weighing E-Signature Only

- Electronic signature enabled
- Weighing E-Signature Only selected

1 Login to the terminal.
2 Perform a weighing operation.
3 When the weight value is stable, press the transfer key .
   ➡ The Electronics Signature opens with the logged in user data.
4 Enter your password and confirm with ✓.
   ➡ The weight record is stored in both alibi and transaction table and transferred out in the selected template, if configured.

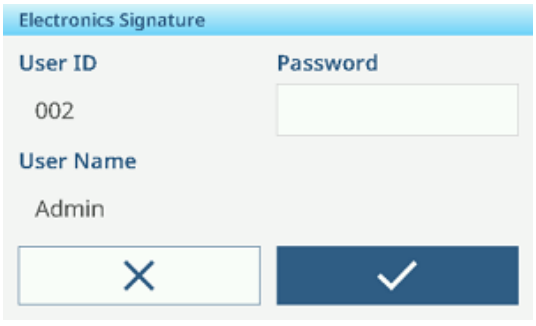
➡ The terminal is ready for the next transaction.

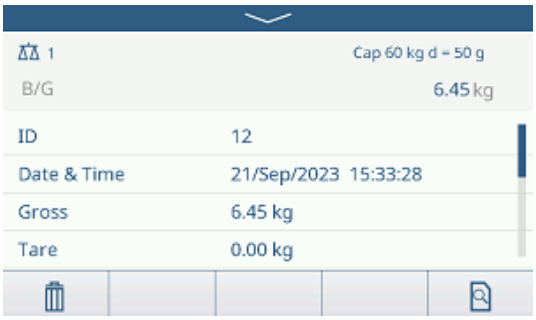


Data generation with Reviewer E-Signature Immediately

- Electronic signature enabled
- Reviewer E-Signature Immediately selected

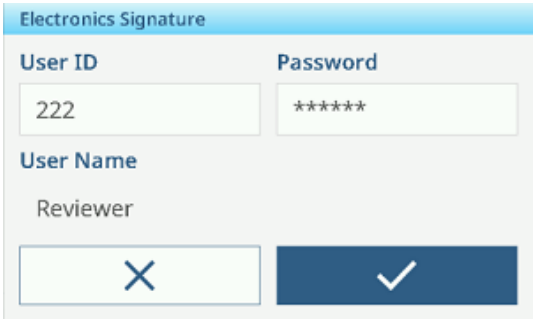
1 Login to the terminal.
2 Perform a weighing operation.
3 When the weight value is stable, press the transfer key .
   ➡ The Electronics Signature opens with the logged in user data.
4 Enter your password and confirm with ✓.
   ➡ The weight record is stored in both alibi and transaction table, and the record in transaction table is in unreviewed state.
   ➡ The Electronics Signature opens again to review the transaction.





5 Check the displayed transaction data.
6 Touch softkey to review the transaction.
   ➡ The weight record in both alibi and transaction table is saved.
   The transaction record is set to reviewed state and transferred out in the selected template, if configured.
7 A different authorized User ID & password must be used as the reviewer, and confirm with ✓.

➡ The terminal is ready for the next transaction.



Data generation with Reviewer E-Signature In Transaction Table

1 Touch softkey .
   ➡ The last weighing transactions are displayed.
2 Touch softkey to see the record's status.
   ➡ Possible status: Blank, Not Reviewed, Reviewed, and Cancelled.
3 Touch softkey to review the record.
   ➡ The status changes to Reviewed.
4 A different authorized User ID & password must be used as the reviewer, and confirm with ✓.

Cancelling a record in the transaction table

Note

- Only records in not reviewed state can be cancelled.
- Once the user confirms the final cancellation, the record will be cancelled finally and can't be reviewed. At this time, the cancel and review softkeys won't display.

- The user has access rights to cancel.
- Softkey is available.

1 Select a record and touch softkey .
   ➡ A page to enter the reason for cancelling is displayed.
2 Enter the reason for cancelling. This is mandatory and the field cannot be blank.
   ➡ The record is marked as cancelled and struck through.

Note

Marking data for deletion does not actually delete the record from the IND400 transaction log. The actions marked for deletion is recorded in the Audit Log.

Export functions in the transaction table

- All data records in the transaction table are reviewed.

– Select a report and proceed as described in [Importing/exporting data ▸ Page 28].
  Note The data is exported in both CSV and PDF formats.

Report	**Data integrity report** The Data Integrity Report is a distinctive feature of IND400. It will offer a comprehensive overview of all weighing data, including scale details, weighing specifics, and audit trail records for the specified period. This report will equip auditors and third-party inspectors with a thorough understanding of the compliance of the weighing results. This report content is editable. All the fields of the application-specific transaction table can be added to the report.	**Electronics batch report** The Electronics batch report will feature records of weighing various materials within a single batch, including their total weights, and will also include a section for signatures. This report content is not editable.	**Transaction report** This report is application-specific.
Softkey			

Contents	• **ID** in the transaction list • **Date & Time** • **Unit** • **Gross** • **Tare** • **Net** • Tare Type • Scale # • Material ID • Material Description • ID1 ... ID3 • **User Name** • **Status** • **Reviewer** • **Review Time** **Note** Items in bold are default items.	• **ID** in the transaction list • **Date & Time** • Material ID • **Gross** • **Net** • **Tare** • **User Name** • **Reviewer** • **Unit**	Refer to the application settings.

Audit Log

In the Audit Log all user actions are recorded.

Note The data is exported in both CSV and PDF formats.

– Touch softkey .

➡ The Audit Log of the last user actions is displayed.

The Audit Log contains the following information:

- ID in the transaction list
- Date & Time
- User Name
- User ID
- Category
- Event
- Action
- Field
- Old
- New
- Detail

2.3 Over/Under checkweighing

2.3.1 Activating Over/Under checkweighing

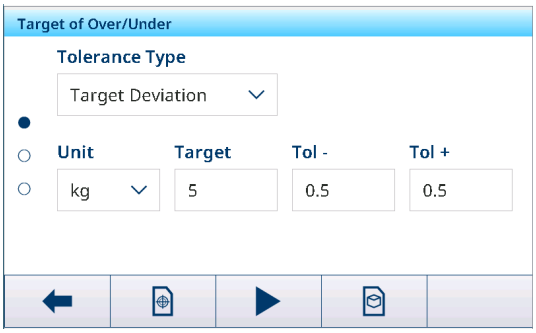
1 On the main screen, touch softkey .

➡ The available applications are displayed.

2 Select Over/Under.

➡ The window to set the target is displayed.

3 Touch softkey ▶ to start the Over/Under checkweighing application.

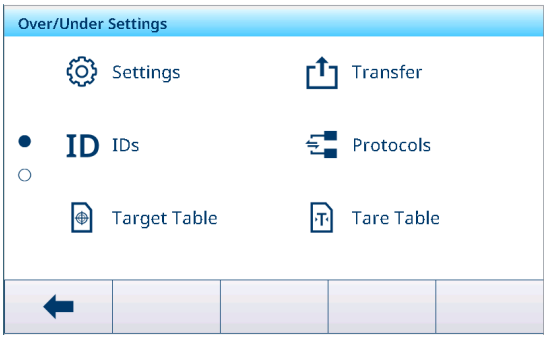


Leaving the Over/Under checkweighing application

1 On the 3rd softkey ribbon, touch softkey ⌂.
   ➡ A safety prompt is displayed.
2 Confirm leaving the Over/Under checkweighing application with ✓.
   ➡ The Over/Under checkweighing application is closed.
   ➡ The Basic Weighing application is active.

2.3.2 Over/Under checkweighing settings

When the application is running, touch softkey ⚙ on the third softkey ribbon to open the Over/Under check-weighing settings.Thus you do need not to enter the setup for settings regarding the application.



Note

For more settings swipe the screen.

⚙	Settings	Over/Under checkweighing settings, see below.
⇧	Transfer	Settings for transferring the data to a computer or printer, refer to [Basic weighing settings ▸ Page 37] and [How to set up a printer ▸ Page 41].
ID	IDs	Setup of the identifications, refer to [Basic weighing settings ▸ Page 37].
⇄	Protocols	Setup of protocols, refer to [Basic weighing settings ▸ Page 37].
◎	Target Table	Setup of the target table for frequently used target values, see below.
T	Tare Table	Setup of the tare table for frequently used known tare values, refer to [Basic weighing settings ▸ Page 37].
	Material Table	Setup of the material table, refer to [Basic weighing settings ▸ Page 37]. **Note** Only materials assigned to the Over/Under checkweighing application can be selected in the material table later.
▮▮▮	Barcode Reader	Setup of a barcode reader, refer to [Basic weighing settings ▸ Page 37] and [How to set up a barcode reader ▸ Page 43].
⚙	Advanced Settings	Open setup, refer to [Configuration ▸ Page 97].

Note

For more information on how to edit tables refer to [Editing tables ▸ Page 28] and [Filtering logs and tables ▸ Page 26].

Settings

The following setup items are available:

Setup item	Sub items		Description
Save & Transfer	Manually		Saving and transferring a transaction has to be confirmed manually using the transfer key ⇪.
	Automatic		Saving and transferring a transaction takes place automatically.
	Clever Print		• Saving and transferring the final stable weight above the Threshold once it is taken off from the platform. • Alibi record will not be generated, but only transaction record.
		Threshold (kg)	• Range: 0 - Capacity • Default value: 0
Visualization	Bargraph (Default)		Checkweighing status indicated by a bargraph.
	Color Weigh		Checkweighing status indicated by colors.
Threshold (%)	• Range: 0 ... 90% • Default value: 10%		Threshold to determine at which weight the status of Tol– is indicated.
Material Change	None		The Material Change function is disabled.
	Deviation +/-		To detect a change in weight, a specific deviation is required.
		Deviation (d)	• Range: 9 – 99 • Default value: 30
	Return to Zero (<9d)		Print is only triggered when the gross weight is below 9 d.
Over Color	Green, Red, Orange, Yellow, Black, Grey, Blue, Cyan, Custom		Select the colors for visualization of the weighing state.
OK Color			
Under Color			
Below Threshold Color			
... Color -> Custom	Text	Black	Black text on white background.
		White (default)	White text on black background.
	Type	RGB (default)	RGB color space. Enter values for R, G and B.
		Hex	Hex code color space. Enter a hex value.
Totalization	Enable/disable (default)		
	Sub Total		Enable/ disable (Default) sub totals.
	Totalization unit		Select unit for the totals.
	Clear on Transfer		Select one of the following methods to clear the total on transfer: • Off (Default) • Clear Total & Subtotal • Clear Subtotal
	Undo Transaction		Only available for IND400 without Data Integrity. Select one of the following methods to undo a transaction: • Off (Default) • Last Transaction • Unlimited
Tare after Transfer in Net Mode	Enable/disable (Default)		When enabled, the scale is tared after transferring a net weight.
Motion Check	Enable/disable (Default)		When enabled, only stable weight values can be transferred.

Setup item	Sub items	Description
Statistic	Enable/disable (Default)	When Enabled, the softkey shows in the 2nd softkey ribbon of the Transaction Table. It allows users to enter the Batch # for statistic parameter calculation.
Stealth Mode	Enable/disable (Default)	Only available for IND400 without Data Integrity. If enabled, no weight value is displayed but the colors will indicate the weighing state

Over/Under checkweighing target table

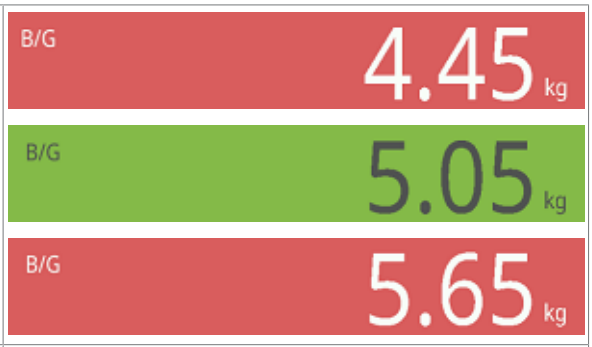
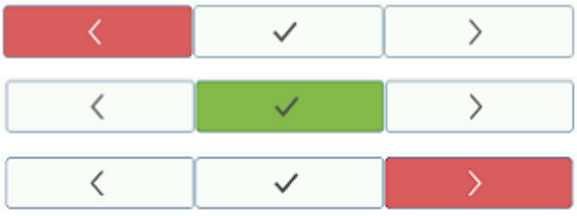
Setup item	Sub items	Description
ID		Enter a numerical ID of the target.
Tolerance Type	Target Deviation (Default)	The target weight has to be entered as an absolute weight, upper and lower tolerances as deviations in weight from the target weight.
	Percentage	The target weight has to be entered as an absolute weight, upper and lower tolerances as deviations in percent from the target weight. This setting is not available for counting.
	Exact Limits	A low and a high weight value must be entered. These weights and all weights within this range are treated as being within tolerance.
Tolerance Type = Target Deviation or Percentage	Unit	Unit of target weight and tolerances.
	Target	Weight value of the target weight.
	Tol -	Lower tolerance of the target weight.
	Tol +	Upper tolerance of the target weight.
Tolerance Type = Exact Limits	Unit	Unit of target weight and tolerances.
	Under Limit	Minimum target weight
	Over Limit	Maximum target weight
Mode	Standard (Default)	When totalizing: Adding up the items.
	Take Away	Totalizing when unloading e.g. from a container.
Data Source	Gross Weight	The target is a gross weight.
	Net Weight (Default)	The target is a net weight.
Description		Enter an alphanumerical description of the target (Up to 40 characters).

2.3.3 Over/Under checkweighing operation

The device offers an Over/Under checkweighing function. The colored weight ranges or the bargraph allow a rapid detection of the weight status.

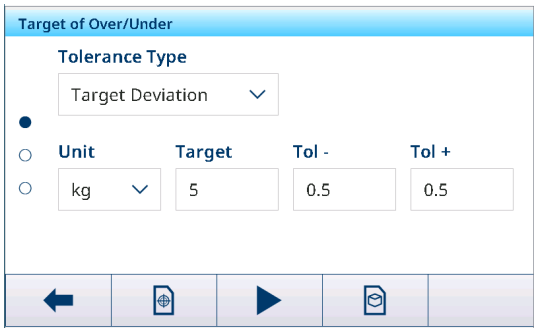
2.3.3.1 Display in Over/Under checkweighing

Depending on the Over/Under checkweighing settings, the following display variants are available:

Visualization	Color Weighing	
	Bargraph	
	Note The colors can be set individually, refer to [Over/Under checkweighing settings ▸ Page 52]	
Tolerance Type	Target Deviation	
	Percentage	
	Exact Limits	

2.3.3.2 Setting target values

1 Touch softkey ⊕.
   ➡ A window opens to enter target and tolerance values.
2 Enter the target weight and the tolerance values.
3 Touch softkey ▶.
   ➡ The Over/Under checkweighing display appears.



Note

With Tolerance Type = Exact Limits, only the upper and lower tolerance have to be specified.

Using the target table

1 Touch .
   ➡ The list of existing targets is displayed.
2 Select a target and confirm with ✓.
   ➡ The selected target values are active.
3 Touch softkey ▶.
   ➡ The Over/Under checkweighing display appears.

Note

There is no global default tolerance deviation or % so all values must be entered. Previous values are retained until exiting the application and returning to the home screen

Using the material table

1 Touch .
   ➡ The list of existing materials is displayed.
2 Select a material and confirm with ✓.

➡ The selected material data are assigned to the following checkweighing operations.

3 Touch softkey ▶.

➡ The Over/Under checkweighing display appears.

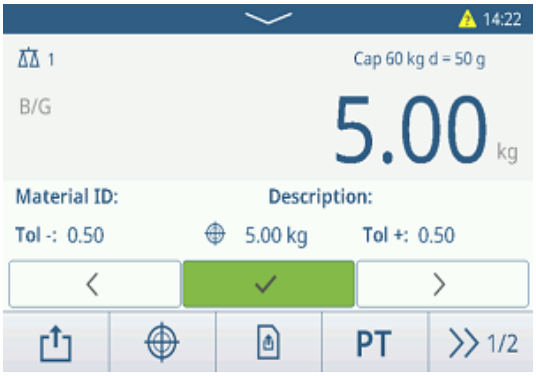
Note

Only materials assigned to the Over/Under checkweighing application are available.

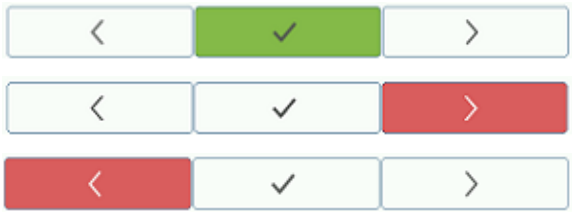
2.3.3.3 Over/Under checkweighing

– When the target is set, place the weighing sample on the weighing platform.

➡ The weight value and the over/under weight status is displayed.



Weight status



Target reached.
Weight within Tol- and Tol+.

Weight outside Tol+.

Weight outside Tol-.

Note

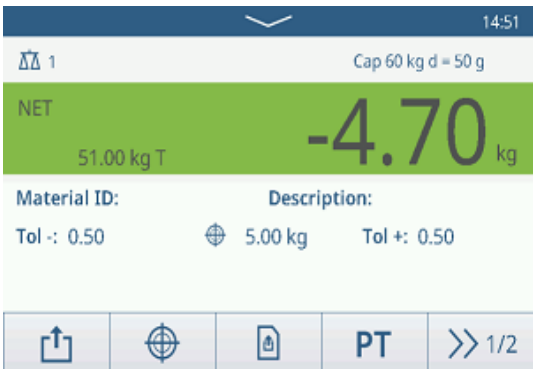
Even if **C** is touched, the target values remain stored in the target input screen until a new target is set or the application is disabled.

2.3.3.4 Over/Under checkweighing in Take Away mode

1 Recall a target with mode setting Take Away.
2 Put the full container on the weighing platform.
3 Tare the full container.
4 Remove the first sample from the container.
5 Touch to save and transfer the sample.

➡ The message "Saving and Transferring" is displayed.

6 Tare the container.
7 Repeat steps 3 to 5 for further samples.

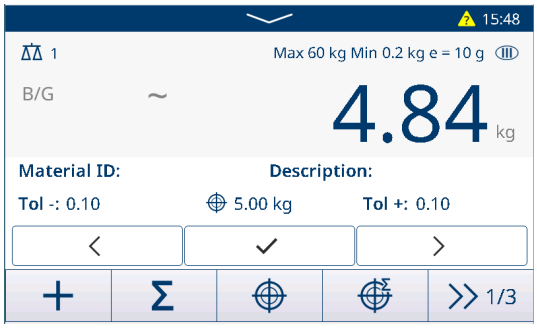


Note

When Tare After Transfer in Net Mode is activated in the Over/Under checkweighing settings, users do not have to tare after each sample.

2.3.3.5 Totalizing in Over/Under checkweighing

1 Put the first sample on the weighing platform.
2 Touch + to add the sample to the total.
➡ The message "Saving and Transferring" is displayed.
3 Unload the sample.
4 Repeat steps 1 to 3 for further samples.



5 When all samples are totalized, touch Σ.
➡ The total is displayed.
6 To clear the total, touch C.
To clear the subtotal, touch C.
➡ A safety prompt is displayed.
7 Confirm clearing the (sub)total with ✓.
➡ The weighing terminal is ready for the next process of totalization.

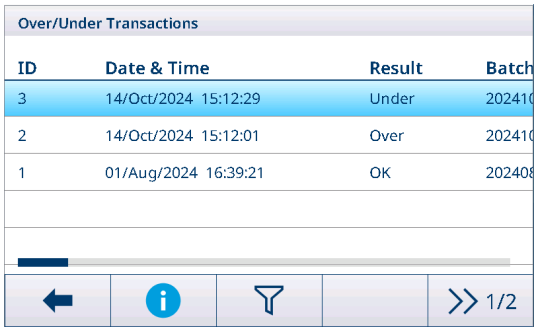
Note

For more totalization features, refer to [Totalization operation ▸ Page 76].

2.3.3.6 Over/Under checkweighing transaction table

– Touch softkey .
➡ The last checkweighing transactions are displayed.
➡ Swiping horizontally will show the complete information on the transactions.
➡ Swiping vertically will show further transactions.

The following information is stored for each transaction in the Over/Under checkweighing application:



ID	Serial number of the transaction
Date & Time	Date and time of the transaction
Status	For IND400 with Data Integrity only: Review status of the weighing
Result	Result of the Over/Under checkweighing transaction
Batch #	Batch number (YearMonthDay+4-digit running number)
Sub #	Number of subtotals
Gross	Gross weight value
Tare	Tare weight value
Net	Net weight value
Deliver Weight	If the Data Source is set as Gross Weight, the Deliver Weight is the Gross Weight. Otherwise, the Deliver Weight is the absolute value of the Net Weight.
Tare Type	• Keypad tare • Preset Tare
Scale #	For IND400: always "1"
Material ID	ID of the selected material
Material Description	Description of the selected material
ID1 ... ID3	Identifications

Mode	Over/Under checkweighing mode: Standard or Take Away
Data Source	Gross or Net weight
Target	Target value
Under Limit	Lower tolerance value
Over Limit	Upper tolerance value
Total Value	Total value
Total Counter	Number of items in total
Subtotal Value	Subtotal value
Subtotal Counter	Number of items of the subtotal
User Name	Name of the user logged in

Note

For more actions in the transaction table refer to [Recalling the transaction table ▸ Page 25] and [Filtering logs and tables ▸ Page 26].

Note

When working with data integrity, additional fields regarding review status and reviewer are shown. Transferring the transaction table is possible for reviewed data only. For more information refer to [Working with Data Integrity ▸ Page 48].

Over/Under checkweighing statistics

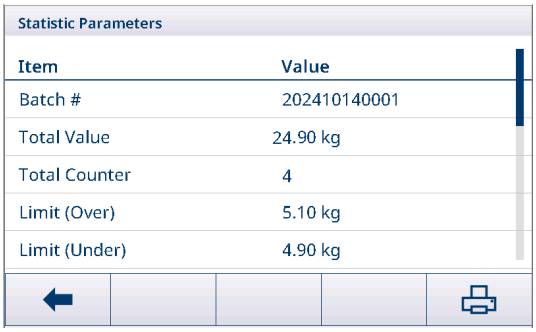
The device offers the statistical evaluation of a batch.

1 On the second softkey ribbon of the transaction table, touch softkey .

2 Select a batch for the statistical evaluation and confirm with ✓.

➡ The statistical parameters are displayed.

3 Scroll to display the following parameters:



Batch #	Batch number (YearMonthDay+4-digit running number)
Total Value	Total value
Total Counter	Number of items in total
Over Limit	Upper tolerance value
Under Limit	Lower tolerance value
Statistic Size	Number of items in the statistic
Mean Value	Mean value of the batch
Mean Value (OK)	Mean value of the good items
Max. Value	Maximum value of the batch
Min. Value	Minimum value of the batch
Median	Median value of the batch
%Ratio (OK)	Ratio of the good weighings
Number (OK)	Number of the good weighings
%Ratio (Over)	Ratio of the high weighings
Number (Over)	Number of the high weighings
%Ratio (Under)	Ratio of the low weighings
Number (Under)	Number of the low weighings

2.4 Counting

2.4.1 Activating Counting application

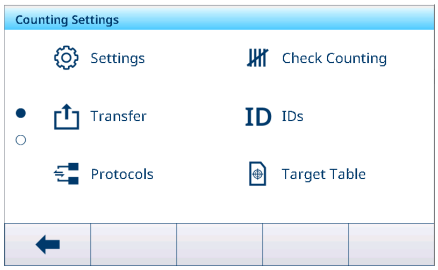
1 On the main screen, touch softkey ⁞⁞.
   ➡ The available applications are displayed.
2 Select Counting.
   ➡ The Counting application screen is displayed.

Leaving the Counting application

1 On the 4th softkey ribbon, touch softkey ⌂.
   ➡ A safety prompt is displayed.
2 Confirm leaving the Counting application with ✓.
   ➡ The Counting application is closed.
   ➡ The Basic Weighing application is active.

2.4.2 Counting settings

Touching softkey ⚙ opens the Counting Settings menu. Thus users don't need to enter the setup for settings regarding the application.



Note

For more settings swipe the screen.

⚙	Settings	Counting application settings, see below.
⫴	Check Counting	Check Counting application settings, see below.
⬆	Transfer	Settings for transferring the data to a computer or printer, refer to [Basic weighing settings ▸ Page 37] and [How to set up a printer ▸ Page 41].
ID	IDs	Setup of the identifications, refer to [Basic weighing settings ▸ Page 37].
⇉	Protocols	Setup of protocols, refer to [Basic weighing settings ▸ Page 37].
◎	Target Table	Setup of the target table for frequently used target values, see below.
T	Tare Table	Setup of the tare table for frequently used known tare values, refer to [Basic weighing settings ▸ Page 37].

	Material Table	Setup of the material table, refer to [Basic weighing settings ▸ Page 37]. **Note** Only materials assigned to the Counting application can be selected in the material table later.
	Reference Balance	Setup of a reference balance, see below.
	Barcode Reader	Setup of a barcode reader, refer to [Basic weighing settings ▸ Page 37] and [How to set up a barcode reader ▸ Page 43].
	Advanced Settings	Open setup, refer to [Configuration ▸ Page 97].

Note

For more information on how to edit tables refer to [Editing tables ▸ Page 28] and [Filtering logs and tables ▸ Page 26].

Settings

The following general setup items are available:

Setup item	Sub items	Description
Reference pieces	Fix Reference pcs (Default)	In the operating mode users can select from 5, 10, 20, 50, 100 reference pieces. Default value: 10
	Var. Reference pcs	The number of reference pieces can be set in the operating mode.
	Lock ref. pcs	If enabled, the set number of reference pieces cannot be changed in the operating mode.
APW Optimization	Off (Default)	No optimization of the average piece weight.
	Manually	Manual optimization of the average piece weight using sofkey .
	Automatic	Automatic optimization of the average piece weight.
	Update Target Table	If enabled and the APW is recalled from the target table, the target table will be updated with the optimized average piece weight.
Material Change	None	The Material Change function is disabled.
	Deviation +/-	To detect a change in weight, a specific deviation is required.
	Deviation (d)	• Range: 9 – 99 • Default value: 30
	Return to Zero (<9d)	Print is only triggered when the gross weight is below 9 d.
Save & Transfer	Manually	Saving and transferring a transaction has to be confirmed manually by using the tansfer key .
	Automatic	Saving and transferring a transaction takes place automatically.
	Clever Print	• Saving and transferring the final stable weight above the Threshold once it is taken off from the platform. • Alibi record will not be generated, but only transaction record.
	Threshold (kg)	• Range: 0 - Capacity • Default value: 0
Tare After Transfer in Net Mode	Enabled/disabled (Default)	If enabled, the scale is tared after transferring a net weight
Check Process Tolerance	Enabled (Default)/ disabled	If enabled, set the value for the maximum uncertainty allowed in the counting process.
	Value	Default: 20.0 %

Setup item	Sub items	Description
Totalization	Enable/disable (Default)	
	Sub Total	Enable/disable (Default) sub totals.
	Clear on Transfer	Select one of the following methods to clear the total on transfer: • Off (Default) • Clear Total & Subtotal • Clear Subtotal
	Undo Transaction	Only available for IND400 without Data Integrity. Select one of the following methods to undo a transaction: • Off (Default) • Last Transaction • Unlimited

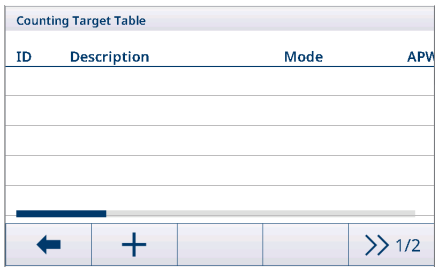
Check Counting

The following setup items for Check Counting are available:

Setup item	Sub items		Description
Data Source	Counts		Fixed setting for Check Counting
	Motion Check		If enabled, only stable weight values can be transferred.
Visualization	Bargraph (Default)		Checkcounting status indicated by a bargraph.
	Color Weighing		Checkcounting status indicated by colors.
Threshold	• Range: 0 ... 90% • Default value: 10%		Threshold to determine at which weight the status of Tol– is indicated.
Over Color	Green, Red, Orange, Yellow, Black, Grey, Blue, Cyan, Custom		Select the colors for visualization of the checkcounting state.
OK Color			
Under Color			
Below Threshold Color			
... Color -> Custom	Text	Black	Black text on white background.
		White (Default)	White text on black background.
	Type	RGB (Default)	RGB color space. Enter values for R, G and B.
		Hex	Hex code color space. Enter a hex value.

Target table

A list of the existing checkcounting targets is displayed.



To create/edit a material the following setup items are available:

Setup item	Sub items	Description
ID		Numerical ID of the APW target.
Description		Description of the APW target.
Mode	Standard (Default)	When totalizing: Adding up the items.
	Take Away	When totalizing: Totalizing when unloading e.g. from a container.
APW Unit		Unit of the average piece weight.
Determine APW	Live Weight (Default)	Using the weight on the scale as reference weight. 1 Enter the number of reference pieces: 1 ... **10** ... 9999. 2 Touch softkey to determine the APW out of the reference weight on the scale and the number of reference pieces. ➡ The APW is determined and displayed.
	Manual	Enter the APW weight value.
	Reference Pcs.	Enter the number of reference pieces.
APW Opt.%	• Range: 0 ...100 (%) • Default value: 30%	Maximum correction factor when optimizing the APW.
APW Tolerance Type	Target Deviation (Default)	APW Tol- and APW Tol+ must be entered.
	Percentage	APW Tol- and APW Tol+ must be entered in percent.
	Exact Limits	APW Limit (Under) and APW Limit (Over) must be entered.
Check Counting		Enable/disable Check Counting
Check Tolerance Type	Target Deviation (Default)	The target weight has to be entered as a number of pieces, Check Tol- and Check Tol+ as deviations in pieces from the target piece number.
	Exact Limits	Piece numbers for Check Limit (Under) and Check Limit (Over) must be entered. Piece numbers within this range are treated as being within tolerance.
Target (pcs)		Enter the target weight as number of pieces.

Note

The displayed order when editing a target is different from the order in the table.

Reference Balance

If the connection to a reference balance is already existing, the connection details are displayed.

For setting up or editing a scale connection, the following settings are available:

Setup item	Sub items	Description
COM	EPort1 ... EPort3 COM1 ... COM3	Select the port where the reference balance is connected.
	Client	
Mode	Reference Balance	Fixed setting
Port	1701	

Note

Only one reference balance connection is possible.

2.4.3 Counting operation

The device offers the Over/Under checkweighing function. The colored weight ranges or the bargraph allow rapid detection of the weight status.

2.4.3.1 Counting with fix reference number

- Softkey FIX10 or another softkey **FIX...** available.

1 Put the indicated number of reference pieces on the scale.

2 Touch softkey FIX10.

➡ The weight display indicates the number of reference pieces.

➡ In the line below the average piece weight with accuracy is indicated.

3 Add more pieces.

Note

The number of fix reference pieces can be changed by touching FIX10 longer until a pop-up window with the possible fix reference pieces is displayed. Possible settings: 5, 10, 20, 50, 100.

Note

The average piece weight is valid until it is cleared or a new average piece weight is set.

2.4.3.2 Counting with variable reference number

- Softkey VAR10 or another softkey **VAR...** available.

1 Touch softkey VAR10 for a longer time until a window to enter the variable number of reference pieces is displayed.

2 Enter the desired number of reference pieces, e.g. 12.

➡ The value in the softkey is changed accordingly.

3 Put the indicated number of reference pieces on the scale.

4 Touch softkey **VAR...**.

➡ The weight display indicates the number of reference pieces.

➡ Below the average piece weight with accuracy is indicated.

5 Add more pieces.

Note

The average piece weight is valid until it is cleared or a new average piece weight is set.

2.4.3.3 Counting with a known average piece weight

- Softkey available.

1 Touch softkey .

2 Enter the known average piece weight. In the example: 0.123 kg.

3 Put the pieces to count on the scale.

➡ The weight display indicates the current number of pieces.

➡ In the line below the average piece weight is indicated. When entering the average piece weight, no accuracy can be determined.

Note

The average piece weight is valid until it is cleared or a new average piece weight is set.

2.4.3.4 Switching between number of pieces and weight

– When the number of pieces is displayed, touch softkey .
  ➡ For a few seconds the corresponding weight value is displayed instead of the number of pieces.

2.4.3.5 Counting with APW optimization

The more reference parts, the more exact is the calculated average piece weight.

- Softkey available.

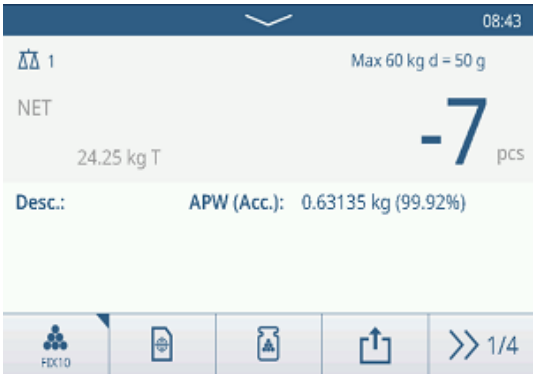
1 Put the indicated number of reference pieces on the scale.
2 Touch softkey (**FIX..** or **VAR...**).
  ➡ The weight display indicates the number of reference pieces.
  ➡ In the line below the average piece weight with accuracy is indicated.
3 Add more pieces for APW optimization.
4 Touch softkey .
  ➡ The new APW is displayed, ideally with higher accuracy.

Note

- If automatic APW optimization is enabled, additional parts after determining the APW are automatically used to optimize the APW. A message is displayed.
- If Update Target Table is enabled and the APW is recalled from the target table, the target table will be updated with the optimized average piece weight.

2.4.3.6 Counting in Take Away mode

1 Put the full container on the weighing platform.
2 Tare the full container.
3 Remove the indicated number of reference pieces and touch softkey (**FIX...** or **VAR...**).
  ➡ The negative number of reference parts is displayed.
4 Tare the container.
5 Remove the desired number of pieces.
6 Touch to save and transfer the sample.
  ➡ The message "Saving and Transferring" is displayed.
7 Repeat steps 4 to 6 for further samples.



Note

When Tare After Transfer in Net Mode is activated in the Over/Under checkweighing settings, you do not have to tare after each sample.

2.4.3.7 Counting with reference balance

For higher accuracy, e.g. when counting light items, a reference balance can be connected to determine the APW. Counting will be performed on the bulk scale.

- Reference balance configured, [Counting settings ▸ Page 59].
- A second balance with higher resolution connected at the reference balance connection.
- Softkey or another softkey **FIX...** or **VAR...** available.

1 Put the indicated number of reference pieces on the **reference** scale.
2 Touch softkey .
  ➡ After determining the average piece weight the scale is automatically switched to the bulk scale.

➡ The weight display indicates the number of reference pieces.

➡ In the line below the average piece weight with accuracy is indicated.

3 Add the parts on the bulk scale.

2.4.3.8 Totalizing in Counting

■ Softkey + available.

1 Determine the average piece weight as described before.

2 Count a sample.

3 Touch + to add the sample to the total.

➡ The message "Saving and Transferring" is displayed.

4 Unload the sample.

5 Repeat steps 2 to 4 for further samples.

6 When all samples are totalized, touch Σ.

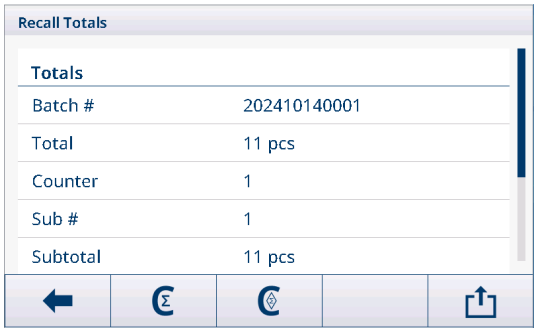
➡ The total is displayed.

7 To clear the total, touch C.
To clear the subtotal, touch C.

➡ A safety prompt is displayed.

8 Confirm clearing the (sub)total with ✓.

➡ The weighing terminal is ready for the next totalization process.



Note

For more totalization features, refer to [Totalization operation ▸ Page 76].

2.4.3.9 Counting transaction table

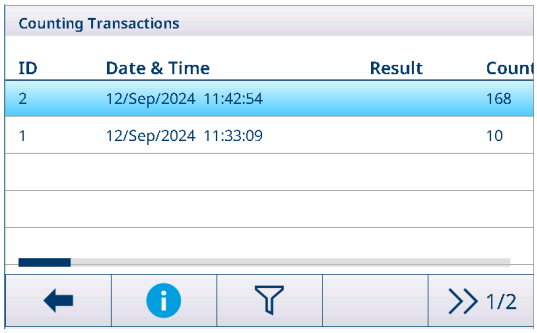
– Touch softkey .

➡ The last checkweighing transactions are displayed.

➡ Swiping horizontally will show the complete information on the transactions.

➡ Swiping vertically will show further transactions.

The following information is stored for each transaction in the Over/Under checkweighing application:



ID	Serial number of the transaction
Date&Time	Date and time of the transaction
Status	For IND400 with Data Integrity only: Review status of the weighing
Result	Result of the Check Counting transaction (OK, Under, Over)
Count	Result of the Counting transaction in pieces
Batch #	Batch number (YearMonthDay+4-digit running number)
Sub #	Number of subtotals
Gross	Gross weight value
Tare	Tare weight value
Net	Net weight value

Tare Type	• Keypad tare • Preset Tare
APW	Average piece weight
Reference Pcs.	Number of reference pieces
Scale #	For IND400: always "1"
Material ID	ID of the selected material
Material Description	Description of the selected material
ID1 … ID3	Identifications
Mode	Standard or Take Away
Data Source	Counts
Limit (Under)	Lower tolerance valuein pieces
Limit (Over)	Upper tolerance value in pieces
Total Value	Total value in pieces
Total Counter	Number of items in the total
Subtotal Value	Subtotal value in pieces
Subtotal Counter	Number of items in the subtotal
User Name	Name of the user logged in

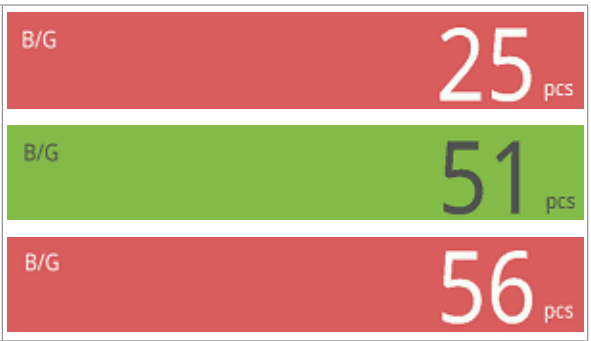
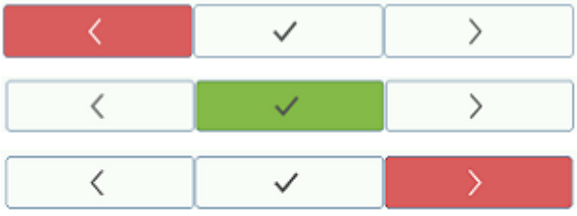
Note

For more actions in the transaction table refer to [Recalling the transaction table ▸ Page 25] and [Filtering logs and tables ▸ Page 26].

2.4.4 Check Counting operation

2.4.4.1 Display in Check Counting

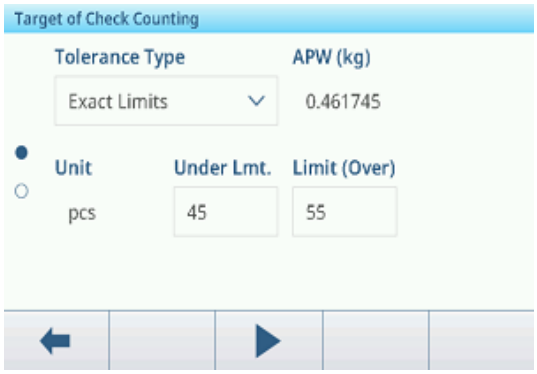
Depending on the Over/Under checkweighing settings, the following display variants are available:

Visualization	Color Weighing	
	Bargraph	
	Note The colors can be set individually, refer to [Counting settings ▸ Page 59].	
Tolerance Type	Target Deviation	
	Exact Limits	

2.4.4.2 Setting Target values

- APW determined as described before.

1 Touch softkey ⊕.
   ➡ A window opens to enter target and tolerance values.
2 Enter the target piece numer and the tolerance values respectively Under Limit and Limit (Over).
3 Touch softkey ▶.
   ➡ The Check Counting display appears.



Using the target table

1 Touch .
   ➡ The list of existing targets is displayed.
2 Select a target and confirm with ✓.
   ➡ The selected target values are active.
3 Touch softkey ▶.
   ➡ The Over/Under checkweighing display appears.

Using the material table

1 Touch .
   ➡ The list of existing materials is displayed.
2 Select a material and confirm with ✓.
   ➡ The selected material data are assigned to the following checkweighing operations.
3 Touch softkey ▶.
   ➡ The Over/Under checkweighing display appears.

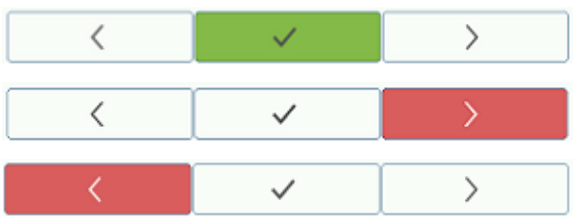
Note

Only materials assigned to the Counting application are available.

2.4.4.3 Check Counting

– When the target is set, place the sample to be checked on the weighing platform.
   ➡ The number of pieces and the over/under weight status is displayed.

Weight status



Target reached.
Weight within Tol- and Tol+.

Weight outside Tol+.

Weight outside Tol-.

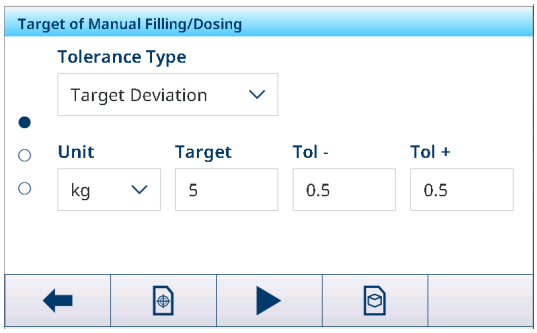
Note

Even if C is touched, the target values remain stored in the target input screen, until a new target is set or the application is disabled.

2.5 Manual Filling/Dosing

2.5.1 Activating Manual Filling/Dosing application

1 On the main, screen touch softkey ⠿.
   ➡ The available applications are displayed.
2 Select Manual Filling/Dosing.
   ➡ The window to set the target is displayed.
3 Touch softkey ▶ to start the Manual Filling/Dosing application.



Leaving the Manual Filling/Dosing application

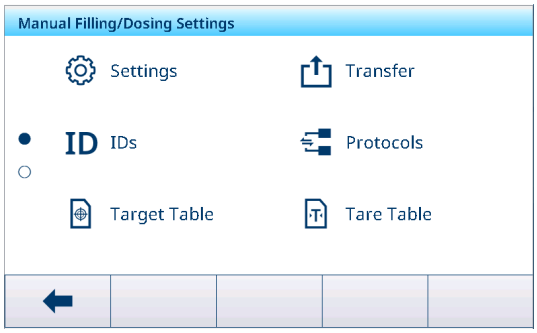
1 On the 3rd softkey ribbon, touch softkey ⌂.
   ➡ A safety prompt is displayed.
2 Confirm leaving the Manual Filling/Dosing application with ✓.
   ➡ The Manual Filling/Dosing application is closed.
   ➡ The Basic Weighing application is active.

2.5.2 Manual Filling/Dosing settings

When the application is running, touch softkey ⚙ on the second softkey ribbon to open the Manual Filling/Dosing settings menu. Thus you do need not to enter the setup for settings regarding the application.

Note

For more settings swipe the screen.



⚙	Settings	Manual Filling/Dosing settings, see below.
⬆	Transfer	Settings for transferring the data to a computer or printer, refer to [Basic weighing settings ▸ Page 37] and [How to set up a printer ▸ Page 41].
ID	IDs	Setup of the identifications, refer to [Basic weighing settings ▸ Page 37].
⇄	Protocols	Setup of protocols, refer to [Basic weighing settings ▸ Page 37].
◎	Target Table	Setup of the target table for frequently used target values, see below.
T	Tare Table	Setup of the tare table for frequently used known tare values, refer to [Basic weighing settings ▸ Page 37].

	Material Table	Setup of the material table, refer to [Basic weighing settings ▸ Page 37]. **Note** Only materials assigned to the Manual Filling/Dosing application can be selected in the material table later.
	Barcode Reader	Setup of a barcode reader, refer to [Basic weighing settings ▸ Page 37] and [How to set up a barcode reader ▸ Page 43].
	Advanced Settings	Open setup, refer to [Configuration ▸ Page 97].

Note

For more information on how to edit tables refer to [Editing tables ▸ Page 28] and [Filtering logs and tables ▸ Page 26].

Settings

The following setup items are available:

Setup item	Sub items	Description
Save & Transfer	Manually (Default)	Saving and transferring a transaction has to be confirmed manually using the tansfer key ⍐.
	Automatically	Saving and transferring a transaction takes place automatically.
Threshold (%)	• Range: 0 ... 90% • Default value: 10%	Threshold to determine at which weight the status of Tol– is indicated.
Statistic	Enable/disable (Default)	
Totalization	Enable/disable (Default)	
	Sub Total	Enable/disable (Default) sub totals.
	Totalization unit	Select unit for the totals.
	Clear on Transfer	Select one of the following methods to clear the total on transfer: • Off (Default) • Clear Total & Subtotal
	Undo Transaction	Only available for IND400 without Data Integrity. Select one of the following methods to undo a transaction: • Off (Default) • Last Transaction • Unlimited
Tare after Transfer in Net Mode	Enable/disable (Default)	When enabled, the scale is tared after transferring a net weight.
Stealth Mode	Enable/disable (Default)	Only available for IND400 without Data Integrity. If enabled, no weight value is displayed but the colors will indicate the weighing state.

Manual Filling/Dosing Target Table

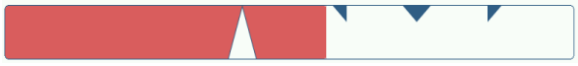
Setup item	Sub items	Description
ID		Enter a numerical ID of the target.
Description		Enter an alphanumerical description of the target.
Target		Weight value of the target weight.
Unit		Unit of the target weight.
Tol -		Lower tolerance of the target weight.
Tol +		Upper tolerance of the target weight.
Tolerance Type	Target Deviation (Default)	The target weight has to be entered as an absolute weight, upper and lower tolerances as deviations in weight from the target weight.
	Percentage	The target weight has to be entered as an absolute weight, upper and lower tolerances as deviations in percent from the target weight. This setting is not available for counting.
Mode	Standard (Default)	When totalizing: Adding up the items.
	Take Away	Totalizing when unloading e.g. from a container.
Data Source	Gross Weight	The target is a gross weight.
	Net Weight (Default)	The target is a net weight.

2.5.3 Manual Filling/Dosing operation

The device offers a Manual Filling/Dosing function. The colored bargraph allows comfortable filling/dosing to a target.

2.5.3.1 Display in Manual Filling/Dosing

Bargraph

	Weight far below the lower tolerance
	Weight too low, but almost near the lower tolerance
	Weight within the tolerances
	Target reached exactly
	Weight too high

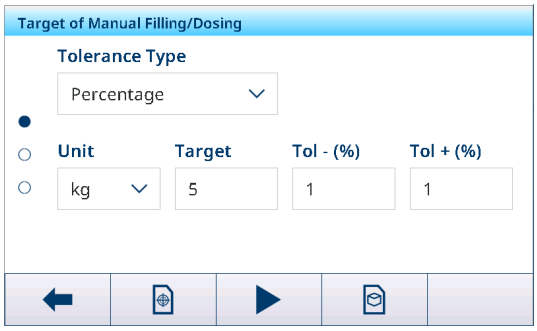
Target indication

	Target indication with Tolerance Type = Target Deviation
	Target indication with Tolerance Type = Percentage

Note

In Manual Filling/Dosing the colors green and red are fixed.

2.5.3.2 Setting Target values



1 Touch softkey ⊕.
   ➡ A window opens to enter target and tolerance values.
2 Enter the target weight and the tolerance values.
3 Touch softkey ▶.
   ➡ The Manual Filling/Dosing display appears.

Note

With Tolerance Type = Exact Limits, only the upper and lower tolerance have to be specified.

Using the target table

1 Touch .
   ➡ The list of existing targets is displayed.
2 Select a target and confirm with ✓.
   ➡ The selected target values are active.
3 Touch softkey ▶.
   ➡ The Manual Filling/Dosing display appears.

Using the material table

1 Touch .
   ➡ The list of existing materials is displayed.
2 Select a material and confirm with ✓.
   ➡ The selected material data are assigned to the following filling/dosing operations.
3 Touch softkey ▶.
   ➡ The Manual Filling/Dosing display appears.

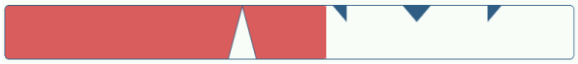
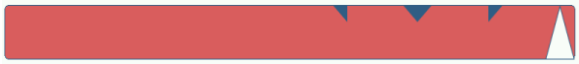
Note

Only materials assigned to the Manual Filling/Dosing application are available.

2.5.3.3 Manual Filling/Dosing

1 When the target is set, place the empty container on the weighing platform.
2 Tare the container.
3 Start filling/dosing the material into the container.
   ➡ The weight value and the filling/dosing status is displayed.

Weight status

	Weight too low, but almost near the lower tolerance.
	Target reached. Weight within Tol- and Tol+.
	Weight too high.

Note

Even if C is touched, the target values remain stored in the target input screen, until a new target is set or the application is disabled.

2.5.3.4 Manual Filling/Dosing in Take Away mode

1 Recall a target with mode setting Take Away.
2 Put the full container on the weighing platform.
3 Tare the full container.
4 Fill/dose the first sample from the container.
5 Touch to save and transfer the sample.
➡ The message "Saving and Transferring" is displayed.
6 Tare the container.
7 Repeat steps 3 to 5 for further samples.

Note

When Tare After Transfer in Net Mode is activated in the Manual Filling/Dosing settings, you do not have to tare after each sample.

2.5.3.5 Totalizing in Manual Filling/Dosing

1 Fill in the first sample.
2 Touch + to add the sample to the total.
➡ The message "Saving and Transferring" is displayed.
3 Unload the sample.
4 Repeat steps 1 to 3 for further samples.

5 When all samples are totalized, touch Σ.
➡ The total is displayed.
6 To clear the total, touch C.
To clear the subtotal, touch C.
➡ A safety prompt is displayed.
7 Confirm clearing the (sub)total with ✓.
➡ The weighing terminal is ready for the next totalization process.

Note

For more totalization features, refer to [Totalization operation ▸ Page 76].

2.5.3.6 Manual Filling/Dosing transaction table

– Touch softkey .
  ➡ The last filling/dosing transactions are displayed.
  ➡ Swiping horizontally will show the complete information on the transactions.
  ➡ Swiping vertically will show further transactions.

The following information is stored for each transaction in the Manual Filling/Dosing application:

ID	Serial number of the transaction
Date & Time	Date and time of the transaction
Result	Result of the Manual Filling/Dosing transaction
Batch #	Batch number (YearMonthDay+4-digit running number)
Sub #	Number of subtotals
Unit	Weight unit of the samples
Gross	Gross weight value
Tare	Tare weight value
Net	Net weight value
Deliver Weight	If the Data Source is set as Gross Weight, the Deliver Weight is the Gross Weight. Otherwise, the Deliver Weight is the absolute value of the Net Weight.
Tare Type	• Keypad tare • Preset Tare
Scale #	For IND400: always "1"
Material ID	ID of the selected material
Material Description	Description of the selected material
ID1 ... ID3	Identifications
Mode	Manual Filling/Dosign mode: Standard or Take Away
Data Source	Gross or Net weight
Target unit	Weight unit of the target weight
Target	Target value
Under Limit	Lower tolerance value
Over Limit	Upper tolerance value
Totalization unit	Weight unit of the total
Total Value	Total value
Total Counter	Number of items of the total
Subtotal Value	Subtotal value
Subtotal Counter	Number of items of the subtotal
User Name	Name of the user logged in

Note

For more actions in the transaction table refer to [Recalling the transaction table ▸ Page 25] and [Filtering logs and tables ▸ Page 26].

Note

When working with data integrity, additional fields regarding review status and reviewer are shown. Transferring the transaction table is possible for reviewed data only. For more information refer to [Working with Data Integrity ▸ Page 48].

Manual Filling/Dosing statistics

The device offers the statistical evaluation of a batch.

1 On the second softkey ribbon of the transaction table, touch softkey .
2 Select a batch for the statistical evaluation and confirm with ✓.
   ➡ The statistical parameters are displayed.
3 Scroll to display the following parameters:

Batch #	Batch number (YearMonthDay+4-digit running number)
Total Value	Total value
Total Counter	Number of items of the total
Target	Target weight
Over Limit	Upper tolerance value
Under Limit	Lower tolerance value
Statistic Size	Number of items in the statistic
Standard deviation	Standard deviation of all items
Standard deviation (OK)	Standard deviation of the good items
Mean Value	Mean value of the batch
Mean Value (OK)	Mean value of the good items
Max. Value	Maximum value of the batch
Min. Value	Minimum value of the batch
Median	Median value of the batch
%Ratio (OK)	Ratio of the good weighings
Number (OK)	Number of the good weighings
%Ratio (Over)	Ratio of the high weighings
Number (Over)	Number of the high weighings
%Ratio (Under)	Ratio of the low weighings
Number (Under)	Number of the low weighings

2.6 Totalization

2.6.1 Activating Totalization application

1 On the main screen, touch softkey .
   ➡ The available applications are displayed.
2 Select Totalization.
   ➡ The Totalization application screen is displayed.

Leaving the Totalization application

1 On the 3rd softkey ribbon, touch softkey .
   ➡ A safety prompt is displayed.

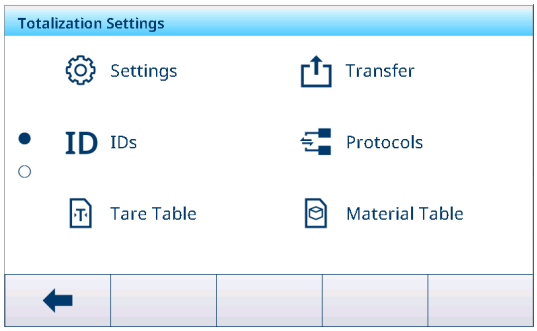
2 Confirm leaving the Totalization application with ✓.
   ➡ The Totalization application is closed.
   ➡ The Basic Weighing application is active.

2.6.2 Totalization settings

Touching softkey ⚙ on the second softkey ribbon opens the Totalization settings menu. Thus you do need not to enter the setup for settings regarding the application.

Note

For more settings swipe the screen.



⚙	Settings	Totalization application settings, see below.
	Transfer	Settings for transferring the data to a computer or printer, refer to [Basic weighing settings ▸ Page 37] and [How to set up a printer ▸ Page 41].
ID	IDs	Setup of the identifications, refer to [Basic weighing settings ▸ Page 37].
	Protocols	Setup of protocols, refer to [Basic weighing settings ▸ Page 37].
T	Tare Table	Setup of the tare table for frequently used known tare values, refer to [Basic weighing settings ▸ Page 37].
	Material Table	Setup of the material table, refer to [Basic weighing settings ▸ Page 37]. **Note** Only materials assigned to the Totalization application can be selected in the material table later.
	Barcode Reader	Setup of a barcode reader, refer to [Basic weighing settings ▸ Page 37] and [How to set up a barcode reader ▸ Page 43].
⚙	Advanced Settings	Open setup, refer to [Configuration ▸ Page 97].

Note

For more information on how to edit tables refer to [Editing tables ▸ Page 28] and [Filtering logs and tables ▸ Page 26].

Settings

The following setup items are available via ⚙:

Setup item	Sub items	Description
Totalization unit		Weight unit of the total.
Subtotal	Enable/disable (Default)	Enable/disable subtotals.
Material Change	None	The Material Change function is disabled.
	Deviation +/-	To detect a change in weight, a specific deviation is required.
	Deviation (d)	
	Return to Zero (<9d)	Print is only triggered when the gross weight is below 9 d.

Setup item	Sub items	Description
Save & Transfer	Manually (Default)	Saving and transferring a transaction has to be confirmed manually using the transfer key .
	Automatically	Saving and transferring a transaction takes place automatically.
Mode	Standard (Default)	Adding up the items.
	Take Away	Totalizing when unloading e.g. from a container.
Data Source	Gross Weight	Gross weights will be totalized.
	Net Weight (Default)	Net weights will be totalized.
Tare After Sum	Enable/disable (Default)	When enabled, the scale is automatically tared after each totalization action.
Clear on transfer	Off (Default)	No clearing of the total.
	Clear Total & Subtotal	On each transfer, total and subtotal are cleared.
Undo transaction	Off (Default)	Only available for IND400 without Data Integrity. A transaction cannot be withdrawn.
	Last Transaction	The last transaction can be withdrawn.
	Unlimited	Any transaction can be withdrawn.
Statistic	Enable/disable (Default)	Enable/disable statistics.

2.6.3 Totalization operation

Batch number

To each total a Batch # is assigned. This number consists of the current date and a running number.

E.g. batch # 20230804007 is the 7th total of August 4th in 2023.

Note

Depending on the Totalization Settings, Totalizing can be performed by adding up the items or by taking away items, e.g. from a container. The following scenarios will show these principles.

2.6.3.1 Totalizing in Standard mode

1 Put the first sample on the weighing platform.

2 Touch + to add the sample to the total.

➡ The message "Saving and Transferring" is displayed.

➡ The total and the number of samples is updated.

3 Unload the sample.

4 Repeat steps 1 to 3 for further samples.

5 When all samples are totalized, touch Σ.

➡ The total is displayed.

6 To clear the total, touch C.

➡ A safety prompt is displayed.

7 Confirm clearing the total with ✓.

➡ The weighing terminal is ready for the next totalization process.

Undoing a transaction

This feature is only available for IND400 without Data Integrity.

When enabled in the Totalization settings, softkey ↺ is available. There are two possible settings: Last Transaction and Unlimited.

Last Transaction

1 To undo the last transaction, touch softkey ↺.
   ➡ A safety prompt is displayed.
2 Confirm undoing the last transaction with ✓
   ➡ The last transaction is deleted from the total.

Unlimited

1 To undo one ore more transactions, touch softkey ↺.
   ➡ The list of the last transactions is displayed.
2 Select the transactions you want to delete and confirm with ✓.
   ➡ A safety prompt is displayed.
3 Confirm undoing the selected transactions with ✓
   ➡ The selected transaction are deleted from the total.

2.6.3.2 Totalizing in Take Away mode

1 Put the full container on the weighing platform.
2 Tare the full container.
3 Remove the first sample from the container.
4 Touch + to add the sample to the total.
   ➡ The message "Saving and Transferring" is displayed.
   ➡ The total and the number of samples is updated.
5 Tare the container.
6 Repeat steps 3 to 5 for further samples.

7 When all samples are totalized, touch Σ.
   ➡ The total is displayed.
8 To clear the total, touch C.
   ➡ A safety prompt is displayed.
9 Confirm clearing the total with ✓.
   ➡ The weighing terminal is ready for the next totalization process.

Note

When Tare After Sum is activated in the Totalization settings, you do not have to tare after each sample.

2.6.3.3 Totalizing to a target

Setting the target

1 Touch ⊕.
2 Select the target mode:
   ➡ Off – no target to be set
   ➡ Lot(N) – set the target to e.g. 5 samples
   ➡ Weight Value – set the target to a weight value, e.g. 10 kg
3 Enter the target, either e.g. 5 (items) or 10 (kg).
4 Confirm target settings with ✓.
   ➡ The totalizing screen with bargraph is displayed.

Totalizing to a target

1 Put the first sample on the weighing platform.
2 Touch + to add the sample to the total.
   ➡ The message "Saving and Transferring" is displayed.
   ➡ The bargraph shows the current total. In the line above the total and the number of samples is updated.
3 Unload the sample.
4 Repeat steps 1 to 3 for further samples.
   ➡ When the target number of samples or the target weight is reached, a message is displayed.
5 Touch Σ.
   ➡ The total is displayed.
6 To clear the total, touch C.
   ➡ A safety prompt is displayed.
7 Confirm clearing the total with ✓.
   ➡ The weighing terminal is ready for the next totalization process.

2.6.3.4 Totalizing with subtotals

1 Put the first sample on the weighing platform.
2 Touch + to add the sample to the total.
   ➡ The message "Saving and Transferring" is displayed.
   ➡ The total and the number of samples is updated.
3 Unload the sample.
4 Repeat steps 1 to 3 for further samples.

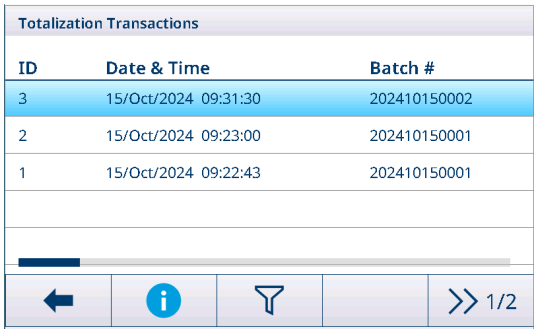
5 When the samples for the subtotal are totalized, touch Σ.
   ➡ The total and subtotal is displayed.
6 To clear the subtotal, touch C.
   ➡ A safety prompt is displayed.
7 Confirm clearing the subtotal with ✓.
8 Repeat steps 1 to 7 for totalizing further subtotals.
9 To clear the grand total and all subtotals, touch C.
   ➡ A safety prompt is displayed.
10 Confirm clearing the grand total with ✓.
   ➡ The weighing terminal is ready for the next totalization process.

2.6.3.5 Totalization transaction table

Note

– Touch softkey .
  - ➡ The last weighing transactions are displayed.
  - ➡ Swiping horizontally will show the complete information on the transactions.
  - ➡ Swiping vertically will show further transactions.

The following information is stored for each transaction in the Totalization application:



ID	Serial number of the transaction
Date & Time	Date and time of the transaction
Batch #	Batch number (YearMonthDay+4-digit running number)
Sub #	Number of subtotals
Unit	Weight unit
Gross	Gross weight value
Tare	Tare weight value
Net	Net weight value
Deliver Weight	If the Data Source is set as Gross Weight, the Deliver Weight is the Gross Weight. Otherwise, the Deliver Weight is the absolute value of the Net Weight.
Tare Type	• Keypad tare • Preset Tare
Scale #	For IND400: always "1"
Material ID	ID of the selected material
Material Description	Description of the selected material
ID1 ... ID3	Identifications
Mode	Totalization mode: Standard or Take Away
Data Source	Gross Weight or Net Weight
Totalization Unit	Weight unit of the total
Total Value	Total weight value
Total Counter	Number of items of the total
Subtotal Value	Subtotal weight value
Subtotal Counter	Number of items of the subtotal
User Name	Name of the user logged in

Note

For more actions in the transaction table refer to [Recalling the transaction table ▸ Page 25] and [Filtering logs and tables ▸ Page 26].

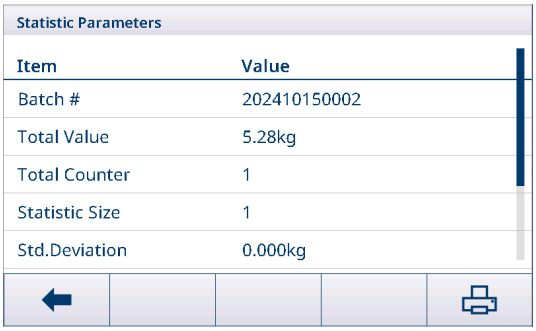
Note

When working with data integrity, additional fields regarding review status and reviewer are shown. Transferring the transaction table is possible for reviewed data only. For more information refer to [Working with Data Integrity ▸ Page 48].

Totalization statistics

The device offers the statistical evaluation of a batch.

1 On the second softkey ribbon of the transaction table, touch softkey .
2 Select a batch for the statistical evaluation and confirm with ✓.
   ➡ The statistical parameters are displayed.
3 Scroll to display the following parameters:



Batch #	Batch number (YearMonthDay+4-digit running number)
Total Value	Total value of all items
Total Counter	Number of items of the total
Statistic Size	Number of items of the statistic
Std. Deviation	Standard deviation of the items
Mean Value	Mean value of the batch
Max. Value	Maximum value of the batch
Min. Value	Minimum value of the batch
Median	Median value of the batch

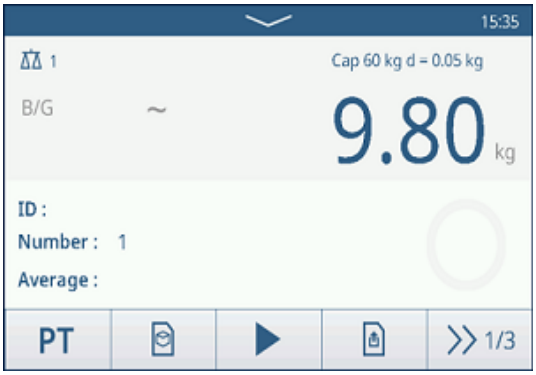
2.7 Animal Weighing

2.7.1 Activating the Animal Weighing application

Note

Animal Weighing is only available for IND400 without Data Integrity.

1 On the main screen, touch softkey .
   ➡ The available applications are displayed.
2 Select Animal Weighing.
   ➡ The Animal Weighing application screen is displayed.

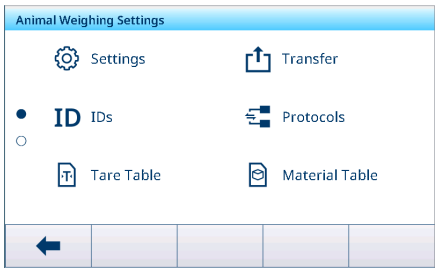


Leaving the Animal Weighing application

– On the 3rd softkey ribbon, touch softkey .
   ➡ The Animal Weighing application is closed.
   ➡ The Basic Weighing application is active.

2.7.2 Animal Weighing settings

Touching softkey on the second softkey ribbon opens the Animal Weighing Settings menu. Thus users don't need to enter the setup for settings regarding the application.



Note

For more settings swipe the screen.

	Settings	Animal weighing application settings, see below.
	Transfer	Settings for transferring the data to a computer or printer, refer to [Basic weighing settings ▸ Page 37] and [How to set up a printer ▸ Page 41].
ID	IDs	Setup of the identifications, refer to [Basic weighing settings ▸ Page 37].
	Protocols	Setup of protocols, refer to [Basic weighing settings ▸ Page 37].
	Tare Table	Setup of the tare table for frequently used known tare values, refer to [Basic weighing settings ▸ Page 37].
	Material Table	Setup of the material table, refer to [Basic weighing settings ▸ Page 37]. **Note** Only materials assigned to the Animal Weighing application can be selected in the material table later.
	Barcode Reader	Setup of a barcode reader, refer to [Basic weighing settings ▸ Page 37] and [How to set up a barcode reader ▸ Page 43].
	Advanced Settings	Open setup, refer to [Configuration ▸ Page 97].

Note

For more information on how to edit tables refer to [Editing tables ▸ Page 28] and [Filtering logs and tables ▸ Page 26].

Settings

The following setup items are available via :

Setup item	Sub items / Settings	Description
Multi-object Support	Enable/disable (Default)	When weighing several samples of the same kind, the average weight of the samples is calculated.
Sampling time	• Range: 1…9 • Default value: 5	Enter the time to average the weight value.
Start Mode	Softkey (Default)	Start animal weighing via softkey ▶.
	Digital Input	Start animal weighing via a digital input signal.
	Automatic	Automatic start of the animal weighing cycle at a change of weight.
Threshold	• Range: 0…max. capacity • Default value: 1 kg	Enter a threshold for starting animal weighing.

Setup item	Sub items / Settings	Description
Save & Transfer	Manually (Default)	Saving and transferring a transaction has to be confirmed manually by using the transfer key ⍐.
	Automatically	Saving and transferring a transaction is performed automatically.

2.7.3 Animal Weighing operation

Note

Depending on the Animal Weighing settings, animal weighing can be started manually or automatically. Transferring the transaction can either be configured manually or automatically. The following scenarios will show these principles.

2.7.3.1 Single sample - manual operation

1 Put the sample on the weighing platform.
2 Start Animal Weighing by touching softkey ▶.
   ➡ A countdown is starting.
   ➡ When the countdown is finished, the main weight display shows the total average weight with symbol *.
   In the lower left of the display the average weight is displayed, too.
3 Press the transfer key to transfer or print the weighing result.
   ➡ In the lower left of the display the value for the ID of the transaction counter increases.
4 Touch ■ to close the transaction.
5 Unload the weighing platform.
   ➡ The weighing terminal is ready for the next animal weighing process.

2.7.3.2 Multi sample - manual operation

1 Put the samples on the weighing platform.
2 Touch softkey n and enter the number of samples.
3 Start animal weighing by touching softkey ▶.
   ➡ A countdown is starting.
   ➡ When the countdown is finished, the main weight display shows the total average weight with symbol *.
   In the lower left display the average weight of a single sample is displayed.
4 Press the transfer key to transfer or print the weighing result.
   ➡ In the lower left display the ID of the transaction counter increases.
5 Touch ■ to close the transaction.
6 Unload the weighing platform.
   ➡ The weighing terminal is ready for the next animal weighing process.

2.7.3.3 Single sample - automatic start and transfer

1 Put the sample on the weighing platform.
   ➡ When the weight is about the threshold, a countdown is starting.
   ➡ When the countdown is finished, the main weight display shows the total average weight with symbol *.
   In the lower left of the display the average weight is displayed, too.
   ➡ The message "Saving and transferring" is displayed.
   ➡ In the lower left of the display the value or the ID of the transaction counter increases.
2 Touch ■ to close the transaction.
3 Unload the weighing platform.
   ➡ The weighing terminal is ready for the next animal weighing process.

2.7.3.4 Animal Weighing transaction table

Note

Animal Weighing results are calculated values. They cannot be stored in the Alibi Memory but in the application-specific transaction table.

– Touch softkey .
   ➡ The last weighing transactions are displayed.
   ➡ Swiping horizontally will show the complete information on the transactions.
   ➡ Swiping vertically will show further transactions.

The following information is stored for each transaction in the Animal Weighing application:

ID	Serial number of the transaction
Date & Time	Date and time of the transaction
Total Weight	Result of the Animal Weighing transaction, marked with a *
Number	Number of samples
Average Weight	Average weight for a single sample
Unit	Weight unit of the transaction
Scale #	For IND400: always "1"
Material ID	ID of the selected material
Material Description	Description of the selected material
ID1 … ID3	Identifications
User Name	Name of the user logged in

Note

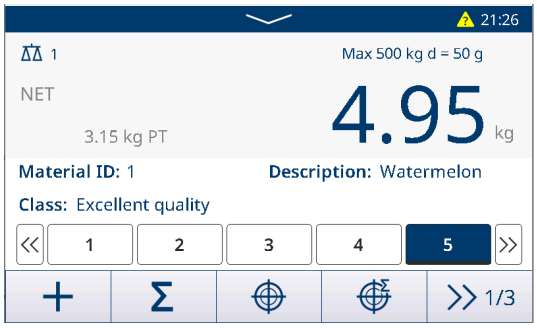
For more actions in the transaction table refer to [Recalling the transaction table ▸ Page 25] and [Filtering logs and tables ▸ Page 26].

2.8 Classification

The Classification application can be used to categorize products into weight classes, which can range up to 8 different classes., to ensure efficient sorting.

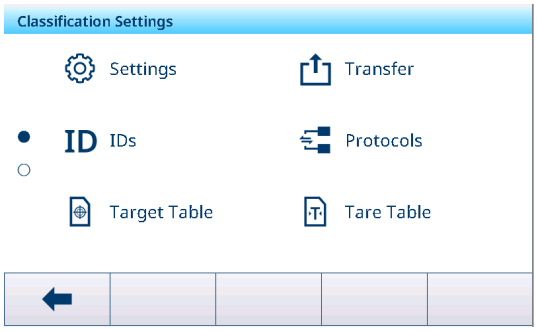
2.8.1 Activating the Classification application

1 On the main screen, touch softkey .
   ➡ The available applications are displayed.
2 Select Classification.
   ➡ The **Classification** application screen is displayed.



2.8.2 Classification Settings

When the application is running, user can touch the softkey on the third softkey ribbon to open the Classification settings.



	Settings	See the [Classification Settings ▸ Page 86] below.
	Transfer	Settings for transferring the data to a computer or printer, refer to [Basic weighing settings ▸ Page 37] and [How to set up a printer ▸ Page 41].
ID	IDs	Setup of the identifications, refer to [Basic weighing settings ▸ Page 37].
	Protocols	Setup of protocols, refer to [Basic weighing settings ▸ Page 37].
	Target Table	Setup of the target table for frequently used target values, see the [Classification Target Table ▸ Page 87] below.
	Tare Table	Setup of the tare table for frequently used known tare values, refer to [Basic weighing settings ▸ Page 37].
	Material Table	Setup of the material table, refer to [Basic weighing settings ▸ Page 37]. **Note** Only materials assigned to the Classification application can be selected in the material table later.
I/O	Discrete IO	Setup of Discrete IO, see also [Communication -> Discrete IO ▸ Page 127].
	Barcode Reader	Setup of a barcode reader, refer to [Basic weighing settings ▸ Page 37] and [How to set up a barcode reader ▸ Page 43].
	Advanced Settings	Open setup, refer to [Configuration ▸ Page 97].

Note

For more information on how to edit tables refer to [Editing tables ▸ Page 28] and [Filtering logs and tables ▸ Page 26].

Classification Settings

Setup item	Sub items	Description
Save & Transfer	Manually	Saving and transferring a transaction is to be confirmed manually using the transfer key .
	Automatic	Saving and transferring a transaction takes place automatically.
Material Change	None	No Material Change is checked during Save & Transfer. **Note** Material Change can't be set as None when Save & Transfer is set as Automatic.
	Deviation (30d) +/-	To detect a change in weight, a deviation of at least 30 d is required.
	Return to Zero (<9d)	To detect a change in weight, the scale must be emptied first (below 9 d).
Above Range	Red, Orange, Yellow, Black, Gray, Blue, Cyan, Green, White	Select the colors for visualization of the weighing state.
Below Range		
Class 1 Color		
Class 2 Color		
Class 3 Color		
Class 4 Color		
Class 5 Color		
Class 6 Color		
Class 7 Color		
Class 8 Color		
Totalization	Enable & Disable	Enabled: Totalization is activated. Disabled: Totalization is deactivated.
	Sub Total	Enabled: Sub Total is activated. Disabled: Sub Total is deactivated.
	Totalization Unit	Select unit for the totals.
	Clear On Transfer	• Off Nothing is done with the Totalization information during transfer. • Clear Total & Subtotal All Totalization information is cleared during transfer. • Clear Subtotal All Sub Total information is cleared during transfer. **Note** If the Sub Total function is not Enabled, this option won't display.
	Undo Transaction	Only available for IND400 without Data Integrity. Select one of the following methods to undo a transaction: • Off This function is deactivated. • Last Transaction The softkey only shows on the 2nd softkey ribbon when a new transaction is saved. • Unlimited The softkey shows on the 2nd softkey ribbon when the number of transactions in this batch is greater than zero.
Tare After Transfer In Net Mode	Enable & Disable	When Enabled, the scale is tared after transferring a net weight. **Note** When Tare After Transfer In Net Mode is Enabled, the Chain Tare Mode needs to be activated at the same time.

Setup item	Sub items	Description
Motion Check	Enable & Disable	When Enabled, only stable weight values can be classified and transferred.
Statistic	Enable & Disable	When Enabled, the softkey shows in the 2nd softkey ribbon of the Transaction Table. It allows users to enter the Batch # for statistic parameter calculation.
Stealth Mode	Enable & Disable	Only available for IND400 without Data Integrity. When Enabled in the Operator access level, all weight-related information is hidden and marked with *.

Classification Target Table

Setup item	Sub items	Description
ID	-	Enter a numerical ID of the target.
Description	-	Enter a description of the target ID.
Mode	Standard	Operator always puts objects on the platform and weigh.
	Take Away	Operator always takes objects from the platform and weigh.
Data Source	Gross Weight	The target is a gross weight.
	Net Weight	The target is a net weight.
# Classes	5/6/7/8	Number of classes
Unit	g/kg/oz/lb/t/ton	Select the required unit.
Upper limit	-	Definition of the upper limit value
Class n (>=)	-	Weight value of a specific class
Class n Description	-	Description of the a specific class

2.8.3 Classification Operation

2.8.3.1 Setting the Active Target

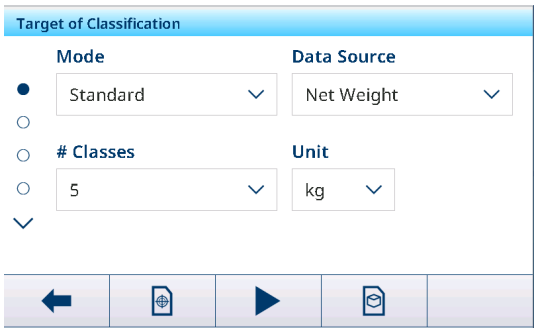
- Scenario 1: Before starting a Classification operation, the Operator needs to set an active target first. The Supervisor can also set the active target as the default target value.

  Note The default target value need to be stored in a non-volatile memory such as Flash to support recalling in the power on / off cycle.
- Scenario 2: The user needs to set the active target without exiting the application.

■ The **Classification** application is entered.

– Touch the Target softkey in the home screen of the application.

➡ The window for active target setting pops up.



Set the Target Value Manually

– Set the target values in each page by referring to the [L_CLASSFICATION L_TARGET_TABLE ▸ Page 87] in [Classification Settings ▸ Page 85].

Set the Target Value by the Target Table or Material Table

– Touch the **Target Table** softkey or the **Material Table** softkey to select a target or a material and confirm with ✓.

➡ The target value are filled in the relevant fields accordingly.

Set the Target Value via Barcode Scanning

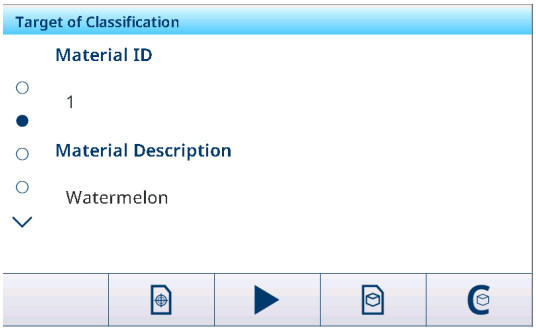
The target value can be set by scanning the barcode with target or material ID assignment.

- A barcode reader is connected. See [How to set up a barcode reader ▸ Page 43]
- Use the barcode reader to scan the target ID or the material ID.
  - ➡ The target value are filled in the relevant fields accordingly.
- ➡ The active target is set.

2.8.3.2 Clearing the Material and Target Information

If material information (Material ID and Material Description) is set in the active target value, the Clear Material Information softkey C will display.

User can touch this softkey C to clear the material information, target value, and tare weight.



2.8.3.3 Classification Process in Standard Mode

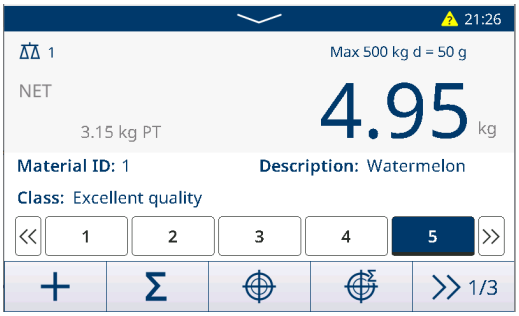
1 When the active target is set, touch the Start softkey ▶ to enter the operation process.

2 Put the weighing sample on the weighing platform.

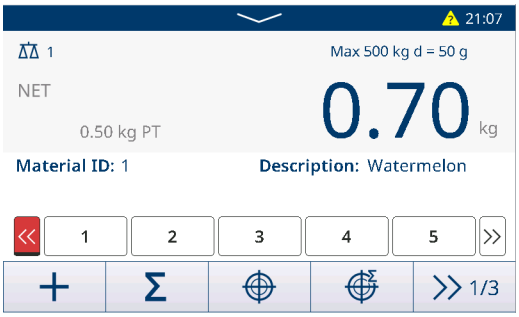
  - ➡ The weight value and the **Classification** weight status are displayed.

Weight Status

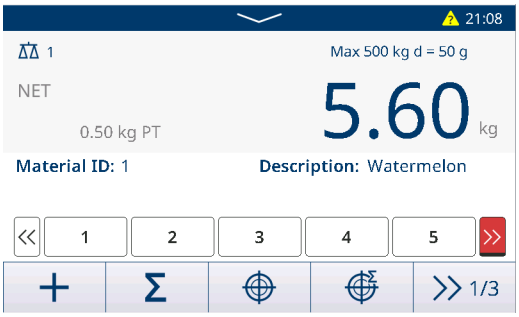
The weight is in the Class 5 (>=) range.



The weight is below range.



The weight is above range.



2.8.3.4 Classification in Take Away Mode

In this application scenario, the absolute value of the Net Weight is used as the Data Source to compare with the active target.

1 Put the container with stuff or only the stuff on the weighing platform.

2 Press the **Tare** hardkey ›T‹.

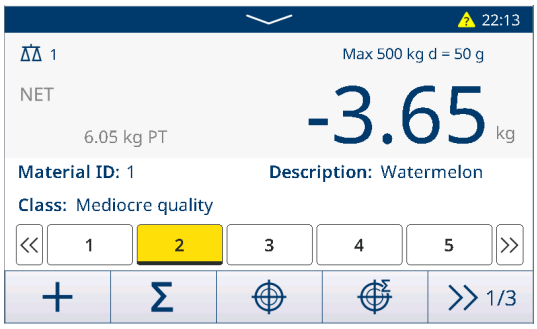
➡ The scale is set into net mode and the terminal shows the **Net Weight** as 0 kg.

3 Take some stuff away from the container.

➡ The **Net Weight** is shown as a negative value, which is the absolute **Net Weight**.

➡ The absolute **Net Weight** is in the range of **Class 2 (>=)**, and the bar of the Class 2 is activated.

4 Repeat the steps 2 and 3 to continue to get the **Classification** results in the **Take Away** mode.



2.8.3.5 Saving and Transferring the Classification Results

The Classification results can be saved and transferred manually or automatically depending on setting of Save & Transfer. See [Classification Settings ▸ Page 86].

Save & Transfer Manually

- A weighing process is completed and the weighing result displays.

1 If **Totalization** is disabled, touch the Transfer softkey.

2 If **Totalization** is enabled, touch the Add softkey +.

➡ The **Classification** results are saved and transferred manually.

Save & Transfer Automatically

When a weighing process is completed and the weighing result displays, the current transaction is saved and transferred automatically.

2.8.3.6 Totalizing in Classification

- The **Totals** target is set. See [Totalizing to a target ▸ Page 77].

1 Put the first sample on the weighing platform.

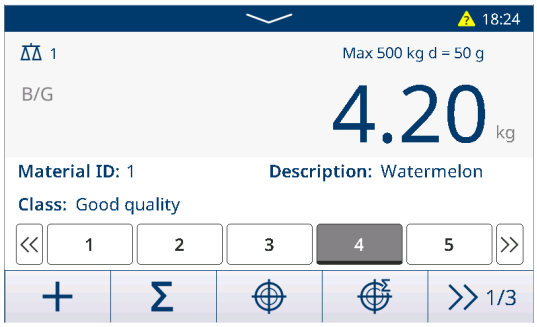
➡ The weight value displays and is classified in a range.

2 Touch the softkey + to add the weighing value of the sample to the **Totals**.

➡ The message "**Saving & Transferring**" displays.

3 Remove the sample.

4 Repeat steps 1 – 3 for other samples.



5 When all samples are totalized, touch the **Recall Totals** softkey Σ.

➡ The **Totals** displays.

6 To clear the **Totals**, touch the softkey Σ.

7 To clear the **Subtotal**, touch the softkey C.

8 Confirm the clearing with ✓.

➡ The weighing terminal is ready for the next **Totalization** process.

Note

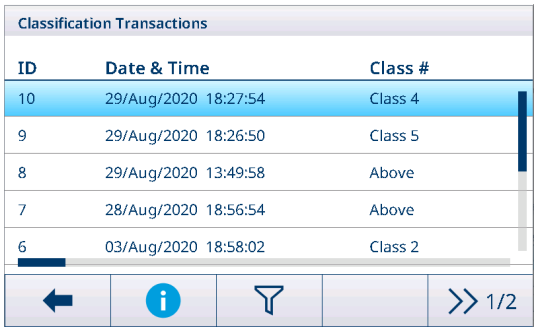
For more Totalization features, see [Totalization operation ▸ Page 76].

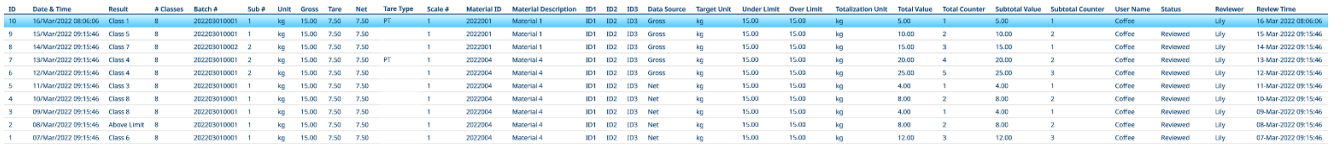
2.8.3.7 Transaction Table in Classification

1 In the **Classification** operation page, touch the **Transaction Table** softkey .

➡ The recent transactions are displayed.

2 Swipe horizontally to show the complete transaction information and vertically to show further transactions.





ID	Date & Time	Result	# Classes	Batch #	Sub #	Unit	Gross	Tare	Net	Tare Type	Scale #	Material ID	Material Description	ID1	ID2	ID3	Data Source	Target Unit	Under Limit	Over Limit	Totalization Unit	Total Value	Total Counter	Subtotal Value	Subtotal Counter	User Name	Status	Reviewer	Review Time
10	16/Mar/2022 08:06:06	Class 1	8	2022E3010001	1	kg	15.00	7.50	7.50	PT	1	2022001	Material 1	ID1	ID2	ID3	Gross	kg	15.00	15.00	kg	5.00	1	5.00	1	Coffee		Lily	16-Mar-2022 08:06:06
9	15/Mar/2022 09:15:46	Class 5	8	2022E3010001	1	kg	15.00	7.50	7.50		1	2022001	Material 1	ID1	ID2	ID3	Gross	kg	15.00	15.00	kg	10.00	2	10.00	2	Coffee	Reviewed	Lily	15-Mar-2022 09:15:46
8	14/Mar/2022 09:15:46	Class 7	8	2022E3010002	2	kg	15.00	7.50	7.50		1	2022001	Material 1	ID1	ID2	ID3	Gross	kg	15.00	15.00	kg	15.00	3	15.00	1	Coffee	Reviewed	Lily	14-Mar-2022 09:15:46
7	13/Mar/2022 09:15:46	Class 4	8	2022E3010001	2	kg	15.00	7.50	7.50	PT	1	2022004	Material 4	ID1	ID2	ID3	Gross	kg	15.00	15.00	kg	20.00	4	20.00	2	Coffee	Reviewed	Lily	13-Mar-2022 09:15:46
6	12/Mar/2022 09:15:46	Class 4	8	2022E3010001	2	kg	15.00	7.50	7.50		1	2022004	Material 4	ID1	ID2	ID3	Gross	kg	15.00	15.00	kg	25.00	5	25.00	3	Coffee	Reviewed	Lily	12-Mar-2022 09:15:46
5	11/Mar/2022 09:15:46	Class 3	8	2022E3010001	1	kg	15.00	7.50	7.50		1	2022004	Material 4	ID1	ID2	ID3	Net	kg	15.00	15.00	kg	4.00	1	4.00	1	Coffee	Reviewed	Lily	11-Mar-2022 09:15:46
4	10/Mar/2022 09:15:46	Class 8	8	2022E3010001	1	kg	15.00	7.50	7.50		1	2022004	Material 4	ID1	ID2	ID3	Net	kg	15.00	15.00	kg	8.00	2	8.00	2	Coffee	Reviewed	Lily	10-Mar-2022 09:15:46
3	09/Mar/2022 09:15:46	Class 8	8	2022E3010001	1	kg	15.00	7.50	7.50		1	2022004	Material 4	ID1	ID2	ID3	Net	kg	15.00	15.00	kg	4.00	1	4.00	1	Coffee	Reviewed	Lily	09-Mar-2022 09:15:46
2	08/Mar/2022 09:15:46	Above Limit	8	2022E3010001	1	kg	15.00	7.50	7.50		1	2022004	Material 4	ID1	ID2	ID3	Net	kg	15.00	15.00	kg	8.00	2	8.00	2	Coffee	Reviewed	Lily	08-Mar-2022 09:15:46
1	07/Mar/2022 09:15:46	Class 6	8	2022E3010001	1	kg	15.00	7.50	7.50		1	2022004	Material 4	ID1	ID2	ID3	Net	kg	15.00	15.00	kg	12.00	3	12.00	3	Coffee	Reviewed	Lily	07-Mar-2022 09:15:46

Note

For more actions in the transaction table refer to [Recalling the transaction table ▸ Page 25] and [Filtering logs and tables ▸ Page 26].

Note

When working with data integrity, additional fields regarding review status and reviewer are shown. Transferring the transaction table is possible for reviewed data only. For more information refer to [Working with Data Integrity ▸ Page 48].

Statistic

Users can check the Statistic result of the current data setting in Transaction Table, while only the last 500 lines of transaction data are counted.

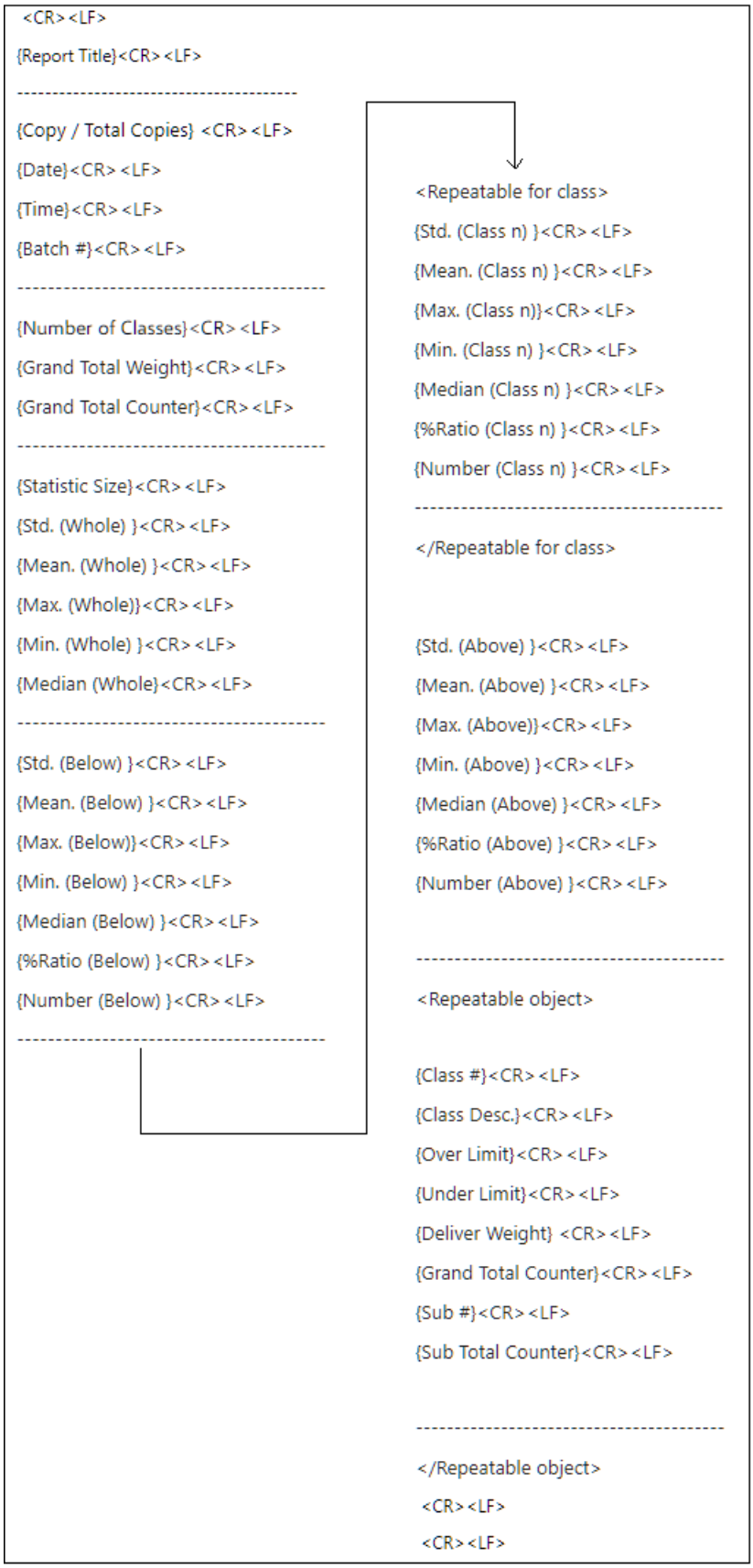
1 Touch the **Statistic** softkey .

2 Select a batch for the statistical evaluation and confirm with ✓.

Note Every time the **Classification** Application is launched, a new **Batch #** is created, and exiting the **Classification** Application will end that **Batch #**.

➡ The statistical parameters are displayed.

Note The standard Statistic template of Classification is shown as below.



2.8.4 Exiting the Classification application

1 On the 3rd softkey ribbon, touch softkey ⌂.

2 Alternatively, press the On / Off hardkey .
   ➡ The **Classification** application is closed.
   ➡ The **Basic Weighing** application is active.

Note If Totalization is enabled, the Grand Total, Grand Total Counter, Sub Total, and Sub Total Counter will be cleared.

2.9 Remote SQC

The Remote SQC application allows the IND400 terminal to be remote controlled by FreeWeigh.Net in a host computer, and to be used as an input device. The FreeWeigh.Net sends commands to IND400 and gets user inputs from IND400, and IND400 acts as a client placed in the production line or warehouse in this process.

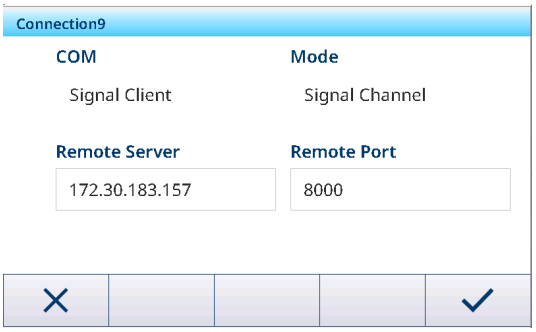
FreeWeigh.Net is an application software for Statistical Quality Control (SQC) and Statistical Process Control (SPC).

The enhanced interface command set of remote enables the communication between FreeWeigh.Net and IND400, while the basic SICS commands are supported as well.

2.9.1 Connection Configuration

The connection is to be configured for different communication methods.

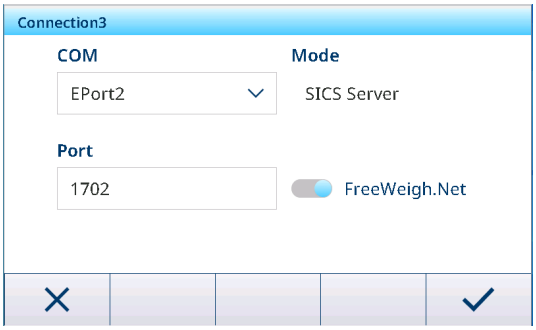
1 Open the **Connection** page in the path: **Communication** -> **Connection**.
2 Touch the softkey + to add a connection.
3 Set **COM** as **Client** and **Mode** as Signal Channel.
4 Enter the **IP Address** in the field **Remote Server** and the port number in the field **Remote Port**.
   Note The default value of **Remote Port** is 8,000.



Wireless or Ethernet Communication

- An **Ethernet** option board or a Wi-Fi option board is installed. See Ethernet board and Wi-Fi option board.

1 Touch the softkey + to add a connection.
2 Enable FreeWeigh.net by switching the toggle
   ➡ The connection is configured for wireless or Ethernet communication.



Serial Communication

- A serial interface is available.

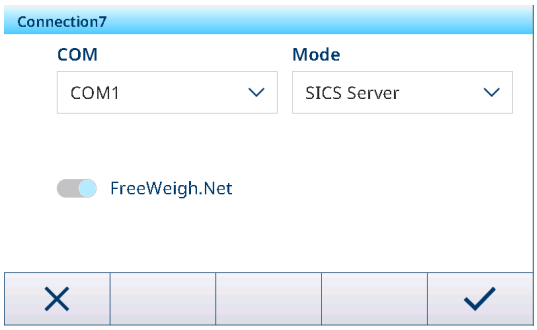
1 Touch the softkey + to add a connection.

2 Set **COM** as any port available for **SICS Server**.

3 Set **Mode** as **SICS Server**.

4 Enable FreeWeigh.Net, which is disabled by default, by switching the toggle.

➡ The connection is configured for serial communication.

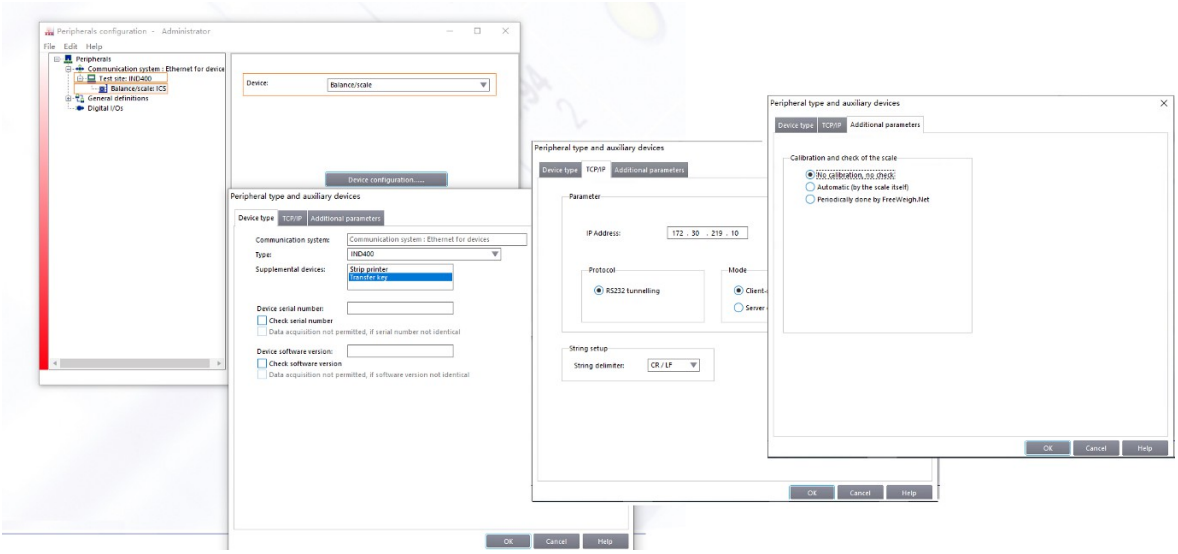


2.9.2 Configuring IND400 in FreeWeigh.net

1 Start the FreeWeigh.net application in the remote server.

2 To connect IND400 to FreeWeigh.net, configure a peripheral in the FreeWeigh.net application.

3 In the left menu column, right click the Communication system menu to add a Test site.



4 Double click Test site to edit its name as IND400 and apply the change.

5 Right click Test site to add a Device, and select Balance/scale in the Device field in the right setting area.

6 Click the button Device configuration..... .

7 In the Device type page of the pop-up window, set the Type as IND400.

8 In the TCP/IP page, set the IP Address the same as IND400's.
In this example, the IP Address is 172.30.219.10 and Port is 1702. See [Connection Configuration ▸ Page 92].

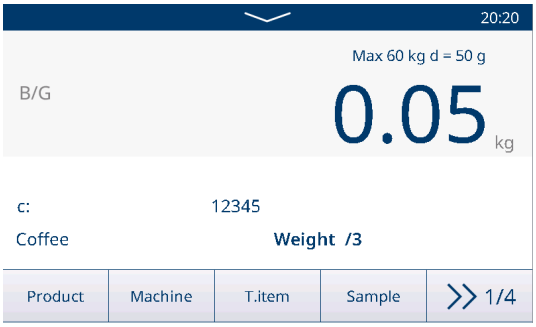
9 In the Additional parameters page, select the scale calibration and check method.

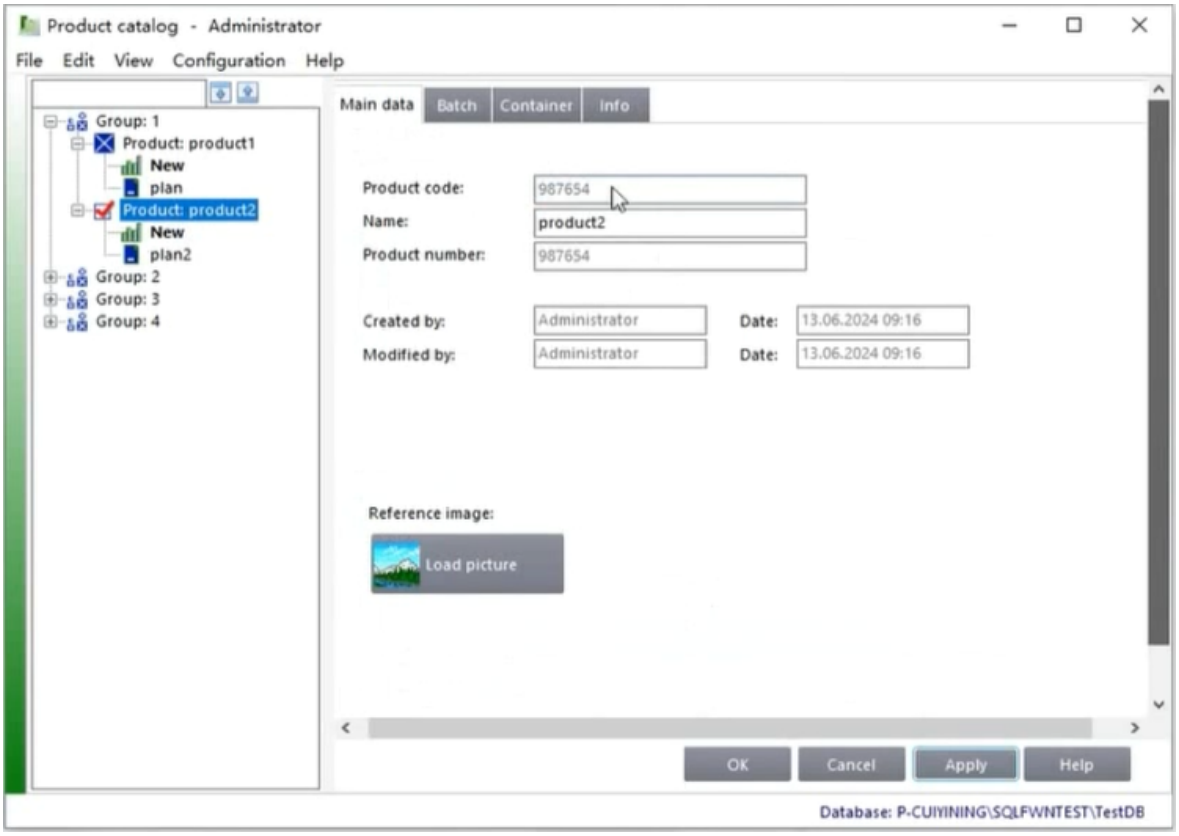
10 Confirm the settings with the button OK .

➡ The communication between IND400 and FreeWeigh.net is started.

2.9.3 Doing A Data Sampling

1 Enter the Product code manually or use the Product list view to select a specific product on IND400.
ⓘ **Note** The material or product data are maintained on the FreeWeigh.net server side under Catalogs -> Products.



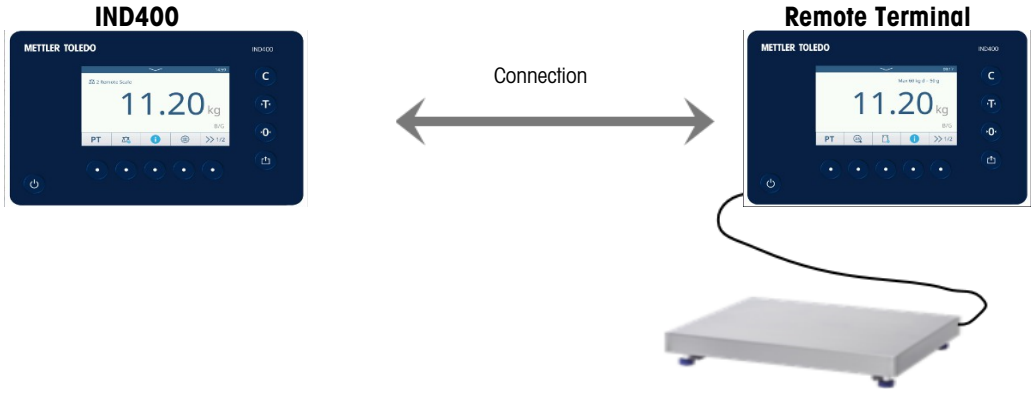


2 Touch the Sample softkey on IND400 to collect the weight data.
3 Collect the weight data according to the prompt message on the IND400.
➡ The items of required number are placed on the weighing platform for weighing data collection one by one.
4 Confirm the sampling result in a pop-up window on IND400.
➡ The data sampling result is displayed in the FreeWeigh.net monitoring window.

2.10 Remote Scale

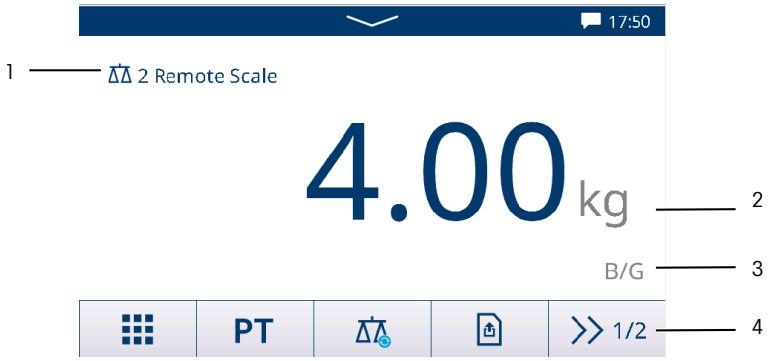
2.10.1 Connection Configuration

The IND400 can function as a Remote Terminal for another IND400 or for another METTLER TOLEDO product capable of transmitting METTLER TOLEDO SICS Server.



Remote Display Overview

Home Screen of IND400(Switch to Remote scale)



1: Scale Number

2: Weight Display Area

3: Net Weight & Gross Weight

4: Softkey Labels

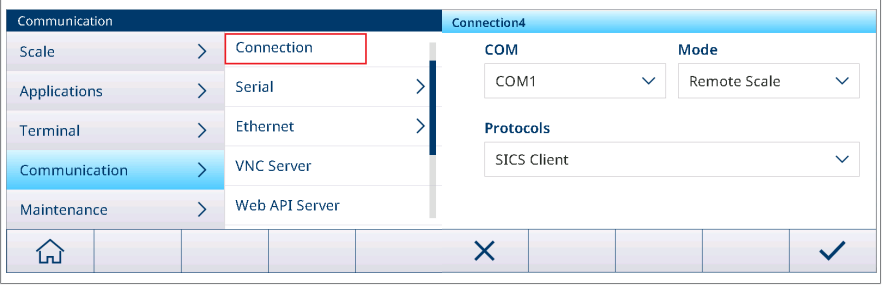
Three steps to configurate two terminals:

1. Physical Connection between Terminals

The communication between IND400 and Remote Terminal via serial uses a single serial connection. Since the IND400 serial ports can handle one output and one input simultaneously, only one port is required to be connected to IND400. Any of the IND400's serial ports can be used, such as:

- IND400 with RS232 to Remote Terminal with RS232
- IND400 with Ethernet to Remote Terminal with Ethernet

2. Configuration of IND400

Setup Menu	Settings
Communication-> Connections	• Create a connection on the desired port with an Assignment of Remote scale. – Supported COM interfaces – Only one Remote Display connection is supported. 

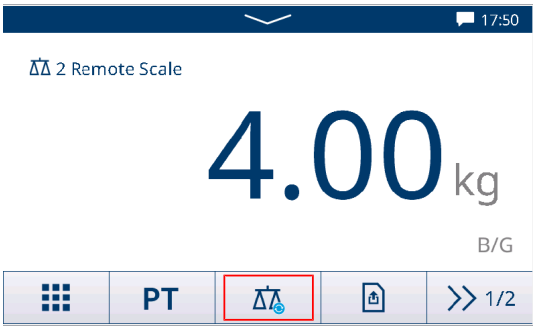
3. Configuration of the Remote Terminal

Setup Menu	Settings
Communication-> Connections	Create a connection on the desired port with an Assignment of SICS server.

2.10.2 Using the Remote Scale Function

- "Remote Scale" has been configured in Communication -> Connection.

1 Touch the softkey to switch to the remote scale.
   ➡ Weight data from remote scale will be shown on IND400 screen.
2 Press the Clear, Print, Tare(including Preset Tare), Zero hardkeys on the right side of the screen to access the remote scale's basic functions.
3 To return to IND400, touch the softkey to back to the scale #1.
4 Touch the softkey to go back to basic weighing applications with current active scale.



3 Configuration

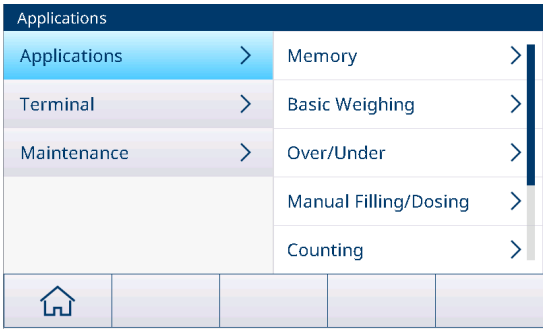
In the setup, users can modify settings and activate functions to tailor the system to their specific weighing needs. The available menu options depend on the user role that is currently logged into the IND400.

3.1 Operating the setup

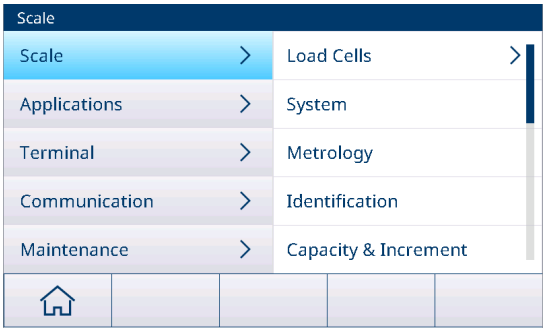
Entering the setup

1 In the Quick setting menu touch ⚙.
   ➡ The main setup items are displayed.
2 Touch the desired setup block.
   ➡ The corresponding sub items are displayed. The selected setup items are highlighted in blue.
3 Proceed until the settings page is displayed.
4 Make the required settings and confirm with ✓.
To leave the settings page without making changes, touch softkey ⬅. The previous setup items are displayed again.

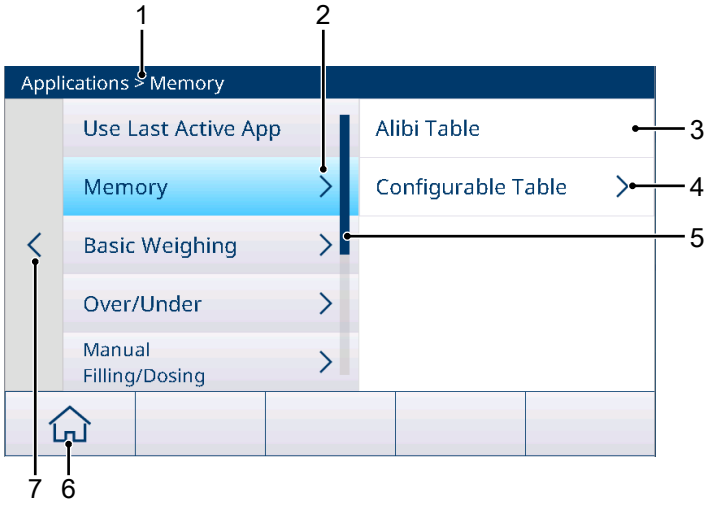
Logged in as Operator (Powercell Scale)



Logged in as Admin (Powercell Scale)



How to navigate in the setup



1	Setup path	**2**	Open sub item
3	Setup sub item to be edited	**4**	Open next level of sub items
5	Scroll bar	**6**	Home button
7	Go to the next higher setup level		

How to operate the setup

Depending on the content, the following options are available to change settings in the setup:

Pull-down menu		Select an option from the displayed list of settings.
Switch		**Example** ID1 enabled ID2 disabled ID3 not available
Page display		When there are several pages of settings, this is displayed by the dots on the left side. In the example, there are two pages of settings and the first page is diplayed. Go to the next page by swiping vertically.
(Alpha-)Numeric entries	On-screen keyboards are displayed, see [Hard and softkeys ▸ Page 7].	

Exiting the setup

– Touch softkey ⌂.

➡ The weight display appears and the device will work with the new settings.

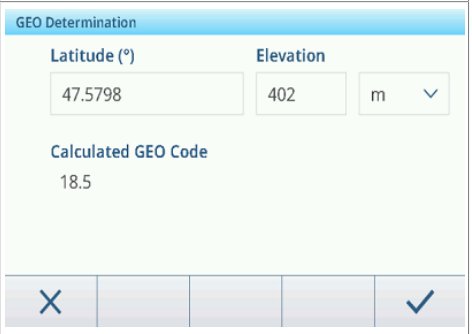
3.2 Scale setup

3.2.1 Metrology setup

Note

Default settings are shown in **bold**.

Setup item	Sub items / possible settings	Comment
Approval	**None**, Argentina, Australia, Canada, OIML, USA, Korea, Thailand	Scale settings are restricted according to the local Weights and Measures regulations. A non-approved scale must not to be used in legal metrology.
Class (approved scales only)	II, **III**, III HD (Canada only), III L (USA only), IIII	When the verification class does not comply with the local Weights and Measures regulations, a message is displayed and you are directed to the respective setup item to correct capacity and increment settings accordingly.

Setup item	Sub items / possible settings	Comment
Geo Value (strain gauge scales only)	Enter the Geo value for your region, see [Table of Geo code values ▸ Page 154].	
	Using softkey the Geo value can be calculated depending on your geographical latitude and height above sea level.	 The Geo value is calculated with one decimal place.
Lower Limit (°C)	-20°C ... **-10 °C** ... 59 °C	Setting the lower and upper temperature limits for operating the weighing system according to the connected scale. Temperature values outside the approved ranges are highlighted in red. The approved temperature ranges are stored in the load cells.
High Limit (°C)	19 °C ... **40 °C** ... 60 °C	

3.2.1.1 Exact GEO Code

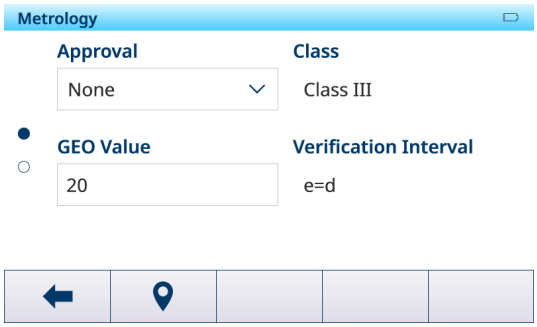
IND400 provides the exact GEO code as the extension for the GEO code feature. The idea of Exact GEO code is to provide more digits in GEO code (Originally the GEO code is an integer value between 0 and 31) to get more accurate "g".

- The terminal is in non-approved mode.

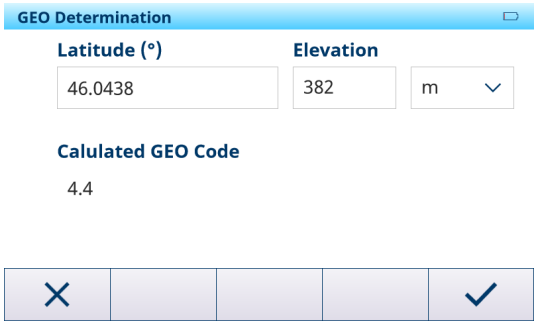
1 Open the **Metrology** page in the path **Scale** > **Metrology**.

2 Click the softkey .

3 Enter the **Latitude (°)** and the **Elevation** in the pop-up **GEO Code Determination** page.



➡ The **Calculated GEO Code** with one digit after the point is displayed in the page.



4 Click the softkey ✓.

➡ The **Calculated GEO Code** is updated to the **GEO Code** field in the **Metrology** page.

3.2.2 SICSpro/Analog/POWERCELL scale setup

Overview

The SICSpro/Analog/POWERCELL scale setup consists of the following setup items:

- Load Cells (POWERCELL scale only)
- System (POWERCELL scale only)

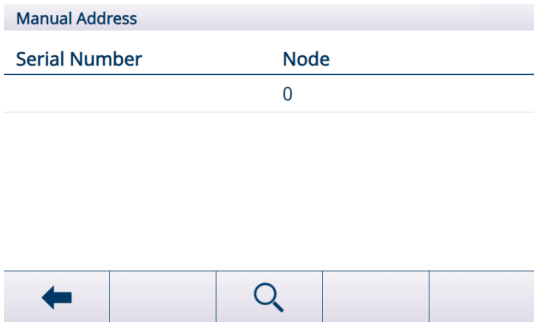
- Shift Adjust Scale (POWERCELL scale only)
- Identification
- Capacity & Increments
- Linearization & Calibration
- Control Mode
- Units
- Zero
- Tare
- Filter
- Stability
- MinWeigh
- Warmup (for approved scales only)
- Loading Alert (POWERDECK Floor Scale only)
- Leveling Guidance (POWERDECK Floor Scale only)
- FACT (SICSpro scale only)
- Reset (SICSpro scale only)

Powercell setup

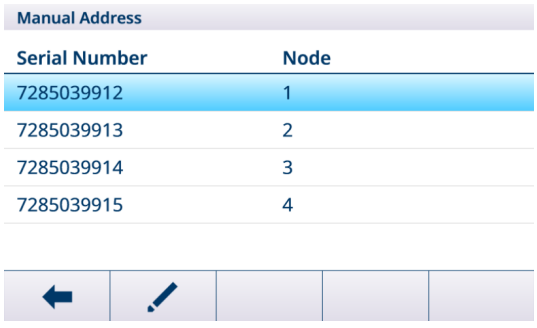
Manual Address

Manual Address can ensure that each load cell has a unique address, helping users quickly locate and repair faulty load cells.

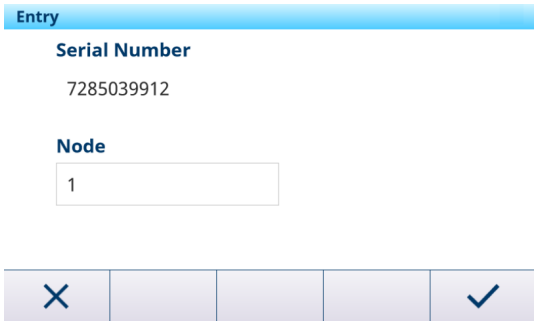
1 In the **Manual Address** page, press the softkey 🔍 to start the addressing process.
   - ➡ The terminal is discovering cells.
   - ➡ The serial number and current node information of the found load cells are indicated.



2 Touch a row to highlight a load cell and click the Edit softkey ✎ to edit the **Node Address** of the load cell.



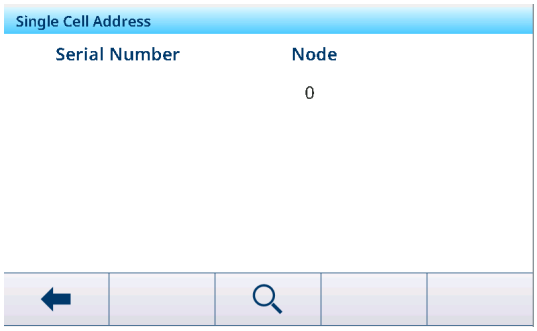
3 Click ✓ to start addressing of this single load cell immediately.



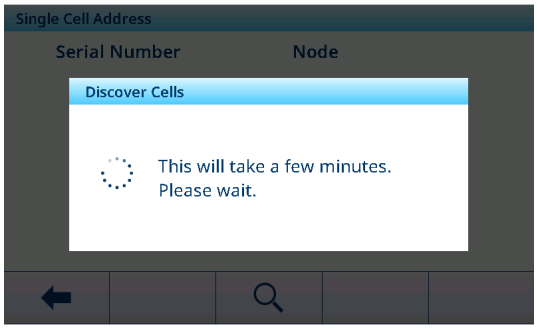
Single Cell Address

Note

- It is important to make sure that only one load cell is connected to the terminal.
- If multiple load cells are connected, it will only deal with the load cell detected first.

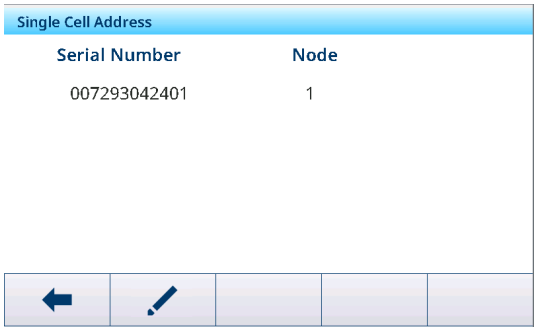


1 In the **Single Cell Address** page, press the softkey to start the addressing process.
   - The terminal is discovering cells.
   - The serial number and current node information of the found load cell are indicated.



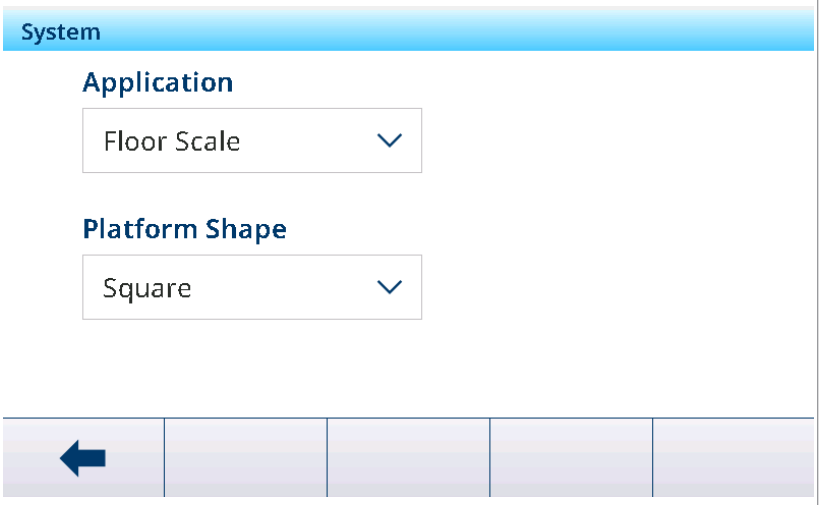
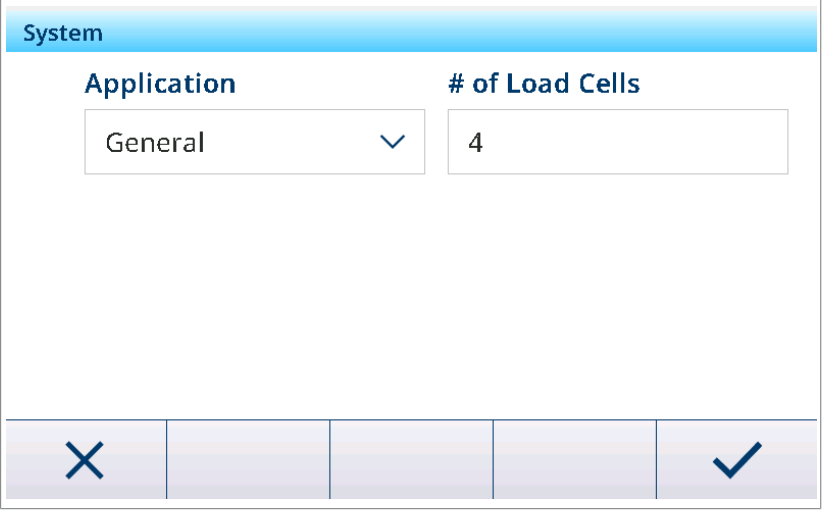
2 Click the Edit softkey to edit the **Node Address** of the load cell.

3 Click ✓ to start addressing of this single load cell immediately.



System setup

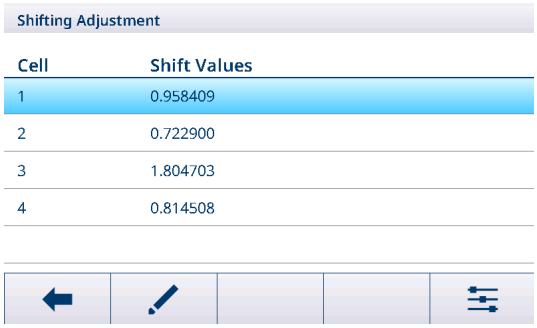
In the menu page, a platform can be configured for PowerDeck.

System	Displaying/setting system data
Application	Floor Scale (default) • Platform Shape – Square (default) – Rectangular  General • The # of Load Cells can be 1 – 12, and the default value is 4. 

Shift Adjust Scale setup

With the Shift Adjust function, the terminal can produce same weight results at different locations within the PowerDeck platform.

1 In the Shifting Adjustment page, click the Edit softkey to edit the coefficients and click the **Shift Adjust** key to start shift adjustment.



2 In the pop-up page, click the Information softkey ⓘ to view the recommended test weight.
Select to do a **Whole Scale** (default) adjustment or a Partial adjustment in the field **Type**, and press the Start softkey ▶ to start the process.

3 Empty the scale as instructed in the display and press ▶.

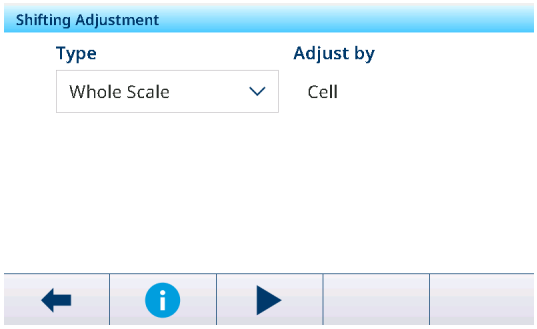
➡ The terminal is doing sampling for the empty scale.

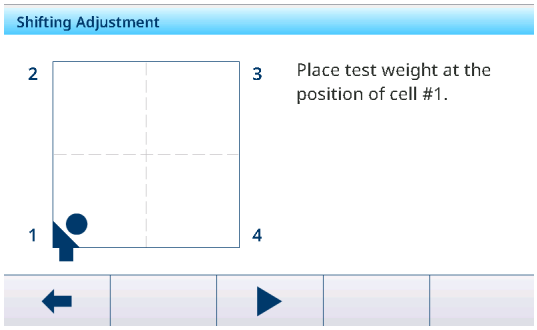
4 When the sampling is completed, click ✓.

5 Place the test weight at the position of each load cell indicated in the display and press ▶.

6 When the process is completed, click ✓.

➡ The shift adjustment is done.





Identification setup

Identification	Displaying/setting scale identification data
Serial Number	Entering the serial number of the selected scale.
Scale Model	Entering the scale type, e.g. PBD555 - 15LA.
Scale Location	Entering the scale location, e.g. floor and room.
Scale Identification	Entering the scale identification, e.g. inventory number.
ⓘ **Note**: Scale Location and Scale Identification can consist of up to 40 alphanumeric characters.	

Capacity & Increments setup

ⓘ **Note**

Default settings are shown in **bold**.

Capacity & Increments	Setting capacity and increment
Primary Unit	Select from the following: g, **kg**, oz, lb, t, ton
#Range/Intervals	Select from the following: **1 Single Range**, 2 Multi-Interval, 2 Multiple Range, 3 Multi-Interval, 3 Multiple Range.
Range 1 … Range 3	Set ranges according to #Range/Intervals. ⓘ **Note** With Multi-Interval / Multiple Range observe the following, otherwise a message is displayed: Range/Interval 1 < Range/Interval 2 < Range/Interval 3
Resolution 1 … Resolution 3	Set resolutions according to #Range/Intervals. ⓘ **Note** • With Multi-Interval / Multiple Range observe the following, otherwise a message is displayed: Resolution 1 < Resolution 2 < Resolution 3 • For approved SICSpro scales, when the Class is II and e = 10 d, the increment must be 1 x 10^k.
Blank Over Capacity (d)	Blanking of the display is used to indicate an overload condition ⌐ - - - - ⌐. Set the number of divisions (d) that the scale is permitted to go over the maximum capacity before blanking. Possible settings: 0 … **5** … 99 (d)

Linearization & Calibration setup

Note

Default settings are shown in **bold**.

Linearization & Calibration	Calibrating the scale
Type -> **Zero Adjustment**	Using this setup item the scale is set to zero. 1 Touch softkey ▶ and follow the instructions on the screen. ➡ When finished, a message is displayed. 2 Confirm the message. ➡ The calibration protocol is displayed. Touching softkey opens a screen for the span adjustment.
Type -> 2-Point	Using this setup item the scale is calibrated by using the zero point and a test weight. 1 Enter weight value and name of the test weight. 2 Confirm test weight data with the checkmark. 3 Touch softkey ▶ and follow the instructions on the screen. ➡ When finished, a message is displayed. 4 Confirm the message. ➡ The calibration protocol is displayed.
Type -> 3-Point, 4-Point, 5 Point, 3-P. With Hysteresis, 4-P. With Hysteresis, 5-P. With Hysteresis	Using this setup items the scale is calibrated using the zero point and two or up to 4 test weights. 1 Enter weight value and name of the test weights. 2 Confirm test weight data with the checkmark. 3 Touch softkey ▶ and follow the instructions on the screen. ➡ When finished, a message is displayed. 4 Confirm the message. ➡ The calibration protocol is displayed.
Auto Print Cal.	If activated, the calibration data are automatically printed/transferred.
Last Calibration Date	Date of the last calibration.

Calibration protocol

Print/transfer the calibration protocol

Enter a comment on the current calibration

Control Mode setup

Control Mode	Weight value in higher resolution
Control Mode	Displaying the weight value in higher resolution.

Units setup

Note

Default settings are shown in **bold**.

Units	Setting display units
Second Unit	Select from the following: g, kg, oz, **lb**, t, ton
Third Unit	Select from the following: g, **kg**, oz, lb, t, ton

Units	Setting display units
Powerup Unit	Select which weight unit shall be used at a restart. • **Primary Unit**: The scale restarts in the primary unit. • Restart: The scale restarts with whichever unit was last displayed before the power cycle.
Note	In case of approved scales, individual sub-items of this setup item may not be available or only to a limited extent, depending on the country.

Zero setup

Note

Default settings are shown in **bold**.

Zero	Zero setting options
Startup Zero	Select which zero value shall be used at startup. • **Capture New**: a new zero value is captured • Use Last: the last zero value is used • Use Calibrated: the calibrated zero value is used
Power Up Range - (%) Power Up Range + (%)	Set the range for zeroing at power up in % of the scale capacity. Possible settings: -99 ... **-10** ... 0 (%) resp. 0 ... **+10** ... +99 (%)
Push Button Zero	Activating/deactivating Push Button Zero.
Push Button Range - (%) Push Button Range + (%)	Set ranges for Push Button Zero in % for zeroing via ›**0**‹. Possible settings: 0 ... **2** ... 99
Auto Zero Tracking	Activating/deactivating automatic zeroing.
Auto Zero Range (d)	Set the range for automatic zeroing. Possible settings: 0.0 ... **0.5** ... 9.9 (d)
Center of Zero	Activating/deactivating the indication of symbol **>0<** for a gross weight within +/- 0.25 e/d. **Note**: In approval mode, this function must be enabled.
Under Zero Blank (d)	Blanking of the display is used to indicate an underload condition  . – Set the number of divisions (d) that the scale is permitted to go under zero before blanking. Possible settings: 0 ... **20** ... 99 (d)
Note	In case of approved scales, individual sub-items of this setup item may not be available or only to a limited extent, depending on the country.

Tare setup

Note

Default settings are shown in **bold**.

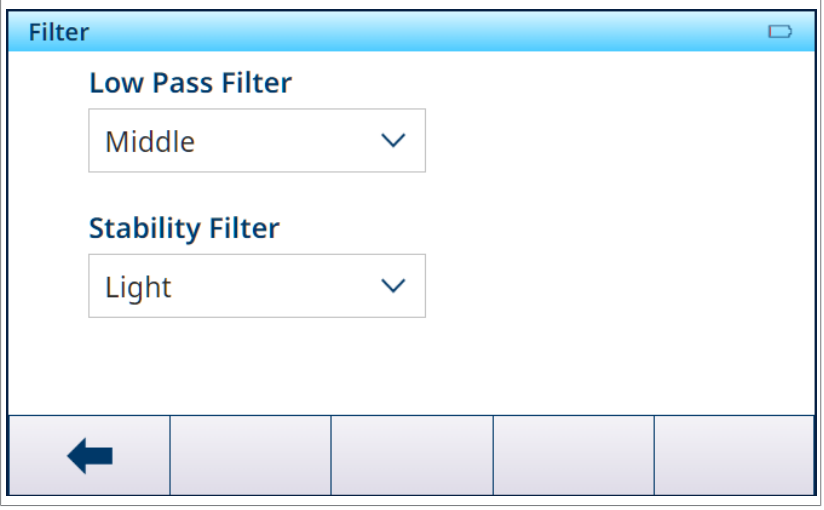
Tare	Tare options
Startup Tare	Selecting which tare value shall be used at startup. • **Clear**: an existing tare value is cleared • Use last: the last tare value is used
Auto Tare Mode	If activated: When a load is placed on the scale and the gross weight exceeds the threshold for automatic taring, the weight is tared automatically.
Threshold (d)	Setting the threshold for automatic taring. Possible settings: 0 ... **9** ... 99 (d)
Reset Threshold (d)	Setting the threshold for clearing the tare. Possible settings: 0 ... **5** ... 99 (d)
Auto Clear Tare	If activated: When the load is removed and the weight drops below the clear threshold weight, the tare weight is cleared automatically.

Tare	Tare options
Threshold (d)	Setting the threshold for clearing the tare automatically. Possible settings: 0 ... **9** ... 99 (d)
Chain Tare Mode	If activated: It is possible to tare several times if e.g. cardboard is placed between individual layers in a container.
Push Button Tare	If activated, taring via ›T‹ is enabled.
Keyboard Tare	If activated, the tare weight can be entered numerically.
Clear With Zero	If activated: When the load is removed and the weight drops below zero, the tare weight is cleared automatically.
Net Sign Correction	Under Legal for Trade mode, the Net Sign Correction function should be disabled.

Filter setup

Note

Default settings are shown in **bold**.

Filter	Filter settings
Low Pass Filter	Setting the condition above which all disturbances are filtered out. The lower the setting, the better the disturbance rejection, but the longer the setting time required for the scale. Possible settings: Low, **Middle**, High, Heavy High
Stability Filter	The stability filter works in conjunction with the standard low pass filter to provide a more stable final weight reading. The stability filter should only be used in transaction weighing applications, since the non-linear action of the filter switching may cause inaccurate cutoffs in batching or filling applications. Possible settings: Off, Light, High • For Analog scale, the default value is Off. • For Powercell scale, the default value is Light. **Note** For Analog scale only, when modifying the Capacity & Increment, the switch of Stability Filter is modified automatically according to the number of divisions. (If the number of divisions is less than 10,000, it is set to Off. If the number of divisions is greater than or equal to 10,000, it is set to Light.) 

Stability setup

Note

Default settings are shown in **bold**.

Stability	Setting the stability detector (weight in motion)
Motion Range (d)	Setting the motion range (in divisions) that the weight is permitted to fluctuate and still have a no-motion condition. Possible settings: 0.1 ... **0.5** ...99.9 (d)
No-motion Interval (s)	The no-motion interval defines the amount of time (in seconds) that the scale weight must be within the motion range setting to have a no-motion condition. A shorter interval means that a no-motion condition is more likely, but may make weight measurement less precise. Possible settings: 0.0 ... **0.5** ...2.0 (s)

MinWeigh setup

Note

Default settings are shown in **bold**.

MinWeigh	MinWeigh function
MinWeigh Mode	Activating/deactivating the MinWeigh function. If activated and the weight on the scale drops below the set minimum value, is blinking.
Value (kg)	Setting the minimum weight value in kg. Possible settings: **0** ... max. load
Note	If you attempt to record the weight while in the MinWeigh condition, the printout will include an asterisk (*) on the net weight value.

Warmup setup

Note

Default settings are shown in **bold**.

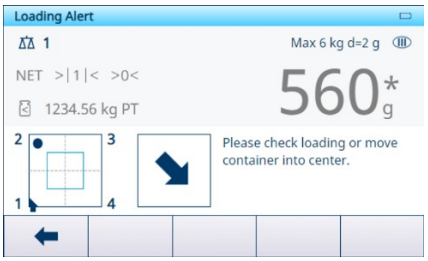
Warmup	Warmup time
Warmup (min)	Setting warmup time at startup, for approved scales only Possible settings: 0 ... **3** ... 99 (min)

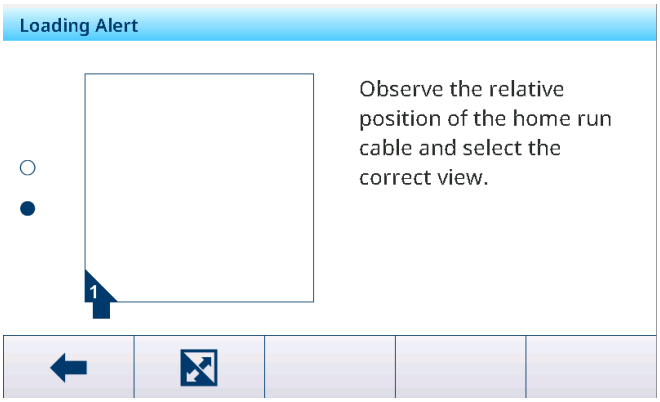
Loading Alert setup

This menu item is only available when:

- The scale type is POWERCELL.
- The platform type is Floor Scale.

Loading Alert determines the "center of gravity" location based on the cell counts. If the location is outside of a certain range (set by the customer) then a loading alert screen is shown. If the container is placed on the scale outside of the customer defined tolerances, Loading Alert will display this window:



Configuration Item	Options	Descriptions
Loading Alert	Disabled (default)	-
	Enabled	Cancel and Continue • Disabled (default): When Loading Alert is active, the operator must relocate the load to within the OK zone. • Enabled: When Loading Alert is active, the operator can ignore and close the warning and continue to work.
		OK Range As definition of the OK zone, this value is in percentage of the distance between load cells. • Default value: 30 • Possible values: 5 – 50 Example: If the platform size is 1m*1m and the OK Range is set at 50%, the square of the OK Range displayed in the OK Range Operation screen is 0.5m*0.5m.
		Threshold • Default value: Weight equivalent to 5% of the scale capacity, and rounded to the scale increment • Possible values: Equivalent to 5% of scale capacity
		Orientations In this function, user can click the softkey ⤢ to change view according to relative position of the first corner, and confirm the selection with ✓. 

Leveling Guidance setup

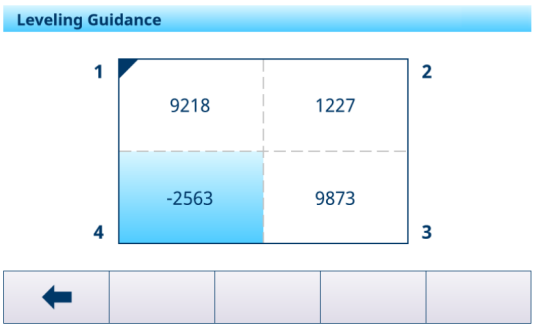
This function indicates the difference between the current counts of each load cell (non-load condition) and the zero counts of each load cell (non-load condition) stored as initial factory data. MT service technician can use shims for scale leveling according to the prompt by Leveling Guidance.

The prerequisites of using this function are listed below:

- A bubble level has been used to level the platform, but fails to work.
- The platform type is Floor Scale, and the number of load cells is 4 or 6.
- The zero counts stored at factory can be recalled from load cells to terminal.
- The individual measurement output of each load cell is separately available and functioning properly.
- The POWERCELL load cell addressing has been completed.
- This function only works for factory calibrated platforms with all original loads cells intact.

Note The Leveling Guidance function is only allowed after the scale parameter restore (see [Maintenance -> Scale Test -> Restore Factory Calibration ▸ Page 137]). Additionally, if the scale is readdressed, the Leveling Guidance function is not recommended.

1 Keep the platform empty.
   - ➡ Terminal can get the current raw counts from each load cell, and take these raw counts as the current zero point.
   - ➡ Display value = Current zero point – Factory stored zero point
2 Check the load cell address with the lowest cell count highlighted.
3 Shim first the corner with load cell highlighted.



FACT setup

FACT	Fully Automatic Calibration Test (for SICSpro scales with internal calibration weight only)
Temperature	FACT is a temperature controlled adjustment device. When the FACT function is enabled, the temperature in the magnet is measured. If the specified temperature change is reached after the last adjustment, an internal adjustment is carried out as soon as the balance has not been used for 3 minutes. An internal adjustment will be performed each time the terminal is started. This adjustment will correct all temperature influences.

Reset setup

Reset	Scale reset (SICSpro scale only)
Perform Reset?	Confirm with the checkmark. The scale settings will be reset to factory settings.

3.2.3 Default settings

SICSpro / Analog / POWERCELL Scale

Setup items		Default setting	Possible settings
System	Application	Floor Scale	Floor Scale, General
	Platform Shape	Square	Square, Rectangular
	# of Load Cells	4	1 - 12
Metrology	Approval	None	None, Argentina, Australia, Canada, OIML, USA, Korea, Thailand
	if approved	Class III	II, III, III HD (Canada only), III L (USA only), IIII
	Geo Value	19	0.0 ... 31.0
	Lower Limit	-10 °C	-20 °C to 59 °C
	High Limit	40 °C	-29 °C to 60 °C
	Display (metrology line)	non-approved: Cap/d approved: Max/Min/e	Non-approved: Disabled, Cap/d, Max/Min/e Approved: Max/Min/e
Capacity & Increments	Primary Unit	kg	Non-approved: g, kg, oz, lb, t, ton Approved: g, kg, t
	#Range/Intervals	1 Single Range	1 Single Range, 2 Multi-Interval, 2 Multiple Range, 3 Multi-Interval, 3 Multiple Range
	Blank Over Capacity (d)	5 (d)	0 ... 99 (d)

Setup items		Default setting	Possible settings
Shifting Adjustment	Type	Whole Scale	Whole Scale, Partial
	Cell	1	1 - 12
Linearization & Calibration	Type	Set Zero	Span, 3-Point, 4-Point, 5 Point, 3-P. With Hysteresis, 4-P. With Hysteresis, 5-P. With Hysteresis
	Auto Print Cal.	Off	On, Off
Units	Second Unit	non-approved: lb approved: None	Non-approved: None, g, kg, oz, lb, t, ton Approved: None, g, kg, t
	Third Unit	kg	Non-approved: None, g, kg, oz, lb, t, ton Approved: None, g, kg, t
	Power Up Unit	Primary Unit	Primary Unit, Restart
Zero	Startup Zero	Capture New	Non-approved: Use Last, Capture New, Use Calibrated Approved: Capture New
	Power Up Range - (%)	Non-approved: 10 (%) Approved: 2 (%)	0 ... 99 (%)
	Power Up Range + (%)	Non-approved: 10 (%) Approved: 18 (%)	0 ... 99 (%)
	Push Button Zero	On	On, Off
	Push Button Range - (%)	2	-99 ... 99 (%)
	Push Button Range + (%)	2	-99 ... 99 (%)
	Auto Zero Tracking	On	On, Off
	Auto Zero Range (d)	0.5 (d)	0 ... 9.9 (d)
	Center of Zero	Off	On, Off
	Under Zero Blank (d)	20 (d)	None-approved: 0 ... 99 (d) Approved: 5 … 20 (d)
Tare	Startup Tare	None-approved: Clear Approved: Clear or Use Last	Clear, Use Last
	Auto Tare Mode	Off	On, Off
	Threshold (d)	9 (d)	0 ... 99 (d)
	Reset Threshold (d)	5 (d)	0 ... 99 (d)
	Auto Clear Tare	Off	On, Off
	Threshold (d)	9 (d)	0 ... 99 (d)
	Chain Tare Mode	On	On, Off
	Push Button Tare	On	On, Off
	Keyboard Tare	On	On, Off
	Clear With Zero	Off	On, Off
	Net Sign Correction	Off	On, Off
Filter	Low Pass Filter	Middle	Light, Middle, High, Heavy High
	Stability Filter	Off	On, Off
Stability	Motion Range (d)	0.5 (d)	0.1 ... 99.9 (d)
	No-Motion Interval (s)	0.5 (s)	0.0 ... 2.0 (s)
MinWeigh	MinWeigh Mode	Off	On, Off
	Value (kg)	0 (kg)	0 ... max. load

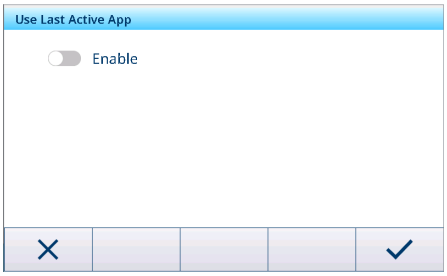
Setup items		Default setting	Possible settings
Warm up (approved scales only)	Warmup (min)	0 (min)	0 ... 99 (min)
Loading Alert		Disabled	Disabled, Enabled
	Cancel and Continue	Disabled	Disabled, Enabled
	OK Range	30	5 - 50
	Threshold	5	Equivalent to 5% of scale capacity

3.3 Applications setup

3.3.1 Application -> Use Last Active App

This function allows users to keep the last active application or always use Basic Weighing after restarting the terminal.

This function is disabled by default.



Use Scenarios

- The Use Last Active App function should be enabled if a user wants to stay in the current application after switching user or logout, or a user wants to go back to the last active application after restarting the terminal.
- The Use Last Active App function should be disabled if a user wants to go back to Basic Weighing after switching user or logout or stay in Basic Weighing after restarting the terminal.

3.3.2 Application -> Memory

The Memory setup consists of the following setup items:

- Alibi Table
  refer to [Recalling the Alibi log file ▸ Page 26]
- Configurable Table
  - Tare Table
    refer to [Basic weighing settings ▸ Page 37]
  - Over/Under Target Table
    refer to [Over/Under checkweighing settings ▸ Page 52]
  - Manual Filling/Dosing Target Table
    refer to [Manual Filling/Dosing settings ▸ Page 68]
  - Counting Target Table
    refer to [Counting settings ▸ Page 59]
  - Material Table
    refer to [Basic weighing settings ▸ Page 37]
  - Import / Export
    refer to [Importing/exporting data ▸ Page 28]

3.3.3 Application -> Basic Weighing

This setup item is another access to the following sub items:

Setup item	Reference
Settings	[Basic weighing settings ▸ Page 37]
Transfer	[Basic weighing settings ▸ Page 37]
Transaction Table	[Recalling the transaction table ▸ Page 25]

3.3.4 Application -> Over/Under

This setup item is another access to the following sub items:

Setup item	Reference
Settings	[Over/Under checkweighing settings ▸ Page 52]
Transfer	[Basic weighing settings ▸ Page 37]
Transaction Table	[Recalling the transaction table ▸ Page 25]

3.3.5 Application -> Manual Filling/Dosing

This setup item is another access to the following sub items:

Setup item	Reference
Settings	[Manual Filling/Dosing settings ▸ Page 68]
Transfer	[Basic weighing settings ▸ Page 37]
Transaction Table	[Recalling the transaction table ▸ Page 25]

3.3.6 Application -> Counting

This setup item is another access to the following sub items:

Setup item	Reference
Settings	[Counting settings ▸ Page 59]
Check Counting	[Counting settings ▸ Page 59]
Transfer	[Basic weighing settings ▸ Page 37]
Transaction Table	[Recalling the transaction table ▸ Page 25]

3.3.7 Application -> Classification

This setup item is another access to the following sub items:

Setup item	Reference
Settings	[Classification Settings ▸ Page 85]
Transfer	[Basic weighing settings ▸ Page 37]
Transaction Table	[Transaction Table in Classification ▸ Page 90]

3.3.8 Application -> Totalization

This setup item is another access to the following sub items:

Setup item	Reference
Settings	[Totalization settings ▸ Page 75]
Transfer	[Basic weighing settings ▸ Page 37]
Transaction Table	[Recalling the transaction table ▸ Page 25]

3.3.9 Application -> Animal Weighing

This setup item is another access to the following sub items:

Setup item	Reference
Settings	[Animal Weighing settings ▸ Page 81]
Transfer	[Basic weighing settings ▸ Page 37]
Transaction Table	[Recalling the transaction table ▸ Page 25]

3.3.10 Application -> IDs

This setup item is another access to the setup of ID1 ... ID3. For details refer to [Basic weighing settings ▸ Page 37].

3.3.11 Application -> Data Integrity

This setup item is only available for IND400 with Data Integrity. The following settings are available:

Setup item	Options	Description
Electronic Signature	Enable & Disable	When enabled, the electronic signature has three scenarios to enhance data integrity. Once enabled, it can't be set up to disabled unless Master Reset in MT technician level.
Type	Weighing E-Signature Only	Require users to enter electronic signature again when generating weighing transaction logs to ensure the data integrity of the system.
	Reviewer E-Signature Immediately	Require users to review the transaction immediately when transferring a transaction.
	Reviewer E-Signature In Transaction Table	Require users to review the accuracy of transaction data in the transaction table and enter electronic signature to ensure the data integrity of weighing data.

3.4 Terminal setup

The Terminal setup consists of the following main setup blocks:

- Device
- User Management

3.4.1 Terminal -> Device

3.4.1.1 Terminal -> Device -> Region

Note

Default settings are shown in **bold**.

Setup item	Sub items		Possible settings/description
Language	Display Message		**English**, Chinese, Deutsch, Français, Italiano, Español, Português, Japanese, Polski
	Onscreen Keyboard		**English**
	Keyboard Layout		**QWERTY**, QWERTZ, AZERTY
	External Keyboard		**None**, English, Português, Français, Español, Italiano, Deutsch
Date & Time	Preview of Time and Date		
	Use 24-Hour Clock		**On**/Off
	Display Seconds		On/**Off**
	Show 2-Digit Month		On/**Off**
	Show 2-Digit Year		On/**Off**
	Time Separator		**:**, .
	Date Format		**Day Month Year**, Month Day Year, Year Month Day
	Date Separator		**/**, None, (Space), Dash, ., /, :
	Time Zone		Only available if Network Time Synchronization is set to On.
	Daylight Saving Time		On/**Off**
		Shift (H)	Shift of the daylight saving time
		Start - Summer	Start date of the daylight saving time
		End - Winter	End date of the daylight saving time
	Set Date		Set date and time in the selected format
	Hour		
	Minute		

Setup item	Sub items	Possible settings/description
	Network Time Synchronization	On/**Off**
	Connect Timeout	1 ... **5** ... 30
	Time	Current time
	Last Synchronization	Time of the last synchronization
	Sync Cycle (Hours)	1 ... **8** ... 99
	Time Server IP Address	IP Address of a time server for your region
	Time Server Port #	123
	Alert (d)	0 ... **1** ... 30
	Synchronizing data and time automatically When Network Time Synchronization is set to On and a time server is entered, date and time are synchronized with the time server automatically after the set Sync Cycle has elapsed. **Synchronizing data and time manually** For a manual synchronization with the time server, touch ↻. After the synchronization a message is displayed and date and time are updated. **Time zone and daylight saving time** When leaving Network Time Synchronization with ← you are directed to the Date & Time page with the possibility to set a time zone and the daylight saving time. When Network Time Synchronization is set to On it is not possible to set the date and time.	

3.4.1.2 Terminal -> Device -> License Management

A license is required to enable advanced functionality or specific applications. Licenses included with an ordered are installed and activated in the factory. Call Mettler Toledo service to schedule the installation and activation of licenses purchased later in terminals in the field.

Available License Packages

- Basic Weighing
- Alibi
- Remote SQC
- Multi App
- Data Integrity
- Modbus TCP
- Basic Weighing + Modbus TCP
- Alibi + Modbus TCP
- Remote SQC + Modbus TCP
- Multi App + Modbus TCP
- Data Integrity + Modbus TCP
- Modbus RTU
- Basic Weighing + Modbus RTU
- Alibi + Modbus RTU
- Remote SQC + Modbus RTU
- Multi App + Modbus RTU
- Data Integrity + Modbus RTU

This setup item shows a list of software licenses available on the device. The following information is displayed for each license:

Parameter	Icon	Description
#	-	Running number of the license
State		Activated
		Deactivated
		Pending, i.e. not activated yet
Name	-	Name of the license
License Key	-	License key in the format XXXXX-XXXXX-XXXXX-XXXXX-XXXXX
Product	-	Functionality of the license

3.4.1.3 Terminal -> Device -> Screen Saver

After a set time without action on the terminal, a blue screen with METTLER TOLEDO can be displayed as screen saver.

1 **Enable**/disable the screen saver.

2 When enabled, set the timeout after which the screen saver will be active.

Timeout settings: **1 min** to 60 min

3.4.1.4 Terminal -> Device -> Backlight

Set the brightness of the display.

3.4.1.5 Terminal -> Device -> Identification

Setup item	Description
Terminal ID #1	Enter up to 3 terminal identifications of max. 20 alphanumeric characters each.
Terminal ID #2	
Terminal ID #3	
Serial Number	Shows the serial number of the weighing terminal.

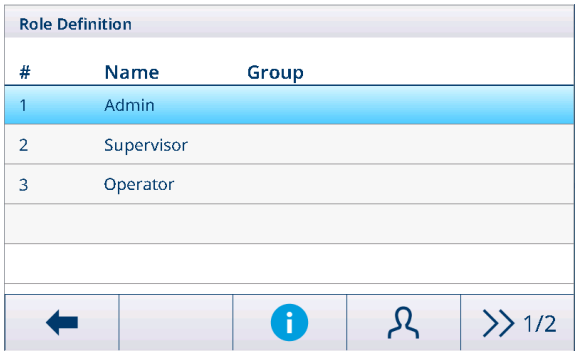
3.4.2 Terminal -> User Management

The device offers a user management with roles and users assigned to a role.

3.4.2.1 Terminal -> User Management -> Role Definition

A maximum of 20 roles can be defined when Data Integrity license is active.

Roles without Data Integrity



Roles with Data Integrity

The default roles are as follows:

- Admin
- Supervisor
- QA (with Data Integrity active only)
- Operator

Each role is assigned to a permission group with authorized permissions as shown in the table below.

Role Details

Touch ⓘ to show details of the marked role.

Role definition	Admin	Supervisor	QA	Operator
Name	Admin	Supervisor	QA	Operator
Role level	1	2	2	6
Permissions	High	Medium	Medium	Low

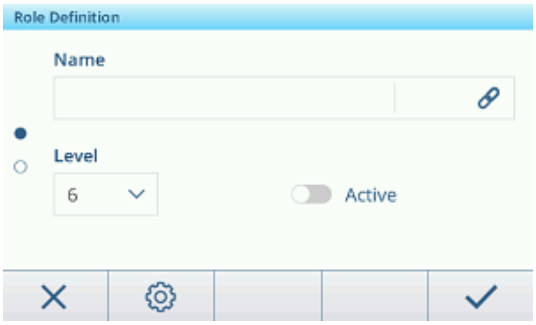
Note Users with a higher role level can reset the password of users with a lower role level.

Touch ⚙ in the next screen to show the role details regarding Permission Groups.

	Admin		Supervisor		QA	Operator	
Permission Group	**without DI**	**with DI**	**without DI**	**with DI**	**with DI only**	**without DI**	**with DI**
W&M	Level 3		Level 2		Level 2	Level 1	
Miscellaneous	Terminal Device Communication		Terminal Device Communication		Terminal Device Communication	–	
Transaction Memory	View Export Reset	View Export Cancel Reprint* Review	View Export	View Export Cancel Reprint* Review	View Export Cancel Reprint* Review	View	View Review
Application	Application Entry		Application Entry		Application Entry	–	
Material Memory	Operate Configure		Operate Configure		Operate Configure	Operate	
Maintenance Memory	View Print & Export Enable & Disable & Reset	View Print & Export Enable & Disable	View Print & Export		View Print & Export	–	
Audit Trail Memory	–	View Print & Export	–		View Print & Export	–	
Shared Data	Read Write FTP		Read		–	–	
User Management	–	Role Definition Password Policy User Definition	–	Role Definition Password Policy User Definition	Role Definition Password Policy User Definition	–	
* Reprint can be performed 5 times at most. After the 5th Reprint operation, the Reprint softkey won't display.							

Add A New Role Level (with Data Integrity active only)

1 In the list of roles touch softkey +.
2 Enter a name for the new role.
3 Select the access level for the new role.
4 Set the new role to Active, if desired.
5 On the second page enter a role description.



Linked Users

There are two possibilities to show which users are linked to a specific role:

- On the Role Definition overview screen, mark a role and touch softkey 👤.
  The users linked to the role are displayed with their name and ID.
- When the role details are displayed, touch the link symbol 🔗 at the right hand side of the role name.
  The users linked to the role are displayed with their name and ID.

Filter roles

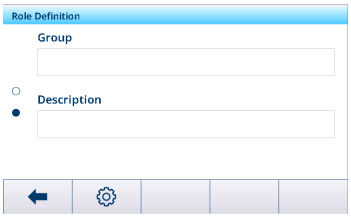
Note

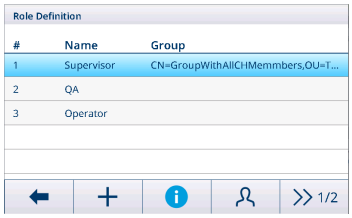
For more information on how to edit tables refer to [Editing tables ▸ Page 28] and [Filtering logs and tables ▸ Page 26].

Role Mapping to LDAP's DN

The roles defined locally need to be mapped to the DN in LDAP server to realize the centralize user management.

To do the mapping, the LDAP group information of the domain user needs to be input in the field Group.

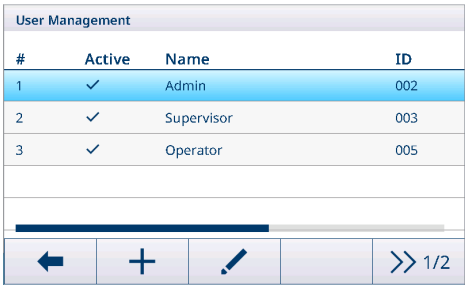




3.4.2.2 Terminal -> User Management -> User Definition

A maximum of 200 users can be defined, including both the default users and the customized users.

The list of existing users is displayed.



Create / Edit A User

1 To create a new user, touch softkey +.
To edit an existing user, mark the user and touch softkey ✎.

2 Do the following settings:

Setup item	Description	Possible settings / comments
Name	User name	Max. 20 alphanumeric characters
Role	IND400 without Data Integrity: Select from Operator or Supervisor IND400 with Data Integrity: Select from Operator, QA, Supervisor or a custom role	**Note** There is only one predefined user with the role of the Admin. **Note** On the IND400 with Data Integrity, once a user has been activated, it cannot be deleted anymore.
ID	User ID	Use this User ID to login.
Description	Additional information on the user	
Enter Password	Password according to Password Policy	-
Confirm Password		
Active	Set the user to "active"	-
Default Login User	Set user to default user on startup and when logging out	For IND400 without Data Integrity only
Language	Select language of the user interface	English, Français, Deutsch, Español, Polski, Italiano, Protuguês, Chinese, Japanese

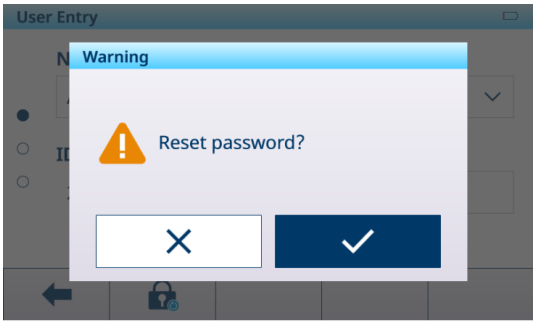
Filter Users

Refer to [Filtering logs and tables ▸ Page 26].

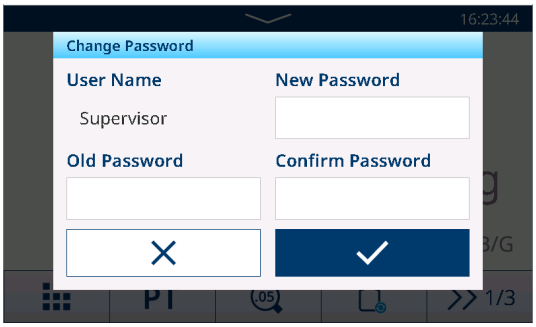
Reset Password

- Password only can be reset as empty here.
- Users only can reset password of those with lower access level.
- Only passwords of the users with Operator, Supervisor, QA, and Customized roles can be reset here.

1 Touch softkey .
   ➡ A safety prompt is displayed.



2 Confirm safety prompt with softkey ✓.
   ➡ The user password is reset.



Note

- In Data Integrity application, user whose password is reset here must set a new password when logging in the next time.
- Beyond Data Integrity application, user whose password is reset here can choose to set a new password or just leave the password empty when logging in the next time.
- For all cases without Data Integrity license, when password policy is disabled and the password is reset, the user can choose to leave the password empty on next login.

3.4.2.3 Terminal -> User Management -> Password Policy

If Password Policy is enabled, the following settings are available:

Setup item	Description	Possible settings
Upper Case	Upper case letter required.	On/**Off**
Lower Case	Lower case letter required.	On/**Off**
Numeric	Number required.	On/**Off**
Special Character	Special character required.	On/**Off**
Minimum Length	Required length of the password.	**4** ... 8 characters
Password Age (day)	Time after which the password has to be changed.	1 ... **30** ... 366 (days)
Enforce Password History	Ensure that the last passwords are not identical.	1 ... **10**
Invalid Logon Attempts	After the specified number of logon attempts, the login is locked.	**3** ... 10
Lockout (s)	Time within the login procedure must be finished.	**60** ... 600 (s)
Timeout (min)	The user will be logged out if there is no action within the specified time.	0 ... **30** ... 180 (min)

3.4.2.4 Terminal -> User Management -> Import/Export

The User Management settings can be imported and exported. Thus, it is possible to synchronize the User Management settings on several devices for example.

Note The user password can't be exported or imported.

For details refer to [Importing/exporting data ▸ Page 28].

3.5 Communication setup

The Communication setup consists of the following main setup blocks:

- Template
- Connections
- Serial
- Ethernet

- VNC Server

3.5.1 Communication -> Template

A template has to be assigned to an application. There are 10 predefined templates available. These templates cannot be changed.

Setting up A New Template

Note

Touch softkey on the second softkey ribbon to copy an existing template for the desired application and to modify it.

For a new template proceed as follows:

1 Touch softkey +.
2 Enter the name of the new template and assign an application.
3 Touch softkey </>.
   ➡ The last element (Type = -END-) is displayed.
4 Touch softkey + to add and edit a new element.
   ➡ The following settings are available per element.
   ➡ The new element is displayed ahead of the -END- element.

Setup item	Sub items	Description / possible settings
Type = SD Name	Alignment	Centered, Left, Right
	Data	Gross, Net, Tare, IDs, application specific data, user identification data, …
	# Characters	Number of characters, depending on the output format
Type = Special Character	Data	Select a special character from the following: 01H_SOH, 02H_STX, 03H_ETX, 04H_EOT, 05H_ENQ, 06H_ACK, 07H_BEL, 08H_BS, 09H_HT, 0AH_LF, 0BH_VT , 0CH_FF, 0DH_CR, 0EH_SO, 0FH_SI, 10H_DLE, 11H_DC1, 12H_DC2, 13H_DC3, 14H_DC4, 15H_NAK, 16H_SYN, 17H_ETB, 18H_CAN, 19H_EM, 1AH_SUB, 1BH_ESC, 1CH_FS, 1DH_GS, 1F_US
	Quantity	Number of special characters
Type = String	Alignment	Centered, Left, Right
	Data	Enter alphanumeric characters
	# Characters	Number of characters, depending on the output format
Type = CR/LF	Quantity	Number of CR/LF characters

Template Preview

– Touch softkey to get a preview of the template.

Import/Export

Templates can be imported resp. exported. Thus, it is possible to edit templates externally on a computer.

For details refer to [Importing/exporting data ▸ Page 28].

Note

Template import replaces all custom templates in terminal. So be sure any existing custom templates are included in the import file (ASCII) & folder (Label).

Editing A Label Template

The terminal supports the ZPL, EPL, DPL, EZPL label designing languages.

1 To insert a terminal variable into the label template, enter the corresponding template keyword at this position.

2 If a string of the template needs to be editable by the terminal, enter <?StringN/> as an editable string keyword.
The maximum number of String is 50.
The maximum length of a String is 50 characters.

Keyword	Date	Time	Gross	Net	Tare	String #N
String	<?Date/>	<?Time/>	<?Gross/>	<?Net/>	<?Tare/>	<?StringN/>

IND400 Weighing Variables

Variable	Shared Data	Type	ASCII Printer	Label Print Template Keywords		Comments	Application
Gross	pv0101	string 21	x	x	<?Gross/>	With unit	General
Net	pv0102	string 21	x	x	<?Net/>	With unit	
Tare	pv0103	string 21	x	x	<?Tare/> <?TarePreset/>	With unit	
Date	pv0104	string 21	x	x	<?Date/>	According to format	
Time	pv0105	string 21	x	x	<?Time/>	According to format	
High Resolution	pv0106	string 21	x	x	<?HighRes/>	High resolution net weight	
ID1	pv0107	string 41	x	x	<?ID1/>	The input title should be used instead of ID1 once the title defined.	
ID2	pv0108	string 41	x	x	<?ID2/>	The input title should be used instead of ID2 once the title defined.	
ID3	pv0109	string 41	x	x	<?ID3/>	The input title should be used instead of ID3 once the title defined.	
Material Description	pv0110	string 41	x	x	<?MaterialDesc/>		
Material ID	pv0111	string 21	x	x	<?MaterialID/>		
Transaction ID	pv0112	string 11	x	x	<?Transac-tionID/>		
Terminal ID #1	xs0106	string 21	x	x	<?TerID#1/>		
Terminal ID #2	xs0107	string 21	x	x	<?TerID#2/>		
Terminal ID #3	xs0108	string 161	x	x	<?TerID#3/>		
SNo Terminal	xs0105	String 14	x	x	<?SNTerminal/>		

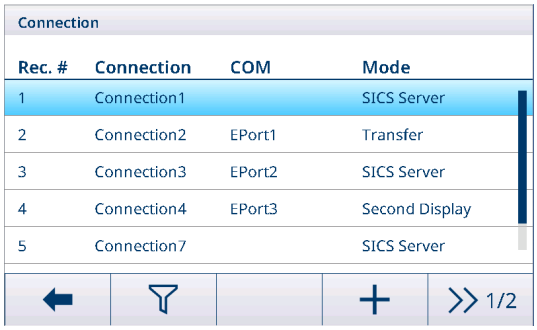
Variable	Shared Data	Type	ASCII Printer	Label Print Template Keywords		Comments	Application
SNo Scale	pv0113	String 14	x	x	<?SNScale/>		
User Name	pv0114	string 21	x	x	<?UserName/>		
Reviewer	pv0115	string 21	x	x	<?Review/>		
Review Date	pv0130	string 21	x	x	<?ReviewDate/>		
Review Time	pv0131	string 21	x	x	<?ReviewTime/>		
IP Address	nt0102	string 40	-	-	-		
Subnet Mask	nt0103	string 40	-	-	-		
Gateway	nt0104	string 40	-	-	-		
Current Copy Number	pv0116	string 11	x	x	<?CurrentCopy/>		
Total Copies	pv0117	string 11	x	x	<?TotalCopies/>		
Mode	pv0140	string 20	x	x	<?Mode/>		
Gross-WOUnit	pv0142	string 21	x	x	<?GrossWOUnit/>	Without unit	
NetWOUnit	pv0143	string 21	x	x	<?NetWOUnit/>	Without unit	
TareWOUnit	pv0144	string 21	x	x	<?TareWOUnit/>	Without unit	
Display Unit	pv0146	string 6	x	x	<?DisplayUnit/>	Display unit	
Tare Type	pv0145	string 3	x	x	<?TareType/>	"PT" = preset tare "T" = push-button tare or no tare	
Total Weight	pv0118	string 21	x	x	<?TotalWgt/>		Animal Weighing
Number of Objects	pv0119	string 11	x	x	<?NumberO-fObjects/>		
Average Weight	pv0120	string 21	x	x	<?AvgWgt/>		
Totalization Type			x	x			
Batch #	pv0132	string21	x	x	<?Batch#/>		Totalization
Sub #	pv0133	string21	x	x	<?Sub#/>		
Grand Total	pv0123	string21	x	x	<?GrandTotal/>	With Unit	
Sub Total	pv0125	string21	x	x	<?SubTotal/>	With Unit	
Grand Total Counter	pv0124	string21	x	x	<?GTCounter/>		
Sub Total Counter	pv0126	string21	x	x	<?STCounter/>		
Data Source	pv0129	string21			<?DataSource/>	Gross/Net	
Totalization Target			x	x			
Deliver Weight	pv0139	string21	x	x	<?Deliver Weight/>	Depends on Data source	
Batch #							Over/Under
Sub #	pv0133	string 21	x	x	<?Sub#/>		
Grand Total	pv0123	string 21	x	x	<?GrandTotal/>	With Unit	
Sub Total	pv0125	string 21	x	x	<?SubTotal/>	With Unit	
Grand Total Counter	pv0124	string 21	x	x	<?GTCounter/>		
Sub Total Counter	pv0126	string 21	x	x	<?STCounter/>		

Variable	Shared Data	Type	ASCII Printer	Label Print Template Keywords		Comments	Application
Target	pv0128	string 21	x	x	<?Target/>	With Unit	
Under Limit	pv0122	string 21	x	x	<?UnderLimit/>	With Unit	
Over Limit	pv0121	string 21	x	x	<?OverLimit/>	With Unit	
Over/Under Result	pv0127	string 21	x	x	<?Over/Under-Result/>		
Data Source	pv0129	string 21	x	x	<?DataSource/>	Gross/Net	
Totalization Target			x	x			
Deliver Weight	pv0139	string21	x	x	<?WeighResult/>	Depends on Data source	
Batch #							Manual Filling
Sub #	pv0133	string 21	x	x	<?Sub#/>		
Grand Total	pv0123	string 21	x	x	<?GrandTotal/>	With Unit	
Sub Total	pv0125	string 21	x	x	<?SubTotal/>	With Unit	
Grand Total Counter	pv0124	string 21	x	x	<?GTCounter/>		
Sub Total Counter	pv0126	string 21	x	x	<?STCounter/>		
Target	pv0128	string 21	x	x	<?Target/>	With Unit	
Under Limit	pv0122	string 21	x	x	<?UnderLimit/>	With Unit	
Over Limit	pv0121	string 21	x	x	<?OverLimit/>	With Unit	
Manual Filling Result	pv0127	string 21	x	x	<?Manual-Filling/Dosin-gResult/>		
Data Source	pv0129	string 21	x	x	<?DataSource/>	Gross/Net	
Totalization Target			x	x			
Deliver Weight	pv0139	string21	x	x	<?WeighResult/>	Depends on Data source	
Batch #							Counting
Sub #	pv0133	string 21	x	x	<?Sub#/>		
Grand Total	pv0123	string 21	x	x	<?GrandTotal/>	Unit = pcs	
Sub Total	pv0125	string 21	x	x	<?SubTotal/>	Unit = pcs	
Grand Total Counter	pv0124	string 21	x	x	<?GTCounter/>		
Sub Total Counter	pv0126	string 21	x	x	<?STCounter/>		
Under Limit	pv0122	string 21	x	x	<?UnderLimit/>	Unit = pcs	
Over Limit	pv0121	string 21	x	x	<?OverLimit/>	Unit = pcs	
Check Counting Result	pv0127	string 21	x	x	<?CheckCount-ingResult/>		
Count	pv0134	string 21	x	x	<?Count/>	Unit = pcs	
APW	pv0135	string 21	x	x	<?APW/>	Unit is the Weight Unit.	
Totalization Target			x	x			
Ref. Pieces	pv0136	string 21	x	x	<?Ref.Pieces/>	Unit = pcs	
Ref. Weight	pv0137	string 21	x	x	<?Ref.Weight/>	Unit is the Weight Unit.	

Variable	Shared Data	Type	ASCII Printer	Label Print Template Keywords		Comments	Application
Batch #							Classifi-cation
Sub #	pv0133	string 21	x	x	<?Sub#/>		
Grand Total	pv0123	string 21	x	x	<?GrandTotal/>	With Unit	
Sub Total	pv0125	string 21	x	x	<?SubTotal/>	With Unit	
Grand Total Counter	pv0124	string 21	x	x	<?GTCounter/>		
Sub Total Counter	pv0126	string 21	x	x	<?STCounter/>		
Under Limit	pv0122	string 21	x	x	<?UnderLimit/>	With Unit	
Over Limit	pv0121	string 21	x	x	<?OverLimit/>	With Unit	
Class Description	pv0141	string 41	x	x	<?ClassDe-scription/>		
Class #	pv0127	string 21	x	x	<?Class#/>		
Number of Classes	pv0138	string 11	x	x	<?NumberOf-Classes/>		
Data Source		string 21	x	x	<?DataSource/>	Gross/Net	
Totalization Target			x	x			
Deliver Weight	pv0139	string21	x	x	<?WeighResult/>	Depends on Data source	

3.5.2 Communication -> Connection

The list of existing connections is displayed.



Setting up a connection

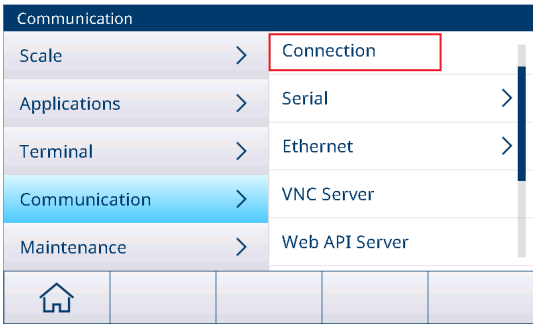
Setup item	Sub items		Description / possible settings
COM	COM1 … COM4		Connection port
	EPort1 … EPort3		
		Port	• For COM = EPort1: The port is fixed as 1701. • For COM = EPort2 and EPort3: The default port of EPort2 is 1702, and the default port of EPort3 is 1703. They are editable but different from each other.
	Client		Operate the device as a client of a server.
		Remote Server	IP address and port of the remote server or printer.
		Remote Port	

Setup item	Sub items	Description / possible settings
Mode	SICS Server SICS Continuous TOLEDO Continuous-W TOLEDO Continuous-C Input Template Second Display Post DigiTol Demand Mode PM Remote Display Reference Balance Transfer Parameter Server Modbus TCP/RTU PSCP	Select the connection mode. For details on the protocols, refer to [Available connection protocols ▸ Page 158].

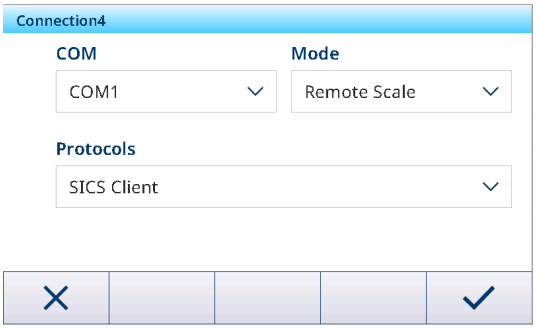
Remote Scale

IND400 terminal can act as remote display with connecting a remote scale through the communication port. The communication protocol between IND400 and the remote scale can be SICS commands and Toledo Continuous. By the connection, IND400 can display the weight from the remote scale and do C/P/T/Z operations over the remote scale.

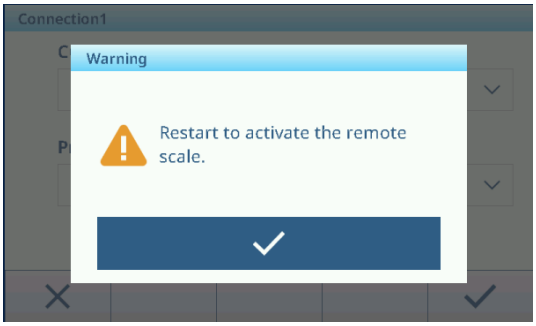
1 To configurate Remote Scale function, via the path: Communication -> Connection.



2 Then select "Remote scale" in the Mode. The default protocol is SICS Client.



3 Confirm the restart message with ✓.



3.5.3 Communication -> Serial

Note

Default settings are shown in **bold**.

Setup item	Sub items	Possible settings
COM1(RS232)	Baud Rate	300, 600, 1200, 2400, 4800, **9600**, 19200, 38400, 57600, 115200
	Parity	7 None, 7 Odd, 7 Even, **8 None**, 8 Odd, 8 Even
	Handshake	**None**, Xon/Xoff
	Stop Bit	Not shown because not programmable, always set to 1.

Note

These are the settings of the standard communication interface.

3.5.4 Communication -> Ethernet

Network Setting

Setup item	Description
DHCP	When enabled, all parameters become ready only.
IP Address	-
Subnet Mask	
Gateway	
MAC Address	• MAC address of the IND400 • Read only
Preferred DNS Server	• IP Address • Default value: 0.0.0.0
Alternate DNS Server	

MQTT

See [Communication -> MQTT Client ▸ Page 131].

LDAP Client

See [Communication -> LDAP Client ▸ Page 135].

FTP / FTPs Server

See [Communication -> FTP / FTPs Server ▸ Page 135].

3.5.5 Communication -> WLAN

3.5.5.1 WLAN Setting

Enabling a wireless network

1 Enable Wireless Setting.
   ➡ The list of the detected wireless networks is displayed. The current connected wireless network is listed on top and marked with ✓.
2 If desired, select another wireless network.

Viewing the wireless network settings

– Select a wireless network and touch ⓘ.
   ➡ Network Name and Suite (security status) are displayed.

Adding a new wireless network

1 When the list of detected wireless networks is displayed, touch +.
2 Enter the network name and select the Suite (security status) out of the following:
Open, WEP, WPA-WPA2 Mix, WPA2, WPA3
Alternatively the suite can be taken from the detected wireless network.
3 Depending on the selected suite, make the following settings:

Suite	Sub items	Description
Open	–	No more security settings
WEP	TX Key Index	Number of WEP keys: **1** ... 4
	Key Size	Length of the WEP key: **40 bits** (5 characters), 104 bits (13 characters)
	Key 1 ... Key 4	Enter keys according to the TX Key Index and Key Size
WPA-WPA2 Mix	WPAx Authentication = PSK	Get the required settings from the detected network or set them manually.
WPA2 WPA3	WPAx Authentication = 802.1X	

Wi-Fi module settings

- WLAN is enabled.

– On the WLAN Setting page touch ⚙.

➡ The following settings are available:

Setting	Description
Configuration page	If set to On, the web page of the Wi-Fi module is enabled.
AP	If set to On, SSID and IP Address of the Wi-Fi module are displayed (read only). • SSID = **MT-AP-XXXXXXXXXXXX** (🛈 **Note**: **XXXXXXXXXXXX** represents the MAC address, which can be found in the path Setup>Communication>WLAN>Network setting**)** • IP Address = 192.168.0.1 • Port = 8080
🛈 **Note** The above setup items are only for Wi-Fi module configuration. From a security perspective, it is to be disabled immediately after Wi-Fi configuration.	
Band	Available communication frequency bands: Dual, 2.4 GHZ Only, 5 GHZ Only
🛈 **Note** If the terminal can't find the AP when the Wi-Fi module is 2.4G and the usage area is China, user needs to check the working frequency band of the AP and avoid channels 12 and 13. 🛈 **Note** Selection of the Wi-Fi frequency band needs to match the antenna (marked at the antenna end), and Dual is not recommended.	

3.5.5.1.1 Wi-Fi Module Setup via Webserver

The section introduces how to upload corporate security certificates, adjust settings like radio band and upgrade module FW using the internal webserver.

- The **Configuration Page** and the **AP** functions are enabled. See WLAN Setting.

1 Find the network **MT-AP- XXXXXXXXXXXX** on the computer and connect to it with password "PASSWORD".

➡ 🛈 **Note** The network name is the same as the default SSID name shown on the Network Setting page.

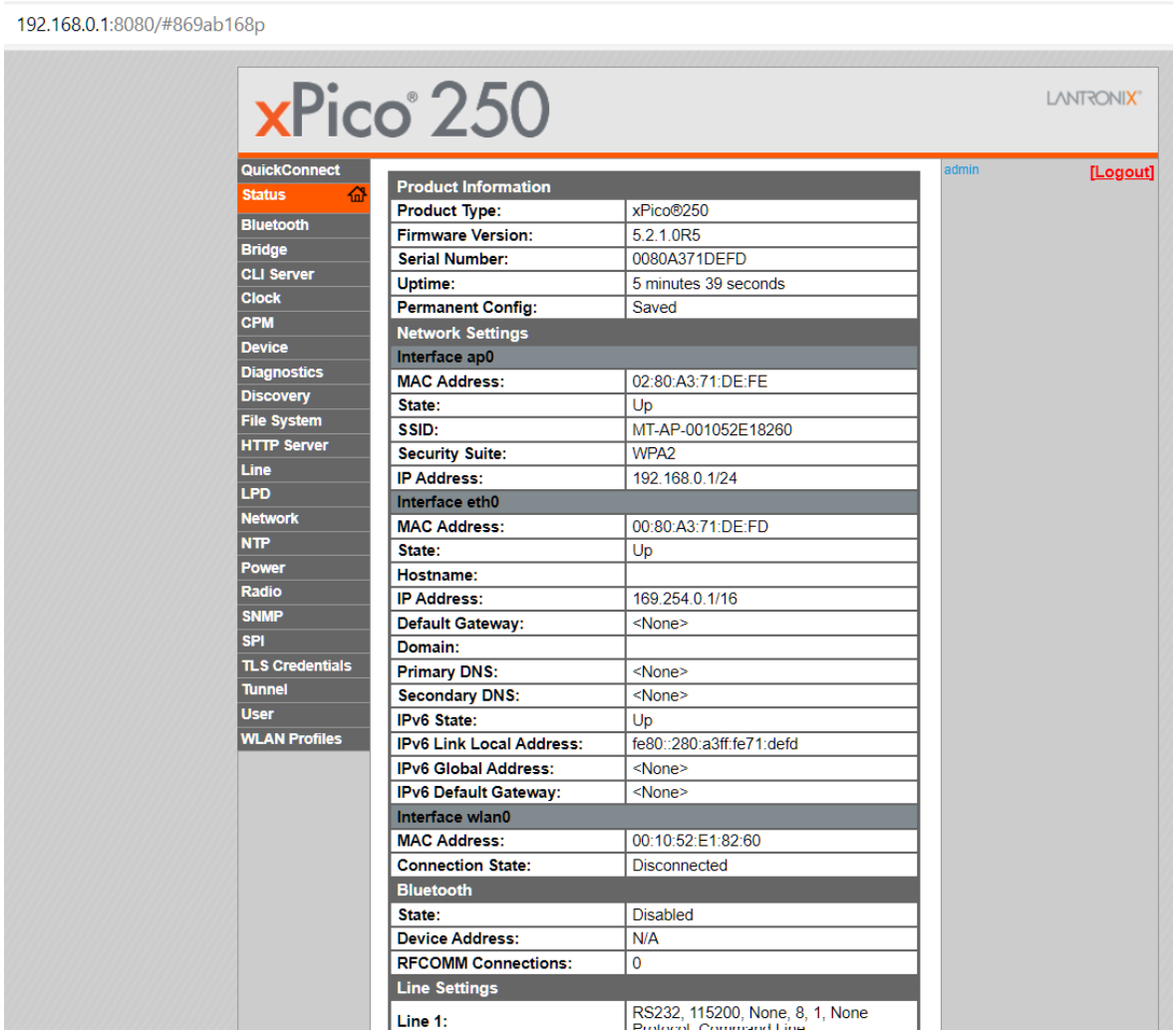
2 By using the PC webbrowser, type IP **192.168.0.1:8080** in the address bar.

➡ 🛈 **Note** The IP Address is the same as shown on the Network Setting page.

3 Log in to the webpage.

➡ User name = admin

➡ Password = PASSWORD



➡ The webpage is opened.

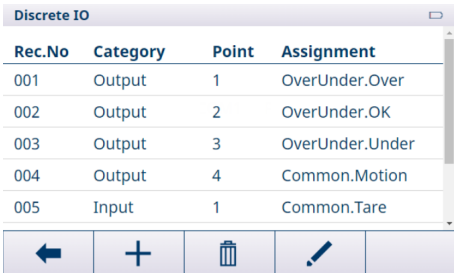
3.5.5.2 Network Setting

See [Communication -> Ethernet ▸ Page 125].

3.5.6 Communication -> Discrete IO

Discrete IO setting provides the centralized setting page to set the IO assignment. The Discrete IO setting data shares the same data source with the IO setting page of other application, which means change in the Discrete IO setting page might impact the Discrete IO setting in the each application setting.

The Discrete IO page shows all the current assignments of IO points.

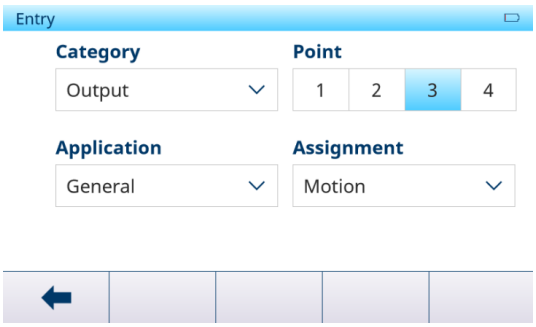


Parameter	Description
Category	Categories of the IO points: • Input • Output
Point	Position of the PIN in the Input or Outputports.
Assignment	The event triggers or actions related to the specific IO point.

Parameter	Description
Application	The specific Application for this IO signal to be applied in. **Note** If the user selects the General application, it means this IO point will be handled by Basic Weighing and will trigger the output signal and deal with the input signal no matter if there is a specific application (such as Totalization / OverUnder / Manual Filling / Counting and so on) running.

Add A New Input or Output

1 Press the Add softkey + in the **Discrete IO** page.
   ➡ The **Entry** page shows.
2 Select the category of an IO point in the field **Category**.
3 Press the number to select the **Point** for use.
4 Select the **Application** for this IO signal to work for.
   Note: The **Application** in the list depends on the activated **Application** license.
   ➡ The **Assignment** options will correspond to the selected **Category** and **Application**.



Input and Output Assignments		
Input	General	Tare
		Clear Tare
		Zero
		Transfer
		Softkey 1
		Softkey 2
		Softkey 3
		Softkey 4
		Softkey 5
	Animal Weighing	Start Signal

Input and Output Assignments		
Output	General	Center of Zero
		Motion
		Net
		Overload
		System Error Alarm
		Underload
		< MinWeigh
	Animal Weighing	In Progress Signal
		Completion Signal
	Totalization	Exceeds Total Target
	Over/Under	Tolerance OK
		Over Zone
		Under Zone
		Below Threshold
	Manual Filling/Dosing	Tolerance OK
		Over Zone
		Under Zone
		Below Threshold
	Counting	Tolerance OK
		Over Zone
		Under Zone
		Below Threshold
	Classification	Below
		Class 1
		Class 2
		Class 3
		Class 4
		Class 5
		Class 6
		Class 7
		Class 8
		Above

3.5.7 Communication -> VNC Server

Using the VNC server you can control the terminal remotely from another computer.

1 Enable the VNC Server.
2 Set a password for VNC control from another computer.
3 Confirm the password.
4 Confirm VNC settings with ✓.

Note

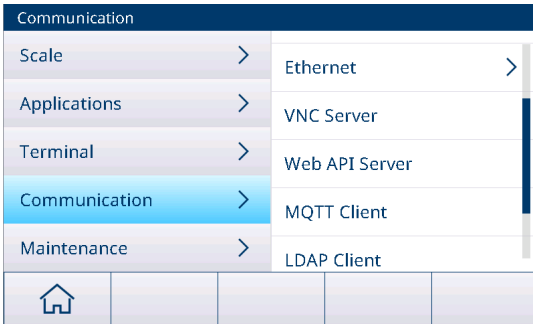
- The password is valid as long as the VNC Server is enabled or until the password is changed.
- The VNC Server Port is fixed and set to 5900.

3.5.8 Communication -> Web API Server

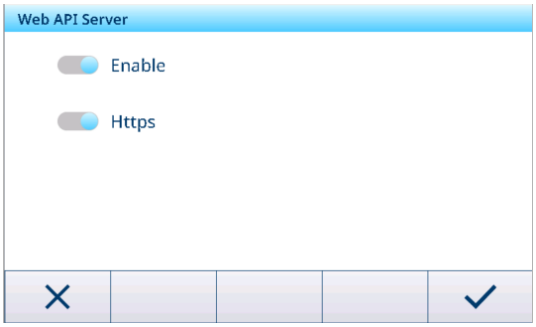
The IND400 includes a Web API Server that provides a lightweight, maintainable, and scalable Web API Service based on REST architecture. This API enables developers to access and manipulate data through create, read, update and delete operations, improving data management and analysis, which also allows third-party developers to create new features or applications.

- Note: The Ethernet or Wi-Fi option board has been installed.

1 Select Web API Server via the path: Communication -> Web API Server.



2 Enter the Web API Server to do configuration.
   - ➡ If enabled, the Web API is available to use.
   - ➡ Enable HTTPS by turning the switch on for better security; turn it off to use HTTP.



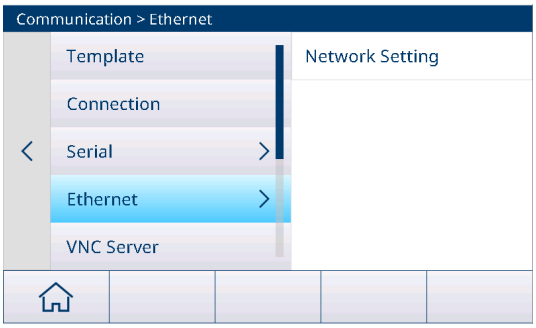
*Choose Http or Https

HTTP is the Hypertext Transfer Protocol used for transmitting data over the web without encryption; HTTPS is the secure version that adds SSL/TLS encryption for data protection. The key difference is that HTTPS provides data encryption and authentication, while HTTP does not.

How to Use Online Documentation

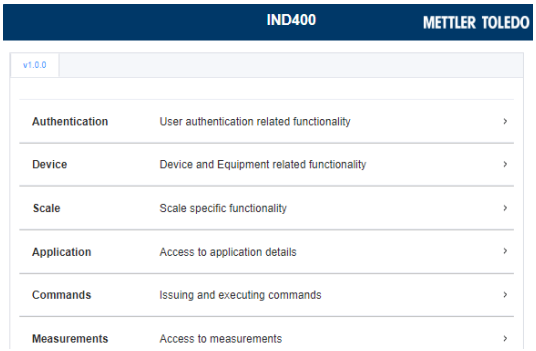
The RESTful API server running on the terminal side provides adequate interfaces for secondary development. Online documentation enables developers and end users to visualize and interact with the API's resources.

1 Find your terminal IP via the path: Communication -> Ethernet -> Network Setting -> IP Address.



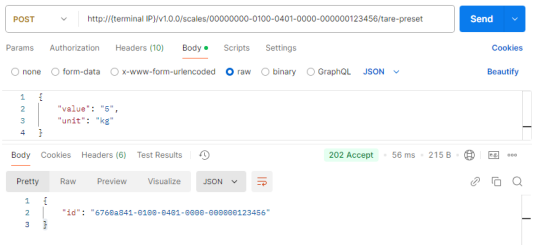
2 Open your browser and enter the terminal IP address. Find the section or link related to Web API in the terminal's web interface.

3 By using the Web API, you can achieve the following two functionalities:
   - ➡ Check the example and schema of API.
   - ➡ Interact with the API and handle API Responses. After each request, process the Json data returned by the API, such as updating webpage content or executing operations.



Example 1:

Utilizing the Web API for Tare Preset and Printing on the IND400



1 Open an HTTP request tool, e.g. Postman.

2 Send a POST request to http://{terminal IP}/v1.0.0/login to login, including the user credentials in the request body as follows: { "userId":"", "password":""}

3 Use a GET request to get the device ID and scale ID from http://{terminal IP}/v1.0.0/devices.

4 Use a POST request to set the tare preset at http://{terminal IP}/v1.0.0/scales/{scale id}/tare-preset. The body includes the tare weight value and unit as follows: { "value": "5", "unit": "kg" }

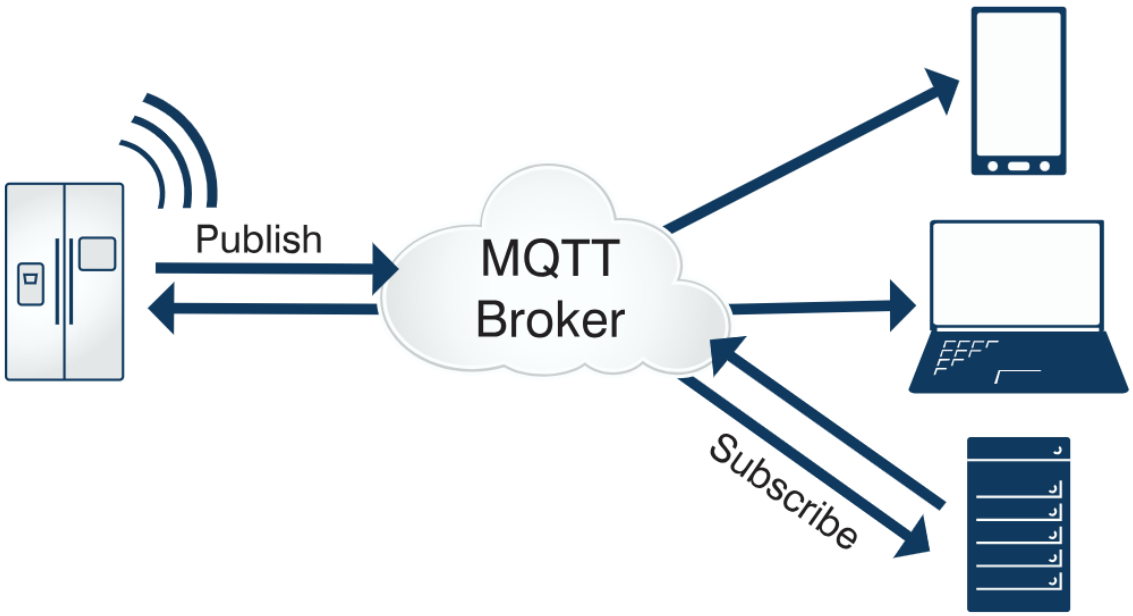
5 Use a POST request to initiate printing at http://{terminal IP}/v1.0.0/devices/{device id}/transfer.

6 Check the print status by command ID at http://{terminal IP}/v1.0.0/commands/{command id}.

Note

- Ensure you understand the parameters and return formats for each API endpoint.
- Handle potential errors, such as network issues or API error messages.
- Add authentication if required (e.g., API key).

3.5.9 Communication -> MQTT Client



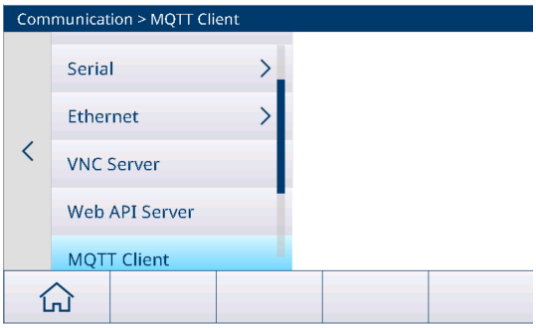
MQTT is a lightweight, open, and simple client-server publish/subscribe messaging protocol designed for easy implementation. The pub/sub model decouples the client that sends a message (the publisher) from the client or clients that receive the messages (the subscribers). The publishers and subscribers never contact each other directly. The connection between them is handled by a third component (the broker), who filters all incoming messages and distribute them correctly to subscribers.

IND400 terminal acts as an MQTT Client. It publishes several kinds of data to specific topics, such as measurement data, application data, and configuration data, etc. It also can subscribe some topics for Clearing, Taring, Printing, and Zeroing.

Step 1: Connecting to MQTT broker

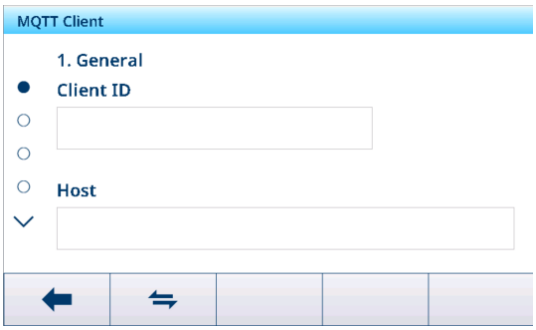
- Note: The Ethernet or Wi-Fi option board has been installed.

1 Select MQTT Client via the path: Settings -> Communication -> MQTT Client.

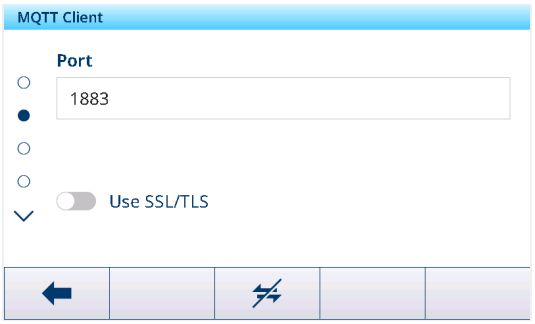


2 Press MQTT Client, the configuration page is as right:

- ➡ In the Host input box, enter the IP address of the MQTT broker, then click ⇋ to connect.
- ➡ Once connected successfully, the screen will display the Connected icon.



3 A list of settings will be displayed in the dropdown menu, including General Settings, Advanced Settings, and Last Will and Testament, which need to be configured.



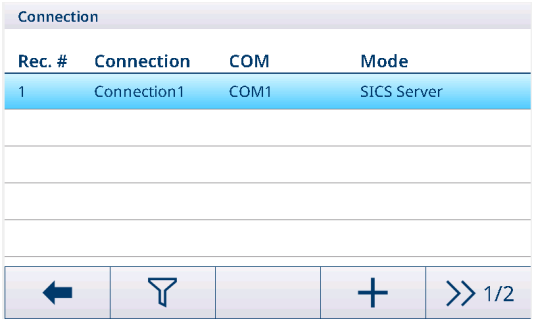
General	
Client ID	Generated automatically by broker or input manually.
Host	Address of the MQTT Broker
Port	• Port number of the MQTT Broker • Default value: 8083
Path	-
User Name	-
Password	-
Advanced	
Connect Timeout (s)	• The waiting time before receiving a server connection acknowledgement **Note** If no connection acknowledgement is received within the waiting period, the connection fails. • Range: 1 – 600s • Default value: 60s

Keep Alive (s)	• When no packets are sent, the client sends heartbeat packets to the server at regular intervals according to the value set by Keep Alive to ensure that the connection is not disconnected by the server. • If the server does not receive any packets from the client within 1.5 times the time of Keep Alive, it will consider a potential connection problem with the client, and the server will disconnect from the client. • Range: 1 – 65535s • Default value: 60s
Clean Session	• Disabled: A persistent session that persists will be created and offline messages will be saved when the client disconnects until the session times out and logs off. • Enabled: A new temporary session will be created, and it is automatically destroyed when the client disconnects. • Enabled by default.
Auto Reconnect	• Enabled: The client will reconnect to the broker in a defined period after network disconnection. • Disabled: The client will not reconnect to the broker after disconnection. • Enabled by default.
Reconnect Period (ms)	• Range: 1 – 300000ms • Default value: 4000ms
Last Will and Testament	
Note: The Last-Will messages are MQTT's ability of gracefully sending wills to third parties for devices that may experience unexpected disconnections.	
Last-Will Topic	Default value: IND400 last-will topic
Last-Will Qos	• Range: 0, 1, 2 • Default value: 0
Last-Will Retain	Disabled by default.
Last-Will Payload	As a read-only value, it is fixed as "IND400 plus Terminal Serial Number".

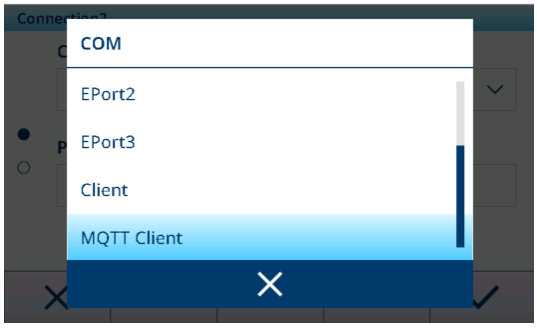
Step 2: Connecting over MQTT

- Note: The Ethernet or Wi-Fi option board has been installed.

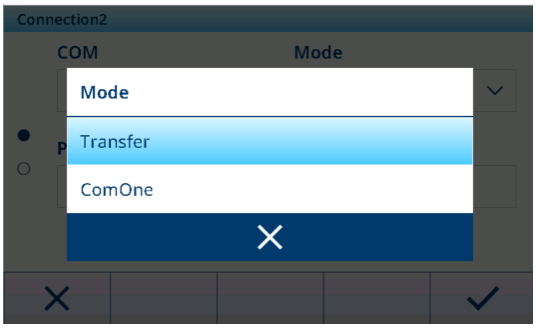
1 Navigate to the connection page under Communication -> Connection.



2 Press + to add a connection. Select "MQTT Client" from the COM dropdown list.



3 Set the connection by referring to the below table.



Parameter	Options	Description
COM	MQTT Client	-
Mode	Transfer	• In this mode, the Publish Topic is to be set. • During communication, content will be published in plain text to the transferring Publish Topic of the MQTT Broker.
	ComOne	• In this mode, both the Publish Topic and the Subscribe Topic are to be set. • The terminal subscribes the topic to which the requests from external device are sent. The terminal publishes the response to the Publish Topic when receiving the request.
Publish Topic	-	• Max. length: 40 characters • Default value: "Transfer" for Transfer Mode; "ComOne Publish" for ComOne Mode.
Subscribe Topic	-	• Max. length: 40 characters • Default value: ComOne Subscribe

Note

Transfer can only send data, such as printing commands, while ComOne can both send and receive data.

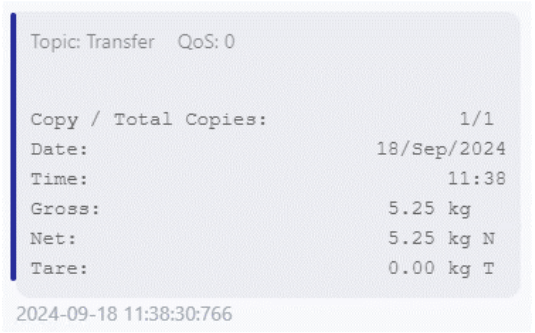
Step 3: Communicating with IND400 by MQTT Client

The MQTT client includes MQTTX, MQTTX Web, MQTT Explorer, MQTT.Cool, MQTTX CLI, Mosquitto CLI, Easy MQTT, etc. Configure the server and add client information to the server application.

Step 4: Retrieving Data from IND400

1 Press the transfer key to release the data.

2 Then you can view the published data in the corresponding topic.



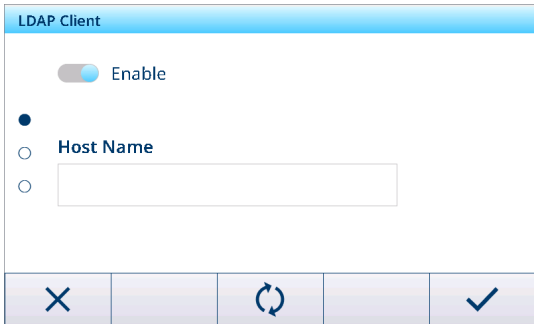
Note

For more details of message type refer to Appendix [MQTT Messages ▸ Page 168].

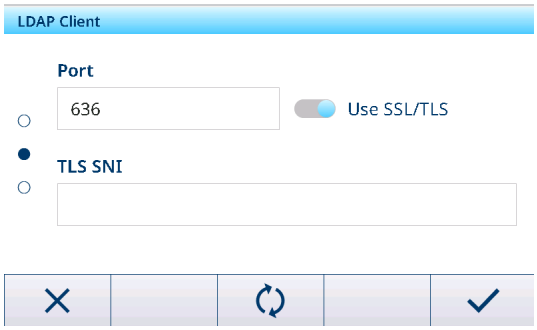
3.5.10 Communication -> LDAP Client

LDAP provides a unified user authentication mechanism, and IND400 uses it to implement domain user authentication, which helps to avoid maintaining a large amount of user information on each terminal.

1 Enable the LDAP Client function by switching the toggle.



2 When the LDAP Client function is enabled, do the settings according to the below table.



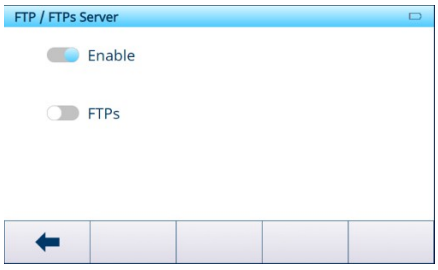
Parameter	Description
Host Name	This parameter specifies the LDAP server, which can be a computer name, an IP address, or a domain name.
Port	• LDAP traffic port • Default value: 389 • When SSL/TLS is enabled, the value will automatically change to 636. • Range: 0 - 65535
Use SSL/TLS	• Used to enable LDAPS. • Enabled by default.
TLS SNI	• Server name indication for TLS • Indicates when SSL/TLS is enabled.
Base DN	User can use the LDAP Client in PC to get the Base DN.

3 After the settings, touch the softkey to test the LDAP server.

➡ The server test result is indicated as "Succeed" or "Failed" in the display.

3.5.11 Communication -> FTP / FTPs Server

The FTP and FTPs function are disabled by default, and users can enable the function by switching the toggle in this page.



FTP

FTP is an application-layer protocol for file transfer between a client and a server on a computer network. Full FTP is composed of an FTP server and an FTP client. The client can upload local files to the server through the FTP protocol or download files from the server to the local computer.

FTPs

FTPs is an enhanced FTP protocol that uses standard FTP protocols and instructions at Secure Sockets Layer, adding SSL security features to the FTP protocol and data channels. FTPs is also known as "FTP-SSL" and "FTP-over-SSL". SSL is a protocol for encrypting and decrypting data over a secure connection between a client and an SSL-enabled server.

3.5.12 Communication -> Certification Management

A digital certificate is issued by a Certificate Authority in accordance with relevant international and domestic standards to prove the digital identity of an individual, organization, website, physical device, etc. on the Internet.

IND400 supports a variety of network applications, so a certificate manager is necessary to manage digital certificates, including importing, viewing, expiration, renewing, deleting, exporting, etc.

View Certification Information

– In the **Certification Management** page, mark a certificate and click the softkey ⓘ.
  ➡ Detailed information of the certificate is displayed.

General

- Issued To
- Issued By
- Valid From

Details

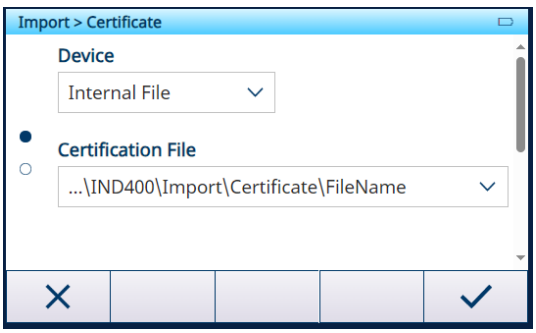
- Version
- Serial Number
- Signature
- Signature Algorithm
- Issuer
- Valid From
- Valid To
- Subject
- Public Key
- Public Key Parameters
- Subjcet Key Identifier
- CRL Distribution Points
- Key Usage
- Basic Constraints
- Thumbprint
- Friendly Name
- Enhanced Key Usage
- Extended Validation
- Extended Error information

Certification Path

- Certification Path
- Certification Status

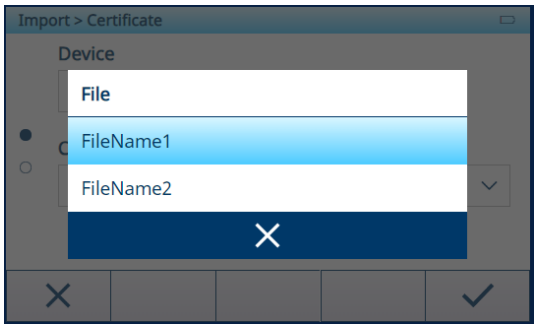
Import A Certificate

1 Press the softkey 📥.
2 Select the location from which the certificate is imported in the field **Device**. See [Importing/exporting data ▸ Page 28].
3 Select the certificate file for import using the dropdown list in the field Certification File.



4 To import the **Private Key File**, switch the **Private Key** toggle on.

5 Press ✓ to start the import.



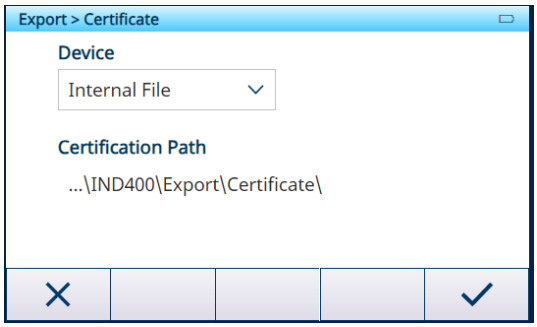
Export A Certificate

1 Mark the certificate to be exported in the certification list.

2 Press the softkey .

3 Select the location to which the certificate is exported in the field **Device**. See [Importing/exporting data ▸ Page 28].

4 Press ✓ to start the export.



Update or Delete A Certificate

The certificate can be updated with the softkey and deleted with the softkey .

Certificate Expiration

The certificate status is checked automatically when the terminal is power up.

If there is a certificate coming due, a warning message will display in the message center. The coming due day is 15 days before the expiration day.

If there is a certificate overdue, a warning message will display in the message center as well.

Note

For the certificate encoding and type, we support only DER encoding and .der type. If not, you must convert them to be .der file. Various programs (examples: openssl, makecert, .net) can be used to do this conversion.

3.6 Maintenance setup

3.6.1 Maintenance -> Scale Test

3.6.1.1 Maintenance -> Scale Test -> Restore Factory Calibration

When connecting a new POWERDECK scale, a prompt will automatically appear asking if the user wants to restore the factory calibration information.

The factory calibration data can be stored in load cells, and users can manually restore the factory calibration data from the load cells of PowerDeck to create a usable Basic Weighing system without applying test weights on site.

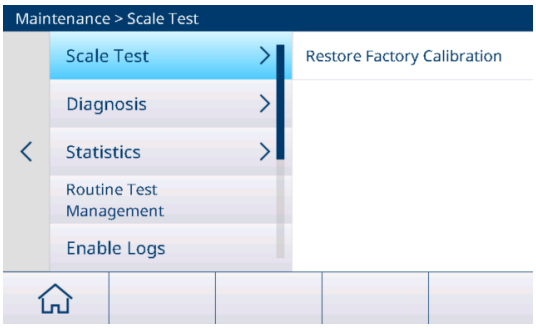
- The scale sealing is broken.

1 Click Restore Factory Calibration in the menu.

➡ A window pops up to indicate that the terminal is receiving data from the load cells.

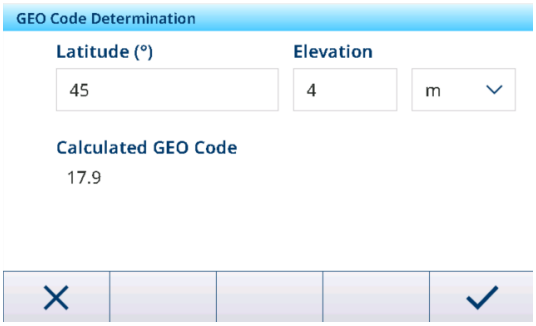
2 Confirm to use factory calibration data with ✓.

3 In the **GEO Code Determination** page, enter the **Latitude (°)** and **Elevation** values.



➡ The field GEO Code is calculated automatically and indicated in the field **Calculated GEO Code**.

Note: The process of manually restoring the factory calibration data is the same as the auto-restoring during power-up.



3.6.2 Maintenance -> Diagnosis

3.6.2.1 Maintenance -> Diagnosis -> Scale 1

Permission Group: W&M -> Level 3

Analog Scale

The Scale 1 page indicates the Signal Quality of the Analog scale connection.

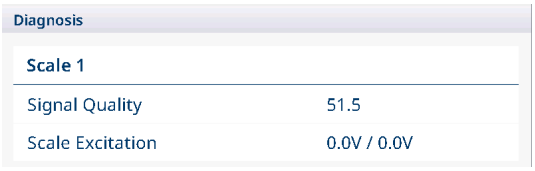
When the signal is sufficient, it is marked with ✓.

SICSpro Scale

There is no diagnosis information available.

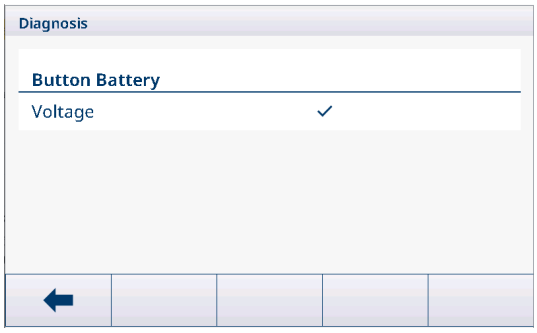
POWERCELL Scale

The Scale 1 page indicates the Signal Quality and the Scale Excitation of the POWERCELL scale connection.



3.6.2.2 Maintenance -> Diagnosis -> Battery

This diagnosis item shows the status of the batteries.



Button battery

The button battery is used for RTC and located on the Main Board.

When the voltage of the button battery is lower than 2.5 V, a SMART5™ message is displayed.

External battery

When an external battery is detected, the battery voltage is displayed.

3.6.2.3 Maintenance -> Diagnosis -> Device

3.6.2.3.1 Test

Display Test

Users are guided through a test sequence to check the display quality.

1 Confirm the information screen with ✓.
   ➡ A checkerboard pattern in red is displayed.
2 Check if all pixels are displayed correctly.
3 Press the transfer key to switch to the next test screen.
4 Check if all pixels are displayed correctly.
5 Repeat steps 3 and 4 until the message "Test finished." is displayed.
6 Confirm finishing with ✓.

Note Users can exit the display test at any time by pressing C.

Touch Test

Users are guided through a test sequence to check the touch functionality.

1 Confirm the information screen with ✓.
   ➡ The display is divided into 12 fields.
2 Touch all the fields in the order from 1 to 12.
   ➡ When the touch functionality is alright, the field is marked with ✓.
   ➡ After touching the last field the message "Passed." is displayed.
3 Confirm the message with ✓.

Note Users can exit the touch test at any time by pressing C.

Keyboard Test

Users are guided through a test sequence to check the hard keys.

1 Confirm the information screen with ✓.
   ➡ A prompt to check the On/Off key is displayed.
2 Touch the requested hard key.
   ➡ A prompt to check the next key is displayed.
3 Repeat step 2 until the message "Passed." is displayed.
4 Confirm the message with ✓.

Note Users can exit the touch test at any time by pressing C.

Serial Port Test

Note

This test will check the COM1 – COM 3 (RS232) serial port.

The ports to be tested need to be loopback wired (transmit and receive shorted).

1 Touch ▶ to start the test.
   - ➡ The serial port test is performed.
   - ➡ The serial port status is displayed.

2 Leave the Serial Port Test with softkey ⬅.
   - ➡ A safety prompt is displayed.

3 Confirm leaving the test with ✓.

Network Test

Note

The test mechanism is PING gateway.

1 Confirm the information screen with ✓.
   - ➡ The serial port test is performed.
   - ➡ The serial port status is displayed.

2 Confirm the serial port status with ✓.
   - ➡ The Network Test is finished.

USB Test

This test will check an external USB device.

1 Insert the USB device to be tested.
   - ➡ The device name is displayed.

2 Touch ▶ to start the test.
   - ➡ The USB test is performed.
   - ➡ The test result is displayed.

3 Leave the USB Test with softkey ⬅.

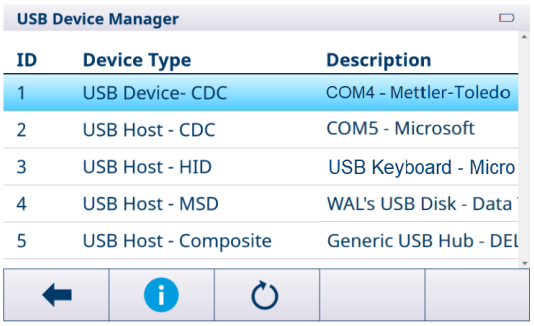
3.6.2.3.2 USB Device Manager

The USB Device Manager shows all connected USB devices.

1 Touch ⓘ to view the settings of the USB device.

2 Touch ✎ to edit the USB device.

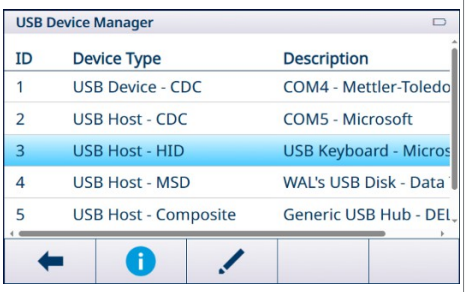
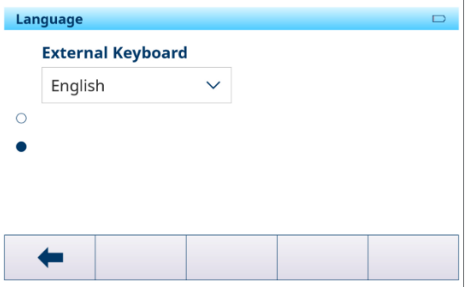
3 Touch 🗑 to delete an installed USB device.
Note The **USB Device** CDC is combined with the USB option board, so it can't be deleted.



Supported Device Types

The table that follows lists the device types that IND400 supports.

Device Type	Description	Additional Information
USB Device - CDC	IND400 works as a USB device, which is connected to a USB Host port in other equipment, such as a PC. From the PC side, the IND400 USB Device - CDC is treated as a serial port.	-
USB Host - CDC	IND400 works as a USB Host and only supports USB to Serial Port converter.	-

Device Type	Description	Additional Information
USB Host - HID	IND400 works as a USB Host and only supports the external USB keyboard and barcode scanner.	• When this Device Type is focused, touch ✎ to edit the external device type (**Keyboard** or BarCoder).  • Select language of the External Keyboard via the path: Terminal -> Region -> Language. 
USB Host - MSD	IND400 works as a USB Host and only supports the USB disk (USB Mass Storage device).	-
USB Host - Composite	IND400 works as a USB Host and only supports the connection of multiple USB devices through a USB Hub, namely USB Host - CDC, USB Host - HID, and USB Host - MSD.	-

3.6.3 Maintenance -> Statistics

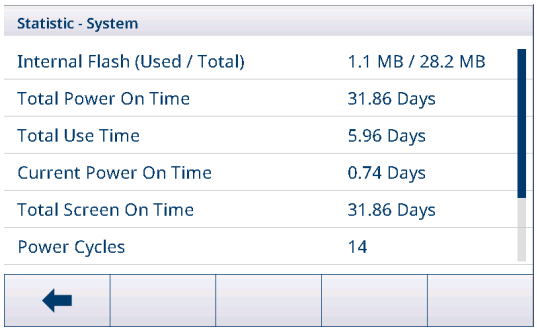
Scale 1

This page shows the statistics over all the weighings since the last Master Reset. The statistic is grouped as follows:

- Peak Weight
- Scale Weighments (Usage, Capacity ranges)
- Scale Status (Overloads, Underloads, Zero operations, Reset operations)

System

This page gives a system overview.



Key count

This page gives an overview of the keystrokes of each hardkey.

3.6.4 Maintenance -> Routine Test Management

Using this setup item you can plan and perform routine test events.

Setting up routine tests - general settings

Setup item	Sub items	Description
Event	Calibration Sensitivity Eccentricity Repeatability 1-point Test Walk Test Customized Event	Select the test to perform. For a Customized Event a name can be entered. It can be used for any reminder purposes. See [Setting up Tests ▸ Page 142] and [Performing A Routine Test ▸ Page 144].
On Overdue	No Action Orange Weight No Weight	Select what to be displayed when the test is overdue.
Interval Days		Enter the interval for performing the test.
Reminder Days		Enter the interval for sending a reminder before the next test is due.
Last Date		Display of the date of the last test.
Due Date		Display of the date of the next test.
Reminder Date		Display of the date when the reminder for the next test will be sent.

3.6.4.1 Setting up Tests

Calibration Test

See [SICSpro/Analog/POWERCELL scale setup ▸ Page 104].

Sensitivity Test

– Mark a sensitivity test in the list and touch ⚙ for further settings.
  ➡ The following settings are available:

Note

Default settings are shown in **bold**.

Setup item	Sub items	Description
Test Load Unit	g kg lb t oz ton	Select the unit of the test load you want to use for the sensitivity test.
Operator Test Weight Edit	Enable/**disable**	When enabled, the operator is allowed to edit the test weight.
Auto Print Log	**Enable**/disable	When enabled, a test protocol is printed automatically.

– In the setup page touch ▭ for setting up the test steps.
  ➡ The following settings are available:

Step No.	Automatic number
Test Load	Weight value of the test load
Weight Name	Name of the test load
Warning Limit	When the deviation is bigger than the waring limit but less than the control limit, a warning is displayed.
Control Limit	When the deviation is bigger than the control limit, the test fails.

Prompt When a test event comes due, the prompt text shows on the Home Screen.

Eccentricity, Repeatability and 1-Point Tests

– Mark a respective test in the list and touch ⚙ for further settings.
  ➡ The following settings are available:

Note

Default settings are shown in **bold**.

Setup item	Sub items	Description
Test Load Unit	g kg lb t oz ton	Select the unit of the test load you want to use for the sensitivity test.
Test Load		Weight value of the test load
Weight Name		Name of the test load
Round		Number of test rounds, for repeatability tests only
Warning Limit		When the deviation is bigger than the waring limit but less than the control limit, a warning is displaed.
Control Limit		When the deviation is bigger than the control limit, the test is failed.
Operator Test Weight Edit	Enable/**disable**	When enabled, the operator is allowed to edit the test weight.
Auto Print Log	**Enable**/disable	When enabled, a test protocol is printed automatically.

Walk-Test

This test checks the repeatability and eccentricity of large weighing platforms by walking on the weighing platform.

– Mark a walk-test in the list and touch ⚙ for further settings.
  ➡ The following settings are available:

Note

Default settings are shown in **bold**.

Setup item	Sub items	Description
Round		Number of test rounds, for repeatability tests only
Repeatability Warning Limit		When the deviation in repeatability is bigger than the warning limit but less than the control limit, a warning is displayed.
Repeatability Control Limit		When the deviationin repeatability is bigger than the control limit, the test is failed.
Eccentricity Warning Limit		When the deviation in eccentricity is bigger than the warning limit but less than the control limit, a warning is displayed.
Eccentricity Control Limit		When the deviationin eccentricity is bigger than the control limit, the test is failed.
Operator Test Weight Edit	Enable/**disable**	When enabled, the operator is allowed to edit the test weight.
Auto Print Log	**Enable**/disable	When enabled, a test protocol is printed automatically.

Customized Event Test

A customized event can be used for any reminder purposes.

– Mark a customized event in the list and touch ⚙ for further settings.
  ➡ The following settings are available:

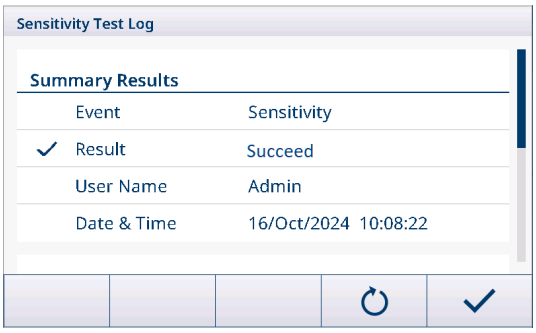
Note

Default settings are shown in **bold**.

Setup item	Sub items	Description
Prompt		Enter a reminder text.
Auto Print Log	**Enable**/disable	When enabled, a test protocol is printed automatically.

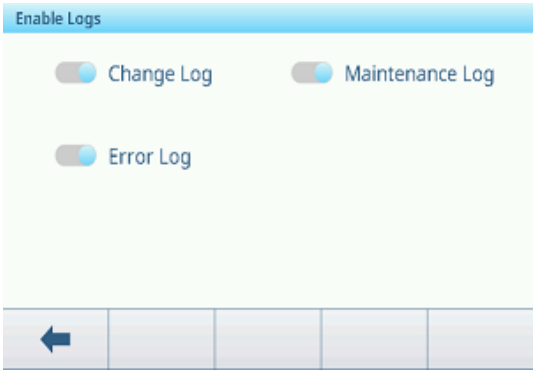
3.6.4.2 Performing A Routine Test

1 Select the required event in the list of events.
2 Touch ▶ to start the test.
   ➡ Users are guided through the test.
   ➡ When the test is finished, the result is displayed.
3 Touch ✓ to leave the test.



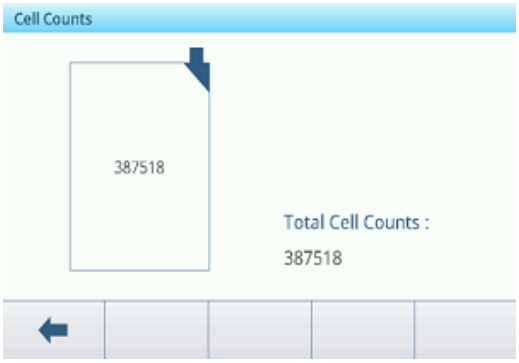
3.6.5 Maintenance -> Enable Logs

– Enable/disable the respective logs.



3.6.6 Maintenance -> Cell Counts

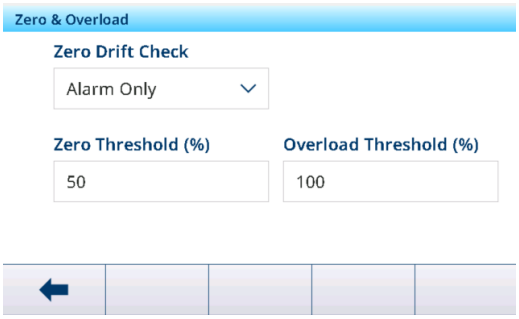
This maintenance items shows the raw weight.



3.6.7 Maintenance -> Zero & Overload

Zero Drift Check

With this function, the terminal can make an alarm or disable the weighing process when a zero-drift failure or a load cell overload happens.



Parameter	Description
Zero Drift Check	• No Action No action is necessary. • Disable & Alarm After user presses OK on the popup message, the POWERCELL scale is disabled. • Alarm Only (default value) User needs to confirm the popup message with OK.
Zero Threshold (%)	• Range: 50 - 90 • Default value: 50
Overload Threshold (%)	• Range: 50 - 100 • Default value: 100

Zero Drift Check

When a scale Zero command is issued the scale is assumed to be empty. The IND400 will first test to see if the Total Zero Drift / Scale Capacity is greater than 1%. If it is, it then tests the percentage of total Zero Drift any one load cell contributes. If it is over the user defined Threshold, either an error is raised and the alarm is logged or an error is raised, the alarm is logged and the scale is disabled.

If an error is triggered, and the Maintenance Log is enabled, the error will be recorded in the Maintenance Log.

To clear an Alarm Only error, the values of either test 1 or test 2 must fall to below 90% of the specified parameter. To clear a Disable & Alarm error, Zero Drift Monitoring must be turned off or changed to Alarm Only and the terminal must be back in the Run Screen.

Note that a Zero Drift Error will not be raised if the zero value is outside the Zero Range. Instead, a Zero Range error will be displayed.

Overload Threshold (%)

The threshold at which a cell overload is logged may be set as a total weight value in primary weight units. The value entered should also account for the pre-load amount and typically not exceed the load cell's rated capacity. The overload trigger is not re-set until the measured weight falls below 90% of the overload threshold value.

3.6.8 Maintenance -> Calibration Values

Note

The available settings depend on the selected type of calibration.

	Span	3-Point	4-Point	5-Point	3-P. With Hysteresis	4-P. With Hysteresis	5-P. With Hysteresis
Counts for Zero	x	x	x	x	x	x	x
#01 Test Load	x	x	x	x	x	x	x
Counts 1	x	x	x	x	x	x	x
Counts 1 Down					x	x	x
#02 Test Load		x	x	x	x	x	x
Counts 2		x	x	x	x	x	x
Counts 2 Down						x	x
#03 Test Load			x	x		x	x
Counts 3			x	x		x	x
Counts 3 Down							x
#04 Test Load				x			x
Counts 4				x			x

Setting	Description
Counts for Zero	Set the raw counts for zero
#01 Test Load	Set the #01 test load weight
Counts 1	Set the raw counts for #01 test load

	Span	3-Point	4-Point	5-Point	3-P. With Hysteresis	4-P. With Hysteresis	5-P. With Hysteresis
Counts 1 Down	Set the raw counts for #01 test load when unloading						
#02 Test Load	Set the #02 test load weight						
Counts 2	Set the raw counts for #02 test load						
Counts 2 Down	Set the raw counts for #02 test load when unloading						
#03 Test Load	Set the #03 test load weight						
Counts 3	Set the raw counts for #03 test load						
Counts 3 Down	Set the raw counts for #03 test load when unloading						
#04 Test Load	Set the #04 test load weight						
Counts 4	Set the raw counts for #04 test load						

3.6.9 Maintenance -> Backup

This setup item offers a backup of the complete system settings as below:

- All configuration parameters, except Memory under Applications, User Management under Terminal, and Template under Communication
- Printout templates
- User management data (password exclusive)

Manual backup

– For a manual backup touch softkey ⬆.
  ➡ The following settings are requested.

Setup item	Description	Possible settings / comments
Device	Select the device where the data will be exported to.	Internal File, USB Mass Memory.
Path	Enter the path where the exported data will be stored.	Ensure that the indicated folder is existent, especially when USB Mass Memory is selected.

– Confirm settings with ✓.
  ➡ The backup is in progress. A message is displayed.

Automatic backup

When Auto Backup is enabled, the backup is automatically made according to the following settings.

Setup item	Description
Interval Days	Set the interval of the automatic backup
Last Backup Date	Show the date of the last backup

– Confirm settings with ✓.
  ➡ The backup is in progress. A message is displayed.
  ➡ The next backup will be made automatically after set interval.

Note

Users can make a manual backup at any time by touching softkey ⬆.

3.6.10 Maintenance -> Restore

This setup item allows to restore the complete system settings.

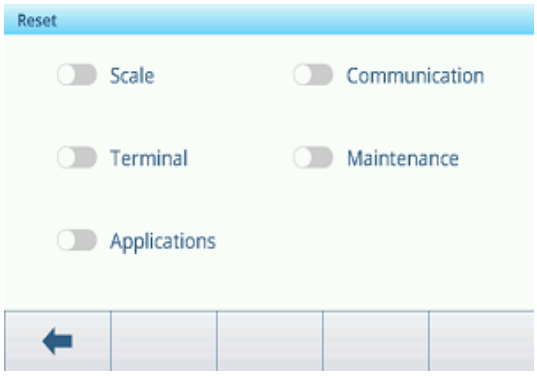
– To restore a system, make the following settings:

Setup item	Description	Possible settings / comments
Device	Select the device from which the data will be imported	Internal File, USB Mass Memory
Path	Path where the data to be imported has to be stored	Ensure that the data to be imported from the correct folder

1 Confirm settings with ✓.
   ➡ A safety prompt is displayed.
2 Confirm restoring and restarting with ✓.
   ➡ Restoring is in progress. A message is displayed.

3.6.11 Maintenance -> Reset

1 Select which part of the device shall be reset.
   ➡ A safety prompt is displayed.
2 Confirm resetting with ✓.



4 Maintenance and service

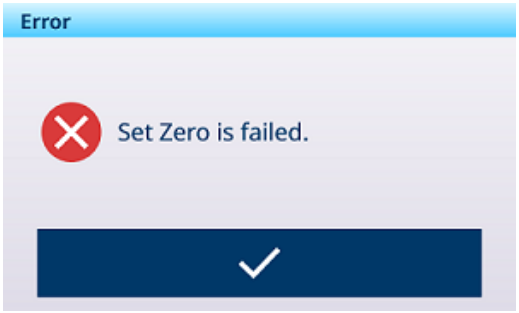
4.1 Error conditions

Error	Cause	Remedy
Display dark	• Backlight timeout too short	– Increase backlight timeout.
	• No power supply	– Check power supply.
	• Unit switched off	– Switch on unit.
	• Power supply cable not plugged in	– Plug in power supply cable.
	• Brief error	– Unplug power supply cable and plug in again.
Weight display unstable	• Unstable installation location	– Adjust environment filter.
	• Draft	– Avoid draft.
	• Unstable weighing sample	– Ensure that the weighing sample is more stable.
	• Contact between weighing pan and/or weighing sample and surroundings	– Avoid contact.
	• Power supply fault	– Check power supply.
Incorrect weight display	• Incorrect zeroing	– Unload scale, set to zero and repeat weighing operation.
	• Incorrect tare value	– Clear tare.
	• Contact between weighing pan and/or weighing sample and surroundings	– Avoid contact.
	• Weighing platform tilted	– Level weighing platform.
⌊ – – – – ⌋	• Load plate not on the scale	– Place load plate on the scale.
	• Weighing range not reached	– Set to zero.
⌈ – – – – ⌉	• Weighing range exceeded	– Unload scale. – Reduce preload.
– – – – –	• Result not yet stable	– If necessary, adjust environment filter.

4.2 Errors and warnings

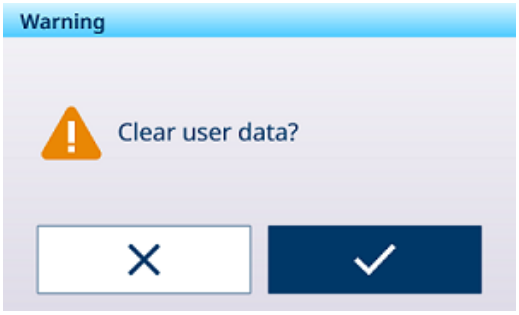
Error messages

Error messages must be confirmed.



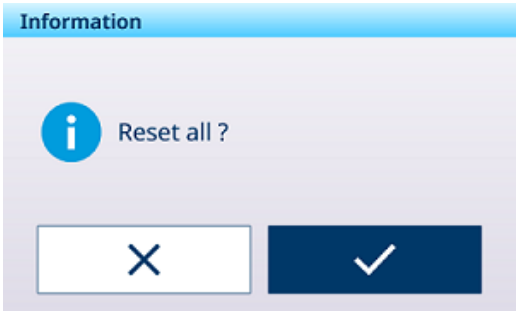
Warnings

You can either cancel a warning or confirm it.



Information

The information message has the function of a safety prompt.



4.3 SMART5™ events and alarms

SMART5™ is intended to harmonize events and alarms based on industry standards and common industry practice. These standards originated from the process control industry in chemistry, oil production and refining where there is a very high risk of explosion and bodily harm.

Some of the Smart5® alarms can also be observed at the PLC side. For details refer to the chapter [Error messages ▸ Page 150].

4.3.1 NAMUR alarm / alert classification

The table that follows is an adaptation of NE107 for weighing devices.

Icon	Rank	Type	Description	Result
	5	Failure	Wrong weight / equipment failure	Alarm stops operation: Clearing the alarm will not reset the condition – the device must be repaired to eliminate the alarm.
	4	Maintenance required	Wrong weight / equipment failure expected based on predictive algorithms and sensors like temperature, humidity.	Alarm indicates failure is imminent within a period of one week or more. The alarm can be reset but will recur each day until the cause is eliminated.
	3	Out of specifi-cation	Wrong Operator Actions or device / application is operating out of specification.	Alarm and log the event. Alarms are only generated / transmitted at the request of the customer.
	2	Alarm	Routine test, Calibration or Preventative maintenance must be undertaken.	Alarm and log the event. Alarms are only generated / transmitted at the request of the customer.
	1	Normal Condition	Unit is operating correctly.	No action required.

4.3.2 Error messages

Message	Alarm code	Namur level	Error log	Action
Scale Type or Slot Changed!\nMaster Reset\nALL setup blocks.	1001	5	Yes	-
Scale Type or Slot Changed!\nMaster Reset\nALL setup blocks.	1002	5	Yes	-
Scale disconnected.	2012	5	Yes	Check scale connection cable
Transaction log of [Application] is size of 100%.	3038	3	Yes	Pls export the log file.
Transaction log of [Application] exceeds 90%.	3039	2	Yes	Pls export the log file.
Transaction log of [Application] exceeds 75%.	3040	2	Yes	Pls export the log file.
Analog Converter Fail	4041	5	Yes	Check scale connection cable.
Zero fail motion.	4042	0	No	Scale is moving.
Zero fail net.	4043	0	No	Remove load from scale.
Zero out of range.	4044	2	Yes	Remove load from scale.
Zero disabled	4045	0	No	Zero not permitted.
Tare fail motion.	4046	0	No	Scale is moving.
PB tare disabled.	4047	0	No	Tare not permitted.
KB tare disabled.	4048	0	No	Tare not permitted.
Chain tare not permitted.	4049	0	No	-
Chain Tare only allowed with positive net weight.	4050	0	No	-
Tare round fail.	4051	0	No	Tare operation not successful.
Tare too small.	4052	0	No	The scale is too large for this item.
Zero init. Fail.	4053	0	No	Remove load from scale.
Tare out of range.	4054	0	Yes	Tare weight exceeds capacity.
Tare negative fail.	4055	0	No	Zero the scale.
Tare failed - over (range).	4056	0	Yes	-
Clear Tare-Gross Zero	4057	0	No	Remove load from scale.
Tare failed - unknown.	4058	0	No	-
Analog Saturation Fail	4059	0	No	Weight far exceeds scale capacity.
Trade overload.	4064	3	Yes	Scale is too small for this item.
Trade underload.	4065	3	Yes	Pls rezero scale.
Sealing switch broken!	4066	3	Yes	-
Sample size too small.	4067	3	Yes	Choose a smaller scale for this item.
Adjustment failure	4069	3	Yes	Pls attempt a new adjustment.
MP Adjustment Failure	4070	3	Yes	Pls attempt a new adjustment.
Zero Required	4074	3	No	-
Sensitivity is overdue.\nPlease run sensitivity test.	4075	2	Yes	Run sensitivity test.
Calibration is overdue.\nPlease run calibration test.	4076	2	Yes	Run calibration test.
Calibration is overdue.\nScale is disabled.\nReset required.	4077	2	Yes	Run calibration test.

Message	Alarm code	Namur level	Error log	Action
Repeatability is overdue.\nPlease run repeatability test.	4078	2	Yes	Run repeatability test.
Repeatability is overdue.\nScale is disabled. \nReset is required.	4079	2	Yes	Run repeatability test.
1-Point is overdue.\nPlease run 1-Point Test.	4080	2	Yes	Run 1-Point Test.
1-Point is overdue.\nScale is disabled. \nReset required.	4081	2	Yes	Run 1-Point Test.
Walk-Test is overdue.\nPlease run Walk-Test.	4082	2	Yes	Run Walk-Test.
Walk-Test is overdue.\nScale is disabled. \nReset required.	4083	2	Yes	Run Walk-Test.
CustomEvent is overdue.\nPlease run CustomEvent test.	4084	2	Yes	Run custom test.
CustomEvent is overdue.\nScale is disabled. \nReset required.	4085	2	Yes	Run custom test.
Eccentricity is overdue.\nPlease run eccentricity test.	4086	2	Yes	Run eccentricity test.
Eccentricity is overdue.\nScale is disabled. \nReset required.	4087	2	Yes	Run eccentricity test.
Sensitivity is coming due.	4088	2	Yes	Run sensitivity test.
Calibration is coming due.	4089	2	Yes	Run calibration test.
Repeatability is coming due.	4090	2	Yes	Run repeatability test.
1-Point is coming due.	4091	2	Yes	Run 1-Point Test.
Walk-Test is coming Due.	4092	2	Yes	Run Walk-Test.
CustomEvent is coming due.	4093	2	Yes	Run custom test.
Eccentricity is coming due.	4094	2	Yes	Run eccentricity test.
Sensitivity is overdue.\nScale is disabled. \nReset required.	4095	2	Yes	Run sensitivity test.
Empty scale, place new weight on.	90001	3	No	-
Remove object or tare the scale.	90002	3	No	-
Put object on the platform.	90003	3	No	-
Exceeds the total target.	90004	3	No	-
No transaction generated	90005	3	No	-
Transaction not completed, cannot quit.	90006	3	No	-
Transaction is already saved.	90007	3	No	-
Weight is under threshold.	90008	3	No	-
Weight is out of OK range.	90009	3	No	-
Transfer is not allowed within 30d deviation.	90010	3	No	-
Totalization value overflow.	90011	3	No	-
APW optimization succeeded.	90012	1	No	-
Take away mode requires net mode, please tare the scale first.	90013	2	No	-
The take away mode is only applicable for unloading weight from the platform.	90014	2	No	-
The standard mode is only applicable for loading weight onto the platform.	90015	2	No	-
Scale in X10 mode.	90016	3	No	-
Network time synchonization failed.	90017	4	Yes	Please check NTP server setting.

Message	Alarm code	Namur level	Error log	Action
Battery critically low.	90018	5	Yes	Please replace battery.
Transferring failed	91001	0	No	-
Transferring failed	91002	0	No	-
Zero is not allowed in current situation.	91003	2	No	-
Tare is not allowed in current situation.	91004	2	No	-
Clear is not allowed in current situation.	91005	2	No	-
Scale In Expanded Mode	91006	0	No	-
Zero failed - zero bad.	91007	0	No	-
Print Error	91010	0	No	-
Scale In Motion	91011	0	No	-
Scale Under Zero	91012	0	No	-
Scale In Expanded Mode	91013	0	No	-
Print Error-No Zero	91014	0	No	-
Print Error	91015	0	No	-
Zero failed - unknown.	91018	0	No	-
Clear failed - unknown.	91019	0	No	-
Operation Fail -Unknown	91020	0	No	-
FACT Cancelled	91021	0	No	-
FACT Successful	91022	0	No	-
FACT Failure - Motion	91023	0	No	-
FACT Failure	91024	0	No	-
FACT In Progress	91025	0	No	-
FACT Failed - 3 Consecutive Failed Attempts	91026	0	No	-
Function disabled.	91027	0	No	-
Template parsing fail	91030	0	No	-
Totals overflow	91031	0	No	-
Target Total Overflow	91032	0	No	-
Tare Total Overflow	91033	0	No	-
ID Not Found	91034	0	No	-
ID Not Found	91035	0	No	-
-	91036	0	No	-
Remote Scale-No Data Transfer	91037	0	No	-
Remote Scale-No Remote Display	91038	0	No	-
Alibi log is size of 100%.	91039	3	Yes	Pls export the log file.
Alibi log exceeds 90%.	91040	2	Yes	Pls export the log file.
Alibi log exceeds 75%.	91041	2	Yes	Pls export the log file.
[Log Name] is size of 100%.	91042	3	No	Pls export the log file.
[Log Name] exceeds 90%.	91043	2	Yes	Pls export the log file.
[Log Name] exceeds 75%.	91044	2	Yes	Pls export the log file.
[Configurale table name] is size of 100%.	91045	3	No	Pls export the log file.
[Configurale table name] exceeds 90%.	91046	2	Yes	Pls export the log file.
[Configurale table name] exceeds 75%.	91047	2	Yes	Pls export the log file.

4.4 Maintenance

Maintenance of the weighing terminal is limited to regular cleaning.

Cleaning

⚠ WARNING

Risk of electric shock

1 Do not open the weighing terminal for cleaning.
2 Before cleaning, unplug the power plug.

1 Make sure that the terminal is disconnected from the power supply.
2 Wipe off the terminal with a dry cloth or with a slightly damp cloth dampened only with clean water.

5 Appendix

5.1 Table of Geo code values

The Geo code feature provided in the weighing terminal permits adjustment by a METTLER TOLEDO service technician due to changes in elevation or latitude without reapplying test weights. This assumes that a previously accurate adjustment 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.

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

Determining the Geo code value

There are two methods to determine the Geo code value for your location.

Method **A**

1 Go to www.welmec.org and find the **Gravity Information** page to obtain the g value (e.g. 9.770390 m/s^2) for your specific geographic location.

2 Check the METTLER TOLEDO Geo code Table A to select the Geo code according to your g value, e.g. Geo code 20 should be applied if your g value is 9.810304.

Method **B**

– Use the METTLER TOLEDO Geo code Table B to determine the Geo code for the new altitude and location where the scale will be used.
The latitude and height above sea level can be found using this link www.mapcoordinates.net/en.

Checking the Geo code value in the instrument

Comparing Geo codes

1 Compare the determined Geo code with the current Geo code setting of the weighing terminal.

2 If the two Geo code values do not match, call the METTLER TOLEDO service technician.
When the system is certified, a re-verification will be necessary.

Note

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 A: Definition of METTLER TOLEDO Geo codes with g value

Geo code	g value (m/s^2)	Geo code	g value (m/s^2)	Geo code	g value (m/s^2)	Geo code	g value (m/s^2)
0	9.770390	8	9.786316	16	9.802295	24	9.818326
1	9.772378	9	9.788311	17	9.804296	25	9.820333
2	9.774367	10	9.790306	18	9.806298	26	9.822341
3	9.776356	11	9.792302	19	9.808300	27	9.824351
4	9.778347	12	9.794299	20	9.810304	28	9.826361
5	9.780338	13	9.796297	21	9.812308	29	9.828371
6	0.782330	14	9.798295	22	9.814313	30	9.830383
7	9.784323	15	9.800295	23	9.816319	31	9.832396

Table B: Definition of METTLER TOLEDO Geo codes with geographic latitude and height

Geographical latitude, North or South	Height above sea level											
	[m]	0 - 325	325 - 650	650 - 975	975 - 1300	1300 - 1625	1625 - 1950	1950 - 2275	2275 - 2600	5600 - 2925	2925 - 3250	3250 - 3575
	[ft]	0 - 1060	1060 - 2130	2130 - 3200	3200 - 4260	4260 - 5330	5330 - 6400	6400 - 7460	7460 - 8530	8530 - 9600	9600 - 10660	10660 - 11730
0° 0' - 5° 46' (0.0° - 5.77°)		5	4	4	3	3	2	2	1	1	0	0
5° 46' - 9° 52' (5.77° - 12.87°)		5	5	4	4	3	3	2	2	1	1	0
9° 52' - 12° 44' (12.87° - 12.73°)		6	5	5	4	4	3	3	2	2	1	1

Geographical latitude, North or South	Height above sea level											
	[m]	0 - 325	325 - 650	650 - 975	975 - 1300	1300 - 1625	1625 - 1950	1950 - 2275	2275 - 2600	5600 - 2925	2925 - 3250	3250 - 3575
	[ft]	0 - 1060	1060 - 2130	2130 - 3200	3200 - 4260	4260 - 5330	5330 - 6400	6400 - 7460	7460 - 8530	8530 - 9600	9600 - 10660	10660 - 11730
12° 44' - 15° 6' (12.73° - 15.1°)		6	6	5	5	4	4	3	3	2	2	1
15° 6' - 17° 10' (15.1° - 17.17°)		7	6	6	5	5	4	4	3	3	2	2
17° 10' - 19° 2' (17.17° - 19.03°)		7	7	6	6	5	5	4	4	3	3	2
19° 2' - 20° 45' (19.03° - 20.75°)		8	7	7	6	6	5	5	4	4	3	3
20° 45' - 22° 22' (20.75° - 22.37°)		8	8	7	7	6	6	5	5	4	4	3
22° 22' - 23° 54' (22.37° - 23.9°)		9	8	8	7	7	6	6	5	5	4	4
23° 54' - 25° 21' (23.9° - 25.35°)		9	9	8	8	7	7	6	6	5	5	4
25° 21' - 26° 45' (23.35° - 26.75°)		10	9	9	8	8	7	7	6	6	5	5
26° 45' - 28° 6' (26.75° - 28.1°)		10	10	9	9	8	8	7	7	6	6	5
28° 6' - 29° 25' (28.1° - 29.42°)		11	10	10	9	9	8	8	7	7	6	6
29° 25' - 30° 41' (29.42° - 30.68°)		11	11	10	10	9	9	8	8	7	7	6
30° 41' - 31° 56' (30.68° - 31.93°)		12	11	11	10	10	9	9	8	8	7	7
31° 56' - 33° 9' (31.93° - 33.15°)		12	12	11	11	10	10	9	9	8	8	7
33° 9' - 34° 21' (33.15° - 34.35°)		13	12	12	11	11	10	10	9	9	8	8
34° 21' - 35° 31' (34.35° - 35.52°)		13	13	12	12	11	11	10	10	9	9	8
35° 31' - 36° 41' (35.52° - 36.68°)		14	13	13	12	12	11	11	10	10	9	9
36° 41' - 37° 50' (36.68° - 37.83°)		14	14	13	13	12	12	11	11	10	10	9
37° 50' - 38° 58' (37.83° - 38.97°)		15	14	14	13	13	12	12	11	11	10	10
38° 58' - 40° 5' (38.97° - 40.08°)		15	15	14	14	13	13	12	12	11	11	10
40° 5' - 41° 12' (40.08° - 41.2°)		16	15	15	14	14	13	13	12	12	11	11
41° 12' - 42° 19' (41.2° - 42.32°)		16	16	15	15	14	14	13	13	12	12	11
42° 19' - 43° 26' (42.32° - 43.43°)		17	16	16	15	15	14	14	13	13	12	12
43° 26' - 44° 32' (43.43° - 44.53°)		17	17	16	16	15	15	14	14	13	13	12
44° 32' - 45° 38' (44.53° - 45.63°)		18	17	17	16	16	15	15	14	14	13	13
45° 38' - 46° 45' (45.63° - 46.75°)		18	18	17	17	16	16	15	15	14	14	13
46° 45' - 47° 51' (46.75° - 47.85°)		19	18	18	17	17	16	16	15	15	14	14
47° 51' - 48° 58' (47.85° - 48.97°)		19	19	18	18	17	17	16	16	15	15	14
48° 58' - 50° 6' (48.97° - 50.1°)		20	19	19	18	18	17	17	16	16	15	15
50° 6' - 51° 13' (50.1° - 51.22°)		20	20	19	19	18	18	17	17	16	16	15
51° 13' - 52° 22' (51.22° - 52.37°)		21	20	20	19	19	18	18	17	17	16	16

Geographical latitude, North or South	Height above sea level											
	[m]	0 - 325	325 - 650	650 - 975	975 - 1300	1300 - 1625	1625 - 1950	1950 - 2275	2275 - 2600	5600 - 2925	2925 - 3250	3250 - 3575
	[ft]	0 - 1060	1060 - 2130	2130 - 3200	3200 - 4260	4260 - 5330	5330 - 6400	6400 - 7460	7460 - 8530	8530 - 9600	9600 - 10660	10660 - 11730
52° 22' - 53° 31' (52.37° - 53.52°)		21	21	20	20	19	19	18	18	17	17	16
53° 31' - 54° 41' (53.52° - 54.68°)		22	21	21	20	20	19	19	18	18	17	17
54° 41' - 55° 52' (54.68° - 55.87°)		22	22	21	21	20	20	19	19	18	18	17
55° 52' - 57° 4' (55.87° - 57.07°)		23	22	22	21	21	20	20	19	19	18	18
57° 4' - 56° 17' (57.07° - 56.28°)		23	23	22	22	21	21	20	20	19	19	18
56° 17' - 59° 32' (56.28° - 59.53°)		24	23	23	22	22	21	21	20	20	19	19
59° 32' - 60° 49' (59.53° - 60.82°)		24	24	23	23	22	22	21	21	20	20	19
60° 49' - 62° 9' (60.82° - 62.15°)		25	24	24	23	23	22	22	21	21	20	20
62° 9' - 63° 30' (62.15° - 63.5°)		25	25	24	24	23	23	22	22	21	21	20
63° 30' - 64° 55' (63.5° - 64.92°)		26	25	25	24	24	23	23	22	22	21	21
64° 55' - 66° 24' (64.92° - 66.4°)		26	26	25	25	24	24	23	23	22	22	21
66° 24' - 67° 57' (66.4° - 67.95°)		27	26	26	25	25	24	24	23	23	22	22
67° 57' - 69° 35' (67.95° - 69.58°)		27	27	26	26	25	25	24	24	23	23	22
69° 35' - 71° 21' (69.58° - 71.35°		28	27	27	26	26	25	25	24	24	23	23
71° 21' - 73° 16' (71.35° - 73.27°)		28	28	27	27	26	26	25	25	24	24	23
73° 16' - 75° 24' (73.27° - 75.4°)		29	28	28	27	27	26	26	25	25	24	24
75° 24' - 77° 52' (75.4° - 77.87°)		29	29	28	28	27	27	26	26	25	25	24
77° 52' - 80° 56' (77.87° - 80.93°)		30	29	29	28	28	27	27	26	26	25	25
80° 56' - 85° 45' (80.93° - 85.75°)		30	30	29	29	28	28	27	27	26	26	25
85° 45' - 90° 0' (85.75° - 90.0°)		31	30	30	29	29	28	28	27	27	26	26

5.1.1 Exact GEO Code

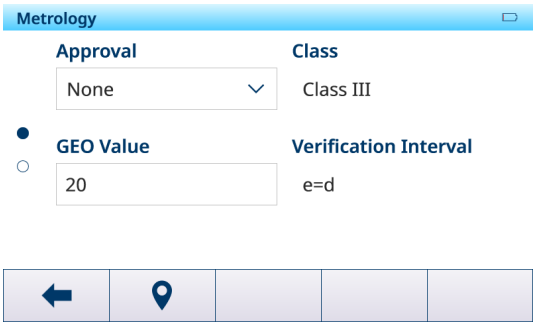
IND400 provides the exact GEO code as the extension for the GEO code feature. The idea of Exact GEO code is to provide more digits in GEO code (Originally the GEO code is an integer value between 0 and 31) to get more accurate "g".

- The terminal is in non-approved mode.

1 Open the **Metrology** page in the path **Scale** > **Metrology**.

2 Click the softkey .

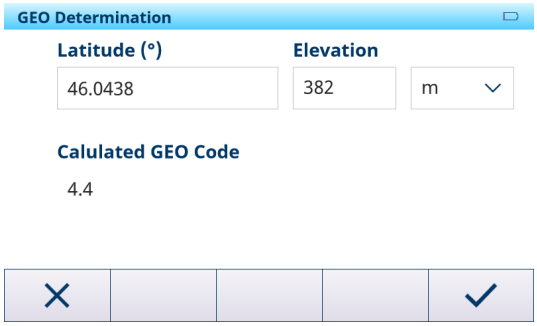
3 Enter the **Latitude (°)** and the **Elevation** in the pop-up **GEO Code Determination** page.



➡ The **Calculated GEO Code** with one digit after the point is displayed in the page.

4 Click the softkey ✓.

➡ The **Calculated GEO Code** is updated to the **GEO Code** field in the **Metrology** page.



5.2 Available SICS commands

CLR	Clear key
D	Scale display
DAT	Inquire/set system date
DIO	Inquire input status / set output status
DW	Weight display
DY	Target values
GEO	Inquire Geo value
I0	Inquire all implemented MT-SICS commands
I1	Inquire MT-SICS level and MT-SICS versions
I2	Inquire device data
I3	Inquire terminal software version and type definition number
I4	Inquire serial number
I6	Inquiry of scale build parameters
I10	Inquire/set device identification
I11	Inquire model designation
I12	Inquire/set identifications ID1 / ID2 / ID3
I13	
I14	
I51	Power on time
K	Keyboard monitoring
LDR	Load material
MER	Inquire meridian
M08	Inquire/set display brightness
M15	Language
M21	Inquire/set weight unit
PCS	Send number of pieces immediately
PMC	Set Over/under checkweighing parameters in counting mode
PMI	Inquire Over/under checkweighing parameters in weighing mode
PMW	Set Over/under checkweighiing parameters in weighing mode
PRN	Initiate printout
PW	Inquire/set the piece weight
PWR	Switch off
REF	Counting: Build reference
RST	Restart
R0	Enable user input
R1	Disable user input
S	Send stable weight value
SI	Send weight value immediately

SIH	Send net value in high resolution immediately
SIR	Send weight value immediately and repeat
SIRU	Send weight value with currently displayed unit immediately and repeat
SIS	Send current net information
SIU	Send weight value with currently displayed unit immediately
SIX1	Current gross, net, tare values
SIX2	Current gross, net, tare, HighResNet values
SIX3	Current gross, net, tare, HighResNet, MaxResNet values
SM	Send stable net value with range information
SMI	Send net value with range information immediately
SMIR	Send net value with range information immediately and repeat
SM1	Perform animal weighing
SNS	Inquire/set the active scale
SR	Send weight value on weight change
SRU	Send weight value in display unit on weight change and repeat
ST	Send stable weight value after pressing the transfer key
STA	Preset tare value in the defined unit
SU	Send stable weight value in display unit
SV	Send stable net value
SVI	Send net value immediately
SVIR	Send net value immediately and repeat
SWU	Switch display unit
SX	Send stable weighing data
SXI	Send stable weighing data immediately
SXIR	Send stable weighing data immediately and repeat
T	Tare
TA	Inquire/set tare value
TAC	Clear tare value
TI	Tare immediately
TIM	Inquire/set system time
U	Unit change
Z	Zero
ZI	Zero immediately
@	Reset

Note

For more information on the SICS commands, refer to the MT-SICS Reference manual 30881805.

5.3 Available connection protocols

Note

Default settings are shown in **bold**.

SICS Server

For more information on the SICS commands, refer to the MT-SICS Reference manual 30881805.

SICS Continuous

The terminal continuously sends data packets (about 20 to 25 times) in the following format:

S_S_Weight value_Unit	Current stable weight in the unit currently set for Unit1
S_D_Weight value_Unit	Dynamic (unstable) weight in the unit currently set for Unit 1
S_I	Command understood, but not executable at present

S_+	Scale in overload range
S_–	Scale in underload range.

For more information on the SICS commands, refer to the MT-SICS Reference manual 30881805.

TOLEDO Continuous-W

Weight values are transferred in the following format:

	Status			**Field 1**						**Field 2**							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
STX	SWA	SWB	SWC	MSD	–	–	–	–	LSD	MSD	–	–	–	–	LSD	CR	CHK

Field 1	Weight value without decimal point and unit
Field 2	Tare weight without decimal point and unit
STX	"Start of text", can be activated/deactivated in the menu settings
SWAS, SWB, SWC	Status words, see below
MSD	Most significant digit
LSD	Least significant digit
CR	Carriage Return
CHK	Checksum (2-complement of the binary sum of the 7 lower bits of all the characters sent before including STX and CR), can be activated/deactivated in the menu settings.

Status word A

		Status bit						
Function	**Selection**	**6**	**5**	**4**	**3**	**2**	**1**	**0**
Decimal position	X00	0	1			0	0	0
	X0					0	0	1
	0.X					0	1	0
	0.0X					0	1	1
	0.00X					1	0	0
	0.000X					1	0	1
	0.0000X					1	1	1
Numerical increment	X1	0	1					
	X2	1	0					
	X5	1	1					

Status word B

Function	**Value**	**Bit**
Gross/Net	Net = 1	0
Sign	Negative = 1	1
Underload/Overload	Overload = 1	2
Movement	Movement = 1	3
kg/lb	kg = 1	4
1	1	5
Power up	Power up = 1	6

Status word C

Function/Value				**Bit**
kg/lb	**g**	**t**	**oz**	
0	1	0	1	0
0	0	1	1	1
0	0	0	0	2

Function/Value	Bit
Print request = 1	3
Expand data X10 =1, Normal = 0	4
Always = 1	5
Always = 0	6

TOLEDO Continuous-C

This protocol is for the counting application. Piece count values are transferred in the following format:

	Status			Field 1						Field 2							
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
STX	SWA	SWB	SWC	MSD	–	–	–	–	LSD	MSD	–	–	–	–	LSD	CR	CHK

Field 1	6 Byte for piece count, no leading "0", tailing space If not in counting application: 6 Byte filled with "0"
Field 2	6 Byte filled with "0"
STX	"Start of text", can be activated/deactivated in the menu settings
SWAS, SWB, SWC	Status words, see below
MSD	Most significant digit
LSD	Least significant digit
CR	Carriage Return
CHK	Checksum (2-complement of the binary sum of the 7 lower bits of all the characters sent before including STX and CR), can be activated/deactivated in the menu settings.

Input commands supported

P	Printing out the current result
T	Taring the scale
Z	Zero setting of the display
C	Deleting of the current value
U	Switch unit

Input Template

This protocol is used e.g. for a barcode connection.

Setup item	Possible settings
Preamble Length	**0** ... 20 (characters)
Data Length	**1** ... 99 (characters)
Postamble Length	**0** ... 20 (characters)
Assignment	**None**, Keypad, Preset Tare, Tare ID, ID1, ID2, ID3, Target ID, Material ID
Termination Character	None, SOH, STX, ETX, EOT, ENQ, ACK, BEL, BS, HT, LF, VT, FF, **CR**, SO, SI, DLE, DC1, DC2, DC3, DC4, NAK, SYN, ETB, CAN, EM, SUB, ESC, FS, GS, RS, US **Note** For standard definition of these characters, see [Control Characters Page 166].

Second Display

Setup item	Sub items	Possible settings
Toledo continuous-W	Checksum	**On**/Off
Toledo continuous-C	STX	
AD-RS-M7		

Post

Setup item	Possible settings
Post	**IBP**, IBP Demand, IP2420, IP2420 Demand, OPOS

DigTol

Setup item	Possible settings
Gross	**G**, B, Off
Net	**On**, Off
Tare	**On**, Off

Demand Mode

Setup item	Possible settings
Auto	On / **Off**
Print G	On / **Off**
Line Format	**Multiple**, Single, Fixed
Expanded	On / **Off**
Checksum	**On** / Off
STX	**On** / Off

PM

Setup item	Possible settings
Special	On / **Off**

Remote Display

Setup item	Sub items	Possible settings
SICS Client		
Toledo Continuous-W	Terminal Model	General, IND231/6, IND245, IND256x, ICS4xx, ICS6xx, **IND400**, IND570, IND500x, IND700, IND900 base pack IND900 FA
	Checksum	On / **Off**
	STX	**On** / Off

Reference Balance

This mode is used to connect a reference balance for counting. There are no more settings.

Transfer

Setup item	Sub Items	Remark
Print Type	**ASCII Printer**	All ASCII templates can be used for the printout
	Smart Printer	
	Label Printer	All Label templates can be used for the printout
Length	1 ... **24** ... 100 (characters)	For ASCII Printer and Smart Printer only
Endcoding Format	**UTF8**, Unicode, GB2312, Shift_JIS, ISO/IEC 8859-15	

Parameter Server

This mode is used to connect a server for importing/exporting parameters. It is a protocol proprietary for MT internal use. There are no more settings.

PSCP

PSCP is one mode of communication port, and could be activated in menu setting, with Manual mode and Auto mode available for selection. The difference between these two modes is that Auto mode sends data automatically via the interface (same conditions as Auto Print), whereas with the Manual mode, the sending has to be initiated by pressing the transfer key or sending a command.

Setup item	Possible settings
Format	**16 Bytes Without ID**, 22 Bytes With ID
Auto	On / **Off**

- Format for 16 Bytes without ID

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
+	*	D	D	D	D	D	D	D	D	*	U	U	U	CR	LF
-	*	D	D	D	D	D	D	D	D	*	U	U	U	CR	LF
*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR	LF

+ / -: Sign

*: Space

D: Digits or display symbol (maximum of 7 with decimal point)

U: Unit symbol (1, 2 or 3 characters; if length is < 3, filled with follow space symbols)

CR: Enter

LF: Line feed

- Format for 22 Bytes with ID

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
I	I	I	I	I	I	**+**	*****	D	D	D	D	D	D	D	D	*	U	U	U	CR	LF
I	I	I	I	I	I	**-**	*****	D	D	D	D	D	D	D	D	*	U	U	U	CR	LF
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CR	LF

I: ID code (right align); "N" for net weight, "G" for gross weight, "T" for tare value

+ / -: Sign

*: Space

D: Digits or display symbol (maximum of 7 with decimal point)

U: Unit symbol (1, 2 or 3 characters; if length is < 3, filled with follow space symbols)

CR: Enter

LF: Line feed

- Control Command

ESC P CR LF: Read net weight

ESC U CR LF: Read tare weight

ESC V CR LF: Read gross weight

ESC T CR LF: Tare

ESC Z CR LF: Zero

Modbus RTU / Modbus TCP

Modbus is one kind of commonly available means of connecting industrial electronic devices. It is typically used for communication with I/O systems, including Programmable Logic Controllers (PLCs). Modbus can be assigned to the port installed RS232, RS485/422, and Ethernet option board.

Modbus RTU is applicable for port RS232 or RS485/422, while Modbus TCP is applicable for Ethernet port.

- Byte Order

Configuration Item	Description
Big Endian	An order in which the "big end" (most significant value in the sequence) is stored first, at the lowest storage address
Little Endian	An order in which the "little end" (least significant value in the sequence) is stored first
Byte Swap	Consists of masking each byte and shifting them to the correct location.
Word Swap	Consists of masking each word and shifting them to the correct location

- Modbus Commands

Address	Function	Data Type	Read / Write	Description
40001	Report Default Value	Float	R	Gross weight data in displayed resolution
40003	Report Rounded Gross Weight	Float	R	Gross weight data in displayed resolution
40005	Report Rounded Tare Weight	Float	R	Tare weight data in displayed resolution
40007	Report Rounded Net Weight	Float	R	Net weight data in displayed resolution
40015	Report Weight Unit	Float	R	Weight unit (number representing unit from chart)
40020	Write Preset Tare Weight	Float	W	Sets Preset Tare to Value provided.
40022	Tare	Short	W	Tare executed with motion check. If address 40991 is set to Little Endian or Byte Swap: 0 = Disable 1 = Enable
40023	Report Tare operation status	Short	R	Report Tare operation status (used when triggering tare from acyclic interface).
40024	Zero	Short	W	Zero executed with motion check. If address 40991 is set to Little Endian or Byte Swap: 0 = Disable 1 = Enable
40025	Report zero operation status	Short	R	Report zero operation status (used when triggering zero from acyclic interface).
40026	Clear Tare	Short	W	Motion not checked, clear tare executed. If address 40991 is set to Little Endian or Word Swap: 0=Disable 1=Enable
40027	Tare Immediate	Short	W	Motion not checked, tare executed.
40028	Zero Immediate	Short	W	Motion not checked, zero executed.
40029	Print	Short	W	Demand Print executed. If address 40991 is set to Little Endian or Word Swap: 0 = Disable 1 = Enable
40204	Report d	Float	R	Smallest "d" available digit (MT-SICS:I38)
40206	Report "Nmax"	Float	R	Scale /sensor capacity (MT-SICS:XP9010)
40991	Swap Mode of byte order	Short	R / W	Change byte order swap mode: • 0-Automatic(unsupported) • 1-Big Endian(default)[a b c d] [a b] • 2-Little Endian [d c b a] [b a] • 3-Byte Swap [c d a b] [a b] • 4-Word Swap [b a d c] [b a]
40993 40994	Automatic Byte Order Setting	Float	R / W	Automatically recognizing the byte order. User writes this index using float value 2.76 with wanted byte order. When user writes to this index, Terminal recognizes the value with different byte order to check if the value is 2.76(0x4030a3d7). If verified, change index 40991's value.
41001	Rounded Tare weight	Float	R	Tare weight data in displayed resolution
41003	Display weight	Float	R	Gross weight data in displayed resolution

Address	Function		Data Type	Read / Write	Description
41005	.0	Status	Bit	R	Data OK
	.1		Bit	R	Motion
	.2		Bit	R	Net Mode
	.3		Bit	R	Center of Zero
	.4		Bit	R	X10 Status
	.5		Bit	R	Print Status: 0 = No operation 1 = In Process
	.6		Bit	R	Zero Status: 0 = No operation 1 = In Process
	.7		Bit	R	Tare Status: 0 = No operation 1 = In Process
	.8		Bit	R	Empty
	.9		Bit	R	Empty
	.10		Bit	R	Empty
	.11		Bit	R	Empty
	.12		Bit	R	Empty
	.13		Bit	R	Empty
	.14		Bit	R	Empty
	.15		Bit	R	Empty
Note: All of the description in the above table is based on that address 40991 is set to Little Endian or Word Swap mode. Bit order may need to change correspondingly in other mode.					

Definition of Address 40015

Index	Weight Unit
1	g
2	kg
3	oz
4	lb
5	t
6	ton

Definition of Address 40023

Index	Weight Unit
0	Tare success
1	Taring
2	Tare fail
When user writes tare command to terminal, the terminal first enters into taring status. Then it will change to tare success or tare fail status. The terminal will keep success or fail status until user writes tare command next time.	

Definition of Address 40025

Index	Weight Unit
0	Zero success
1	Zeroing
2	Zero fail
When user writes zero command to terminal, the terminal first enters into zeroing status. Then it will change to zero success or zero fail status. The terminal will keep success or fail status until user writes zero command next time.	

5.4 ASCII Standard and Control Codes

DEC	HEX	Symbol	DEC	HEX	Symbol	DEC	HEX	Symbol	DEC	HEX	Symbol
0	00	NUL	64	40	@	128	80	€	192	C0	À
1	01	SOH	65	41	A	129	81		193	C1	Á
2	02	STX	66	42	B	130	82	‚	194	C2	Â
3	03	ETX	67	43	C	131	83	ƒ	195	C3	Ã
4	04	EOT	68	44	D	132	84	„	196	C4	Ä
5	05	ENQ	69	45	E	133	85	…	197	C5	Å
6	06	ACK	70	46	F	134	86	†	198	C6	Æ
7	07	BEL	71	47	G	135	87	‡	199	C7	Ç
8	08	BS	72	48	H	136	88	ˆ	200	C8	È
9	09	HT	73	49	I	137	89	‰	201	C9	É
10	0A	LF	74	4A	J	138	8A	Š	202	CA	Ê
11	0B	VT	75	4B	K	139	8B	‹	203	CB	Ë
12	0C	FF	76	4C	L	140	8C	Œ	204	CC	Ì
13	0D	CR	77	4D	M	141	8D		205	CD	Í
14	0E	SO	78	4E	N	142	8E	Ž	206	CE	Î
15	0F	SI	79	4F	O	143	8F		207	CF	Ï
16	10	DLE	80	50	P	144	90		208	D0	Đ
17	11	DC1	81	51	Q	145	91	‘	209	D1	Ñ
18	12	DC2	82	52	R	146	92	’	210	D2	Ò
19	13	DC3	83	53	S	147	93	“	211	D3	Ó
20	14	DC4	84	54	T	148	94	”	212	D4	Ô
21	15	NAK	85	55	U	149	95	•	213	D5	Õ
22	16	SYN	86	56	V	150	96	–	214	D6	Ö
23	17	ETB	87	57	W	151	97	—	215	D7	×
24	18	CAN	88	58	X	152	98	˜	216	D8	Ø
25	19	EM	89	59	Y	153	99	™	217	D9	Ù
26	1A	SUB	90	5A	Z	154	9A	š	218	DA	Ú
27	1B	ESC	91	5B	[	155	9B	›	219	DB	Û
28	1C	FS	92	5C	\	156	9C	œ	220	DC	Ü
29	1D	GS	93	5D	]	157	9D		221	DD	Ý
30	1E	RS	94	5E	^	158	9E	ž	222	DE	Þ
31	1F	US	95	5F	_	159	9F	Ÿ	223	DF	ß
32	20		96	60	`	160	A0		224	E0	à
33	21	!	97	61	a	161	A1	¡	225	E1	á
34	22	"	98	62	b	162	A2	¢	226	E2	â
35	23	#	99	63	c	163	A3	£	227	E3	ã
36	24	$	100	64	d	164	A4	¤	228	E4	ä
37	25	%	101	65	e	165	A5	¥	229	E5	å

DEC	HEX	Symbol	DEC	HEX	Symbol	DEC	HEX	Symbol	DEC	HEX	Symbol
38	26	&	102	66	f	166	A6	¦	230	E6	æ
39	27	'	103	67	g	167	A7	§	231	E7	ç
40	28	(	104	68	h	168	A8	¨	232	E8	è
41	29	)	105	69	i	169	A9	©	233	E9	é
42	2A	*	106	6A	j	170	AA	ª	234	EA	ê
43	2B	+	107	6B	k	171	AB	«	235	EB	ë
44	2C	,	108	6C	l	172	AC	¬	236	EC	ì
45	2D	-	109	6D	m	173	AD		237	ED	í
46	2E	.	110	6E	n	174	AE	®	238	EE	î
47	2F	/	111	6F	o	175	AF	¯	239	EF	ï
48	30	0	112	70	p	176	B0	°	240	F0	ð
49	31	1	113	71	q	177	B1	±	241	F1	ñ
50	32	2	114	72	r	178	B2	²	242	F2	ò
51	33	3	115	73	s	179	B3	³	243	F3	ó
52	34	4	116	74	t	180	B4	´	244	F4	ô
53	35	5	117	75	u	181	B5	µ	245	F5	õ
54	36	6	118	76	v	182	B6	¶	246	F6	ö
55	37	7	119	77	w	183	B7	·	247	F7	÷
56	38	8	120	78	x	184	B8	¸	248	F8	ø
57	39	9	121	79	y	185	B9	¹	249	F9	ù
58	3A	:	122	7A	z	186	BA	º	250	FA	ú
59	3B	;	123	7B	{	187	BB	»	251	FB	û
60	3C	<	124	7C	l	188	BC	¼	252	FC	ü
61	3D	=	125	7D	}	189	BD	½	253	FD	ý
62	3E	>	126	7E	~	190	BE	¾	254	FE	þ
63	3F	?	127	7F		191	BF	¿	255	FF	ÿ

5.4.1 Control Characters

Symbol	Definition	Function
SOH	Start of Heading	A transmission control character used as the first character of a heading of an information message.
STX	Start of Text	A transmission control character that precedes a text and that is used to terminate a heading.
ETX	End of Text	A transmission control character that terminates a text.
EOT	End of Transmission	A transmission control character used to indicate the conclusion of the transmission of one or more texts.
ENQ	Enquiry	A transmission control character used as a request for a response from a remote station; the response may include station identification and/or station status. When a "Who are you" function is required on the general switched transmission network, the first use of ENQ after the connection is established will have the meaning "Who are you" (station identification). Subsequent use of ENQ may, or may not, include the function "Who are you", as determined by agreement.
ACK	Acknowledgment	A transmission control character transmitted by a receiver as an affirmative response to the sender.
BEL	Bell	A control character that is used when there is a need to call for attention; it may control alarm or attention devices.
BS	Back Space	A format effector that moves the active position one character position backwards on the same line.

Symbol	Definition	Function
HT	Horizontal Tab	A format effector that advances the active position to the next pre-determined character position on the same line.
LF	Line Feed	A format effector that advances the active position to the same character position of the next line.
VT	Vertical Tab	A format effector that advances the active position to the same character position on the next pre-determined line.
FF	Form Feed	A format effector that advances the active position to the same character position on a pre-determined line of the next form or page.
CR	Carriage Return	A format effector that moves the active position to the first character position on the same line.
SO	Shift Out / X-On	A control character that is used in conjunction with SHIFT IN and ESCAPE to extend the graphic character set of the code.
SI	Shift In / X-Off	A control character that is used in conjunction with SHIFT OUT and ESCAPE to extend the graphic character set of the code.
DLE	Data Line Escape	A transmission control character that will change the meaning of a limited number of contiguously following characters. It is used exclusively to provide supplementary data transmission control functions. Only graphic characters and transmission control characters can be used in DLE sequences.
DC1	Device Control 1 (oft. XON)	A device control character that is primarily intended for turning on or starting an ancillary device. If it is not required for this purpose, it may be used to restore a device to the basic mode of operation (see also DC2 and DC3), or for any other device control function not provided by other DCs.
DC2	Device Control 2	A device control character that is primarily intended for turning on or starting an ancillary device. If it is not required for this purpose, it may be used to set a device to a special mode of operation (in which case DC1 is used to restore normal operation), or for any other device control function not provided by other DCs.
DC3	Device Control 3 (oft. XOFF)	A device control character that is primarily intended for turning off or stopping an ancillary device. This function may be a secondary level stop, for example, wait, pause, stand-by or halt (in which case DC1 is used to restore normal operation). If it is not required for this purpose, it may be used for any other device control function not provided by other DCs.
DC4	Device Control 4	A device control character that is primarily intended for turning off, stopping, or interrupting an ancillary device. If it is not required for this purpose, it may be used for any other device control function not provided by other DCs.
NAK	Negative Acknowledgement	A transmission control character transmitted by a receiver as a negative response to the sender.
SYN	Synchronous Idle	A transmission control character used by a synchronous transmission system in the absence of any other character (idle condition) to provide a signal from which synchronism may be achieved or retained between data terminal equipment.
ETB	End of Transmit Block	A transmission control character used to indicate the end of a transmission block of data where data is divided into such blocks for transmission purposes.
CAN	Cancel	A character, or the first character of a sequence, indicating that the data preceding it is in error. As a result, this data is to be ignored. The specific meaning of this character must be defined for each application and/or between sender and recipient.

Symbol	Definition	Function
EM	End of Medium	A control character that may be used to identify the physical end of a medium, or the end of the used portion of a medium, or the end of the wanted portion of data recorded on a medium. The position of this character does not necessarily correspond to the physical end of the medium.
SUB	Substitute	A control character used in the place of a character that has been found to be invalid or in error. SUB is intended to be introduced by automatic means.
ESC	Escape	A control character that is used to provide additional control functions. It alters the meaning of a limited number of contiguously following bit combinations.
FS	File Separator	A control character used to separate and qualify data logically; its specific meaning has to be specified for each application. If this character is used in hierarchical order, it delimits a data item called a file.
GS	Group Separator	A control character used to separate and qualify data logically; its specific meaning has to be specified for each application. If this character is used in hierarchical order, it delimits a data item called a group.
RS	Record Separator	A control character used to separate and qualify data logically; its specific meaning has to be specified for each application. If this character is used in hierarchical order, it delimits a data item called a record.
US	Unit Separator	A control character used to separate and qualify data logically; its specific meaning has to be specified for each application. If this character is used in hierarchical order, it delimits a data item called a unit.

5.5 MQTT Messages

5.5.1 Commands

Description	Request	Response

Zero	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Request",
	"ActionCode": "Update",
	"MessageID": "1234",
	"Path": "Command"
	},
	"Command": {
	"DeviceName": "Scale1",
	"CommandCode": "Zero"
	}
	}
	}
		{
		"Message": {
		"Header": {
		"Version": "v1.0.0",
		"MessageType": "Response",
		"MessageID": "1733783860810020",
		"Timestamp": 1733783860810,
		"Path": "Command",
		"Response": {
		***
		},
		"WorkstationID": "IND400-123456"
		},
		"Command": {
		"DeviceName": "Scale1",
		"CommandCode": "Zero"
		},
		"Measurement": [
		{
		***
		}
		]
		}
		}

Description	Request	Response

Tare	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Request",
	"ActionCode": "Update",
	"MessageID": "1234",
	"Path": "Command"
	},
	"Command": {
	"DeviceName": "Scale1",
	"CommandCode": "Tare"
	}
	}
	}
		{
		"Message": {
		"Header": {
		"Version": "v1.0.0",
		"MessageType": "Response",
		"MessageID": "1733784163730022",
		"Timestamp": 1733784163730,
		"Path": "Command",
		"Response": {
		***
		},
		"WorkstationID": "IND400-123456"
		},
		"Command": {
		"DeviceName": "Scale1",
		"CommandCode": "Tare"
		},
		"Measurement": [
		{
		***
		}
		]
		}

Preset Tare	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Request",
	"ActionCode": "Update",
	"MessageID": "1234",
	"Path": "Command"
	},
	"Command": {
	"DeviceName": "Scale1",
	"CommandCode": "PresetTare",
	"Value": 3.51,
	"Unit": "kg"
	}
	}
	}
		{
		"Message": {
		"Header": {
		"Version": "v1.0.0",
		"MessageType": "Response",
		"MessageID": "1733784585200023",
		"Timestamp": 1733784585200,
		"Path": "Command",
		"Response": {
		***
		},
		"WorkstationID": "IND400-123456"
		},
		"Command": {
		"DeviceName": "Scale1",
		"CommandCode": "PresetTare",
		"Value": 3.51,
		"Unit": "kg"
		},
		"Measurement": [
		{
		***
		}
		]
		}
		}

Clear	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Request",
	"ActionCode": "Update",
	"MessageID": "1234",
	"Path": "Command"
	},
	"Command": {
	"DeviceName": "Scale1",
	"CommandCode": "Clear"
	}
	}
	}
		{
		"Message": {
		"Header": {
		"Version": "v1.0.0",
		"MessageType": "Response",
		"MessageID": "1733787267945033",
		"Timestamp": 1733787267945,
		"Path": "Command",
		"Response": {
		***
		},
		"WorkstationID": "IND400-123456"
		},
		"Command": {
		"DeviceName": "Scale1",
		"CommandCode": "Clear"
		},
		"Measurement": [
		{
		***
		}
		]
		}
		}

Description	Request	Response

Print Command	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Request",
	"ActionCode": "Update",
	"MessageID": "1234",
	"Path": "Command"
	},
	"Command": {
	"CommandCode": "Print"
	}
	}
	}
		{
		"Message": {
		"Header": {
		"Version": "v1.0.0",
		"MessageType": "Response",
		"MessageID": "1733784625665024",
		"Timestamp": 1733784625665,
		"Path": "Command",
		"Response": {
		***
		},
		"WorkstationID": "IND400-123456"
		},
		"Command": {
		"CommandCode": "Print"
		},
		"Measurement": [
		{
		***
		}
		]
		}
		}

5.5.2 Read Measurement

Description	Request	Response

Read all scales in a terminal	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Request",
	"ActionCode": "Read",
	"MessageID": "1234",
	"Path": "Measurement/Weight"
	}
	}
	}
		{
		"Message": {
		"Header": {
		***
		"Response": {
		***
		},
		"WorkstationID": "IND400-123456"
		},
		"Measurement": [
		{
		"id": "00000000-0401-0500-0000-000000123456",
		"type": "weight",
		"deviceName": "Scale1",
		"deviceType": "Analog Scale",
		***
		},
		{
		"id": "00000000-0402-0500-0000-000000123456",
		"type": "weight",
		"deviceName": "Scale2",
		"deviceType": "Remote Scale",
		***
		}
		]
		}
		}

Read a specific scale in a terminal	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Request",
	"ActionCode": "Read",
	"MessageID": "1234",
	"Path": "Measurement/Weight",
	"DeviceName":"Scale1"
	}
	}
	}
		{
		"Message": {
		"Header": {
		***
		"Response": {
		***
		},
		"WorkstationID": "IND400-123456"
		},
		"Measurement": [
		{
		"id": "00000000-0401-0500-0000-000000123456",
		"type": "weight",
		"deviceName": "Scale1",
		"deviceType": "Analog Scale",
		***
		}
		]
		}

Description	Request	Response

Read a specific scale in a terminal and additionally show cell data	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Request",
	"ActionCode": "Read",
	"MessageID": "1234",
	"Path": "Measurement/Weight",
	"DeviceName":"Scale1",
	"View":"All"
	}
	}
	}
		{
		"Message": {
		"Header": {
		***
		"Response": {
		***
		},
		"WorkstationID": "IND400-123456"
		},
		"Measurement": [
		{
		"id": "00000000-0401-0500-0000-000000123456",
		"type": "weight",
		"deviceName": "Scale1",
		"deviceType": "Powercell Scale",
		***
		"cellWeight": [
		****
		]
		}
		]
		}

Read everything under Measurement/ Weight	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Request",
	"ActionCode": "Read",
	"MessageID": "1234",
	"Path": "Measurement/Weight",
	"View":"All"
	}
	}
	}
		{
		"Message": {
		"Header": {
		***
		"Response": {
		***
		},
		"WorkstationID": "IND400-123456"
		},
		"Measurement": [
		{
		***
		"deviceName": "Scale1",
		"deviceType": "Powercell Scale",
		***
		"cellWeight": [
		****
		]
		},
		{
		"id": "00000000-0402-0500-0000-000000123456",
		"type": "weight",
		"deviceName": "Scale2",
		"deviceType": "Remote Scale",
		***
		}
		]
		}

Read everything under Measurement - Include app	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Request",
	"ActionCode": "Read",
	"MessageID": "1234",
	"Path": "Measurement"
	}
	}
	}
		{
		"Message": {
		"Header": {
		***
		"Response": {
		***
		},
		"WorkstationID": "IND400-123456"
		},
		"Measurement": [
		{
		"id": "00000000-0401-0500-0000-000000123456",
		"type": "weight"
		***
		},
		{
		"id": "00000000-0301-0503-0000-000000123456",
		"type": "Over Under",
		"application": [
		***
		],
		***
		}
		]

5.5.3 Subscribe

Description	Request	Response

Subscribe	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Subscribe",
	"MessageID": "1234",
	"Path": "Measurement/Weight"
	}
	}
	}
		{
		"Message": {
		"Header": {
		"Version": "v1.0.0",
		"MessageType": "Publish",
		"MessageID": "1733786920765031",
		"Timestamp": 1733786920765,
		"Path": "Measurement/Weight",
		"Response": {
		"ResponseCode": "OK",
		"RequestID": "1234"
		},
		"WorkstationID": "IND400-123456"
		},
		"Measurement": [
		{
		***
		}
		]
		}
		}

Unsubscribe	{
	"Message": {
	"Header": {
	"Version": "v1.0.0",
	"MessageType": "Unsubscribe",
	"MessageID": "1234",
	"Path": "Measurement/Weight"
	}
	}
	}
		{
		"Message": {
		"Header": {
		"Version": "v1.0.0",
		"MessageType": "Response",
		"MessageID": "1733787053525032",
		"Timestamp": 1733787053525,
		"Path": "Measurement/Weight",
		"Response": {
		"ResponseCode": "OK",
		"RequestID": "1234"
		},
		"WorkstationID": "IND400-123456"
		}
		}
		}

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