User Manual

IND700 ProWorks Multi-Tools

Applications

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1 ProWorks Multi-Tools and Base Model Applications

The IND700's base software, ProWorks, provides two applications:

- Simple Weighing
- ID Forms

When a ProWorks Multi-Tools Application license is added to the terminal, additional applications are available:

- Counting
- Manual Target Weighing - Classification
- Manual Target Weighing - Filling
- Manual Target Weighing - Over/Under weighing
- Totalization

All three forms of target weighing can be configured to use counting and totalization in any combination.

Simple weighing and the use of ID Forms are described in **Operation > Non-Weighing Operation > ID Forms** in the **IND700 User's Manual**. This section describes the functions, configuration and use of the five Multi-Tools applications.

Manuals download

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1.1 Configuration for Applications

> **NOTICE**
>
> **Configuration for Applications**
>
> Only users with a Supervisor or Admin login can make changes to the configuration screens and tables, whether they are accessed in setup or by touching a softkey.

> **NOTICE**
>
> **Comparator Configuration**
>
> Note that [Comparators ▶ Page 20] do not appear as an application to select. Once they are configured, the output of each Comparator is always available via Shared Data.

Several steps are necessary to set up an application process:

1 Select one or more applications to run, from the [Select Application ▶ Page 6] screen.
2 **Either** use Application Screen softkeys to set up the application attributes, **or** create one or more properly-configured [Material Table ▶ Page 7] records.
3 Optionally, create one or more [Tare Table ▶ Page 12] entries for use with the materials.
4 Configure the [App Screen View ▶ Page 12] to determine which data fields display on the application screen while the application is being run. **Note**: These selections, and the contents of any configured ID Form fields, (refer to the IND700 User's Manual, sections 2.3.1. and 3.2.2.) will also determine what data is recorded in the **Transaction Table** (refer to the **IND700 User's Manual**, sections 3.2.1.4. and 6.3.1.4.), and captured by the Automated Standard Template (refer to the **IND700 User's Manual**, sections 2.1.11 and 3.4.5.1.).
5 Either select **App Screen View** ⊠ from the menu on the main screen, or (if it is available in the softkey ribbon) touch the Apps softkey ⠿ to display the application user interface. (Note: When the App Screen View is dispayed, the Apps softkey changes to a Home softkey ⌂)
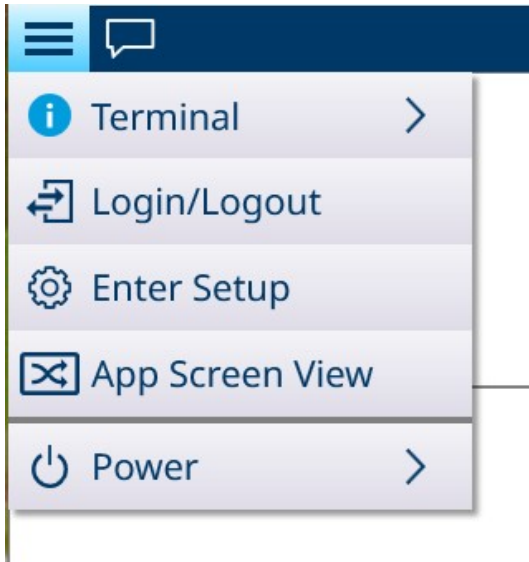
In setup, the **Application** menu provides access to these configuration options. Note that the available sub-menus will vary depending on the selections made in **Select Application**. In the first example below, no application has been selected.
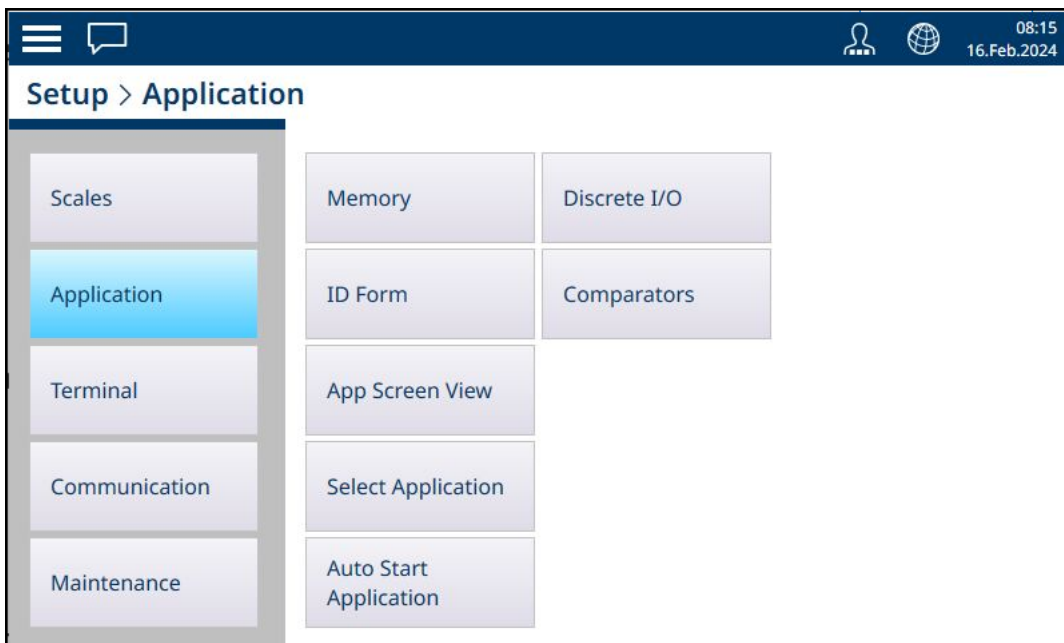
Figure 1: Application Sub-Menus, No Application Selected

In this example, the Application menu is shown with **Manual Filling** and **Counting** enabled.
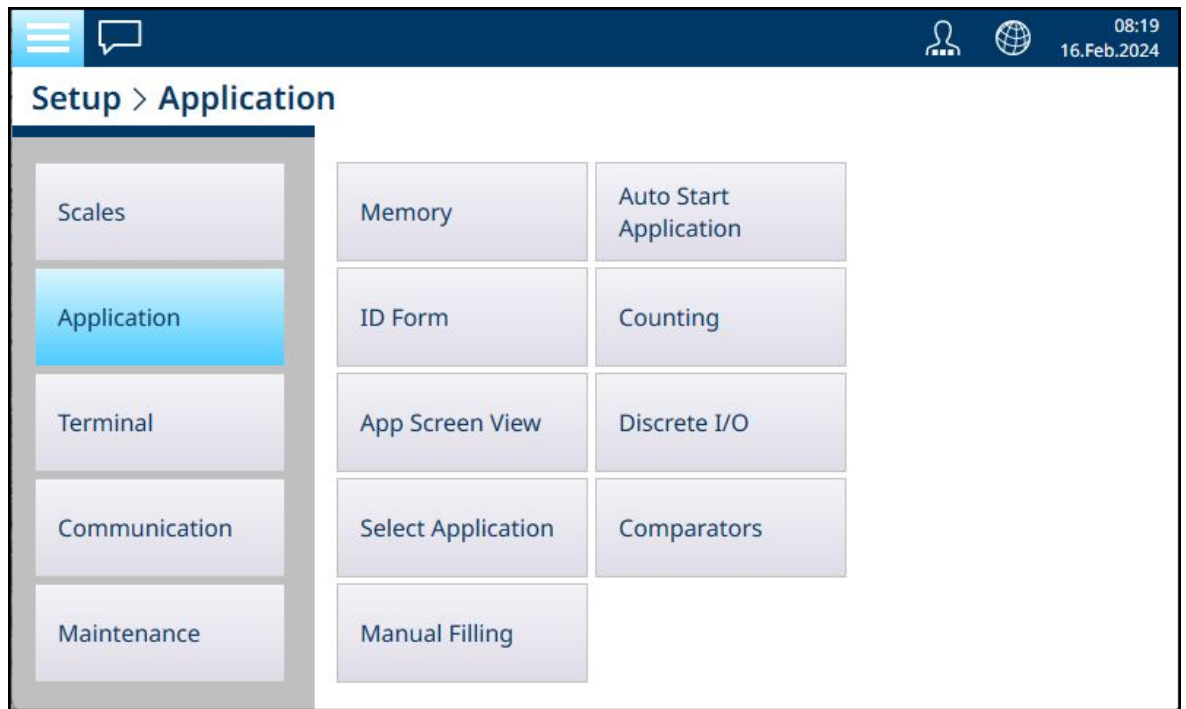
Figure 2: Application Sub-Menus, Manual Filling and Counting Selected

The **Application > Memory** sub-menu provides access to the Material Table and Tare Table, which are particularly important for the operation of Applications.
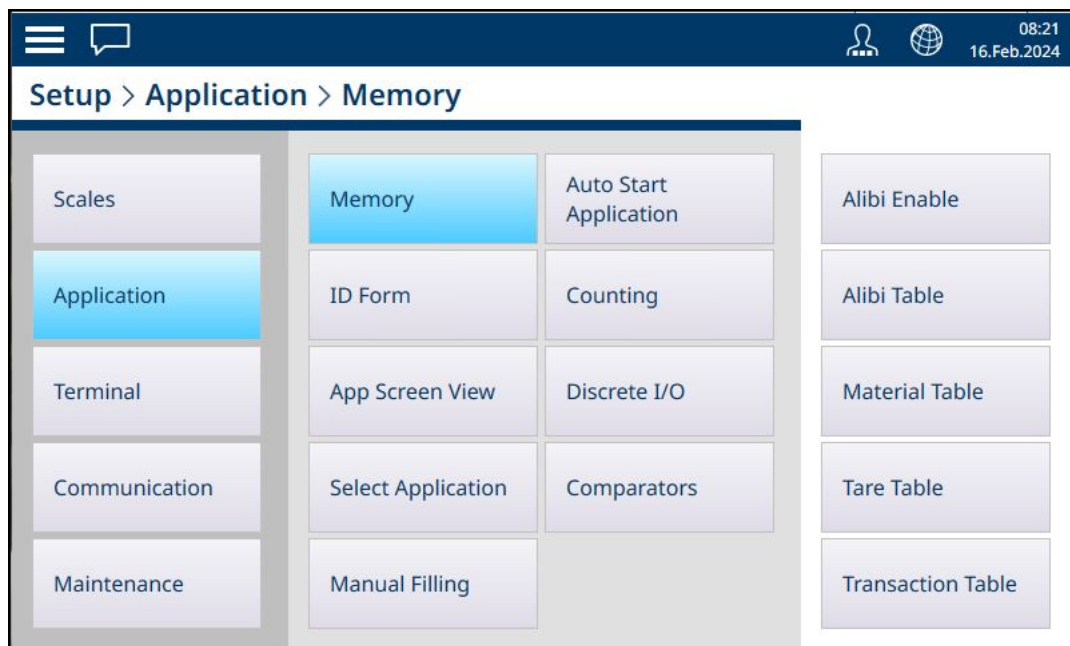
Figure 3: Application Memory Sub-Menus

1.1.1 Select Application

The first step in configuring the items necessary to run an application is to access **Setup > Application > Select Application** and choose one or more applications to run.
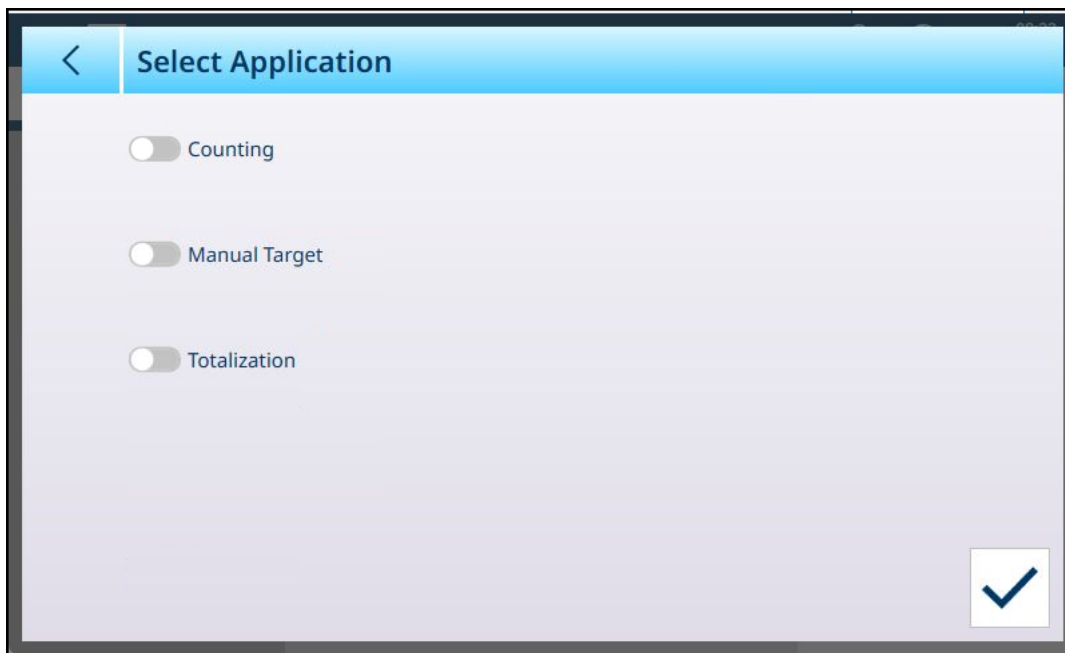
Figure 4: Select Application Screen, Default View

By default, this screen shows three items, with no item selected: **Counting**, **Manual Target**, and **Totalization**.

Toggle the slider next to an item to enable it. In the case of **Manual Target**, touching the slider reveals three sub-options, only one of which can be active at a time: Classification, Filling, and Over/Under.
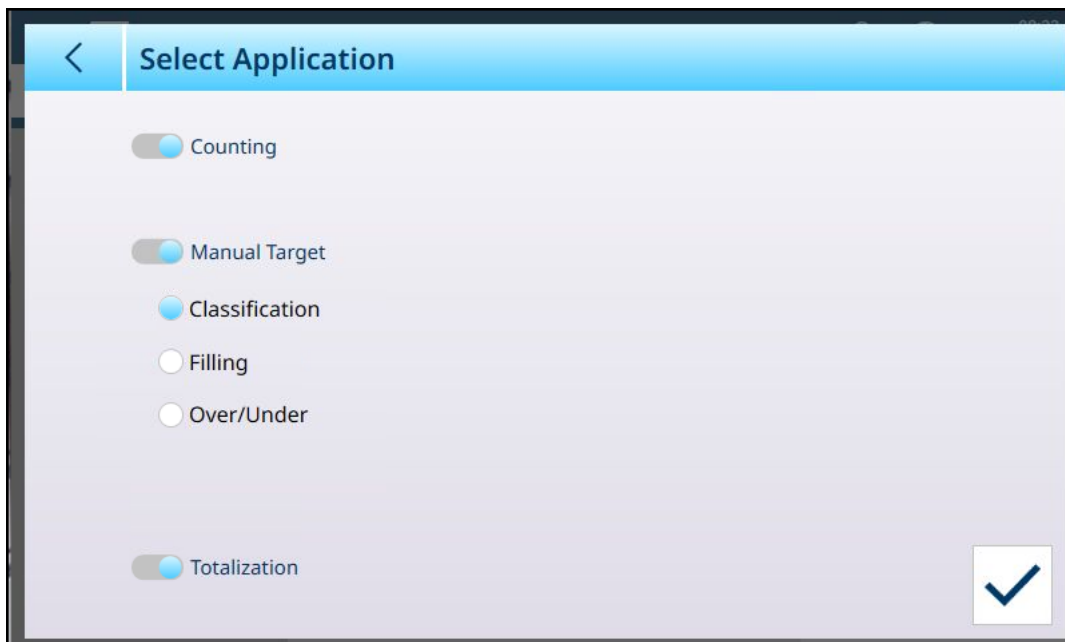
Figure 5: Select Application Screen, Selections Made

The choice/s made here will affect [Material Table ▸ Page 7] and [App Screen View ▸ Page 12] setup.

With the selections shown above, the Application menu system will now appear like this:
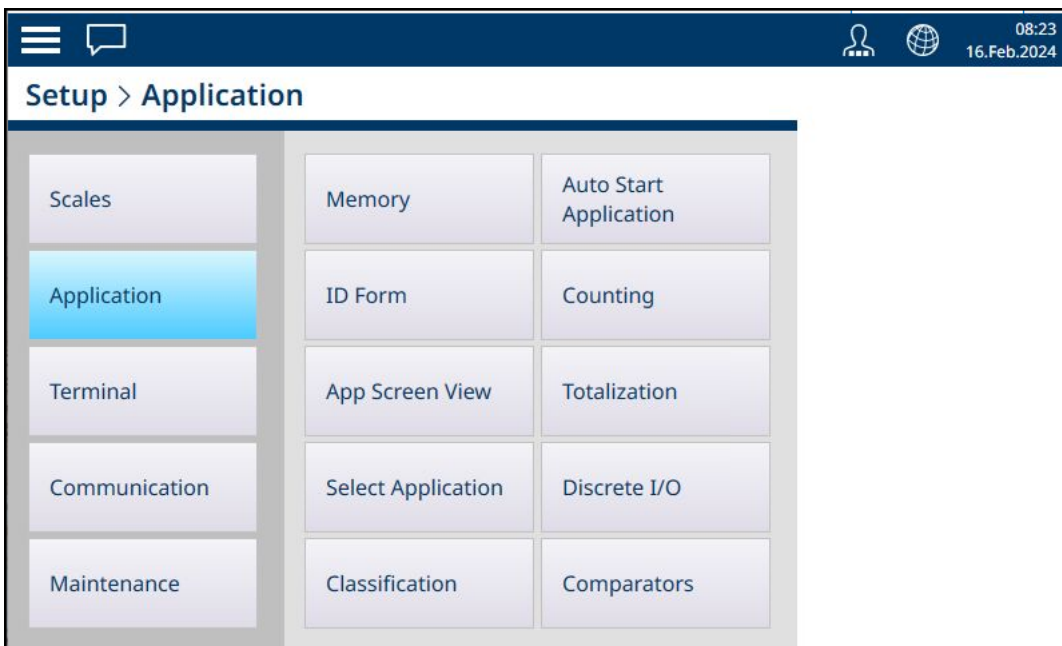
Figure 6: Application Menu System, Applications Enabled

Note that a user with a Supervisor or Admin login can use the Application softkeys for free entry of parameters for a material, to run the application without using a Material Table record.

1.1.2 Material Table

Correct configuration of the Material Table will facilitate the use of the Applications. Depending on the currently enabled application, different options will exist for a record, and the record will appear in the Material Table with its associated application listed.

Access the Material Table

The Material Table can be accessed in two ways:

• Access **Setup > Application > Memory > Material Table**.

• Touch the Material Table softkey 🗐 from the Application Screen View. With no Materials configured, the table will appear as follows:

Figure 7: Material Table, Default View

Add New Material

1. Open the Material Table
2. Touch the + icon in the header row.
3. The **Add New Material** screen will appear. This page includes four fields: **ID**, **Name**, **Tare ID/Name** and **Description**. Touching the **Tare ID/Name** field displays the **Tare Table**, listing all available tare records. When Valid entries have been made, touch the confirmation check button at lower right of the screen to return to the Application View screen.
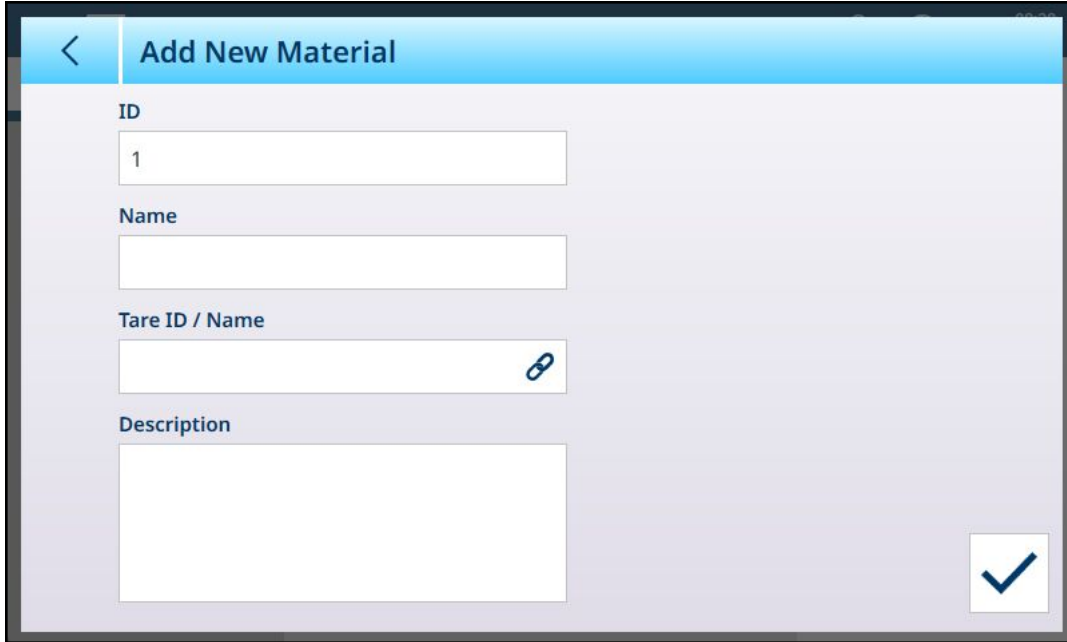
Figure 8: Add New Material Screen

Add New Material Fields

ID	ID is a number which simply indicates the record's position (1, 2,…n) in the table.
Name	An alphanumeric identification of the material (article or raw material). This identification is particularly useful when recalling Material records using a barcode scanner.
Description	A descriptive name which will appear on the Application Screen View when the Material Table record is loaded (if configured to display at **Setup > Application > App Screen View**).
Tare ID	[Optional] The numerical ID of a Tare Record associated with this item. If a valid Tare ID is entered here, the name of Tare name will appear at the bottom of the screen. Tare can also be taken manually while in the Application Screen View.

Add New Material, Application Selected

When an application has been selected (in the [Select Application ▸ Page 6] screen), additional fields appear in the **Add New Material** screen, and dots appear at the left of the screen to indicate that additional parameters are available on two or three pages. Touch a dot to display the second or third page.
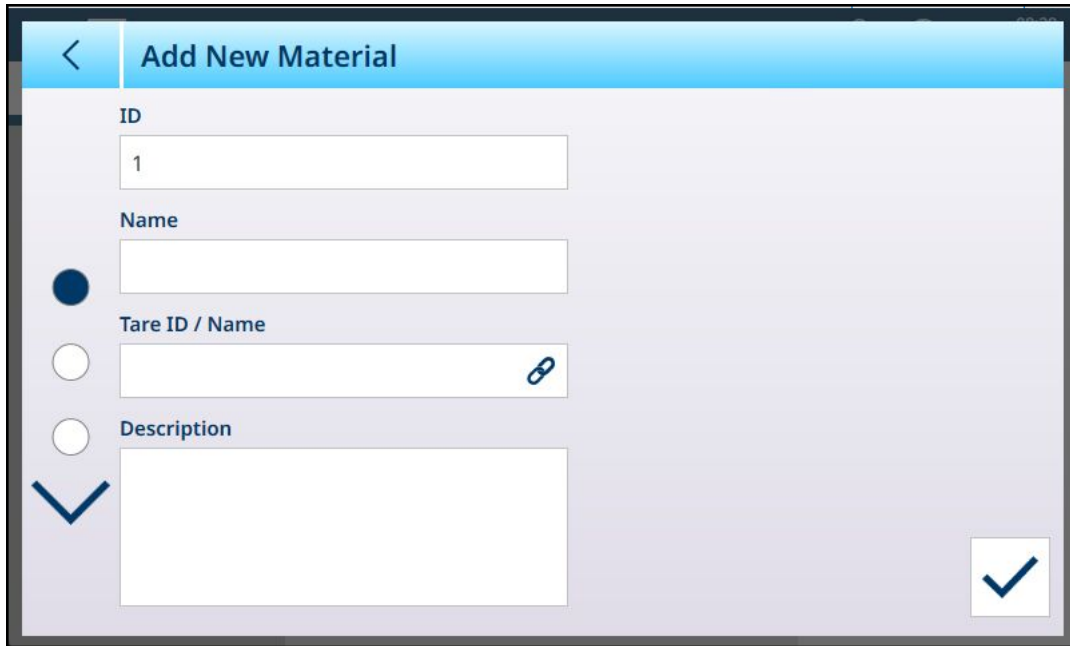
Figure 9: Add New Material, Application Selected

The additional pages show the selected application in the screen's header. Note that an Invalid Value notice will display under the **APW** field until appropriate parameter has been added.:
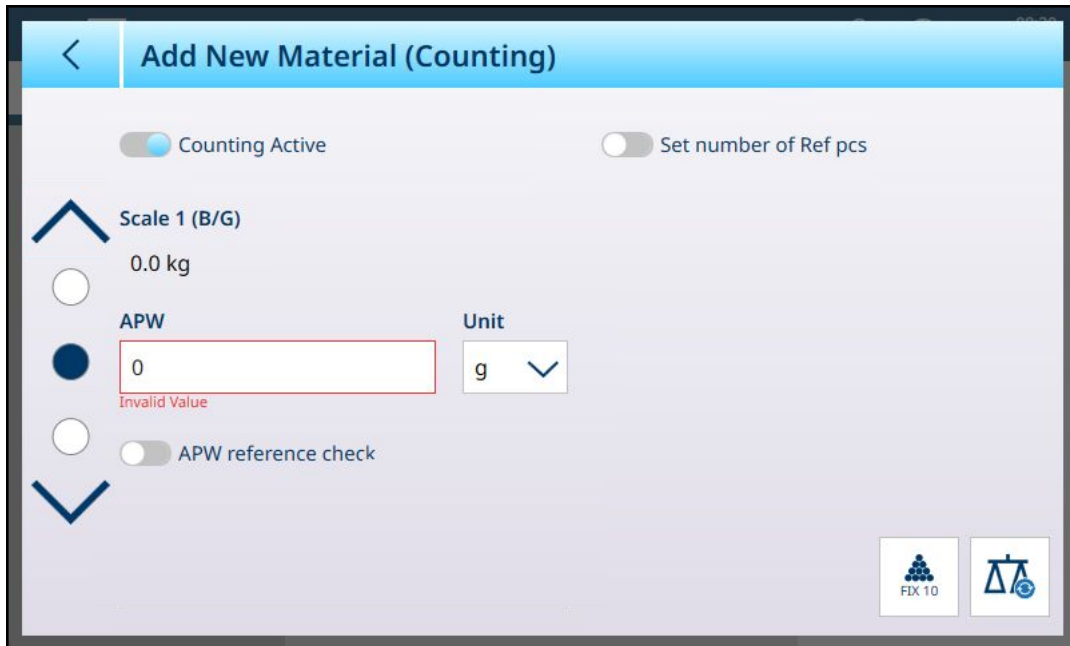
Figure 10: Add New Material Header Showing Selected Application

By default, the additional pages show only a slider used to activate the application for this material. Touch the slider to activate the application, and further fields appear. Note that an Invalid Data notice will display under the **Classification Active** slider until appropriate parameters have been defined.

In the case of an 8-category Classification configuration, one more additional page appears.

Figure 11: Add New Material - Classification, Second Page

Parameters for a second application appear on an additional page.

Figure 12: Add New Material -- Second Application Configuration Page

NOTICE

Material Table Record Units Field
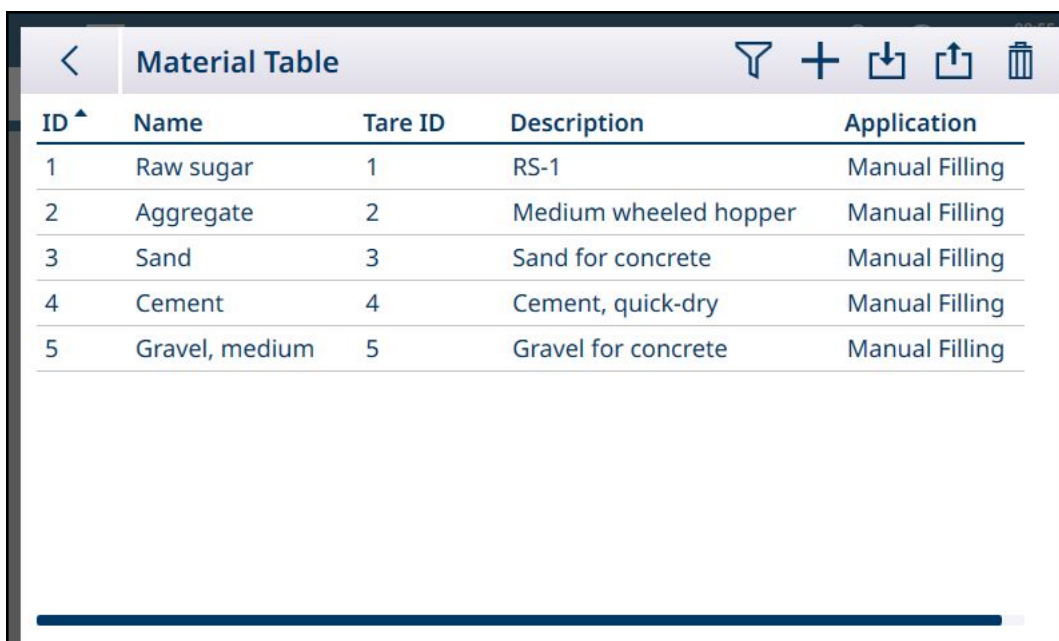
The Unit field configured in a Material Table record is used in the application's calculations (e.g. for Average Piece Weight in Counting). This unit is not affected by the Primary Unit set for the scale in ASM at **Capacity & Increments** (refer to **Configuration > Scale Setup**, in the **IND700 User's Manual**). This permits the Application to display a result appropriate for the size of the item or material – for example, grams for small items, kilograms for large ones – using the same scale.

Add New Material Fields by Application

Counting	APW	The average piece weight of reference pieces can be included in the Material Table record.
		Note: APW can also be calculated from the Application Screen View using the FIX 10 🔺 and VAR 10 🔺 softkeys.
	Unit	The weight unit for the APW.
	Fix 10 Softkey	Captures live scale weight to use as reference weight for 10 items.
Classification	Unit	The weight unit to be used for the classification operation.
	Lower Limits 1-7, for up to 8 classes	The number of fields depends on how many classes are specified at [Setup > Application > Classification ▶ Page 72].
	Upper Limit	The upper limit of the last defined class.
Manual Filling	Target Value	Target weight for Filling operation.
	Unit	Weight unit for Filling target.
	-Tolerance	The type of value used here depends on the configuration of the [Filling application ▶ Page 76] -- Absolute, Deviation or Percentage.
	+Tolerance	
Over/Under	Target Value	Target weight for Over/Under operation.
	Unit	Weight unit for Over/Under target.
If 3 zones selected:	-Tolerance (Under)	The type of value used here depends on the configuration of the [Filling application ▶ Page 76] -- Absolute, Deviation or Percentage.
	+Tolerance (Over)	
If 5 zones selected:	-Tolerance (Under)	
	-Tolerance (Low)	
	+Tolerance (High)	
	+Tolerance (Over)	

When the record is correctly configured, access the first **Add New Material** screen and touch the confirmation check mark.

The Material Table will display, with the new record listed and its associated application/s indicated in the **Application** column. Note that the application is indicated **only** for active applications. Records which show no Application may be associated with other applications. In the example below, the **Counting** application is active.

ID ▲	Name	Tare ID	Description	Application
1	Raw sugar	1	RS-1	Manual Filling
2	Aggregate	2	Medium wheeled hopper	Manual Filling
3	Sand	3	Sand for concrete	Manual Filling
4	Cement	4	Cement, quick-dry	Manual Filling
5	Gravel, medium	5	Gravel for concrete	Manual Filling

Figure 13: Material Table View

Editing or Deleting a Material Table Record

Edit a Material Table Record

Access the Material Table. With the table displayed, touch the affected record and select the Edit ✎ icon from the pop-up. The pop-up menu shown below is displayed when the Material Table is accessed from the softkey in the ribbon. When the Material Table is viewed in setup at **Application > Memory**, the selection confirmation check mark does not appear.
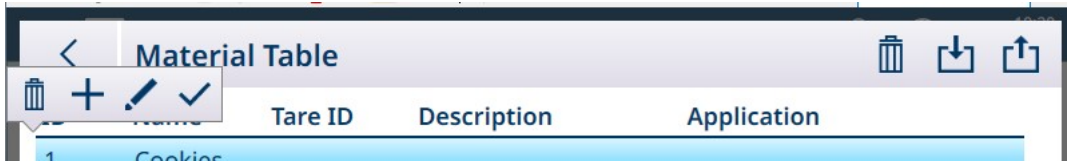

Figure 14: Material Table Options Popup

Configure the record as described above. All fields, including the ID number field, can be modified.

To save the changes, touch the check mark at lower right; the Material Table will display.

Delete a Material Table Record

Access the Material Table. With the table displayed, touch the affected record and select the Delete icon 🗑 from the pop-up.

A confirmation dialog will display, indicating "Data in Record is going to be deleted." Touch either the X to cancel the deletion, or the check mark to confirm it.

1.1.3 Tare Table

Refer to **Configuration > Application > Memory > Tare Table** in the **IND700 User's Guide**. Correctly configured tare records are an integral part of the function of the applications.

> **NOTICE**
>
> **Tare Table Modification**
>
> Only users with a Supervisor or Admin login can modify the Tare Table.

Limit Values in Tare Records

The **Lower Limit** and **Upper Limit** fields in the tare table record can be used instead of an absolute tare value. These limit parameters are used when a weight check is applied to a container placed on the scale. If the container's weight passes the evaluation -- falls within the limits -- the terminal takes a tare and the operation can proceed. If the container is too heavy or too light, a failure message will display when the container is placed on the scale.
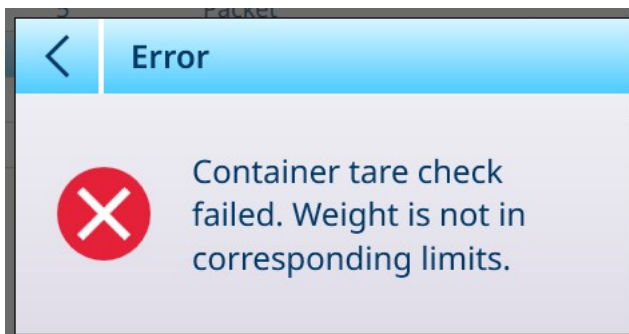
Figure 15: Tare Check Failed Message

1.1.4 App Screen View Configuration

The elements which appear in the Application Screen View for each application are determined in Setup at **Application > App Screen View.** Each available field can be enabled or disabled using the slider next to the name. Enabled fields will appear in the **App Screen View**.

In the first example below, applications are disabled and only the default fields are visible.
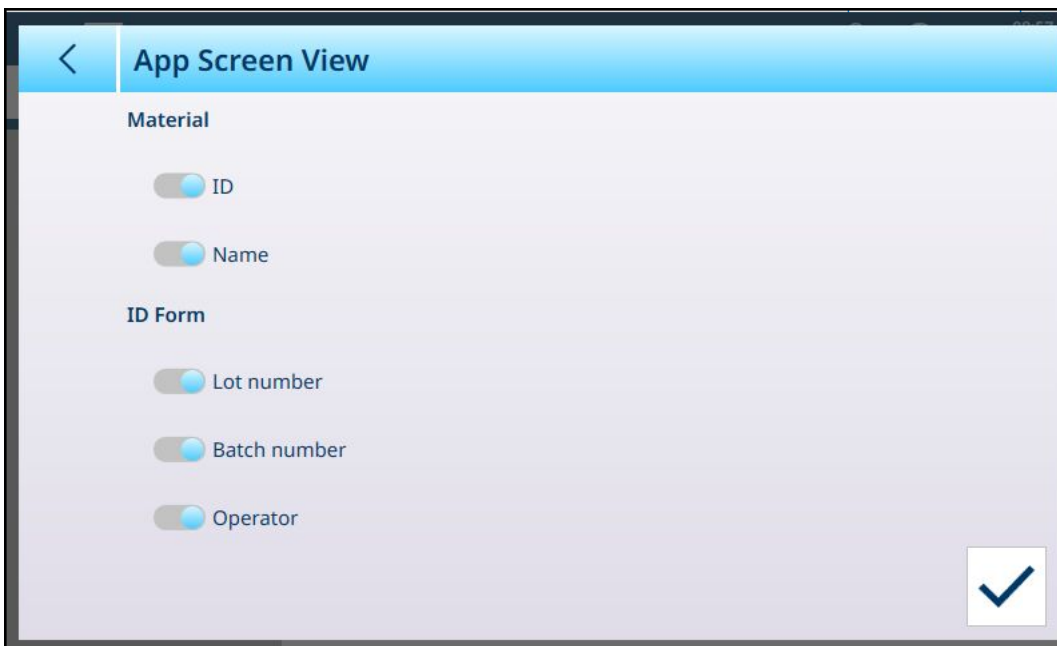
Figure 16: App Screen View Menu, No Application Enabled

In the next example, manual filling, counting and totalization are all enabled and more fields are available. Three ID Forms are also enabled. (Refer to the **IND700 User's Manual**, **Configuration > Application > ID Form** for details on ID Form setup.)
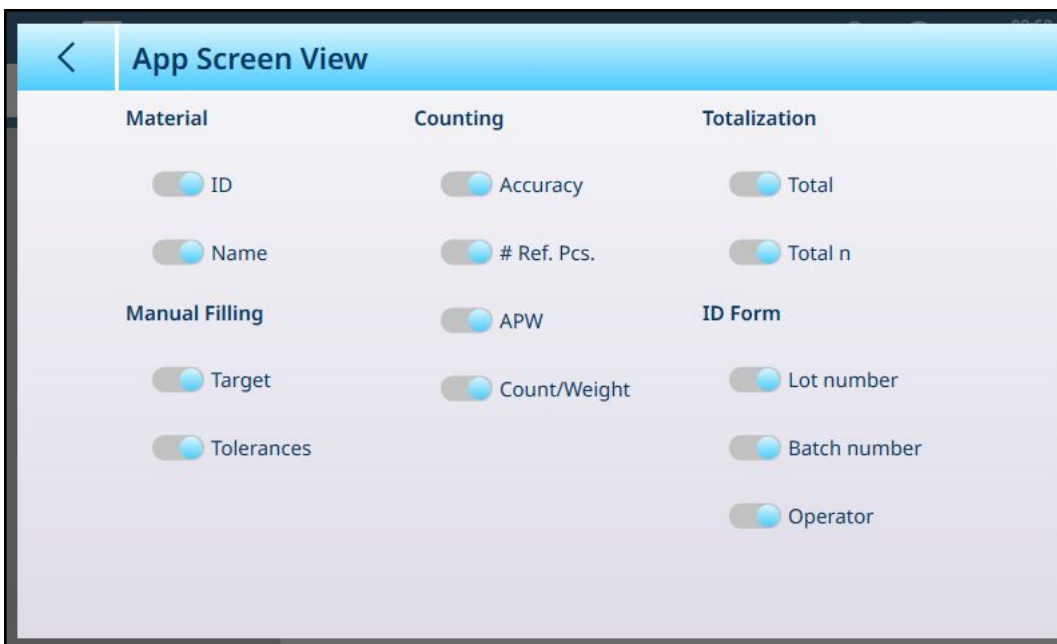
Figure 17: App View Screen Menu, Applications Enabled

Options in the App Screen View Menu

App Screen View Options, by Application

Category	Parameter	Counting	Classification	Filling	Over/Under	Totalization
Material	ID	X	X	X	X	X
	Name	X	X	X	X	X
	Description					
Classification	Limit		X			
Manual Filling	Target			X	X	
	Tolerances			X	X	

Category	Parameter	Counting	Classification	Filling	Over/Under	Totalization
Over/Under	Start Thresh.					
Counting	Accuracy	**x**				
	# of Ref. Pcs.	**x**				
	APW	**x**				
	Count/Weight	**x**				
Totalization	Total					**x**
	Total n					**x**
	Sub-Total					**x**
	Sub-Total n					**x**

Note that both **Counting** and **Totalization** can be enabled in combination with any of the three types of **Manual Target**, and this will affect the options on the App Screen View page. For example, if Counting and Manual Target – Classification are both selected, the App Screen View will offer the following options:
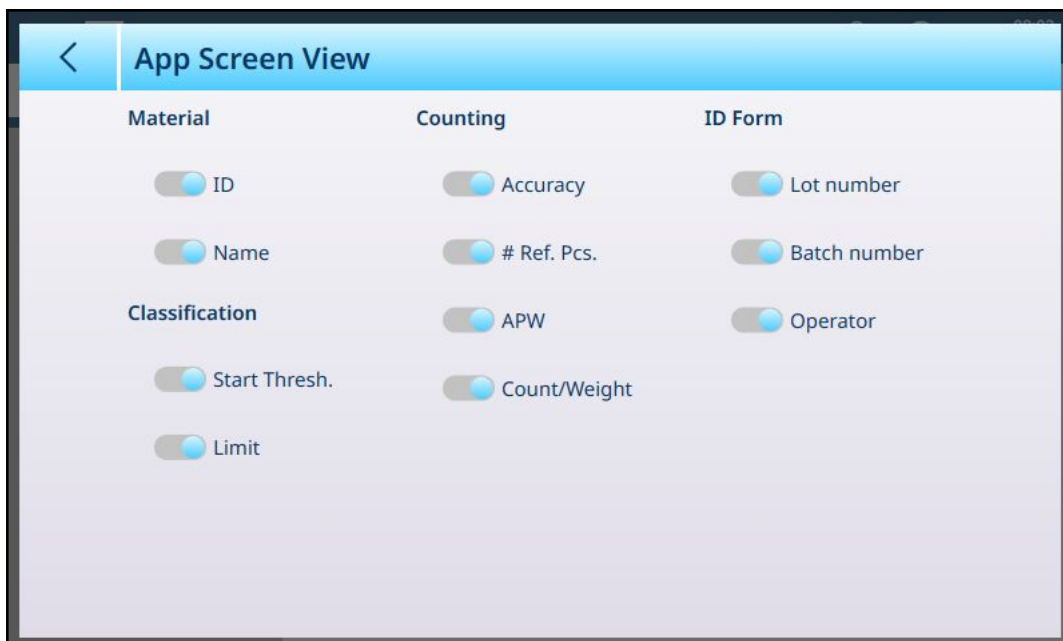
Figure 18: App Screen View, Classification and Counting

If the Classification application is configured with five categories, and three ID Form fields are set up, the **App Screen View** configuration shown above will result in display which looks like this:

Note: The contents of the softkey ribbon shown in the screens before have been modified in setup. Refer to [Softkeys ▸ Page 16] and the **IND700 User's Manual**, **Configuration > Terminal > Softkeys**.

Figure 19: App Screen View, Classification and Counting Fields Displayed

If Manual Target - Over/Under and Totalization are selected, the view will look like this:

Figure 20: App Screen View, Over/Under and Totalization

1.1.4.1 Softkeys

The set of softkeys available in an IND700 licensed for use with the ProWorks Multi-Tools applications includes several application-specific softkeys not available in the base terminal.

Figure 21: Softkeys Available with ProWorks Multi-Tools

1.1.5 Target Operations

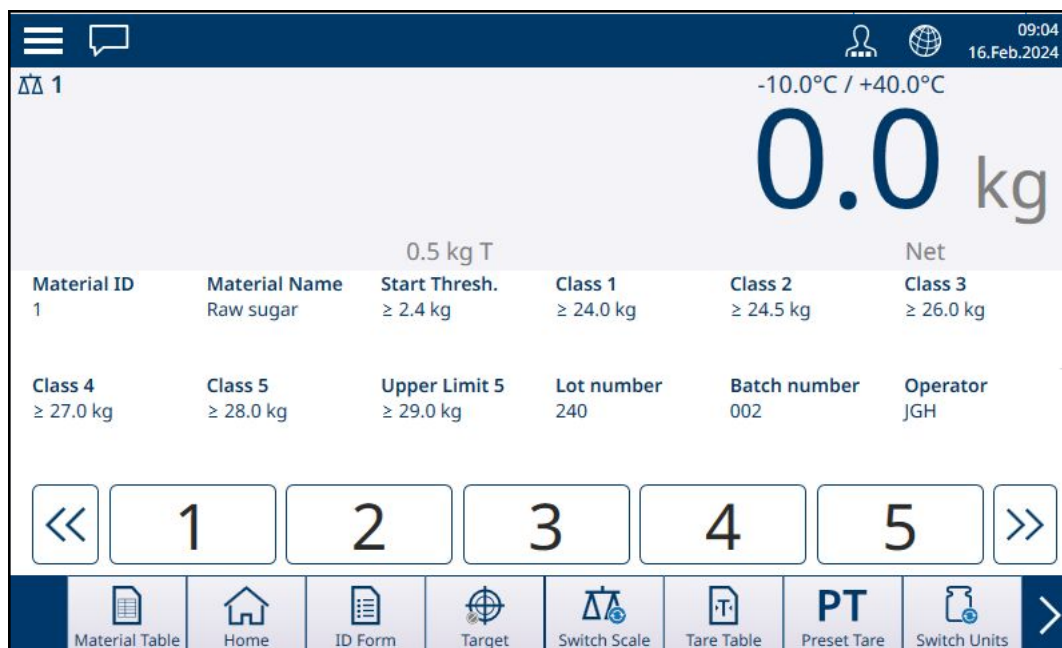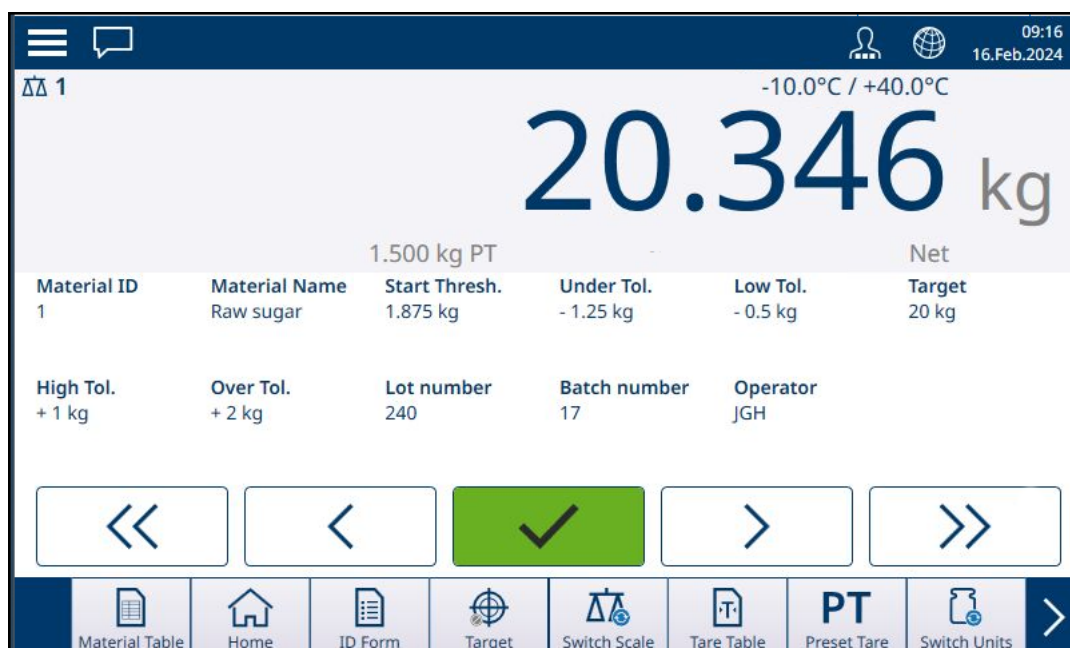The IND700 does not include a target table. Target values are associated with the materials configured in the [Material Table ▸ Page 7]. If no material is currently loaded, target values can be edited directly by touching the Target ⊕ softkey.

Note that this softkey is available if:

- one of the **Manual Target** applications (Classification, Filling, and Over/Under) has been selected., ⇨↔⇦
- the Target softkey has been added to the home screen ribbon in setup at **Terminal > Softkeys**.

Even if the softkey is configured to display in the ribbon, it will not appear unless one of the target applications is loaded. If a Material which uses a target value has been selected from the Material Table, the Target softkey will display like this ⊕, and cannot be accessed.

The Enter Limits screen which appears includes a unit selection dropdown box and a set of fields for limit values or classes. The number of and type of fields is determined by the currently-loaded Application ([Select Application ▸ Page 6]).

When Classification is the selected target weighing application, the entry screen appears as shown below. The number of fields is determined by the number of classes configured in setup at [Application > Classification ▶ Page 71].

Figure 22: Enter Limits Screen -- Classification Application Loaded, 5 Classes configured

When Filling is the selected target weighing application, the screen appears as shown below. The fields available depend on whether the filling tolerance is by weight value or percentage, selected in setup at [Application > Manual Filling ▶ Page 75].

Figure 23: Enter Limits Screen -- Filling Application Loaded

When Over/Under is the selected target weighing application, the entry screen appears as below. The fields available depend on two parameters -- the number of zones and the tolerance type, both selected in setup at [Application > Over/Under ▸ Page 80].

Figure 24: Enter Limits Screen -- Over/Under Application Loaded, Tolerance Values - Deviation

1.1.5.1 Edit Active Records Directly

> **NOTICE**
>
> **Target Softkey**
>
> This procedure assumes that the Target softkey has been added to the home screen ribbon, in setup at **Terminal > Softkeys**. This softkey is only available when the terminal is licensed to run ProWorks Multi-Tools applications.

1 Press the Target softkey ⊕ in the home screen ribbon.

> **NOTICE**
>
> **Availability of Target Softkey**
>
> If target data has been loaded from a Material Table record, the home screen Target softkey will be locked ⊕. Target values cannot be entered directly. To unload the Material Table record and enable direct entry of target data, press Clear **C**.

➡ The **Enter Limits** screen shows. The fields available depend on the Manual Target application's [configuration ▶ Page 48].
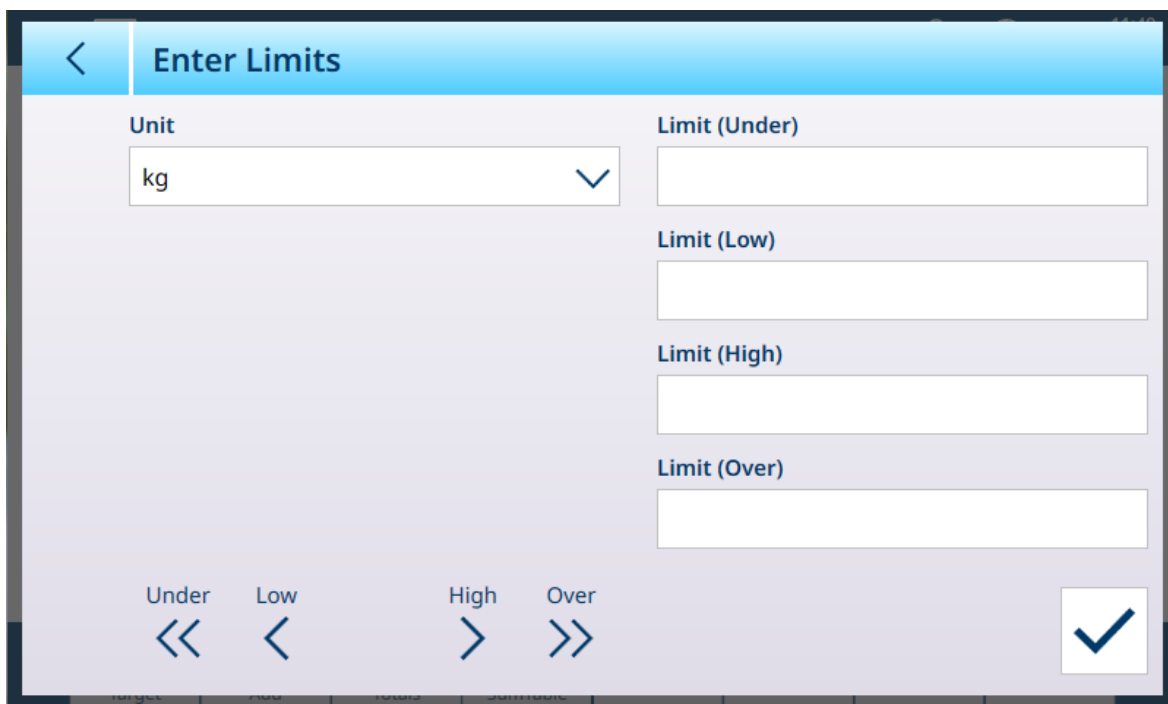
Figure 25: Target Limit Entry Screen

2   Touch the Unit dropdown list to view options and to select one, then each limit field to display a numeric entry keypad.

3   Press the OK softkey ✓ to accept edits to the active target.

4   Press the back arrow to retain the current active values and return to the home screen.

1.1.6 Using Shared Data to Select Material Table and Tare Table Records

> **NOTICE**
>
> **Automatic Standard Template**
>
> The creation of custom output templates is simplified by the use of Output Template 1, the **Automatic Standard Template**. The contents of this template reflect the current on-screen view of weighing and other data. It is updated in real time, and can be used to set up as many as ten custom output templates simply by reconfiguring the terminal and then copying Output Template 1 to one of templates 2 to 10. Refer to **Configuration > Communication > Output Templates** in the **IND700 User's Manual**.

The sequence of steps that must be followed to recall memory table records using Shared Data is shown below. Refer to the **IND700 PLC Interface Manual** (# 30753886) for information regarding the use of a PLC to recall memory table records.

To recall a Material Table record or Tare Table record from a memory table, the first step is to specify the Tare or Material record ID. Then a command is issued to recall this specified record ID from either the Tare Table or the Material Table.

When the Shared Data Server is accessed via the intrinsically safe COM1, an appropriate barrier must be used.

Recall A Material Table Record or Tare Table Record to Active Status

1   Log into Shared Data server. Refer to Shared Data Server Login

2   In the Shared Data field qc0189, write the numeric ID of the record to recall from either the Material Table or the Tare Table. Numeric ID is a maximum two-digit value (1-25).

3   Write either a 1 or a 6 to Shared Data field qc0189. Writing a "1" will recall the ID set in qc0190 from the Tare Table; writing a "6" will recall the ID set in qc0190 from the Target Table.

NOTE: These shared data fields are only applicable when a Manual Filling application is selected.

Table Records in Output Templates

Information regarding activated Material Table and Tare Table records, including Totalization, is available for transmission in output (print) templates. This information can be found in the "TD" block of Shared Data. The TD shared data fields will report values only if the active Tare or Material record was retrieved directly from the Tare or Material Table. If manual changes are made to the active Tare or Material record, these shared data values will report empty fields. Records can be recalled by any available means: table search, quick recall or remotely via PLC or Shared Data.

1.1.7 Comparators Overview and Configuration

Up to 20 Comparators can be configured in the screen found at **Application > Comparators**. Once configured, each Comparator outputs either 0 (if its condition is not met) or a 1 (if its condition is met). This output is accessible through a connection configured with **SharedData** as its assignment.
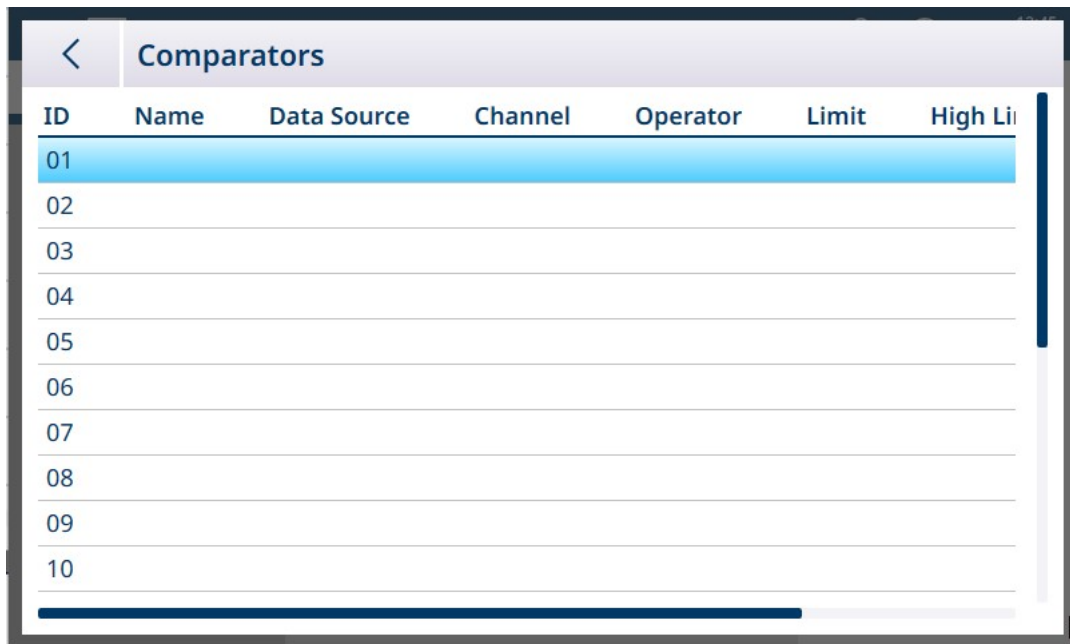
Summary of Comparator Settings

Comparator Settings

Data Source	**None** [default]: The Comparator is disabled
	Displayed Weight: The Comparator is enabled and uses either the NET or B/G value as its data source
	Gross Weight: The Comparator is enabled and uses the B/G value as its data source, regardless of whether the scale is in NET mode
	Application: The Comparator is enabled and uses data output from an Application as its data source
Name	Touch this field to open an alphanumeric data entry window. Give the Comparator a descriptive name indicating its function. This field is blank by default.
Shared Data Variable	Available if **Data Source** is **Application**. Touch the SD variable field to open an alphanumeric data entry window.
Channel	Available if **Data Source** is either **Displayed Weight** or **Gross Weight**. The channel is the source of the weight data – Scales 1, 2, 3 or 4, or the Sum Scale.
Discrete Output	If DIO is configured for the terminal, this field defines the output which will be switched when the comparator's state changes. Refer to the **IND700 User's Manual**, section 3.2.5.2., for details on the configuration of Discrete Outputs.
Operator	The Comparator uses the Operator set here to compare to the source data. Options are:
	< less than [default] > greater than
	<= less than or equal to >= greater than or equal to
	= equal to >_< within the range
	<> not equal to _<>_ outside the range
Limit	All operators require at least one limit, to define the value against which the data source is to be compared.
High Limit	If the operator specifies a range, the **High Limit** field appears. The **Limit** and **High Limit** fields define the range within which values must be included, or from which they must be excluded, to satisfy the Comparator.

1.1.7.1 Comparators Setup

Access **Setup > Application > Comparators** to display the screen shown below. Additional columns are visible when the screen is scrolled to the right. Not all columns will be populated for every Comparator.

Figure 26: Comparators Configuration Screen, initial view

Figure 27: Comparators Configuration Screen, additional columns

To configure a Comparator:

1. In the **Comparators** configuration screen, select a row by touching it, and then touch the Edit icon that appears.
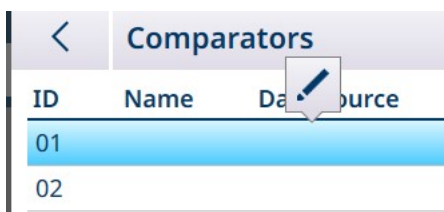
Figure 28: Accessing a Comparator Edit Screen

Figure 29: Default Comparator Edit Screen - Weight Source
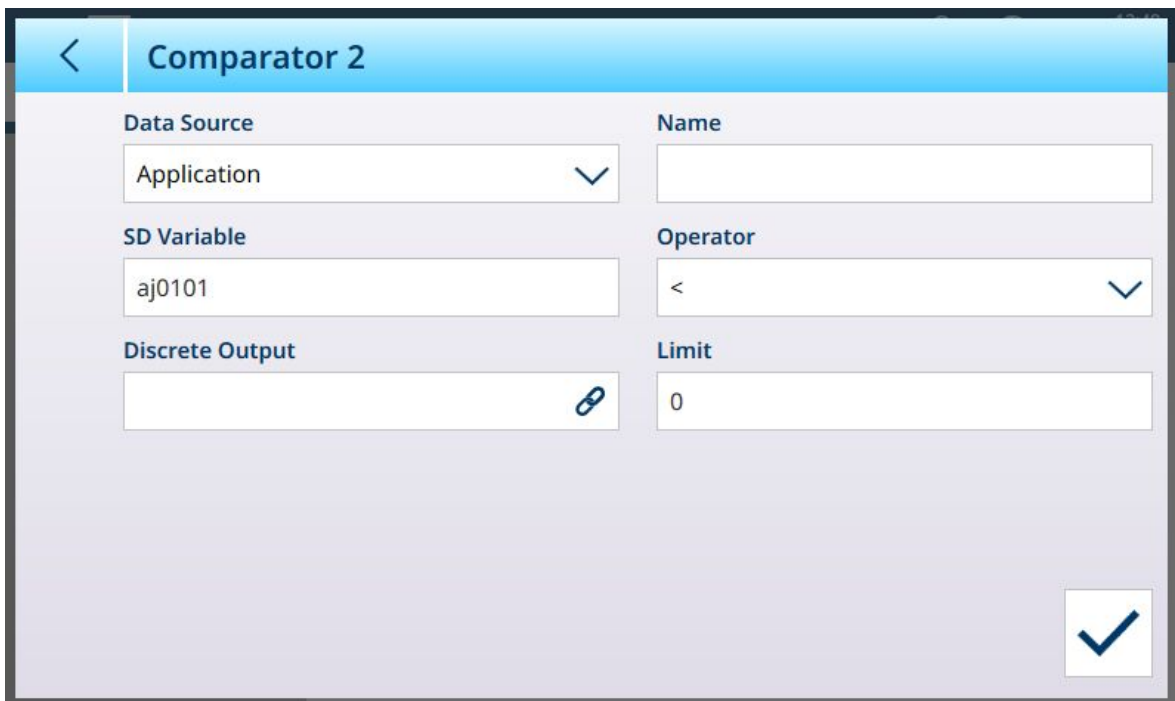
Figure 30: Default Comparator Edit Screen - Application Source

2. First, select a source for the data to be subjected to the comparator. Options are None (disable the Comparator); Displayed Weight, Gross Weight and Application. Once a selection is made, additional parameters will appear. Note that if **Application** is selected as the data source, it is necessary to enter a shared data variable name representing the required information.
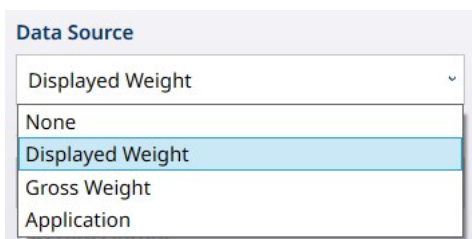
Figure 31: Data Sources for Comparators

3. Next, if **Data Source** is a weight value, a source **Channel** for that value must be specified. Only scales available in the terminal are displayed here:
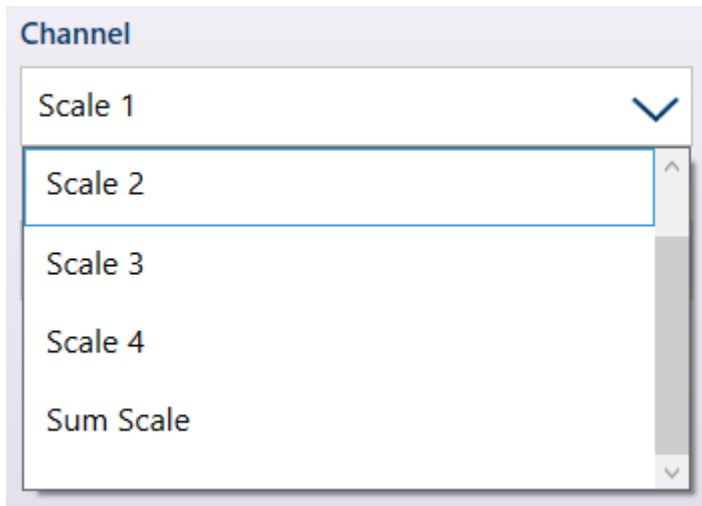
Figure 32: Channel - Weight Value Sources

4. If **Data Source** is **Application**, refer to [Comparators and Shared Data ▸ Page 32].

5. If **Data Source** is **Displayed** or **Gross Weight**, refer to [Comparators and Discrete Outputs ▸ Page 32].

6. The **Operator** determines the type of comparison to be made. The Limit specifies the condition in which the Comparator's state will "turn on" and change from 0 (zero) to 1. Available **Operators** are:

  − **< -** the comparator's current value is less than the **Limit** value
  − **<=** the comparator's current value is less than or equal to the **Limit** value
  − **=** the comparator's current value is is equal to **Limit** value
  − **>** the comparator's current value is greater than the **Limit** value
  − **>=** the comparator's current value is greater than or equal to the **Limit** value
  − **>_<** the comparator's current value is within the range specified by the **Limit** and **High Limit**
  − **_<>_** the comparator's current value is outside -- either higher or lower than -- the range specified by the **Limit** and **High Limit**

Figure 33: Comparator Operators

7. If the Operator is set to a simple comparison -- <, <=, = -- the final value to be specified is **Limit**, as seen in the Comparator Edit screens above. The value entered here will be compared with the source data to determine the state of the Comparator.

8. If the Operator is set to a range -- >_< or _<>_ -- a **Limit** and a **High Limit** must be specified. The source data will be compared to the specified range, and the Comparator's state will be on when the condition is true. In the example shown below, the condition will be true when Scale 1's **Displayed Weight** is more than 2 and less than 3 kg.

Figure 34: Limit and High Limit Fields

9. When all the fields are set correctly, touch the check mark to confirm the configuration.

The Comparators screen will reappear, with the new Comparator's configuration shown. Note that associated digital outputs are not included in this view of Comparators.

Figure 35: Comparators Screen, Comparators Configured, Screen 1

Figure 36: Comparators Screen, Comparators Configured, Additional Columns

Once all the configuration steps are complete, the Comparator is active and will output its state in real time to the selected Shared Data Variable or Discrete Output.

1.1.7.1.1 Comparators

Up to 20 Comparators can be configured in the screen found at **Application > Comparators**. Once configured, each Comparator outputs either 0 (if its condition is not met) or a 1 (if its condition is met). This output is accessible through a connection configured with **SharedData** as its assignment.
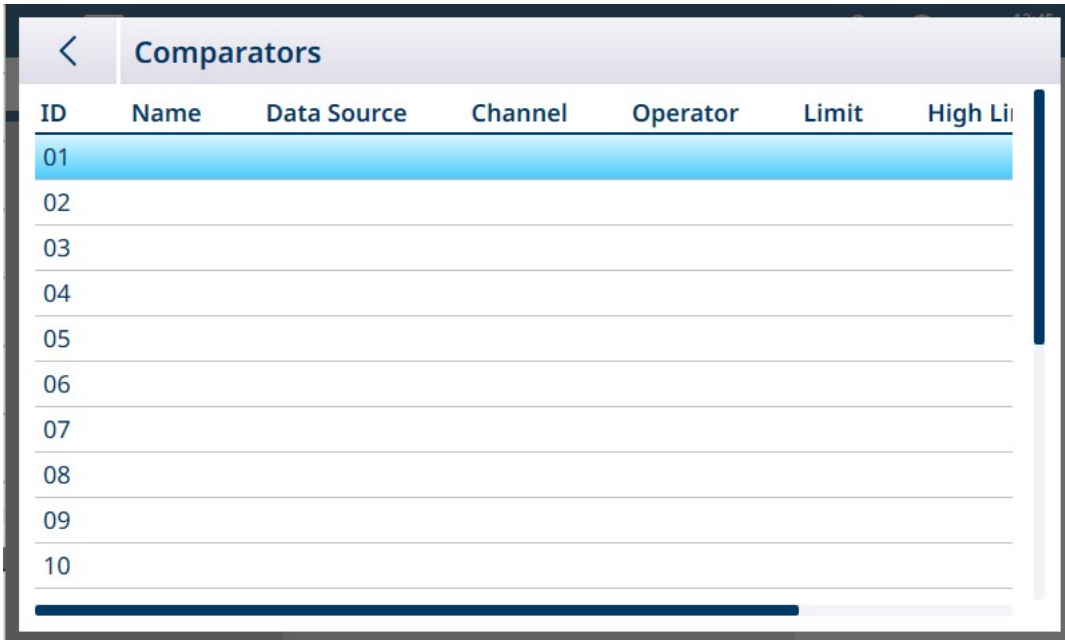
Summary of Comparator Settings

Comparator Settings

Data Source	**None** [default]: The Comparator is disabled
	Displayed Weight: The Comparator is enabled and uses either the NET or B/G value as its data source
	Gross Weight: The Comparator is enabled and uses the B/G value as its data source, regardless of whether the scale is in NET mode
	Application: The Comparator is enabled and uses data output from an Application as its data source
Name	Touch this field to open an alphanumeric data entry window. Give the Comparator a descriptive name indicating its function. This field is blank by default.
Shared Data Variable	Available if **Data Source** is **Application**. Touch the SD variable field to open an alphanumeric data entry window.
Channel	Available if **Data Source** is either **Displayed Weight** or **Gross Weight**. The channel is the source of the weight data – Scales 1, 2, 3 or 4, or the Sum Scale.
Discrete Output	If DIO is configured for the terminal, this field defines the output which will be switched when the comparator's state changes.
Operator	The Comparator uses the Operator set here to compare to the source data. Options are:

Operator		
	< less than [default]	> greater than
	<= less than or equal to	>= greater than or equal to
	= equal to	>_< within the range
	<> not equal to	_<>_ outside the range

Limit	All operators require at least one limit, to define the value against which the data source is to be compared.
High Limit	If the operator specifies a range, the **High Limit** field appears. The **Limit** and **High Limit** fields define the range within which values must be included, or from which they must be excluded, to satisfy the Comparator.

Comparator Setup

Figure 37: Comparators Configuration Screen, initial view

Figure 38: Comparators Configuration Screen, additional columns

The complete set of parameters configured for a Comparator can be viewed by scrolling the screen to the right, as shown above.

To configure a Comparator:

1. In the **Comparators** configuration screen, select a row by touching it, and then touch the Edit icon that appears.

Figure 39: Accessing a Comparator Edit Screen
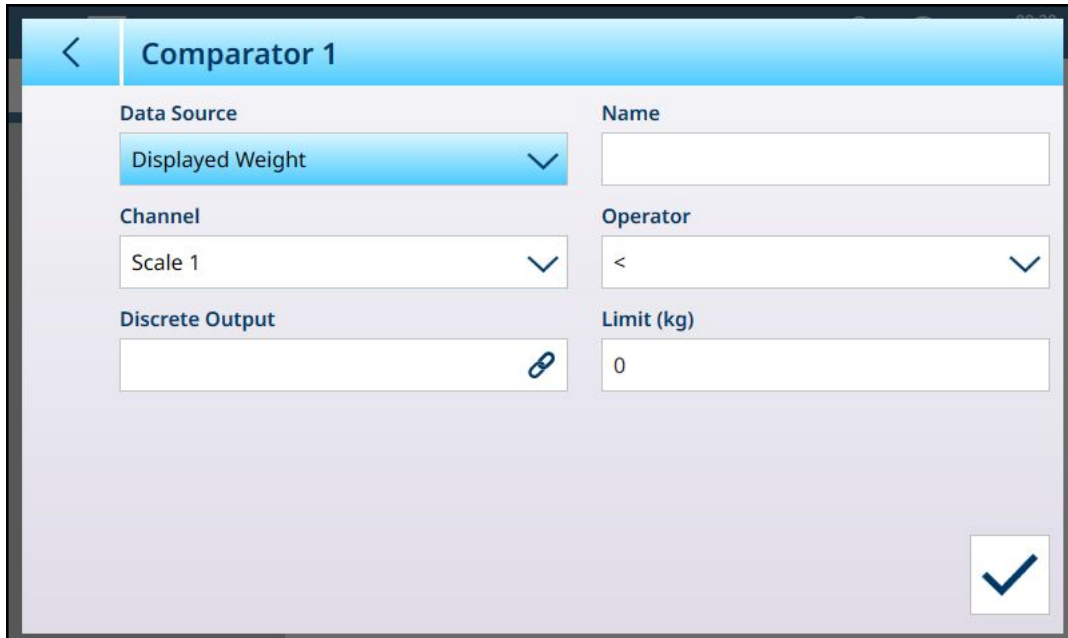
Figure 40: Default Comparator Edit Screen - Weight Source

Figure 41: Default Comparator Edit Screen - Application Source

2. First, select a source for the data to be subjected to the comparator. Options are None (disable the Comparator); Displayed Weight, Gross Weight and Application. Once a selection is made, additional parameters will appear. Note that if **Application** is selected as the data source, it is necessary to enter a shared data variable name representing the required information.
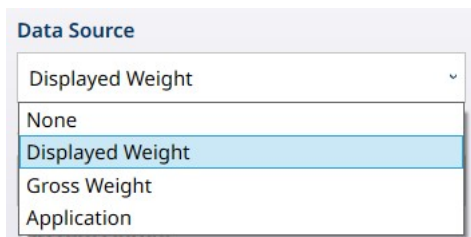
Figure 42: Data Sources for Comparators

3. Next, if **Data Source** is a weight value, a source **Channel** for that value must be specified. Only scales available in the terminal are displayed here:
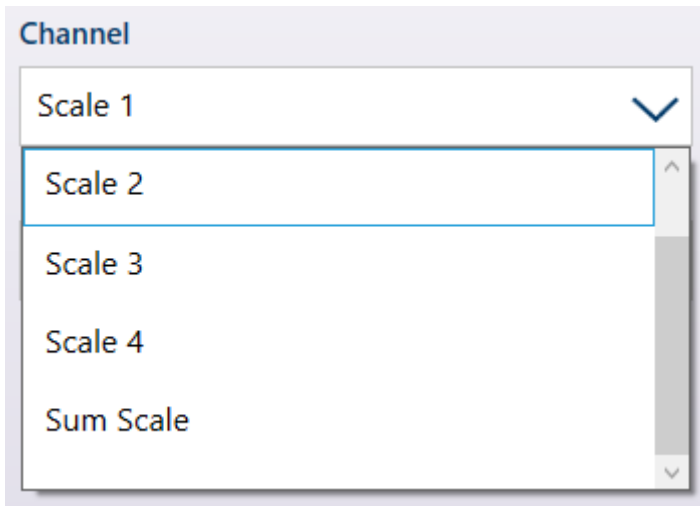
Figure 43: Channel - Weight Value Sources

4. If **Data Source** is **Application**, touching the SD Variable field will display an alphanumeric entry screen in which the SD name can be specified. In the example shown, the comparative data source is SD variable cd010, a Counting Application value which provides the current number of parts on the scale. Note that in the case of many SD Variables, the instance number (the first two digits in the variable's name) indicates the source channel.
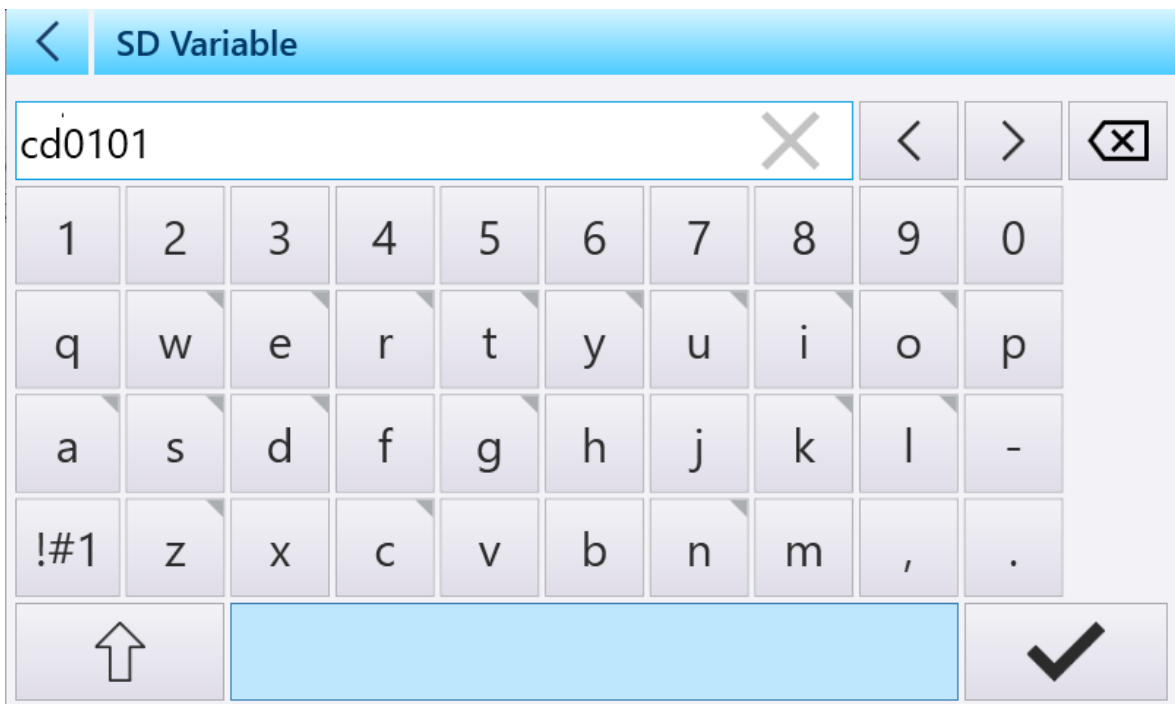
Figure 44: SD Variable Name Entry Screen

5. The **Operator** determines the type of comparison to be made. The Limit specifies the condition in which the Comparator's state will "turn on" and change from 0 (zero) to 1. Available **Operators** are:

    –   **< -** the comparator's current value is less than the **Limit** value
    –   **<=** the comparator's current value is less than or equal to the **Limit** value
    –   **=** the comparator's current value is is equal to **Limit** value
    –   **>** the comparator's current value is greater than the **Limit** value
    –   **>=** the comparator's current value is greater than or equal to the **Limit** value
    –   **>_<** the comparator's current value is within the range specified by the **Limit** and **High Limit**
    –   **_<>_** the comparator's current value is outside -- either higher or lower than -- the range specified by the **Limit** and **High Limit**

Figure 45: Comparator Operators

6. If the Operator is set to a simple comparison -- <, <=, =, <> -- the final value to be specified is **Limit**, as seen in the Comparator Edit screens above. The value entered here will be compared with the source data to determine the state of the Comparator.

7. If the Operator is set to a range -- >_< or _<>_ -- a **Limit** and a **High Limit** must be specified. The source data will be compared to the specified range, and the Comparator's state will be on when the condition is true. In the example shown below, the condition will be true when Scale 1's **Displayed Weight** is more than 2 and less than 3 kg.

Figure 46: Limit and High Limit Fields

8. Touch the **Discrete Output** field to display a list of all configured outputs.

Figure 47: Dicrete Outputs List

9. Touch an output to display the context menu, and touch the check mark to associate that output with the selected Comparator.

Figure 48: Discrete Output List Context Menu

10. Note that the Discrete Outputs **Edit** screen cab be accessed by touching the Edit icon ✎. The output's **Assignment** must be **Comparators**, the Comparator must be specified, and the source of the output's information set using the **Type**, **Location** (if **Type** is set to **Scale Card**) and **Position** fields.
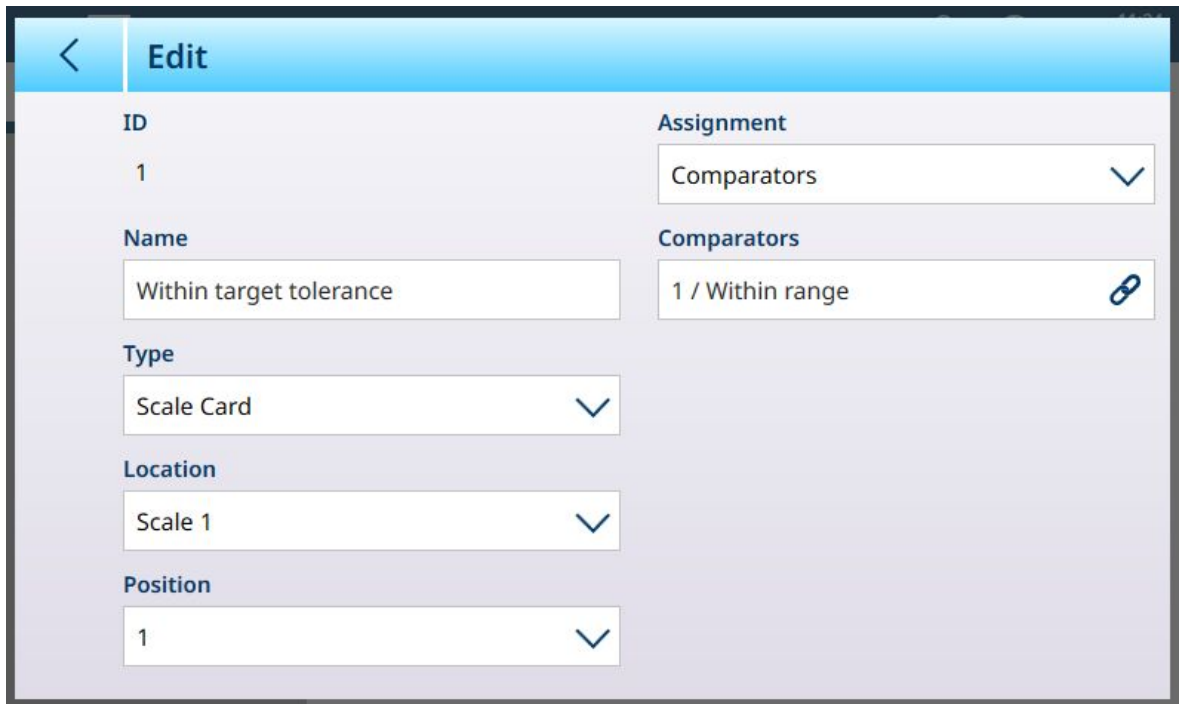
Figure 49: Discrete Output Edit Screen

11. When all the fields are set correctly, touch the check mark to confirm the configuration.

The Comparators screen will reappear, with the new Comparator's configuration shown. Note that associated digital outputs are not included in this view of Comparators.
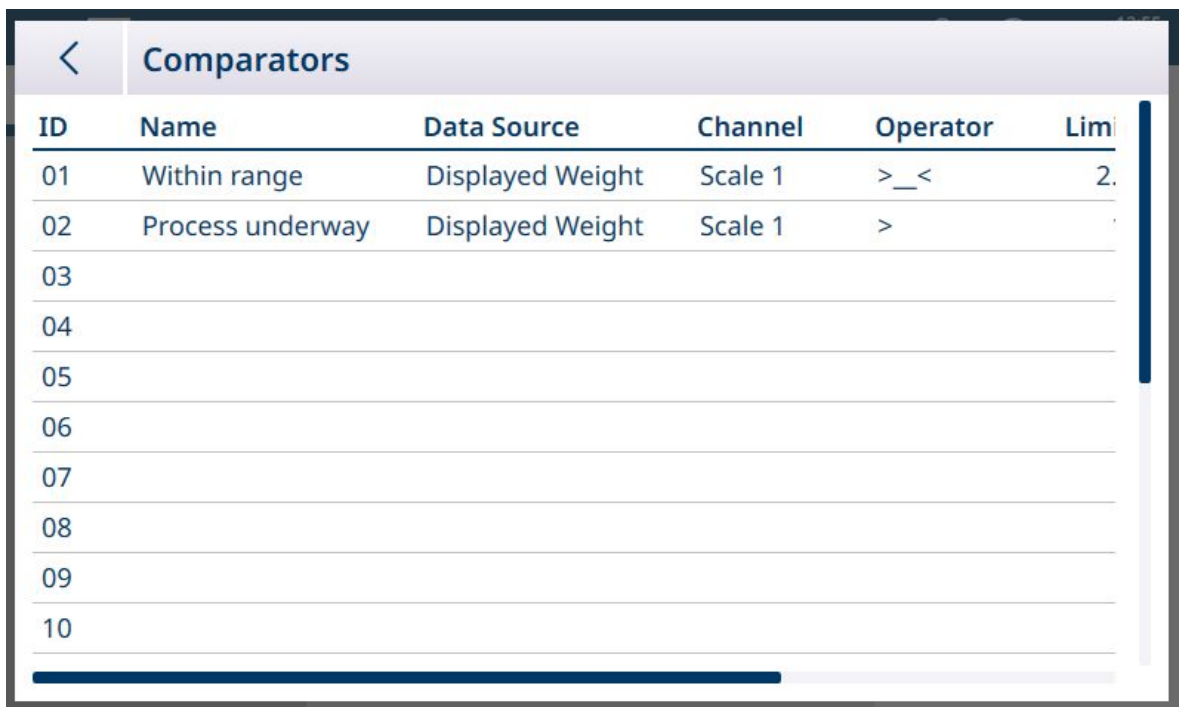
Figure 50: Comparators Screen, Comparators Configured, Screen 1
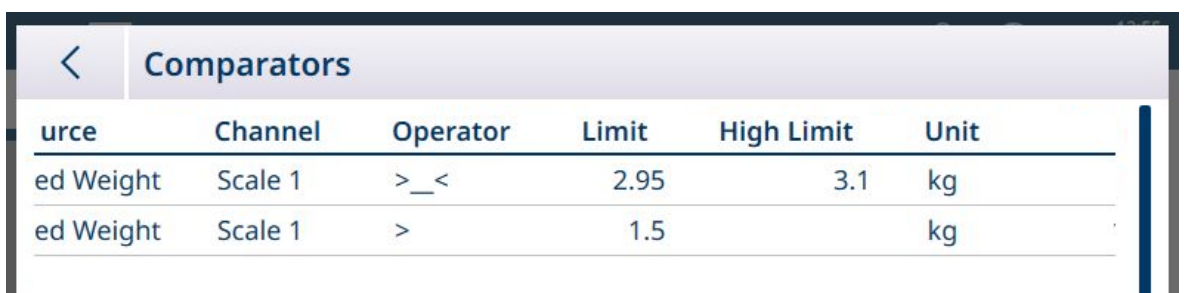
Figure 51: Comparators Screen, Comparator Configured, Additional Columns

1.1.7.2 Comparators and Shared Data

If **Data Source** is **Application**, touching the **SD Variable** field will display an alphanumeric entry screen in which the SD name can be specified. In the example shown, the comparative data source is SD variable cd010, a Counting Application value which provides the current number of parts on the scale. Note that in the case of many SD Variables, the instance number (the first two digits in the variable's name) indicates the source channel.
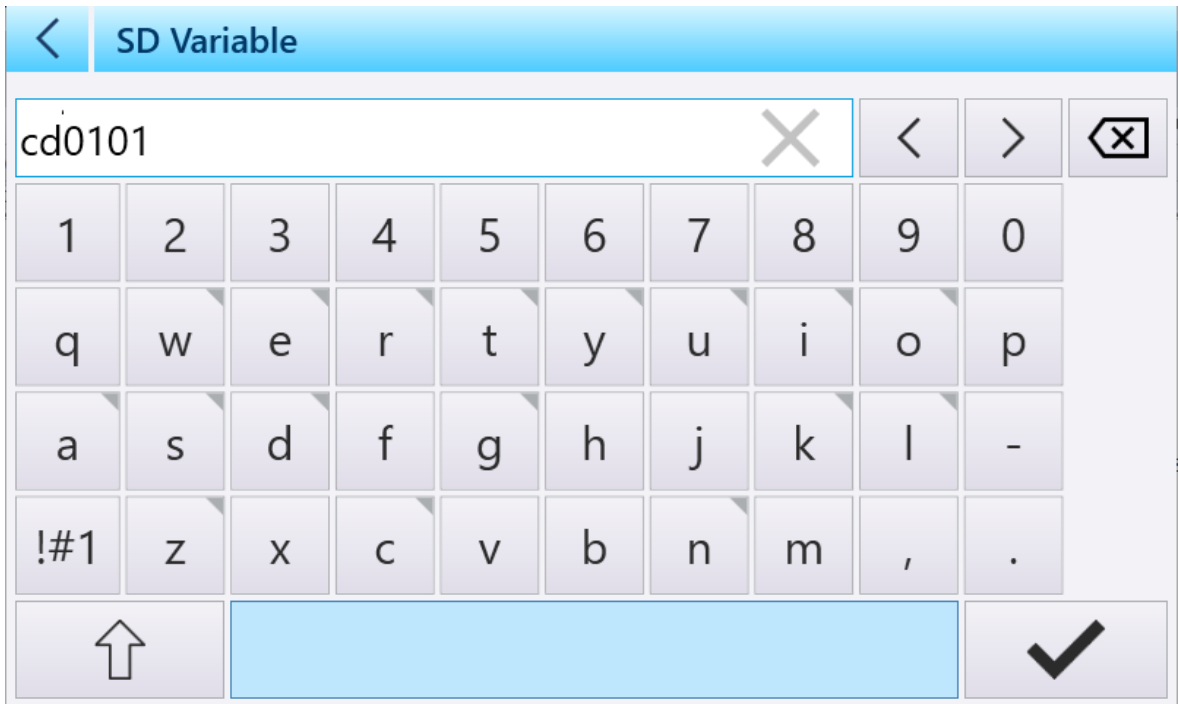
Figure 52: SD Variable Name Entry Screen

Refer to the **IND700 Shared Data Reference** manual for a list of Shared Data Variables available in the IND700.

1.1.7.3 Comparators and Discrete Outputs

If the Data Source is either **Displayed** or **Gross Weight**, the **Discrete Output** field displays. touch this field to display a list of all configured outputs, or to create a new one.

ID	Name	Type	Location	IP Address	Node
1	Within target tolerance	ScaleCard	Scale 1	-	-
2	Process indicator	None	-	-	-

Figure 53: Dicrete Outputs List

Either touch an existing Output, or touch an empty row, to display a context menu.
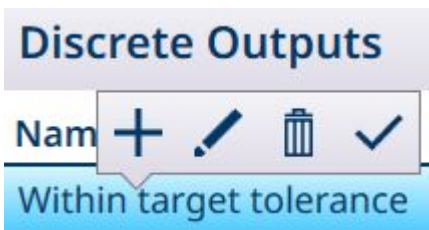
Figure 54: Discrete Outputs Context Menu

To create or edit a Discrete output, touch the Edit icon ✎ .The discrete output Edit screen will display.
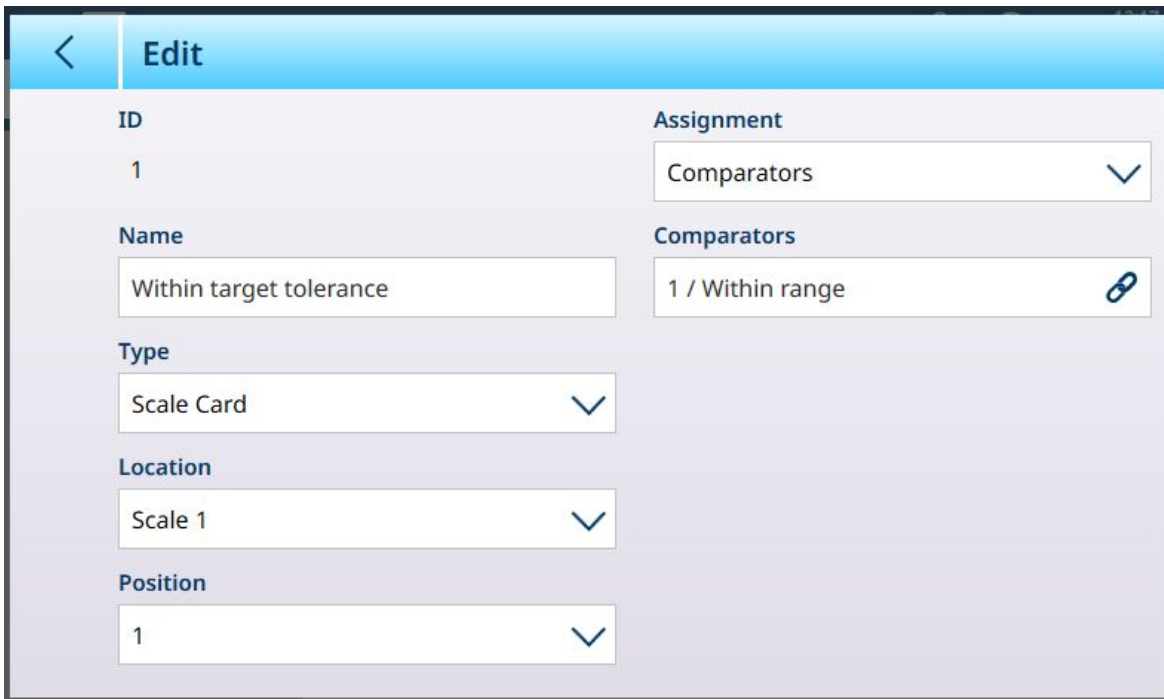
Figure 55: Discrete Outputs: Edit

Here, the output can be named and its source configured. It can also be assigned to a specific Comparator. Touch the **Comparators** field to display the **Comparators** list.

Touch a row in the Comparators list to display another context menu:

Figure 56: Comparators List Context Menu

Here, the selected comparator can be edited ✎, selected ✓, or reset . If the reset option is selected, a warning screen will display.
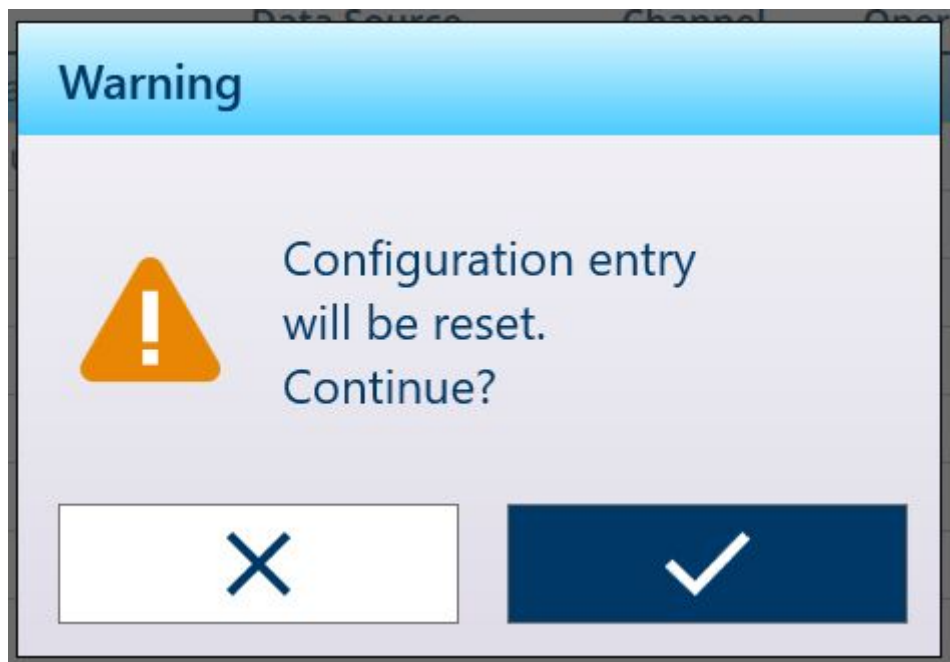
Figure 57: Comparator Reset Warning

If the Comparator is selected, touch the check mark ☑ at lower right to display the **Discrete Outputs Edit** screen again. Touch the Back arrow ‹ at upper left to return to the comparator configuration screen.

1.2 Counting

The Counting application uses the weight added to the scale to calculates a number. This number can represent the count of pieces or, for instance, the number meters of cable. The application requires the measurement of reference pieces or lengths on which to base the calculation.

Use Case 1
- 10 reference items weigh 1 kg.
- APW is calculated as 0.1 kg.
- 50 kg of items placed on the scale will result in a displayed count of 500.

Use Case 2
- A cable spool weights 3 kg; this is used as the tare weight.
- 5 m. of spooled cable is placed on the tared scale, and weighs 8 kg net.
- A net weight 64 kg of cable placed on the scale will result in a displayed count of 40, representing 40 m. of cable.

1.2.1 Counting: Operational Features

The counting application offers the following features in the weighing screen softkey ribbon:
- Fixed Sample entry, or variable sample entry using the terminal's numeric keyppad.
- Average Piece Weight (APW) entry by configuring a Material Table record.
- The ability to toggle between a display of the count, and a display of current scale weight.

When the Counting application is selected, the Application Screen View automatically includes three new softkeys:

Counting Application Softkeys

FIX 10	⛰	By default, this softkey is used to determine a fixed sample size of 10. Touch and hold the softkey to display a pop-up window showing options – sample size can be set to 5, 10, 20, 50 or 100 reference pieces.
VAR 10	⛰	Touch and hold this softkey to display the numerical keypad. Here, any number of reference pieces can be defined.

Switch Weight	⬤-♣	Touch this softkey to switch between the weight display and the piece count display.

Tare functions as normal in the Counting application, and can be entered using the TARE scale function key ▣, the Tare softkey ▸T◂ (if configured), recalled from the Tare Table ▣, or sent via an Industrial Network.

A tare value can also be configured in the Material Table; this tare is automatically active when the associated Material Table record is selected, and the FIX 10 and VAR 10 softkeys are deactivated.

1.2.2 Counting: Configuration

The following sections describe the use of the counting application.

Configuration for Counting Procedure

The screen below shows all available settings in the **Counting** setup page.
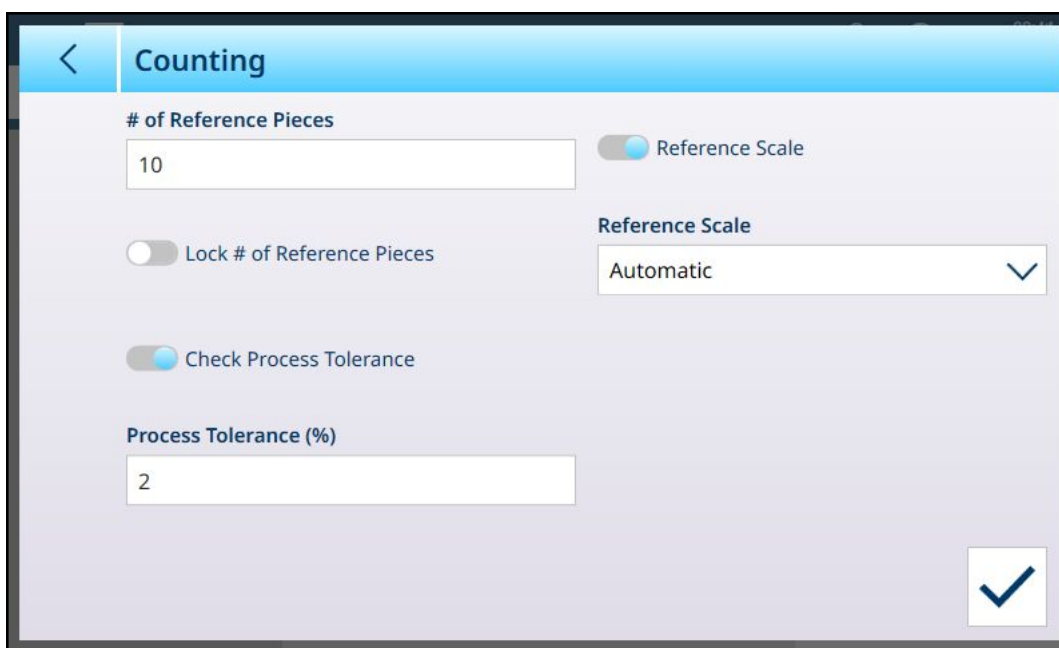
Figure 58: Application > Counting Configuration Screen

The following settings are used to configure the Counting application.

Configuration for Counting Procedure

In Setup > Application	Parameter	Setting
Select Application	Counting	Enabled, **Disabled**
App Screen View	Refer to [App Screen View Configuration ▸ Page 12].	

In Setup > Application	Parameter	Setting
Counting	# of Reference Pieces	Sets the number of pieces used to calculate the APW; if set, the FIX and VAR softkeys are not used.

It is important to specify a sufficient number of Reference Pieces. This relative weighing error increases exponentially as the weight on the scale approaches a very small percentage of its span.

A good general rule is that the minimum weight of the reference pieces should be at least 10 times the minimum APW.

This field accepts values from 1 to 9,999. |
| | Lock # of Reference Pieces | Locks the FIX softkey value so that it cannot be changed from the Application Screen view. |
| | Check Process Tolerance | When enabled, the terminal informs the operator if the number of **Reference Pieces** is too low, and indicates the number of pieces that should be added to or removed from the scale. This information is calculated based on the **Process Tolerance** value.

If the weight on the scale is not within the **Process Tolerance %**, the system will display a message advising the operator to add or remove pieces, or to close the warning message to abort the process.

Reference weight tolerance is calculated continuously when the counting application is in operation. |
| | Process Tolerance (%) | The percentage entered here refers to the APW (Average Piece Weight) of the items here. This value describes the degree of variation in weight between pieces. For parts having a very consistent weight, this number can be quite small. Where there is more variation between part weights, the **Process Tolerance** should be less strict, to allow for that variation.

This field accepts values from 0.01 to 99.99 |
| | Reference Scale | If enabled, an additional **Reference Scale** field appears, which allows the selection of the scale from which the counting data should be derived.

Options: Available scales, **Automatic [default]**

Note that Sum Scale cannot be used for a counting operation. |

In Setup > Application	Parameter	Setting
Memory > Tare Table	ID	[Assigned automatically]
	Name	Select a descriptive name for the tare
	Tare Value	Touch this field to select a tare value from the Tare Table.
	Unit	The unit in which the tare value is expressed. kg, t, lb, oz, lb-oz
	Description	A descriptive name for the container for which this tare value is defined
	Tare Value, Limits	For further details, refer, to **Configuration > Application > Memory > Tare Table**, in the **IND700 User's Manual**.
	Scale ↔	Displays current scale weight
Memory > Material Table	Counting Active	Selected. For further details, refer to [Material Table ▸ Page 7].
	APW	The average piece weight of the reference items
	Unit	The unit used for the APW value.

See also

🔗 Manual Target Weighing with Classification: Configuration ▸ Page 72

🔗 Manual Target Weighing - Filling: Configuration ▸ Page 76

🔗 Tare Table ▸ Page 12

1.2.3 Counting: Simple Counting

This example procedure assumes the IND700 is in **App Screen View** and that the counting process is correctly configured, as described in [Counting: Configuration ▸ Page 35].

1. Place the container on the scale.
2. Touch the **Material Table** softkey 📄 and choose a material record which is configured for counting, including a tare value and number of reference pieces.
3. In the **Material table**, touch the desired record and then touch the blue check mark to load that record.
4. A message will display. -- "Put [number of reference pieces] on the scale and confirm, else abort."
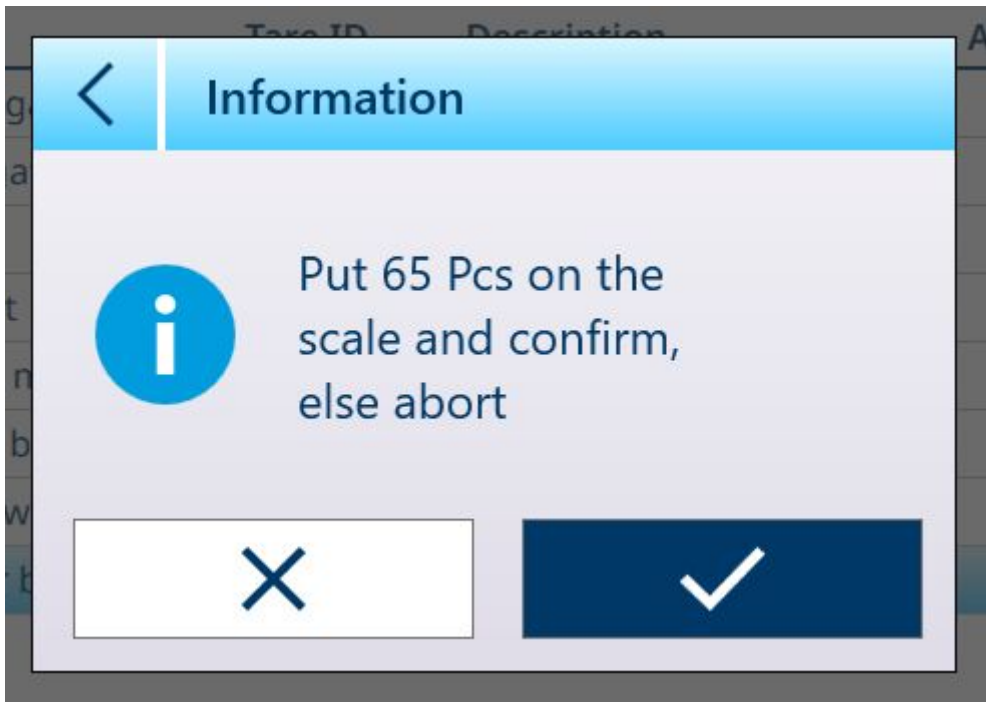
Figure 59: Reference Pieces Placement Prompt

5. Place the correct number of reference pieces in the container. If the number is correct, the application view will appear with the record loaded. If the system does not detect the expected weight of the reference pieces, a warning will display.
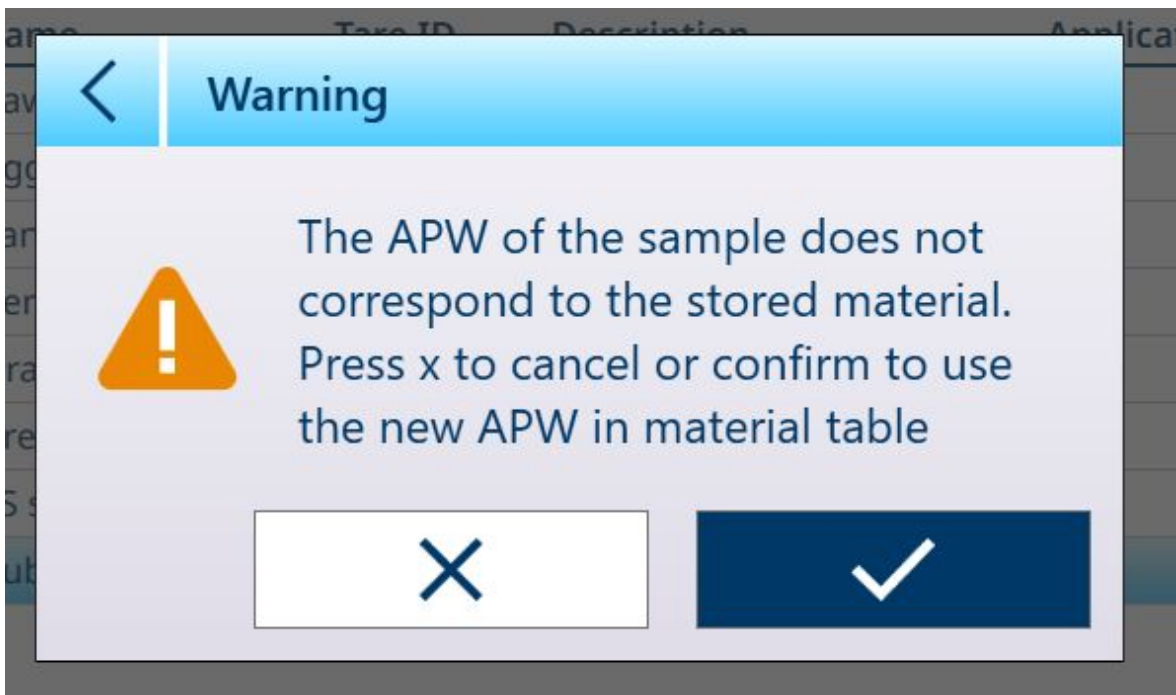
Figure 60: Number of Reference Pieces Mismatch Warning

6. Either choose to continue by touching the check mark, or cancel the operation by pressing the X. Cancelling returns the view to the Material Table.

    Note: If the Material Table record does not include a fixed Average Piece Weight (APW) and number of reference pieces, these parameters must be established from the main screen. Place the desired number of reference pieces in the container and record their weight, using either the FIX 10 ⛀ or VAR 10 ⛀ softkey, if enabled. The VAR number will depend on whether **Set number of Ref pcs** is enabled in the Material record. If it is enabled, the terminal wil calculate the correct number of reference pieces based on the scale capacity and increment, and the APW of the item to be counted.

If the number of pieces does not match the FIX or VAR sample size, edit the value by touching and holding the appropriate softkey (approx. 2 seconds), then select or enter the new value and touch the check mark to confirm it.

7. With the counting operation correctly configured, the application view screen will resemble the one shown here.
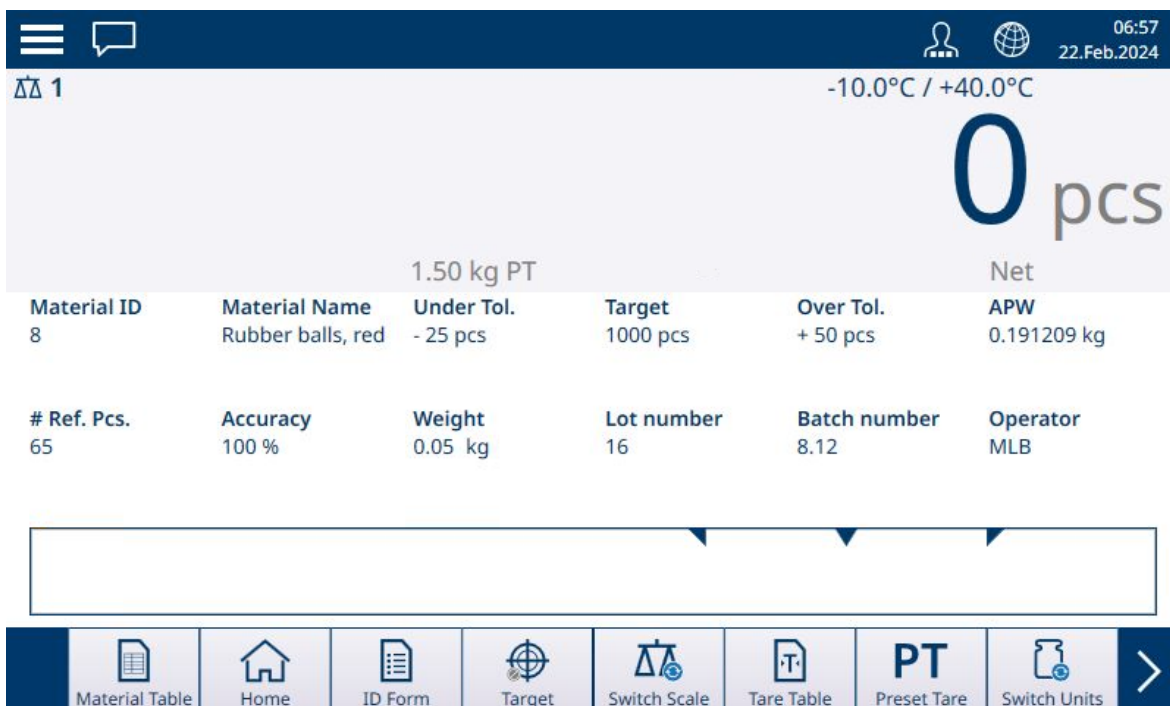
Figure 61: Counting Application View, Ready to Count

8. With the APW established, add items to the container until the appropriate count is displayed.
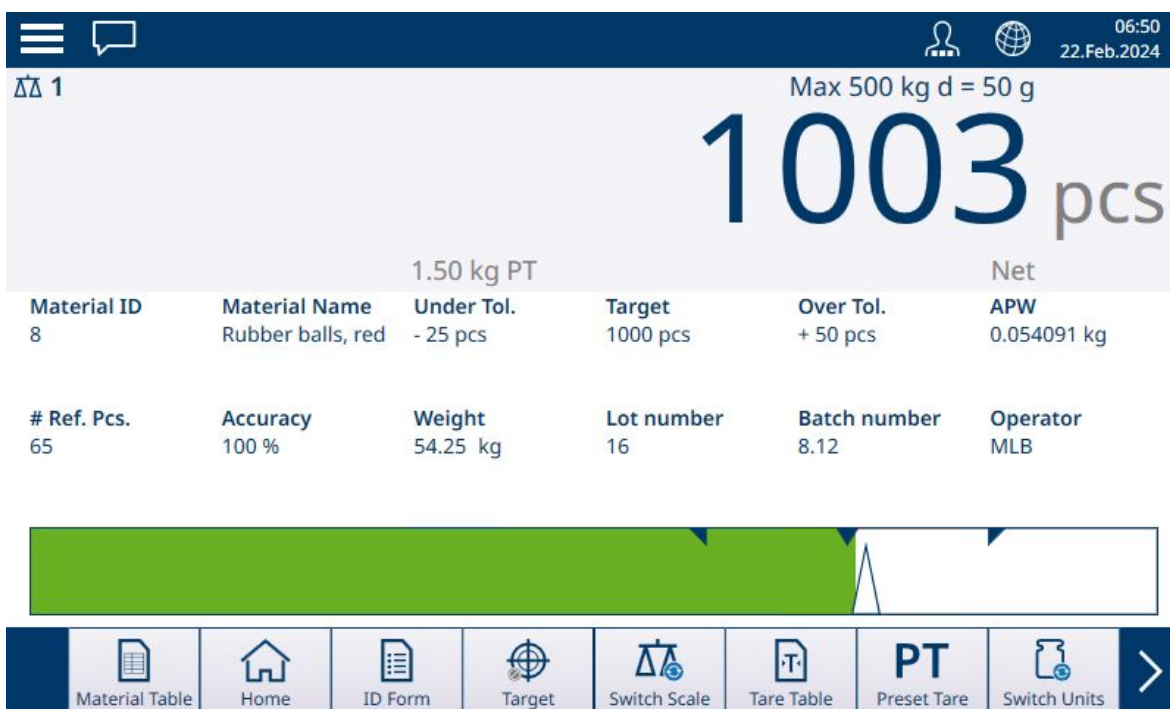
Figure 62: Counting Target Achieved

9. Remove the container from the scale and either empty it and put it back on the scale, or place a new empty container on the scale.

Note: To see the current Net weight on the scale, touch the Switch Weight softkey ⬚⋅⧆. Touch the softkey again to switch back to display the count. If no Material has been selected, the softkey is disable and appears like this: ⬚⋅⧆

Note: To unload the material table record, touch the Clear function key. The tare value will be cleared and the display will revert to displaying weight in B/G (gross) mode.

See also

- ⬄ App Screen View Configuration ▸ Page 12
- ⬄ Manual Target Weighing with Classification: Configuration ▸ Page 72
- ⬄ Manual Target Weighing - Filling: Configuration ▸ Page 76
- ⬄ Tare Table ▸ Page 12

1.2.4 Counting with Classification

When Counting and Classification are combined, the classes are determined by number of pieces. Up to eight classes can be defined, and number of pieces determined by observing the class indicator on the **Application Screen View**.

The following illustration shows examples of classes indicated by ColorWeigh visualization -- with different colored backgrounds indicating the current Class, and by bargraph visualization, which indicates the Class by adding color to one of the boxes displayed. Refer to the [Classification Configuration ▸ Page 72] section for details on setting the type of visualization.
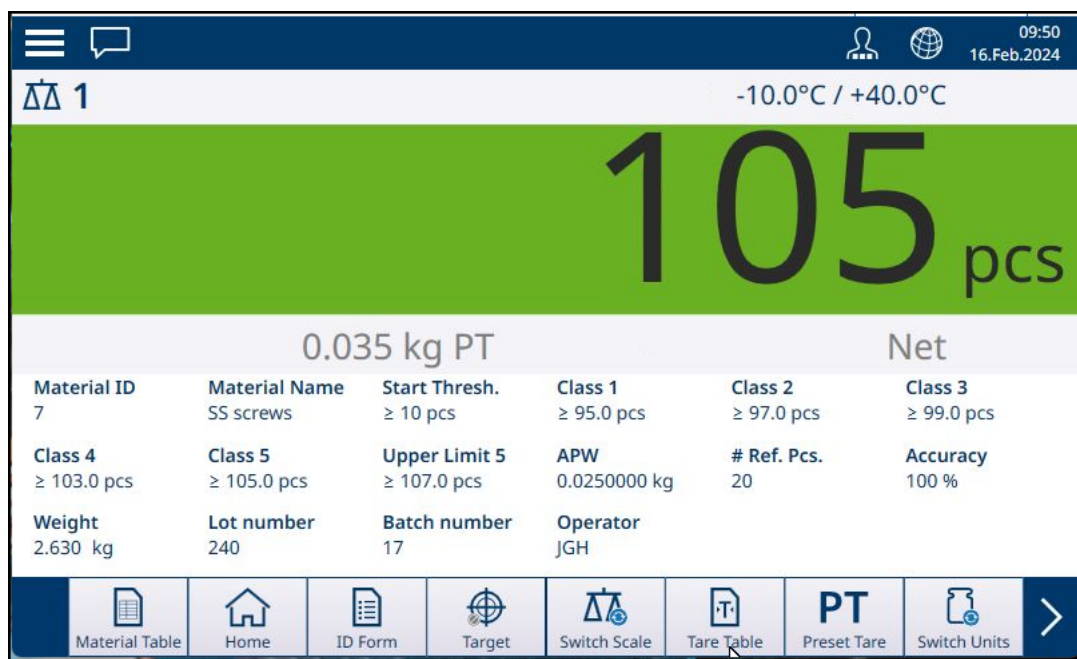
Figure 63: Counting with Classification, ColorWeigh Visualization
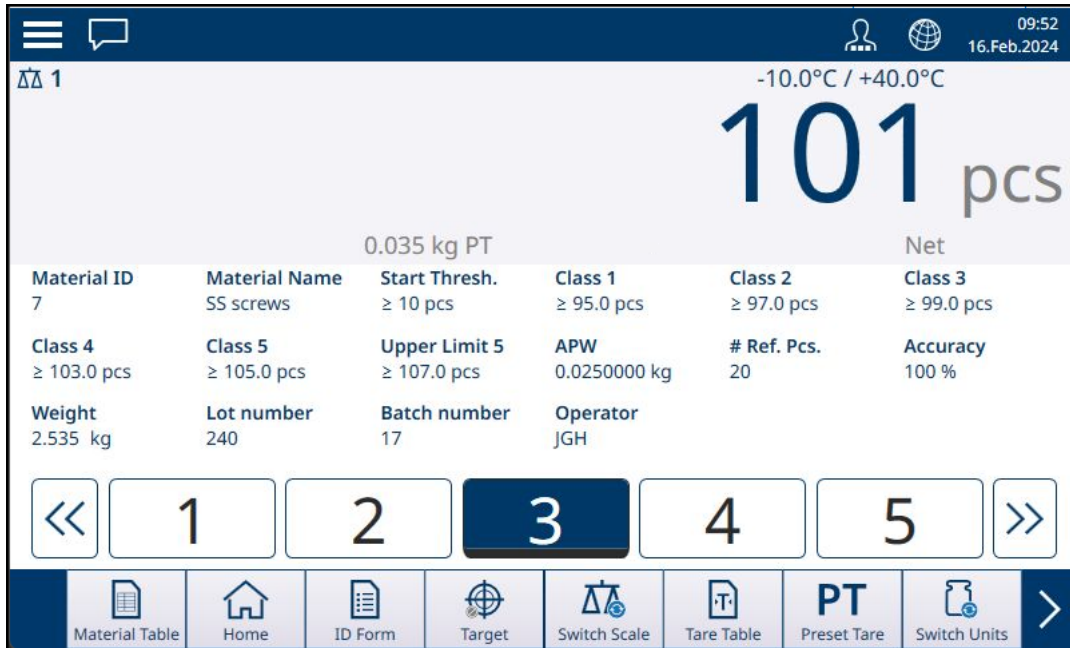
Figure 64: Counting with Classification, Bargraph Visualization

1.2.5 Counting with Manual Filling

When Counting and Manual Filling are combined, a Bargraph display appears showing the target and its upper and lower tolerances. Adding pieces to the container on the scale moves the bar graph. The white triangle is a vernier scale which provides a more precise indication of the relationship between the scale weight (in this case, number of pieces) and the target.
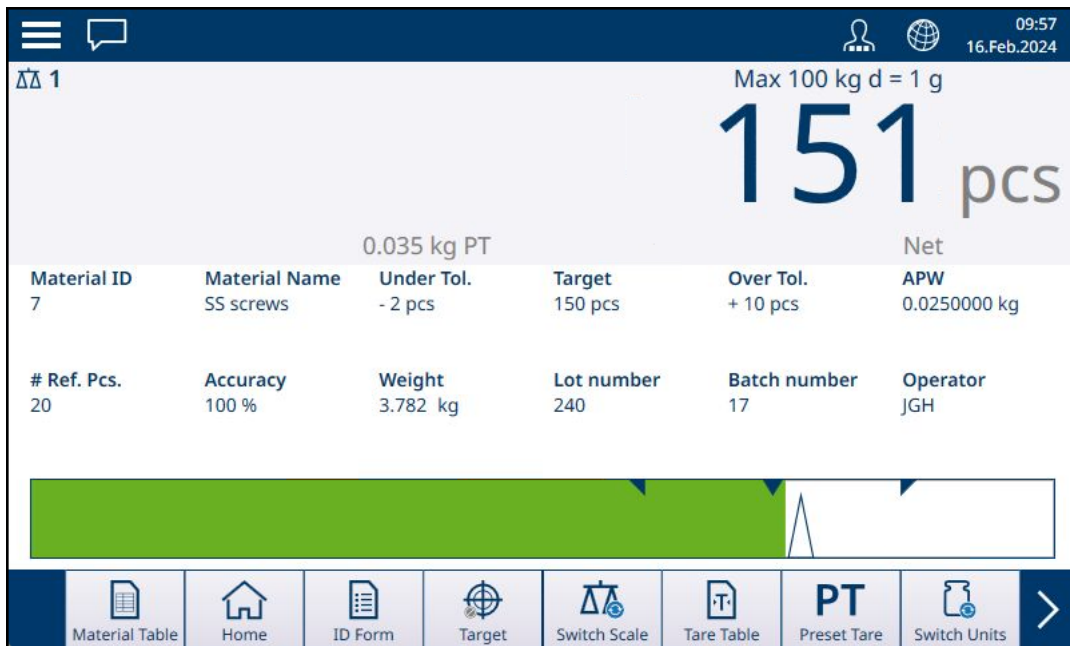
Figure 65: Counting with Manual Filling

Once the graph indicates that the number of pieces is within the proper tolerance, remove the container from the scale, empty it, and begin the process again.

See also

🔗 Manual Target Weighing - Filling: Configuration ▶ Page 76

1.2.6 Counting with Over/Under

When Counting and Over/Under weighing are combined, the visualization configured in Setup at [Application > Over/Under ▸ Page 80] will display – either a bargraph showing the count status, or a ColorWeigh background to the piece count.
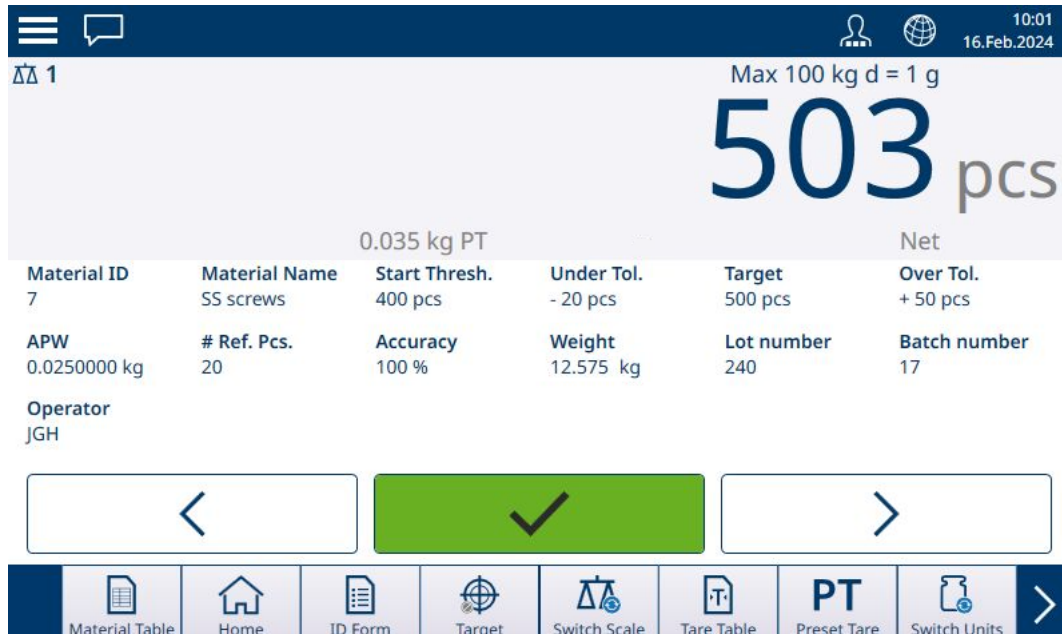
Figure 66: Counting with Over/Under
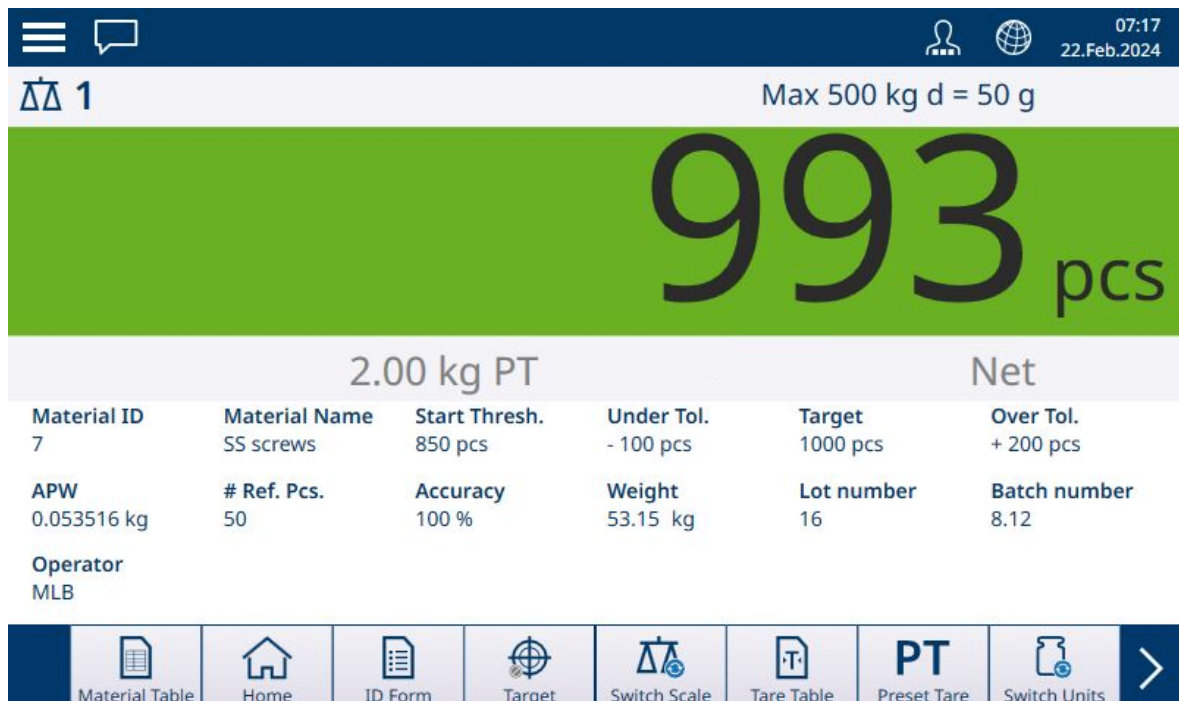
Figure 67: Counting with Over/Under, Colorweigh Visualization

Once the count is within the required tolerance, remove the container from the scale, empty it, and being the process again.

1.2.7 Counting with Totalization

Refer to **Configuration > Totalization**, in the IND700 **User's Manual**. Totalization can be enabled in combination with any of the other weighing modes. When Totalization is required, each weighment or transaction must be concluded by touching the + softkey to record the result, and scale weight must either return to zero or change by more than 30 divisions (depending on how the Material Change Criteria are configured) to trigger the next weighment. The weight sum and count of Totals and Subtotals will be recorded as configured in Setup at **Application > Totalization**

1.3 Totalization

It is frequently useful for the user of weighing equipment to know how many weighing transactions have been processed and how much material was processed (e.g. removed from stock) during a particular period of time. Often there is also a need to subdivide this information according to material or item number, customer account, etc. The terminal supports several methods for tracking the number of transactions and processed material. Totalization can occur in the general scale totals register, within the Tare Table and within the Target Table.

1.3.1 Totalization: Configuration

Totalization is configured in setup at **Application > Totalization**. The menu item appears if Totalization is among the applications enabled in the **Select Application** screen.

Figure 68: Totalization Configuration Screen

The following settings are used to configure Totalization. Default settings are shown in **bold**.

Configuration for Totalization

In Setup > Application	Parameter	Setting
Select Application	Totalization	Enabled, **Disabled**
App Screen View	Refer to [App Screen View Configuration ▸ Page 12]	
Totalization	Additional Features: Sub-Total	Enabled, **Disabled**
	Material Change Criteria	
	Deviation (30 d) ±	Enable either criterion with radio button
	Return to Zero	

Note: Neither the Material Table record nor the Tare Table record include any parameters required for Total-ization, which is based on weight or count values and transactions.

The table below provides further details about these parameters:

Setting	Explanation
Additional Features	When the Sub-Total slider is enabled, the IND700 captures both total and sub-total values for each transaction.

Setting	Explanation
Material Change Criteria	One of the criteria listed here must be selected by touching the associated radio button. The change criterion determines how the scale recognizes the start of a new weighing transaction. In either case, the criterion resets the interlock for the Add softkey $+$. Pressing this softkey again before its interlock is reset will have no effect.
	If the Add softkey is touched before the material change criterion is satisfied, a message will display indicating "Cannot add weight. Replace item" (if criterion is **Deviation**) or "Cannot add weight. Empty scale and place new weight" (if the criterion is **Return to Zero**).
Deviation (30d) +/-	By default, the system recognizes that a transaction is complete when scale weight deviates from the weight displayed when the Add softkey $+$ was pushed by at least 30 divisions, as configured in setup at **Scale n > ASM > Capacity & Increment**.
Return to Zero	If **Return to Zero** is selected, the IND700 detects a displayed NET weight of zero to determine the end of the transaction

1.3.2 Totalization: Additional Softkeys

When Totalization is enabled at **Setup > Application > Select Application**, two or three additional softkeys appear on the Application Screen view:

- $+$ **Add** -- adds the current count or weight to the Total and (if configured) Sub-Total, and triggers a transfer
- Σ **Totals** -- displays the **Recall Totals** screen
- Σ SumTable -- dislays the **Material Totals** screen

Add

To complete a weighing operation, touch the Add softkey. The application screen view will update to reflect:

- The sum of all weights for completed additions(**Total**)
- The number of additions performed (**Total n**, or **Total Counter**)
- The sum of all sub-total additions (**Sub-Total**), if Sub-Total is enabled on the [Totalization setup screen ▶ Page 43].
- The number of all additions since Sub-Totals were last cleared in the Totals view (**Sub-Total n** or **ST Counter**).

Totals View

Touch the Totals softkey to display the current values for **Total**, **Total n** and, if **Sub-Total** is enabled, **Sub-Total** and **ST Counter** (number of sub-totals recorded).

Figure 69: Totals View Screen, Sub-Total Enabled

From this screen, the displayed values can be transferred⬆, Sub-Totals cleared ℂ and all totals cleared C.

Touch the **Transfer** softkey to export the displayed data via the currently configured connection. The format of the output data is determined by the Template defined for use with this connection. Apart from the pre-configured Template 1, 9 templates are available for customization, to use with particular procedures. For example, a template for Totalization might include the values listed on the Totals View screen, together with ID Form data for the material being weighed, and general data such as time and date.

When the **Clear Sub-Total** softkey € is touched, a warning message will appear.

Figure 70: Clear Sub-Totals Warning

Touch the check mark to confirm the action and reset values to zero weight and zero additions, or the X to return to the Totals View screen without clearing the data.

When the **Clear Totals** softkey C, a similar warning message will appear.
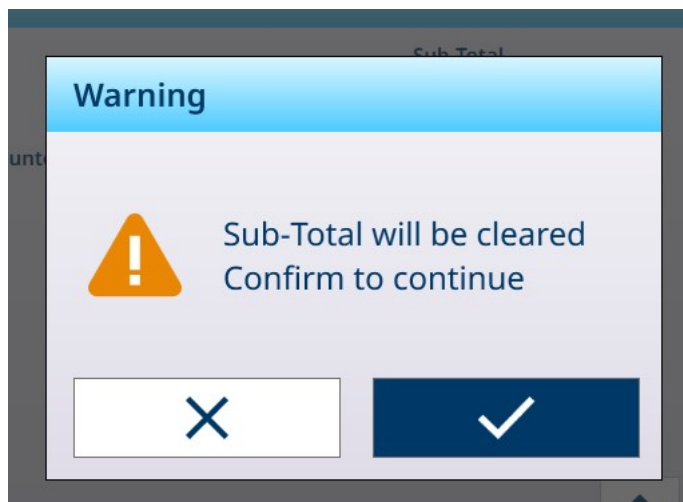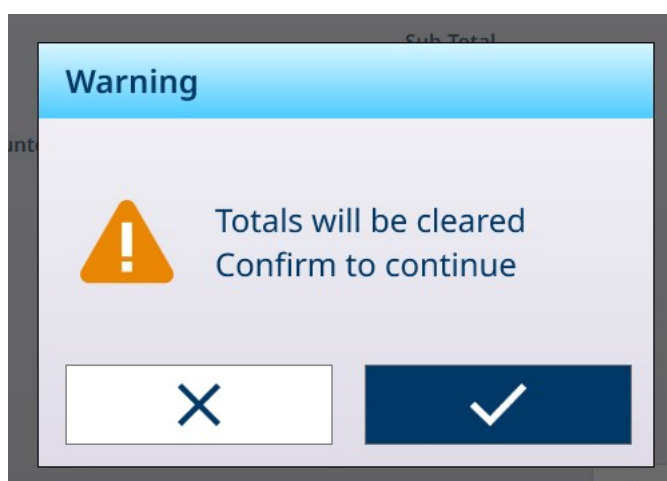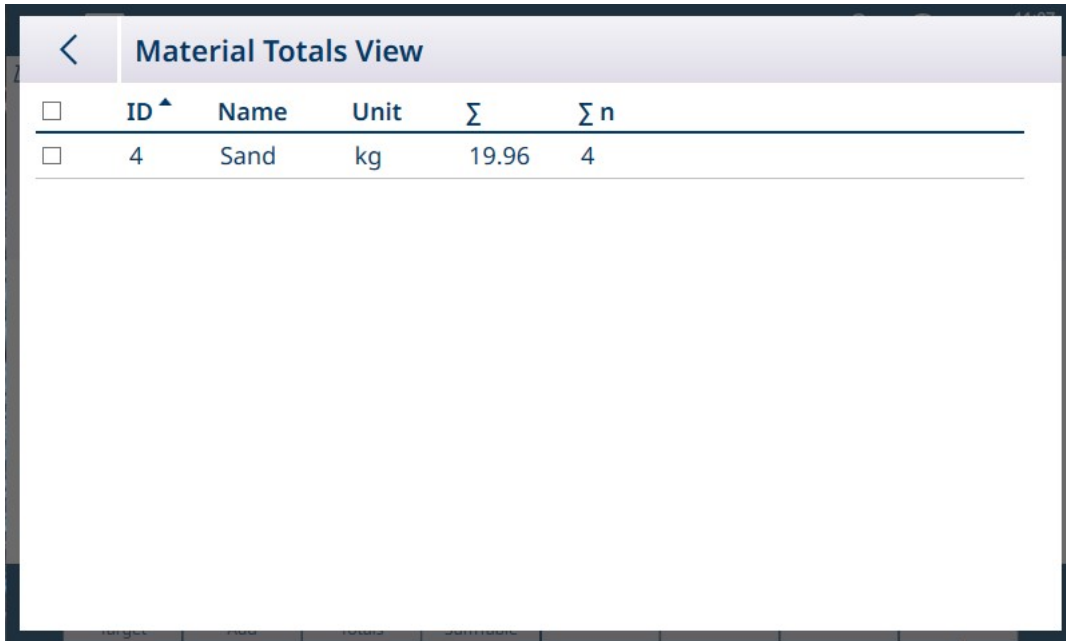

Figure 71: Clear Totals Warning

Touch the check mark to confirm the action and reset all values to zero, or the X to return to the Totals View screen without clearing the data.

SumTable View

Touch the SumTable softkey ![softkey] to display the **Material Totals View** screen.

☐	ID ▲	Name	Unit	∑	∑ n
☐	4	Sand	kg	19.96	4

Figure 72: Material Totals View

This screen displays totalizations performed for materials loaded from the **Materials Table**, and the ID number of the record in the **Materials Table**. Records in this table can be cleared manually. Select the record/s to be deleted by touching the checkbox next to each record, then touch Clear **C**, which appears in the header row.

1.3.3 Totalization: Workflow Example

The following provides a simple example of the use of the Totalization application. In this example, two weighing operations are performed in sequence, and the Totals register is updated. The sequence includes an example of the change in weight display at each step:

Simple Totalization Sequence

Step	Action	Result	Weight Display
1	Place a container on the scale.	Terminal displays container weight	0.500 kg
2	Take a tare by touching the Tare softkey ▸T◂ or Tare function key ▸T◂ .	Display changes to NET mode	0.000 kg
3	Add items or material to container.	Terminal displays weight of added items or material	1.293 kg
4	Touch the Add ➕ softkey.	Displayed weight is added to Totals Table	Total weight = 1.293 kg Count = 1
5	if the Material Change Criterion (see [Totalization: Configuration ▸ Page 43]) is Deviation, either remove the container from scale or add more items/material resulting in a weight change of more than 30 divisions. If the criterion is Return to Zero, remove the container and its contents from the scale.	Scale remains in NET mode Scale remains in NET mode	1.293 kg + additional weight 0.000 kg
6	Place another container on the scale, or continue to use the existing container (refer to step 5).	Scale ready for more material/items	0.000 kg
7	Add items or material to container.	Terminal displays weight of added items or material	1.190 kg

St ep	Action	Result	Weight Display
8	Touch the Add softkey.	Displayed weightis added to Totals Table	Total weight = 2.483 kg Count = 2
9	Repeat these steps until process is complete.	Display changes to match current state	Total weight and count number increment with each transaction

1.3.4 Totals Recall

The Totals Recall softkey Σ, available ifor assignment to the home screen, displays the sub-total and grand-total transaction counters and total weight for the terminal.

Figure 73: Recall Totals Screen

Press the CLEAR SUBTOTAL softkey ℂ to clear the sub-total amounts. Press the CLEAR softkey C to clear both the grand-total and sub-total amounts. Each of these actions will cause a warning to display.
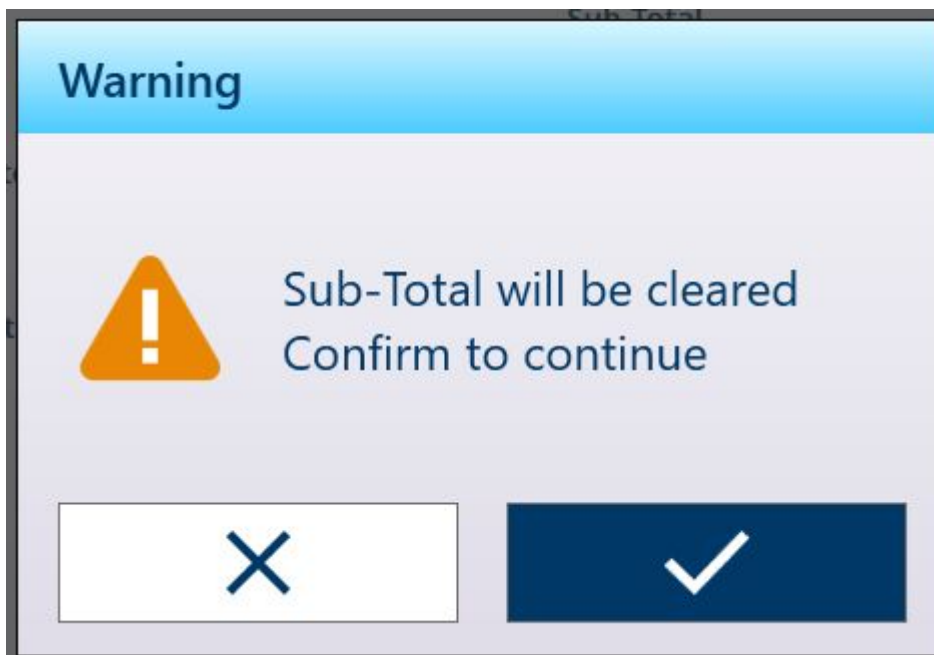
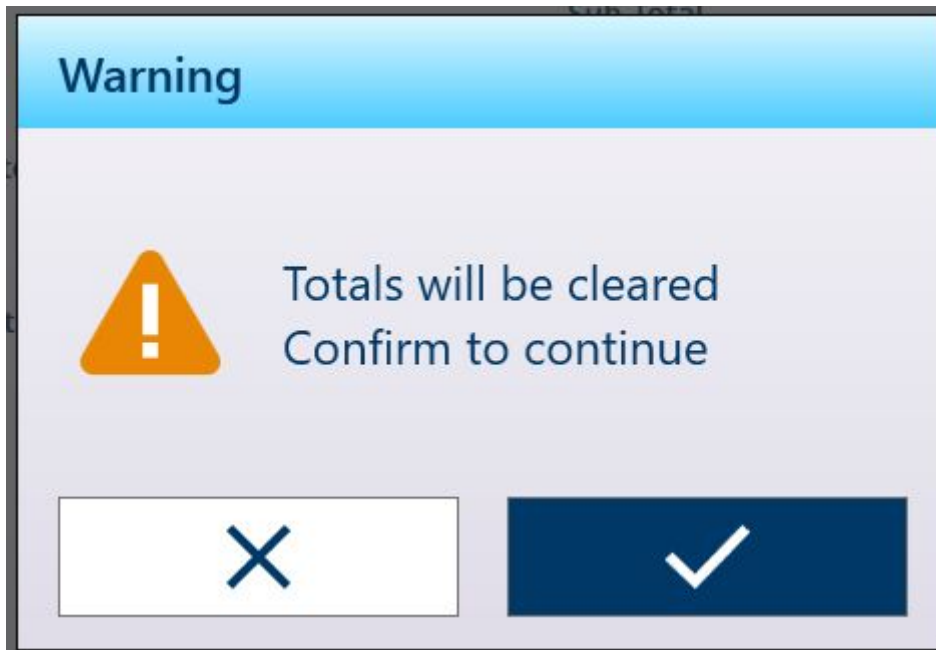

Figure 74: Sub-Totals Clear Warning

Figure 75: Totals Clear Warning

Press the TRANSFER softkey 🔼 to print a report of the totals.

Note: If either **Clear Total** or **Clear Subtotal After Print** is enabled in Setup, these values will clear after printing. If security is enabled, Supervisor level log-in or higher is required to execute this PRINT.

1.3.5 Totalization with Other Applications

When totaliation is used with any of these applications, the steps to make an addition to the total and sub-totals counts and values are the same as those used in totalization for simple weighing. To reset the Add function, ouch the Add softkey ➕, and then add more than 30 divisions of weight to the scale, or return the scale weight to net zero.

1.4 Manual Target Weighing

Tolerance Zones and Start Threshold

In Manual Target Weighing –Classification, Filling and Over/Under weighing – the App Screen view includes a visualization of Tolerance Zones and a calculated Start Threshold, below which the visualization is inactive. These functions are described in [Manual Target Weighing: Tolerance Types ▸ Page 49] and [Manual Target Weighing: Start Threshold ▸ Page 61].

The three types of target weighing are described in [Manual Target Weighing: Classification ▸ Page 71], [Manual Target Weighing: Filling ▸ Page 75] and [Manual Target Weighing: Over/Under ▸ Page 80].

1.4.1 Manual Target Weighing: Tolerance Types

Tolerance types are **Deviation**, **Percentage** and **Absolute**. The following illustrations show the relationship between zones and tolerance types, and how they are displayed in the Application Screen view.
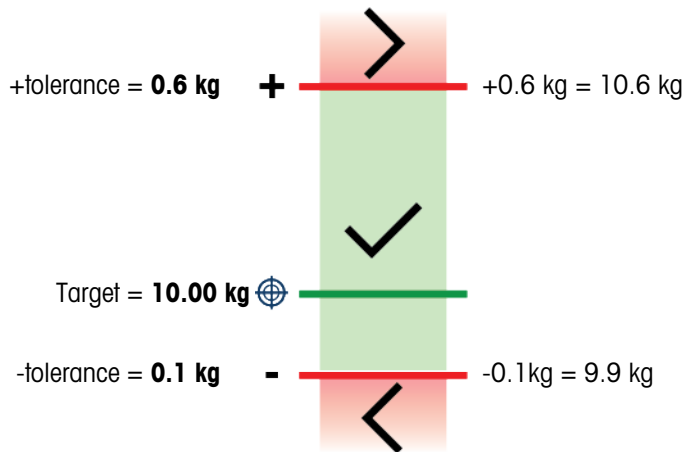
Figure 76: 3 Zones, 10 kg Target, Target Deviation
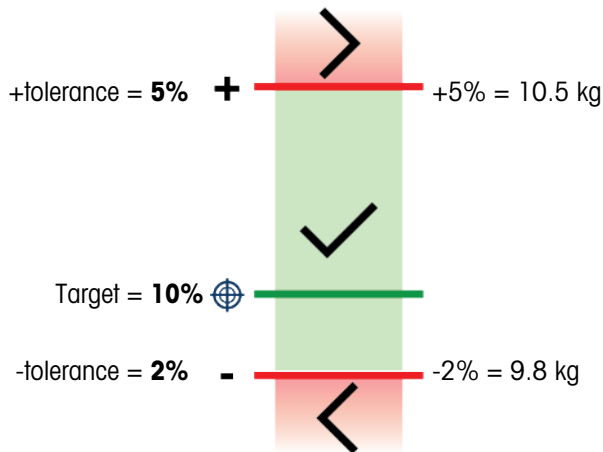
Figure 77: 3 Zones, 10 kg Target, % of Target
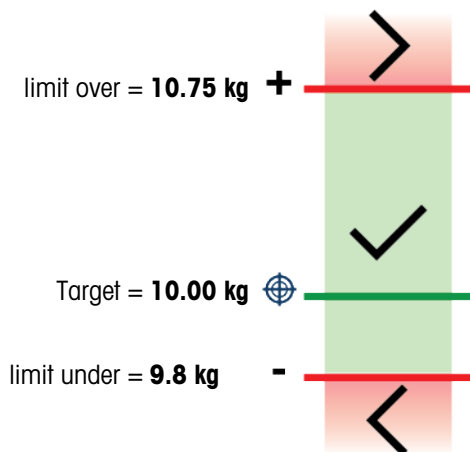
Figure 78: 3 Zones, 10 kg Target, Absolute Value
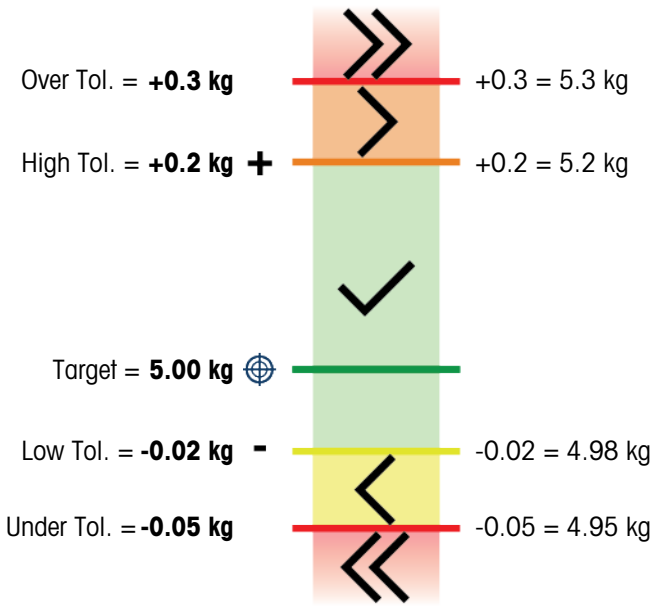
Figure 79: 5 Zones, 5 kg Target, Target Deviation

Over Tol. = **+0.3 kg**   +0.3 = 5.3 kg

High Tol. = **+0.2 kg** +   +0.2 = 5.2 kg

Target = **5.00 kg**

Low Tol. = **-0.02 kg** -   -0.02 = 4.98 kg

Under Tol. = **-0.05 kg**   -0.05 = 4.95 kg
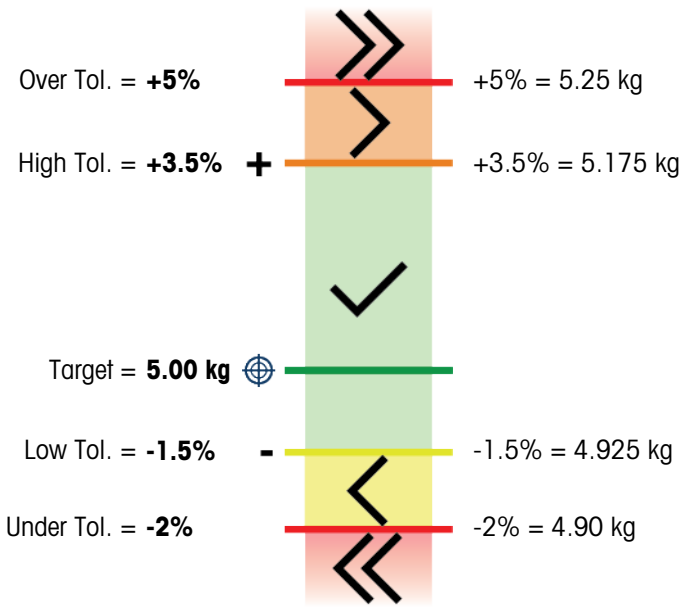
Figure 80: 5 Zones, 5 kg Target, % of Target

Over Tol. = **+5%**   +5% = 5.25 kg

High Tol. = **+3.5%** +   +3.5% = 5.175 kg

Target = **5.00 kg**

Low Tol. = **-1.5%** -   -1.5% = 4.925 kg

Under Tol. = **-2%**   -2% = 4.90 kg

Figure 81: 5 Zones, 10 kg Target, Absolute Value

Start Threshold

The IND700 uses the current weight target to calculate a Start Threshold value. Below this value the one indicator (either ColorWeigh or Bargraph) shows no indication.
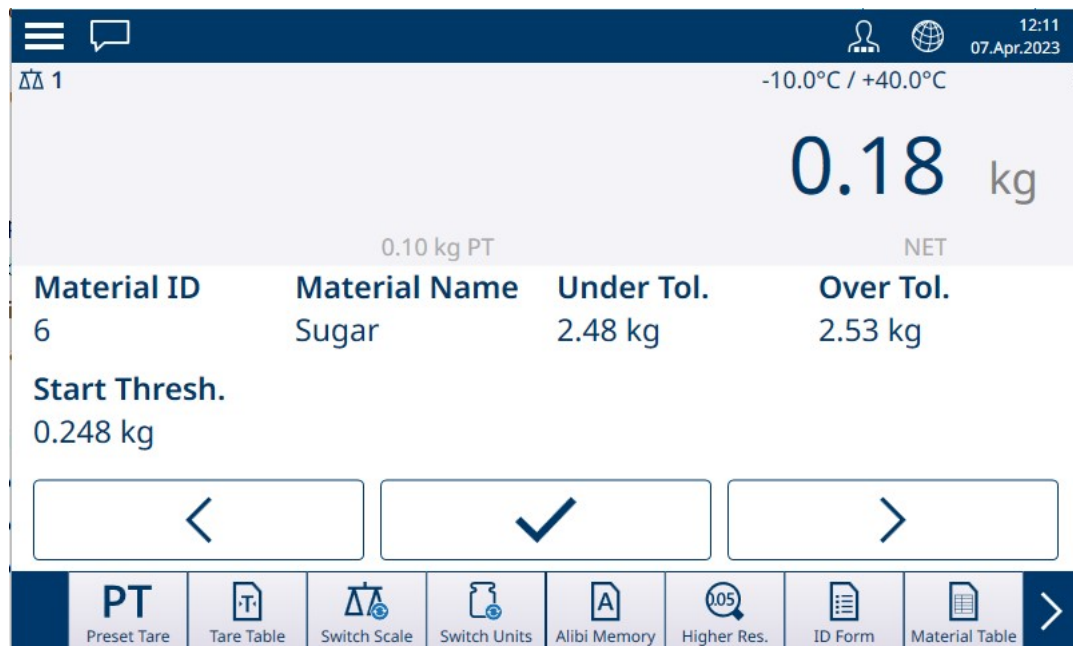
Figure 82: 3-Zone Over/Under, Weight Below Threshold Value

Once the threshold weight value is exceeded, the zone indicator begins to display, allowing the operator to track the weight on scale in comparison to the target value or target zone:
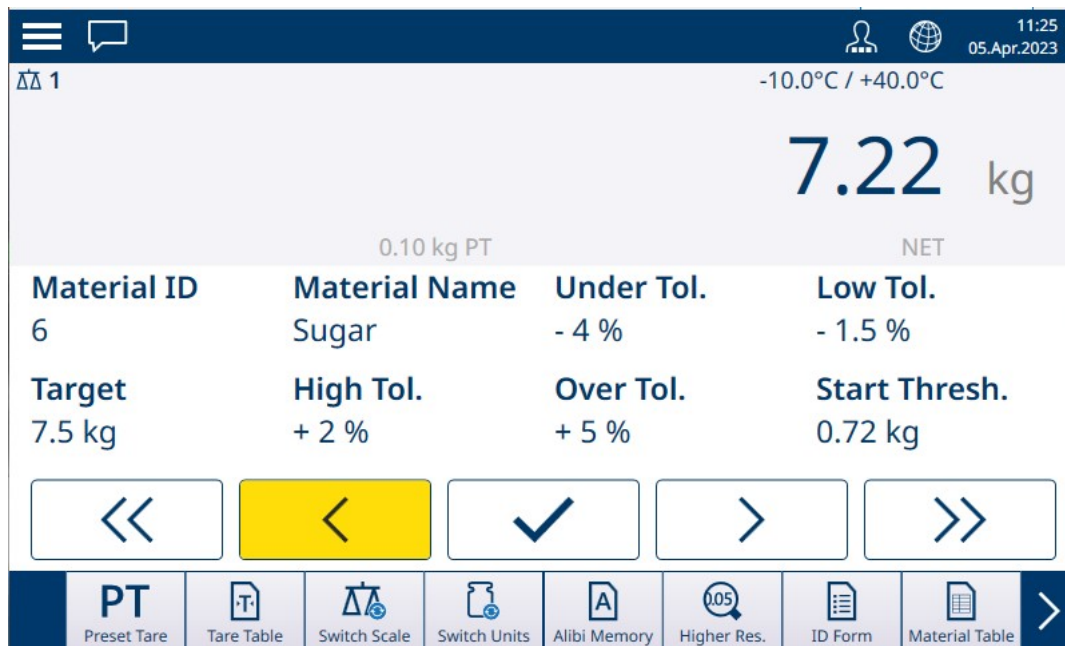
Figure 83: 5-Zone Over/Under, Above Threshold Value, Colorweigh
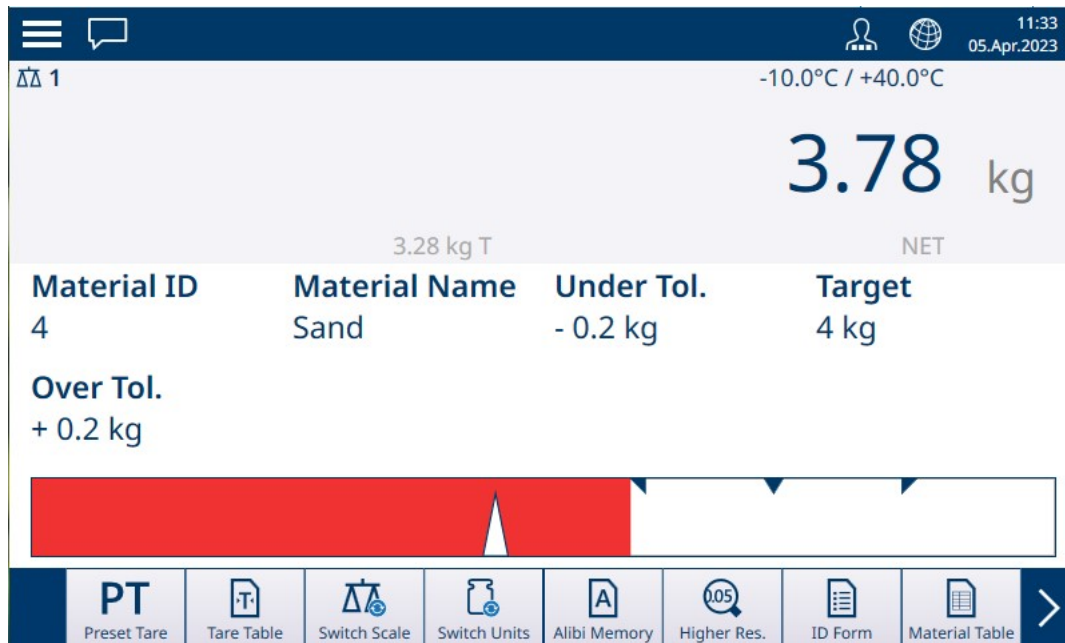
Figure 84: Filling, Above Threshold Value, Bargraph

See also

1.4.1.1 Manual Target Weighing - Classification

The Classification application is used to assort items into weight classes. From 2 to 8 classes can be configured, arranged in ascending order of weight zone. This application is useful when similar items of various sizes must be sorted into separate bins according to size. The terminal's display can show a colored background to indicate class, or can display color in a box representing the class of item currently weighed.

Figure 85: Target Weighing - Classification Example

1.4.1.1.1 Manual Target Weighing with Classification: Configuration
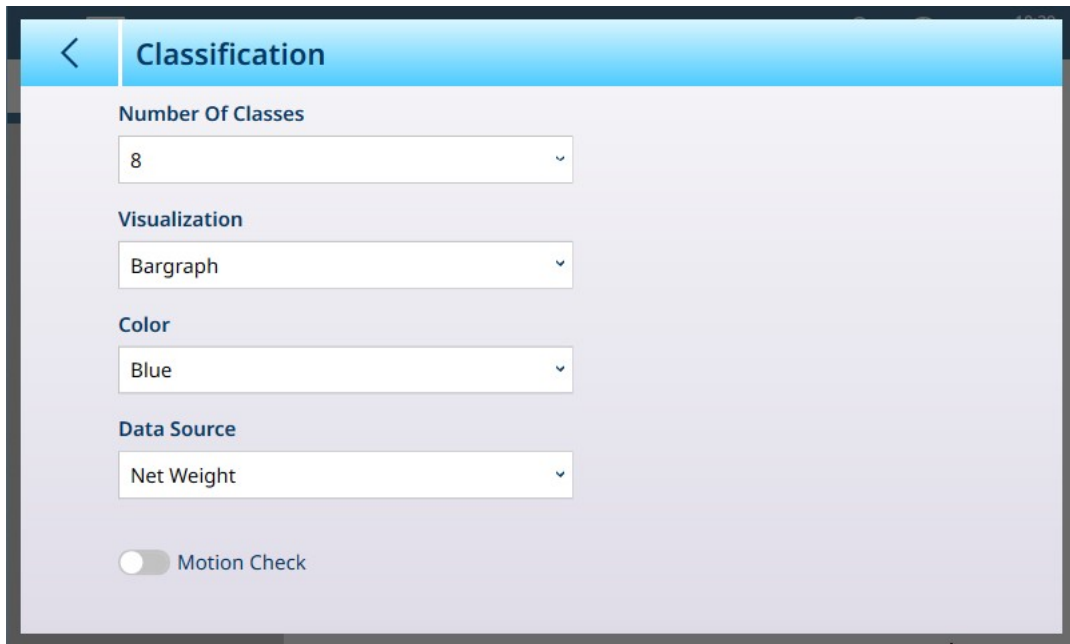
Figure 86: Classification Configuration Screen

The following settings are used to configure Classification. Default values are shown in **bold**.

In Setup > Application	Parameter	Setting
Select Application	Manual Target	Enabled, **Disabled**
	Classification	Enabled, **Disabled**
App Screen View	Refer to [App Screen View Configuration ▸ Page 12]	

In Setup > Application	Parameter	Setting
Classification	Number of Classes	Dropdown list: 2 - 8, default **5**
	Visualization	**Bargraph**, ColorWeigh
	If Bargraph: Color	**Blue**, Cyan, Dark gray, Gray, **Green**, Orange, Red, Yellow
	If ColorWeigh: Class 1 Color ... Class n Color	For each class: Blue, Cyan, Dark gray, Gray, Green, Orange, Red, Yellow
		Default values: 1 - **Yellow**, 2 - **Cyan**, 3 - **Orange**, 4 - **Gray**, 5 - **Green**, 6 - **Orange**, 7 - **Red**, 8 - **Yellow**
	Data Source	**Net Weight**, Gross Weight
	Motion check	**Enabled**, **Disabled**
Memory > Material Table Record	Classification Active	Enabled, **Disabled**
	Unit	**g**, kg, t, lb, oz, lb-oz
	Lower Limit 1 - Lower Limit 8, Upper Limit 8	Numeric data entry. Number of fields determined by Number of Classes selected in **Classification Configuration** screen.

Figure 87: Material Table - Classification Configurations, First Page

Figure 88: Material Table - Classification Configurations, Second page

1.4.1.1.2 Manual Target Weighing with Classification: Operating Procedure

Figure 89: Classification Application View -- ColorWeigh Indicating Class 3

This procedure assumes that the terminal is correctly configured for classification and that the required number of output containers is available – one per class, or whatever the process requires.

1. Optionally, if the Material Table record does not specify a value, take a tare ⬛ or load one from the Tare Table ⬛.
2. Add an item to the scale.
3. Note the class into which the item's weight places it -- indicated either by the zone boxes, or by the ColorWeigh display.
4. Remove the item from the scale and place it in the appropriate class container.
5. Repeat the process until all items are classified.

1.4.1.2 Manual Target Weighing - Filling

Filling is a simple 3-zone Application in which material is added to a container until the weight on the scale falls within the acceptable tolerance zone. Zones are represented by a bargraph, within which both position on the graph and color of the bar indicate whether the current weight is **Under** tolerance, in the **OK** zone, or **Over** tolerance.

In the examples shown here, the target weight is 4 kg, with a tolerance band of -0.2 kg (3.8 kg) to +0.2 kg (4.2 kg).
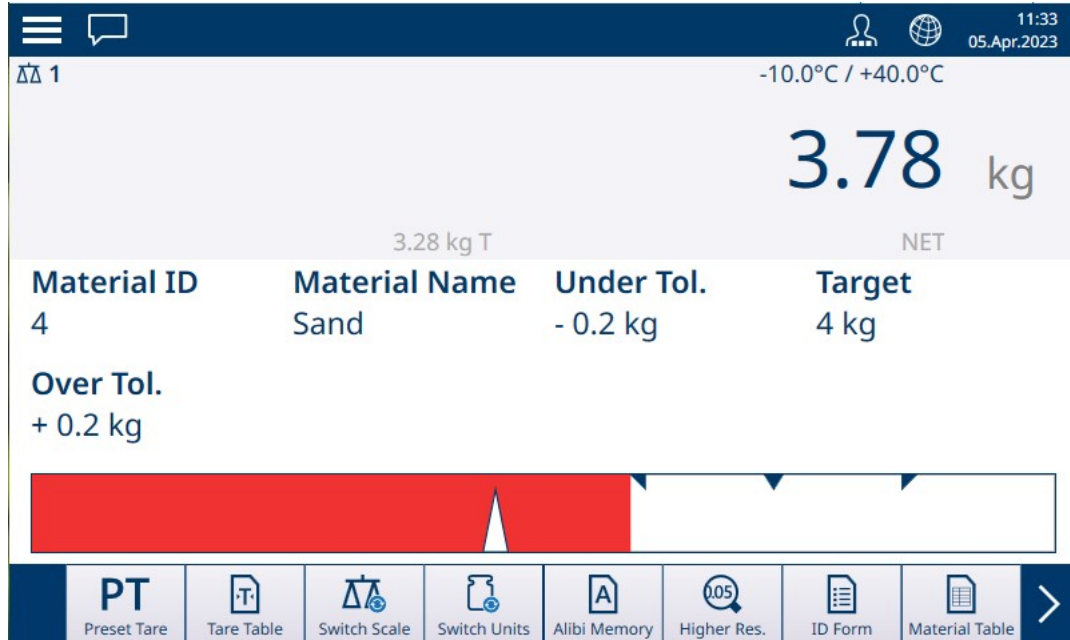
Figure 90: Filling Application View Screen - Under Tolerance
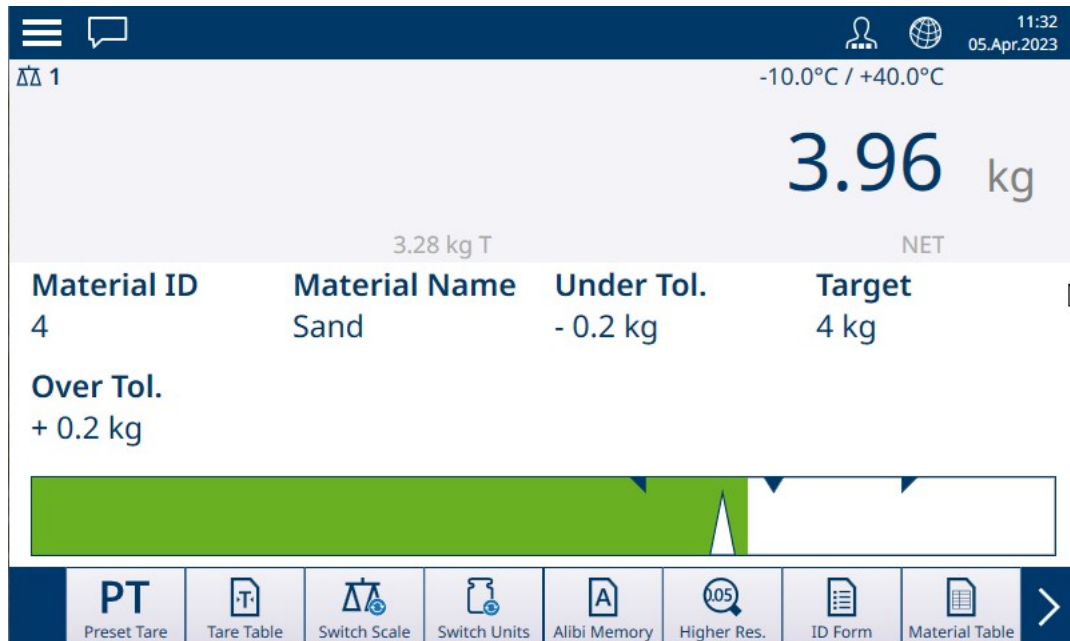
Figure 91: Filling Application View Screen - Within Tolerance
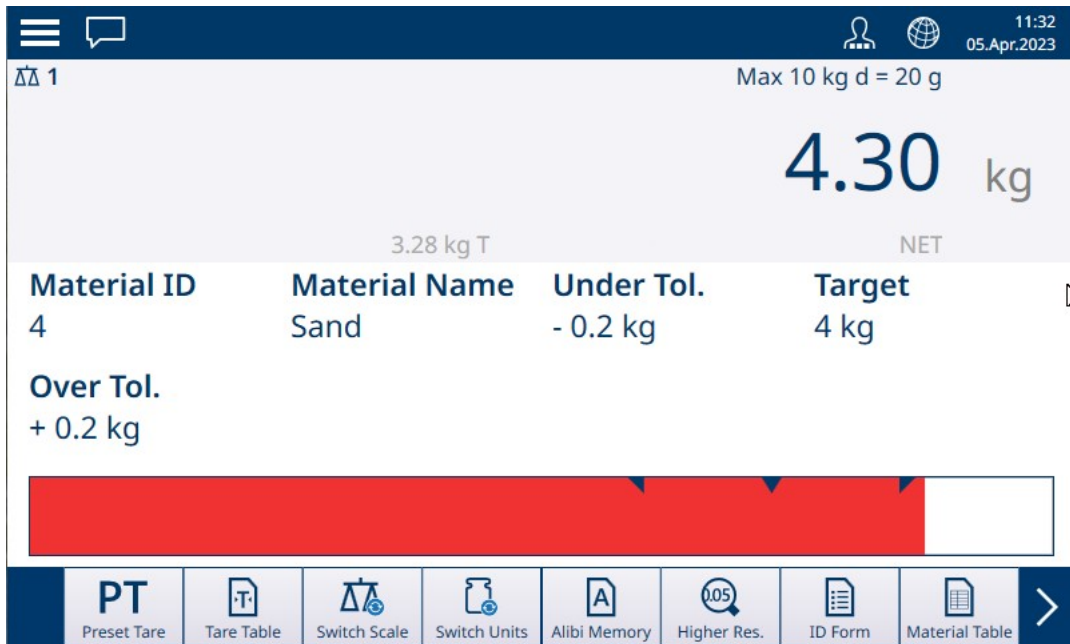
Figure 92: Filling Application view Screen - Over Tolerance

Note the triangle representing the Vernier indicator. This indicator changes to solid blue when the target weight is achieved.

Figure 93: Vernier Indicator Showing Target Matched

1.4.1.2.1 Manual Target Weighing - Filling: Configuration

Figure 94: Filling Configuration Screen

The following settings are used to configure Filling. Default values are shown in **bold**.

In Setup > Application	Parameter	Setting
Select Application	Manual Target - Filling	Enabled, **Disabled**
App Screen View	Refer to [App Screen View Configuration ▶ Page 12]	

In Setup > Application	Parameter	Setting
Manual Filling	Tolerance Type	**Target Deviation**, Percentage
	Over Color	Blue, Cyan, Dark gray, Gray, Green, Orange, Red, Yellow
	OK Color	
	Under Color	Default values are: Under - **Red**, OK - **Green**, Over - **Red**
	Data Source	**Net Weight**, Gross Weight
Memory > Tare Table (Optional)	ID	[Assigned automatically]
	Name	Alphanumeric data entry
	Description	Alphanumeric data entry
	Tare Value	Numeric data entry
	Unit	g, **kg**, t, lb, oz, lb-oz
Memory > Material table	Manual Filling	Enabled, **Disabled**
	Target Value	Numeric data entry
	Unit	g, **kg**, t, lb, oz, lb-oz
	- Tolerance / + Tolerance	Numeric data entry
	- Tolerance / + Tolerance (Percentage)	Percent of target or absolute value, depending on Tolerance Type selected in **Manual Filling** configuration screen.

1.4.1.2.2 Manual Target Weighing - Filling: Operating Procedure

This procedure assumes the IND700 is in App Screen View and the application is configured appropriately as described in [Configuration: Filling ▸ Page 57].

1. Touch the Material Table softkey 📖. From the list of materials, make a selection and confirm by touching the check mark.
2. Optionally, if the Material Table record does not specify a value, take a Tare 🔳, or load one from the Tare Table 🔳.
3. The Application Screen view will display, configured for simple filling, showing all the data specified in setup at [Application > App Screen View ▸ Page 12]. The weight display will be in Net mode, and the defined Tare value loaded.
4. Begin to fill the container and observe the bargraph as it approaches the OK tolerance zone.
5. Once the bargraph indicates that the Net weight is in the OK zone, remove the container from the scale, place a new container, and start the process again.

Refer to [Counting ▸ Page 34] and Totalization for details on how those Applications change the procedure when they are combined with Manual Filling.

1.4.1.3 Manual Target Weighing - Over/Under

In Over/Under weighing, scale weight is compared to a set of parameters which define zones of 'good' and 'bad' values.

In **3-zone** Over/Under target weighing, scale weight can be below, within, or above the Target zone. The 'good' zone defines the acceptable difference between scale weight and target weight.

In **5-zone** Over/Under target weighing, the acceptable weight range is divided into Low, Target, and High zones. The Under and Over zones define unacceptable weights.

Refer to [Tolerance Zones ▸ Page 49] for a description of the types of zone.

1.4.1.3.1 Manual Target Weighing - Over/Under: Configuration
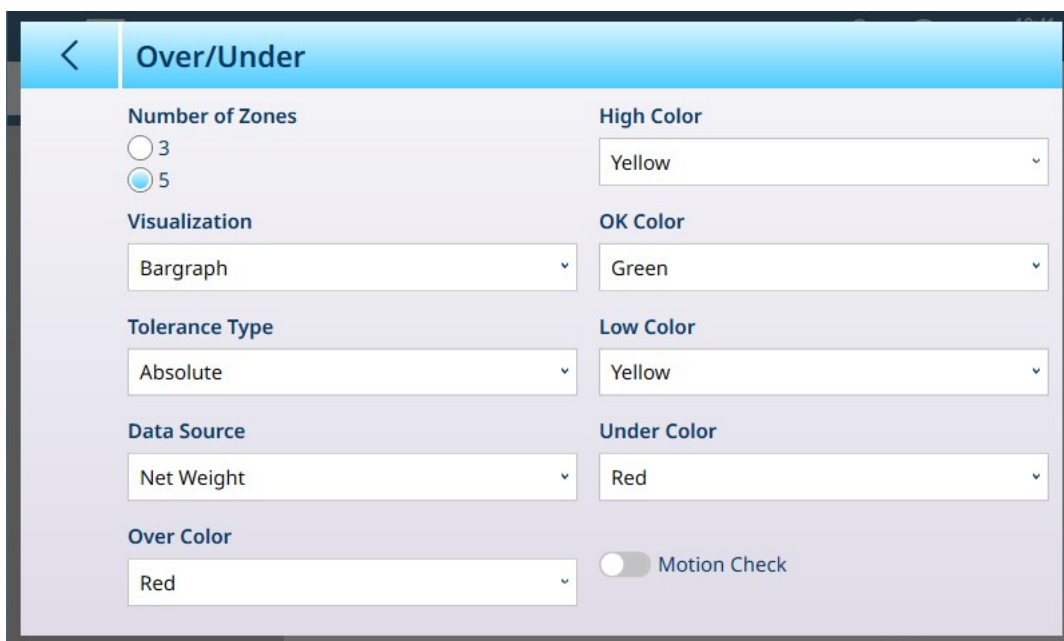
Figure 95: Target Weighing - Over/Under Configuration Screen, 5-Zones, Bargraph Visualization

Figure 96: Over/Under Configuration Screen, 3-Zones, ColorWeigh Visualization

The following settings are used to configure Over/Under weighing. Default values are shown in **bold**.

Over/Under Configuration

In Setup > Application	Parameter	Setting
Select Application	Manual Target selected	Over/Under enabled
App Screen View	Refer to App Screen View Configuration	

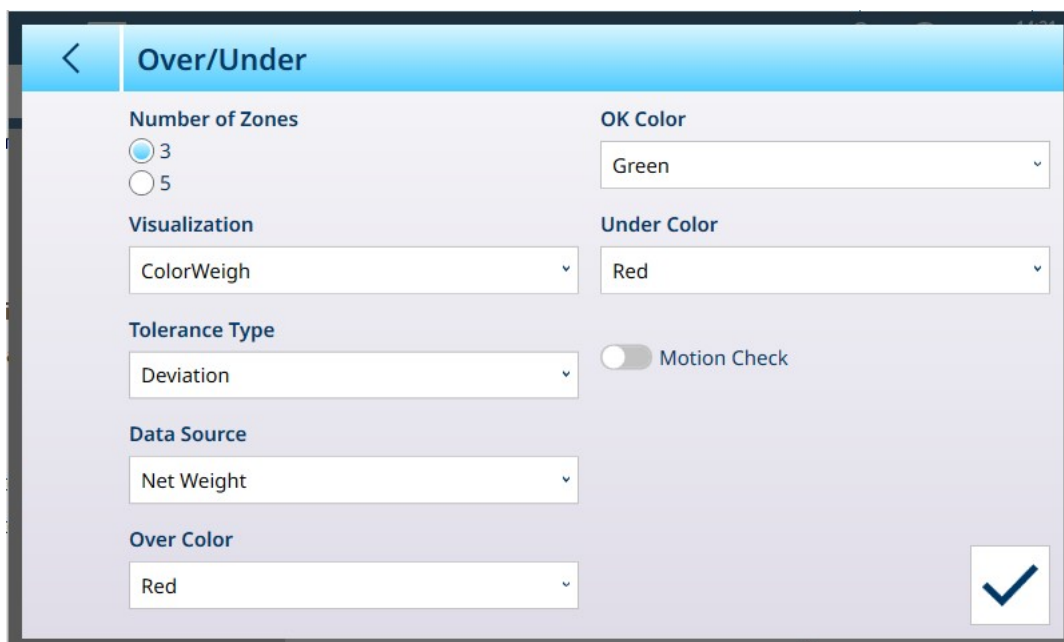| In Setup > Application	Parameter	Setting
Over/Under	Number of Zones	**3**, 5
	Visualization	**Bargraph**, ColorWeigh
	Tolerance Type	**Deviation**, Percentage, Absolute
	Data Source	**Net Weight**, Gross Weight
	Over Color	Blue, Cyan, Dark gray, Gray, Green, Orange, Red, Yellow
	High Color (if Number of Zones = 5)	Default values are: Over - **Red**, High - **Yellow**, OK - **Green**, Low - **Yellow**, Under - **Red**
	OK Color	
	Low Color (if Number of Zones = 5)	
	Under Color	
	Motion Check	Enabled, **Disabled**
Memory > Tare Table [Optional]	ID	[Assigned automatically]
	Name	Alphanumeric data entry
	Description	Alphanumeric data entry
	Tare Value	Numeric data entry
	Unit	Numeric data entry
Memory > Material Table	ID	[Assigned automatically]
	Over/Under	Numeric data entry
	Unit	Numeric data entry
If Over/Under > Tolerance Type = Deviation	-Tolerance (Under)	Numeric data entry
	-Tolerance (Low)	
	+Tolerance (High)	
	+Tolerance (Over)	
If Over/Under > Tolerance Type = Percentage	-Tolerance (% Under)	
	-Tolerance (% Low)	
	+Tolerance (% High)	
	+Tolerance (% Over)	
If Over/Under > Tolerance type = Absolute	Limit (Under)	
	Limit (Low)	
	Limit (High)	
	Limit (Over)	

1.4.1.3.2 Manual Target Weighing - Over/Under: Operating Procedure

This procedure assumes that the terminal is in **App Screen View**, is correctly configured for over/under weighing and that the necessary containers for filling are available.

1. Place a container on the scale.
2. Touch the Material Table softkey ![Material Table]. From the list, select and confirm a material record.
3. The Application Screen view will show the Material Table record fields, depending on the settings chosen in [App Screen View Configuration ▶ Page 12].
4. Optionally, if the Material Table record does not specify a tare value, take a tare ![icon] or load one from the Tare Table ![icon].
5. Begin to fill the container and observe the bargraph or ColorWeigh display as the weight approaches the OK zone.
6. Once the Visualization indicates that the Net weight is in the OK zone, remove the container, place a new one on the scale, and start the process again.

Figure 97: Over/Under Weighing Screen, ColorWeigh Visualization Showing Low Indication

Refer to [Counting ▸ Page 34] and Totalization for details on how those Applications change the procedure when they are combined with Over/Under weighing.

1.4.2 Manual Target Weighing: Start Threshold

The IND700 uses the current weight target to calculate a **Start Threshold** value. Below this value the zone visualization (either ColorWeigh or Bargraph) shows no indication.
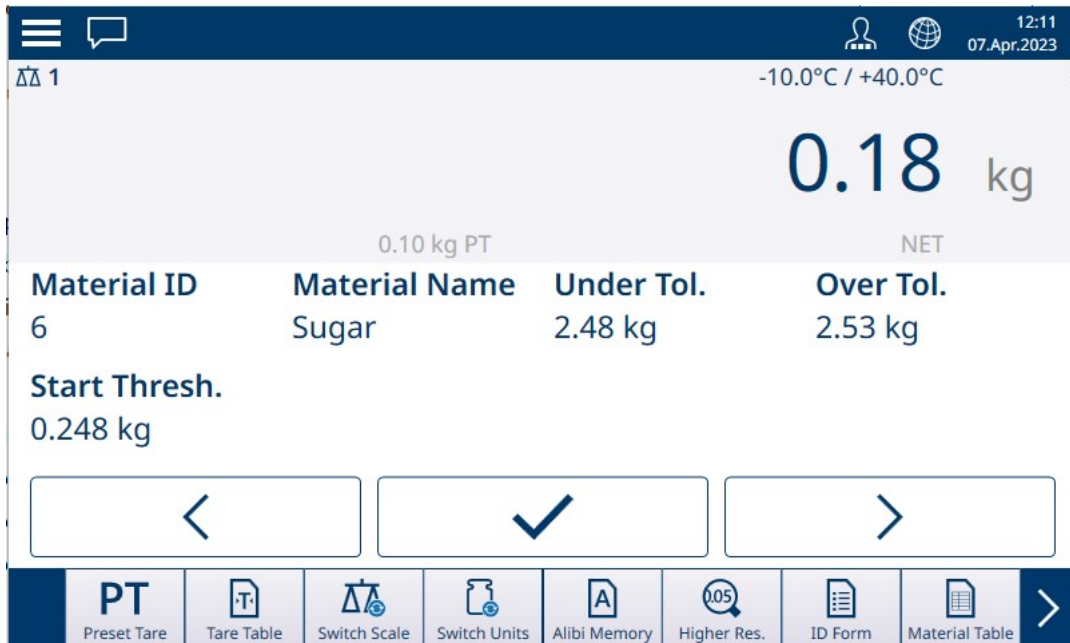
Figure 98: 3-Zone Over/Under, Weight Below Threshold Value

Once the threshold weight value is exceeded, the zone indicator begins to display, allowing the operator to track the weight on scale in comparison to the target value or target zone:
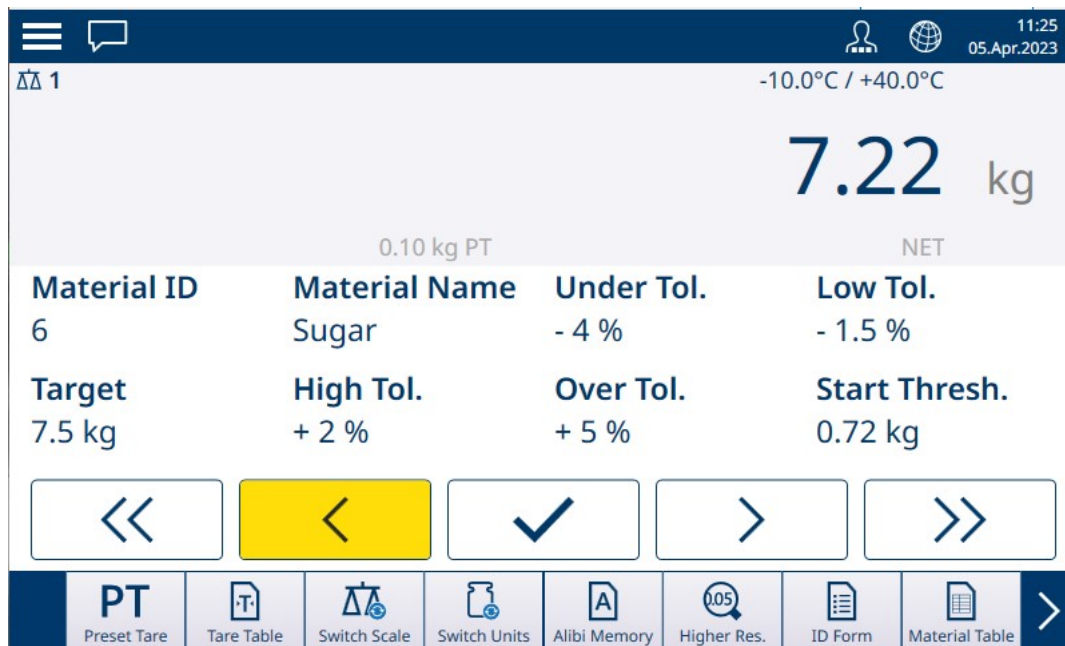
Figure 99: 5-Zone Over/Under, Above Threshold Value, Colorweigh
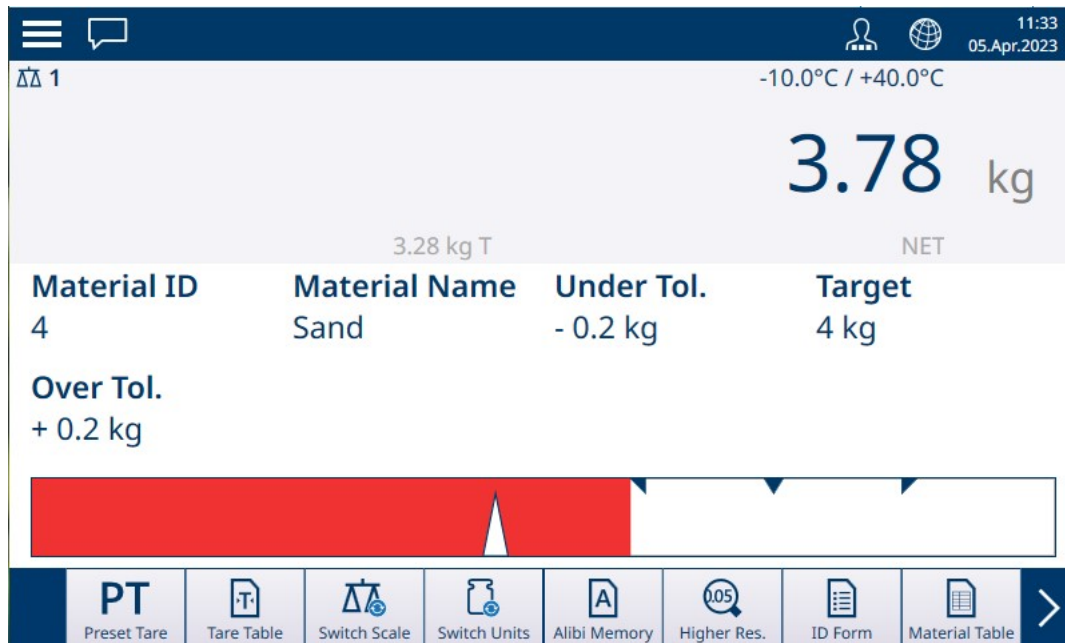
Figure 100: Filling, Above Threshold Value, Bargraph

See also

1.4.2.1 Manual Target Weighing - Classification

The Classification application is used to assort items into weight classes. From 2 to 8 classes can be configured, arranged in ascending order of weight zone. This application is useful when similar items of various sizes must be sorted into separate bins according to size. The terminal's display can show a colored background to indicate class, or can display color in a box representing the class of item currently weighed.

Figure 101: Target Weighing - Classification Example

1.4.2.1.1 Manual Target Weighing with Classification: Configuration
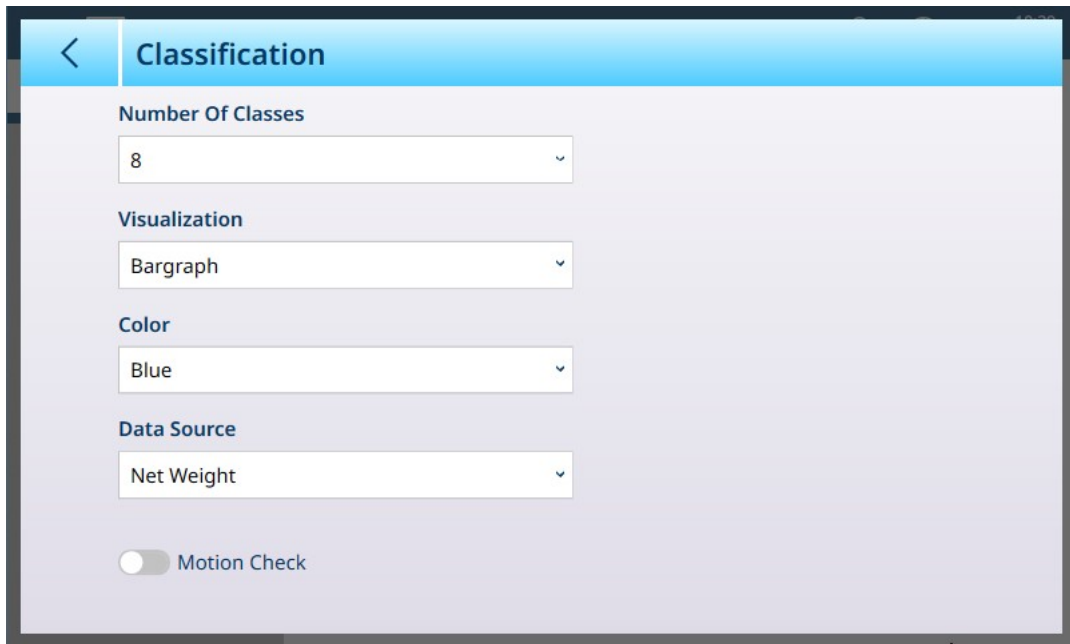
Figure 102: Classification Configuration Screen

The following settings are used to configure Classification. Default values are shown in **bold**.

In Setup > Application	Parameter	Setting
Select Application	Manual Target	Enabled, **Disabled**
	Classification	Enabled, **Disabled**
App Screen View	Refer to [App Screen View Configuration ▶ Page 12]	

In Setup > Application	Parameter	Setting
Classification	Number of Classes	Dropdown list: 2 - 8, default **5**
	Visualization	**Bargraph**, ColorWeigh
	If Bargraph: Color	**Blue**, Cyan, Dark gray, Gray, **Green**, Orange, Red, Yellow
	If ColorWeigh: Class 1 Color … Class n Color	For each class: Blue, Cyan, Dark gray, Gray, Green, Orange, Red, Yellow
		Default values: 1 - **Yellow**, 2 - **Cyan**, 3 - **Orange**, 4 - **Gray**, 5 - **Green**, 6 - **Orange**, 7 - **Red**, 8 - **Yellow**
	Data Source	**Net Weight**, Gross Weight
	Motion check	**Enabled**, **Disabled**
Memory > Material Table Record	Classification Active	Enabled, **Disabled**
	Unit	**g**, kg, t, lb, oz, lb-oz
	Lower Limit 1 - Lower Limit 8, Upper Limit 8	Numeric data entry. Number of fields determined by Number of Classes selected in **Classification Configuration** screen.

Figure 103: Material Table - Classification Configurations, First Page

Figure 104: Material Table - Classification Configurations, Second page

1.4.2.1.2 Manual Target Weighing with Classification: Operating Procedure

Figure 105: Classification Application View -- ColorWeigh Indicating Class 3

This procedure assumes that the terminal is correctly configured for classification and that the required number of output containers is available – one per class, or whatever the process requires.

1. Optionally, if the Material Table record does not specify a value, take a tare ⬛ or load one from the Tare Table ⬛.
2. Add an item to the scale.
3. Note the class into which the item's weight places it -- indicated either by the zone boxes, or by the ColorWeigh display.
4. Remove the item from the scale and place it in the appropriate class container.
5. Repeat the process until all items are classified.

1.4.2.2 Manual Target Weighing - Filling

Filling is a simple 3-zone Application in which material is added to a container until the weight on the scale falls within the acceptable tolerance zone. Zones are represented by a bargraph, within which both position on the graph and color of the bar indicate whether the current weight is **Under** tolerance, in the **OK** zone, or **Over** tolerance.

In the examples shown here, the target weight is 4 kg, with a tolerance band of -0.2 kg (3.8 kg) to +0.2 kg (4.2 kg).
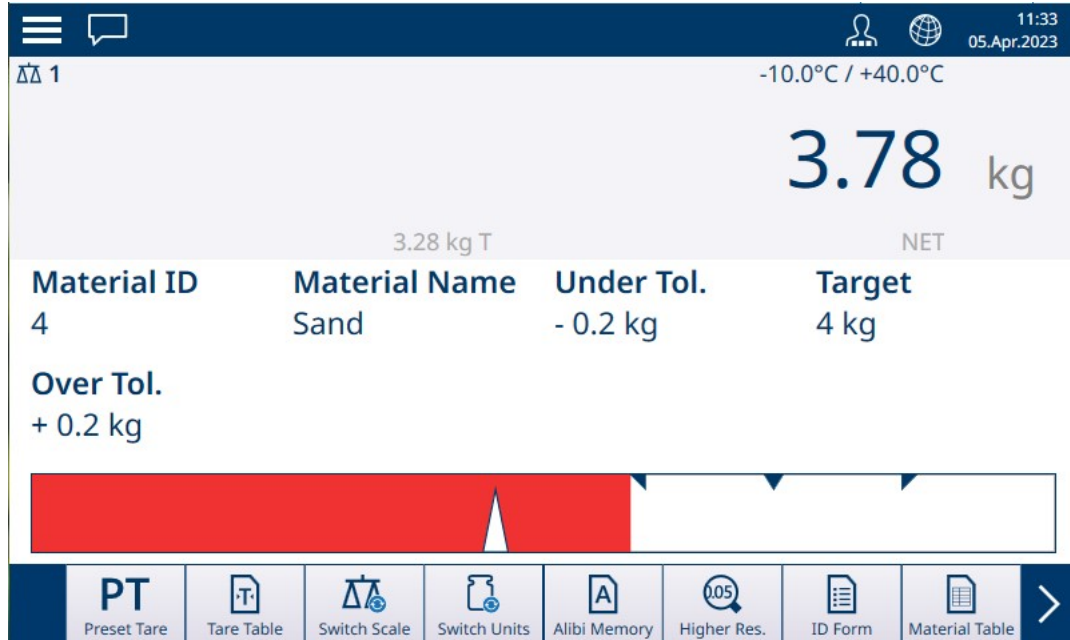
Figure 106: Filling Application View Screen - Under Tolerance
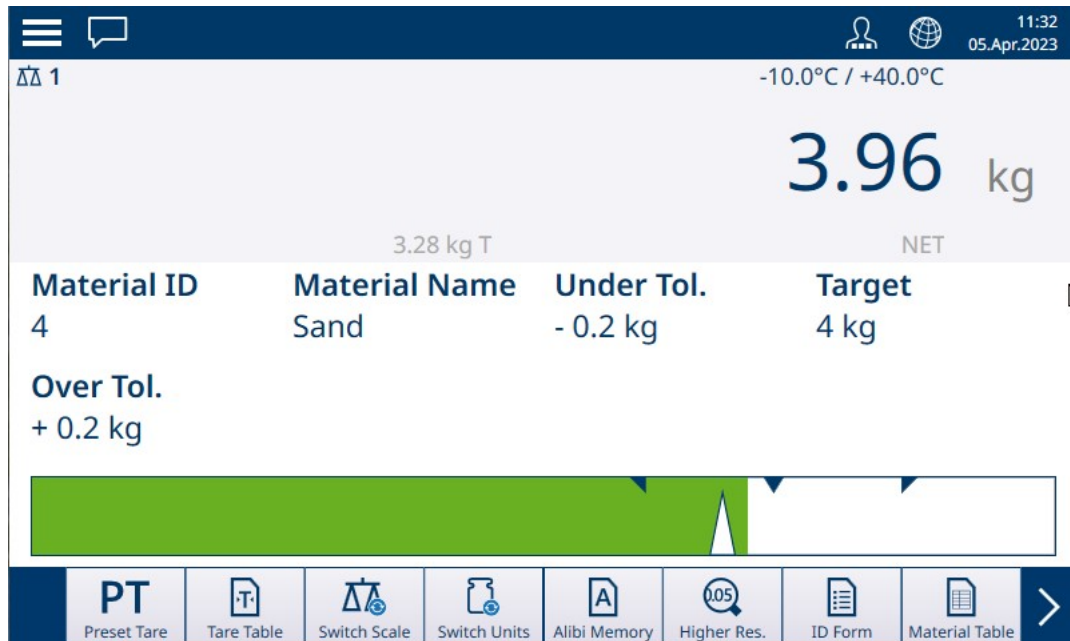
Figure 107: Filling Application View Screen - Within Tolerance
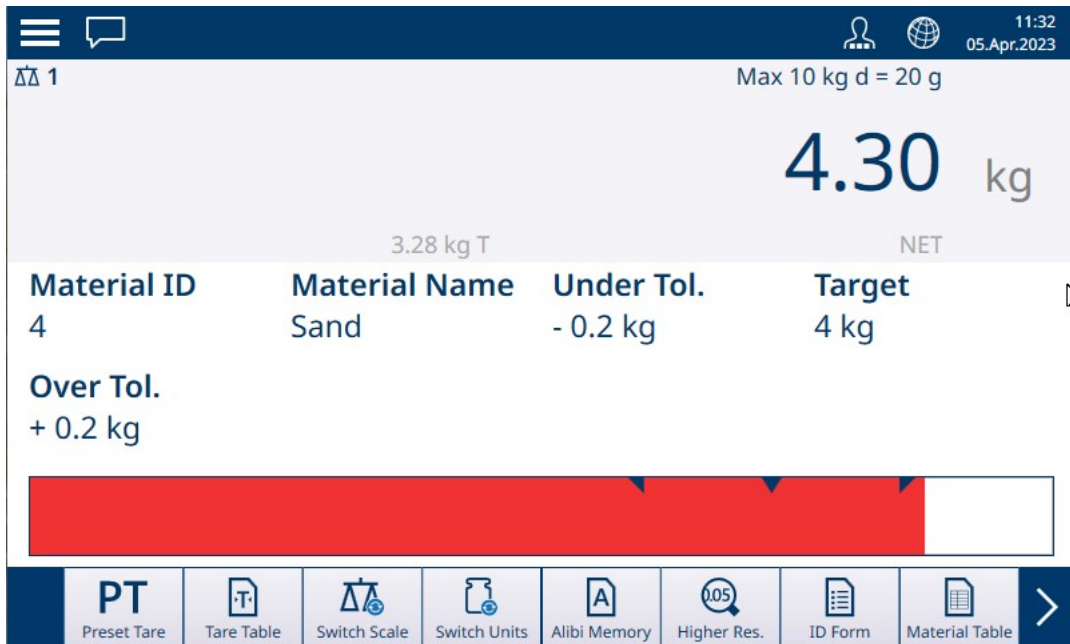
Figure 108: Filling Application view Screen - Over Tolerance

Note the triangle representing the Vernier indicator. This indicator changes to solid blue when the target weight is achieved.

Figure 109: Vernier Indicator Showing Target Matched

1.4.2.2.1 Manual Target Weighing - Filling: Configuration

Figure 110: Filling Configuration Screen

The following settings are used to configure Filling. Default values are shown in **bold**.

In Setup > Application	Parameter	Setting
Select Application	Manual Target - Filling	Enabled, **Disabled**
App Screen View	Refer to [App Screen View Configuration ▸ Page 12]	

In Setup > Application	Parameter	Setting
Manual Filling	Tolerance Type	**Target Deviation**, Percentage
	Over Color	Blue, Cyan, Dark gray, Gray, Green, Orange, Red, Yellow
	OK Color	
	Under Color	Default values are: Under - **Red**, OK - **Green**, Over - **Red**
	Data Source	**Net Weight**, Gross Weight
Memory > Tare Table (Optional)	ID	[Assigned automatically]
	Name	Alphanumeric data entry
	Description	Alphanumeric data entry
	Tare Value	Numeric data entry
	Unit	g, **kg**, t, lb, oz, lb-oz
Memory > Material table	Manual Filling	Enabled, **Disabled**
	Target Value	Numeric data entry
	Unit	g, **kg**, t, lb, oz, lb-oz
	- Tolerance / + Tolerance	Numeric data entry
	- Tolerance / + Tolerance (Percentage)	Percent of target or absolute value, depending on Tolerance Type selected in **Manual Filling** configuration screen.

1.4.2.2.2 Manual Target Weighing - Filling: Operating Procedure

This procedure assumes the IND700 is in App Screen View and the application is configured appropriately as described in [Configuration: Filling ▶ Page 67].

1. Touch the Material Table softkey 📖. From the list of materials, make a confirmation and confirm by touching the check mark.
2. Optionally, if the Material Table record does not specify a value, take a Tare 🔳, or load one from the Tare Table 🔳.
3. The Application Screen view will display, configured for simple filling, showing all the data specified in setup at [Application > App Screen View ▶ Page 12]. The weight display will be in Net mode, and the defined Tare value loaded.
4. Begin to fill the container and observe the bargraph as it approaches the OK tolerance zone.
5. Once the bargraph indicates that the Net weight is in the OK zone, remove the container from the scale, place a new container, and start the process again.

Refer to [Counting ▶ Page 34] and Totalization for details on how those Applications change the procedure when they are combined with Manual Filling.

1.4.2.3 Manual Target Weighing - Over/Under

In Over/Under weighing, scale weight is compared to a set of parameters which define zones of 'good' and 'bad' values.

In **3-zone** Over/Under target weighing, scale weight can be below, within, or above the Target zone. The 'good' zone defines the acceptable difference between scale weight and target weight.

In **5-zone** Over/Under target weighing, the acceptable weight range is divided into Low, Target, and High zones. The Under and Over zones define unacceptable weights.

Refer to [Tolerance Zones ▶ Page 61] for a description of the types of zone.

1.4.2.3.1 Manual Target Weighing - Over/Under: Configuration
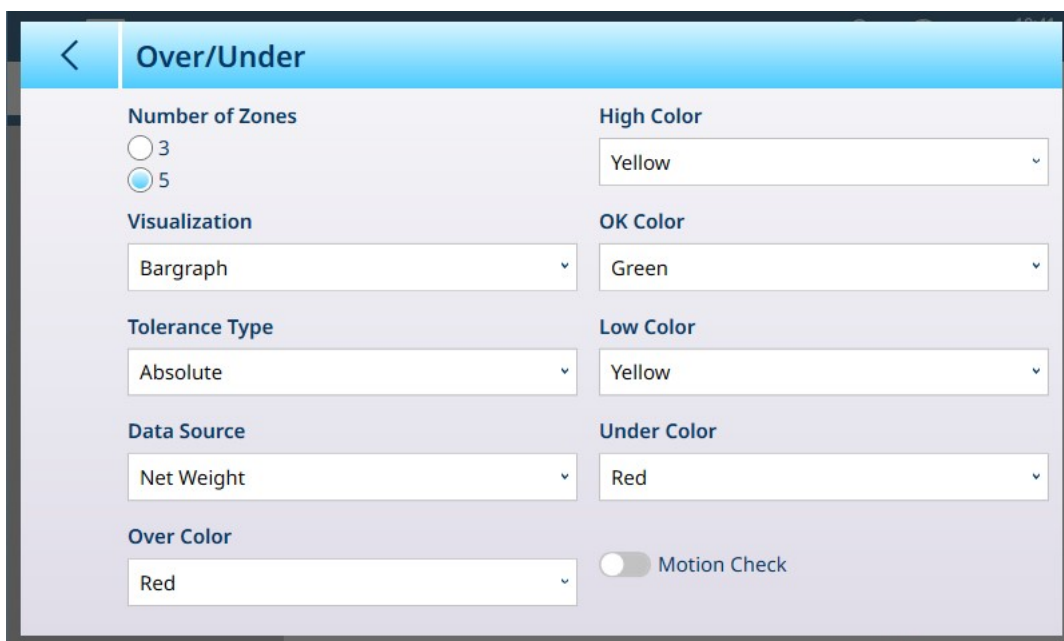
Figure 111: Target Weighing - Over/Under Configuration Screen, 5-Zones, Bargraph Visualization

Figure 112: Over/Under Configuration Screen, 3-Zones, ColorWeigh Visualization

The following settings are used to configure Over/Under weighing. Default values are shown in **bold**.

Over/Under Configuration

In Setup > Application	Parameter	Setting
Select Application	Manual Target selected	Over/Under enabled
App Screen View	Refer to App Screen View Configuration	

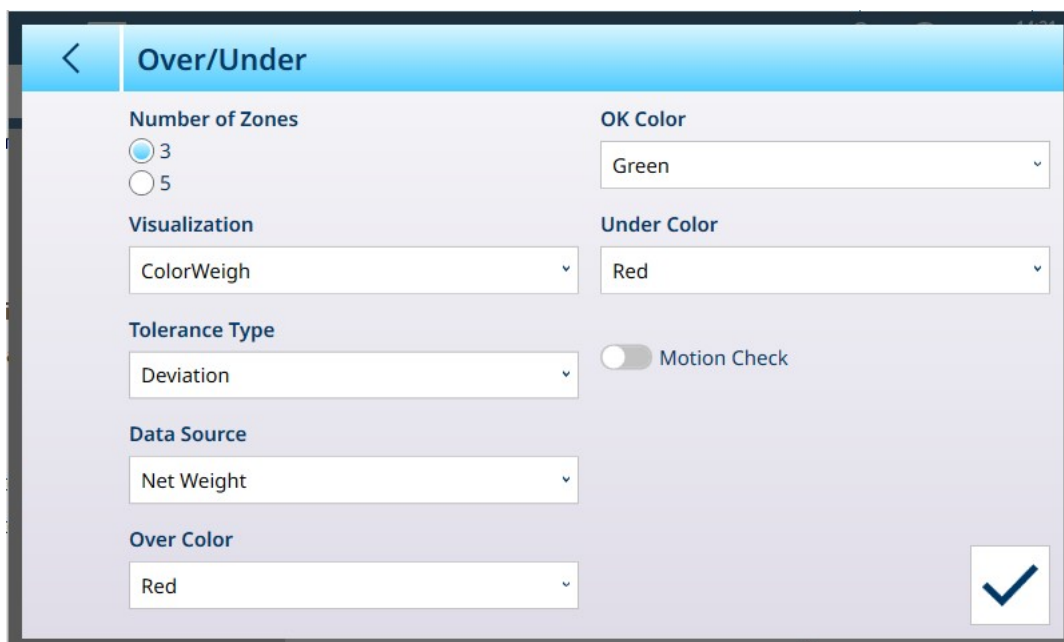| In Setup > Application	Parameter	Setting
Over/Under	Number of Zones	**3**, 5
	Visualization	**Bargraph**, ColorWeigh
	Tolerance Type	**Deviation**, Percentage, Absolute
	Data Source	**Net Weight**, Gross Weight
	Over Color	Blue, Cyan, Dark gray, Gray, Green, Orange, Red, Yellow
	High Color (if Number of Zones = 5)	Default values are: Over - **Red**, High - **Yellow**, OK - **Green**, Low - **Yellow**, Under - **Red**
	OK Color	
	Low Color (if Number of Zones = 5)	
	Under Color	
	Motion Check	Enabled, **Disabled**
Memory > Tare Table [Optional]	ID	[Assigned automatically]
	Name	Alphanumeric data entry
	Description	Alphanumeric data entry
	Tare Value	Numeric data entry
	Unit	Numeric data entry
Memory > Material Table	ID	[Assigned automatically]
	Over/Under	Numeric data entry
	Unit	Numeric data entry
If Over/Under > Tolerance Type = Deviation	-Tolerance (Under)	Numeric data entry
	-Tolerance (Low)	
	+Tolerance (High)	
	+Tolerance (Over)	
If Over/Under > Tolerance Type = Percentage	-Tolerance (% Under)	
	-Tolerance (% Low)	
	+Tolerance (% High)	
	+Tolerance (% Over)	
If Over/Under > Tolerance type = Absolute	Limit (Under)	
	Limit (Low)	
	Limit (High)	
	Limit (Over)	

1.4.2.3.2 Manual Target Weighing - Over/Under: Operating Procedure

This procedure assumes that the terminal is in **App Screen View**, is correctly configured for over/under weighing and that the necessary containers for filling are available.

1. Place a container on the scale.
2. Touch the Material Table softkey ![Material Table]. From the list, select and confirm a material record.
3. The Application Screen view will show the Material Table record fields, depending on the settings chosen in [App Screen View Configuration ▶ Page 12].
4. Optionally, if the Material Table record does not specify a tare value, take a tare ![T] or load one from the Tare Table ![T].
5. Begin to fill the container and observe the bargraph or ColorWeigh display as the weight approaches the OK zone.
6. Once the Visualization indicates that the Net weight is in the OK zone, remove the container, place a new one on the scale, and start the process again.

Figure 113: Over/Under Weighing Screen, ColorWeigh Visualization Showing Low Indication

Refer to [Counting ▶ Page 34] and Totalization for details on how those Applications change the procedure when they are combined with Over/Under weighing.

1.4.3 Manual Target Weighing - Classification

The Classification application is used to assort items into weight classes. From 2 to 8 classes can be configured, arranged in ascending order of weight zone. This application is useful when similar items of various sizes must be sorted into separate bins according to size. The terminal's display can show a colored background to indicate Class, or can display color in a box representing the Class of item currently weighed. The example below shows the ColorWeigh visualization.
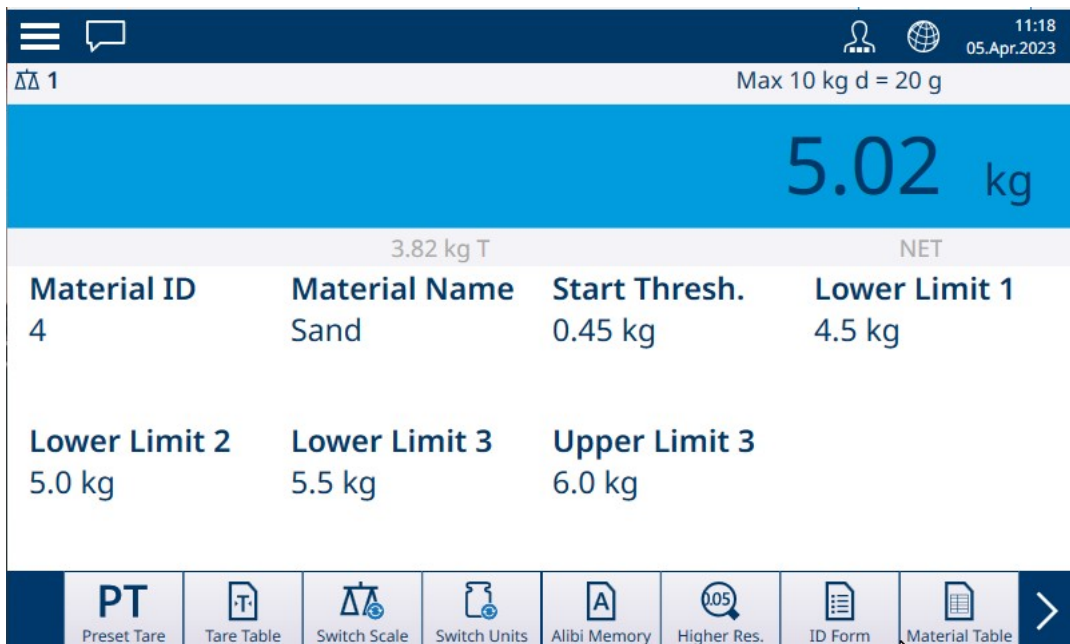
Figure 114: Target Weighing - Classification Example

1.4.3.1 Manual Target Weighing with Classification: Configuration
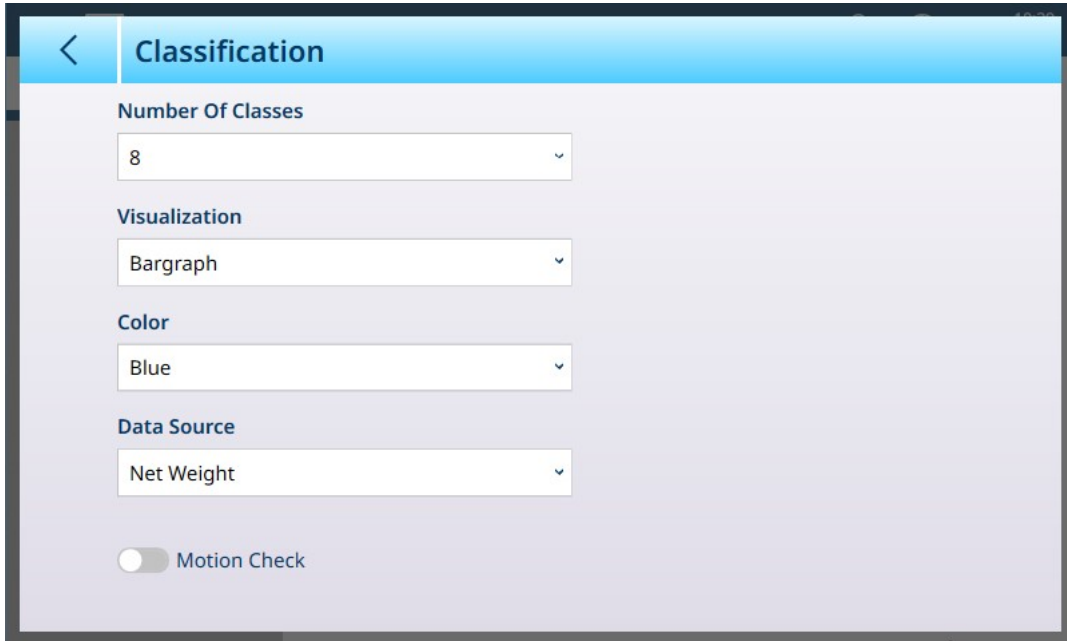
Figure 115: Classification Configuration Screen

The following settings are used to configure Classification. Default values are shown in **bold**.

In Setup > Application	Parameter	Setting
Select Application	Manual Target	Enabled, **Disabled**
	Classification	Enabled, **Disabled**
App Screen View	Refer to [App Screen View Configuration ▶ Page 12]	
Classification	Number of Classes	Dropdown list: 2 - 8, default **5**
	Visualization	**Bargraph**, ColorWeigh
	If Bargraph: Color	**Blue**, Cyan, Dark gray, Gray, **Green**, Orange, Red, Yellow
	If ColorWeigh: Class 1 Color ... Class n Color	For each class: Blue, Cyan, Dark gray, Gray, Green, Orange, Red, Yellow Default values: 1 - **Yellow**, 2 - **Cyan**, 3 - **Orange**, 4 - **Gray**, 5 - **Green**, 6 - **Orange**, 7 -**Red**, 8 - **Yellow**
	Data Source	**Net Weight**, Gross Weight
	Motion check	**Enabled**, **Disabled**
Memory > Material Table Record	Classification Active	Enabled, **Disabled**
	Unit	**g**, kg, t, lb, oz, lb-oz
	Lower Limit 1 - Lower Limit 8, Upper Limit 8	Numeric data entry. Number of fields determined by Number of Classes selected in **Classification Configuration** screen.

Figure 116: Material Table - Classification Configurations, First Page

Figure 117: Material Table - Classification Configurations, Second page

1.4.3.2 Manual Target Weighing with Classification: Operating Procedure
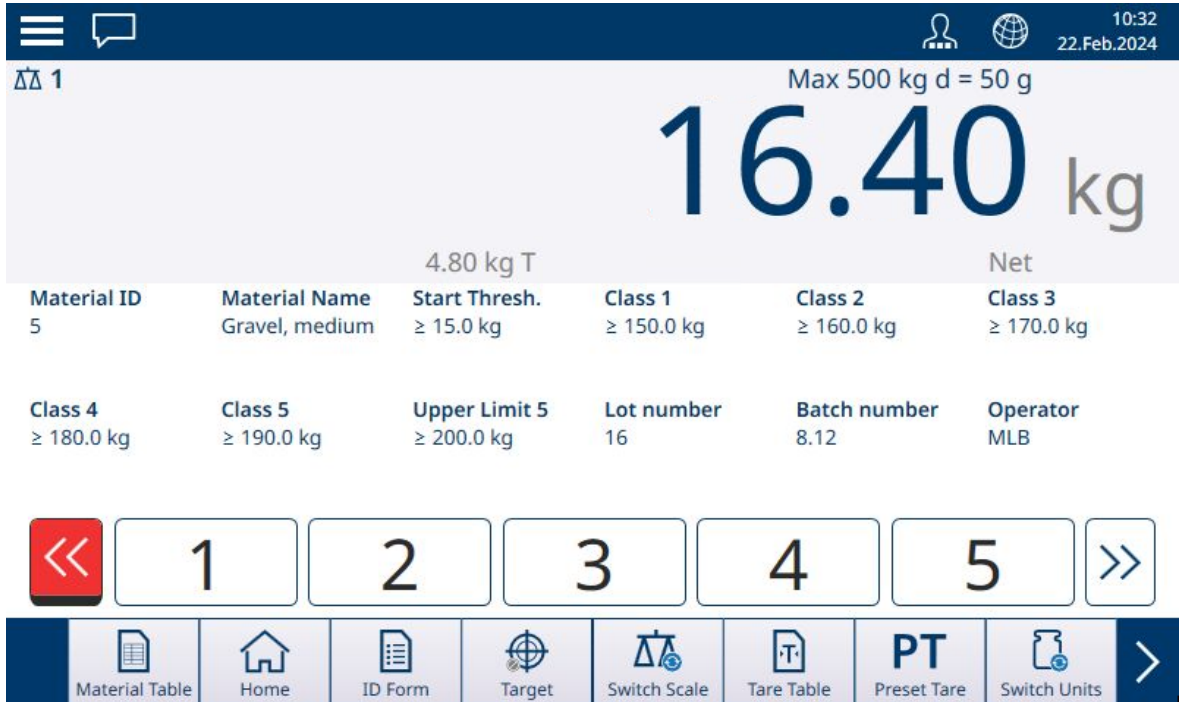
Figure 118: Classification Application View -- Calculated Threshold Met

This procedure assumes that the terminal is correctly configured for classification and that the required number of output containers is available – one per class, or whatever the process requires.

1. Optionally, if the Material Table record does not specify a value, take a tare ⚖ or load one from the Tare Table 🔳.
2. Add weight to the scale. Once the scale weight exceeds the calculated Start Threshold, the Under indicator will display in red, as shown in the image above.
3. When scale weight reaches the low limit defined for Class 1, the Class indicators will appear in blue to indicate the Class currently on the scale.
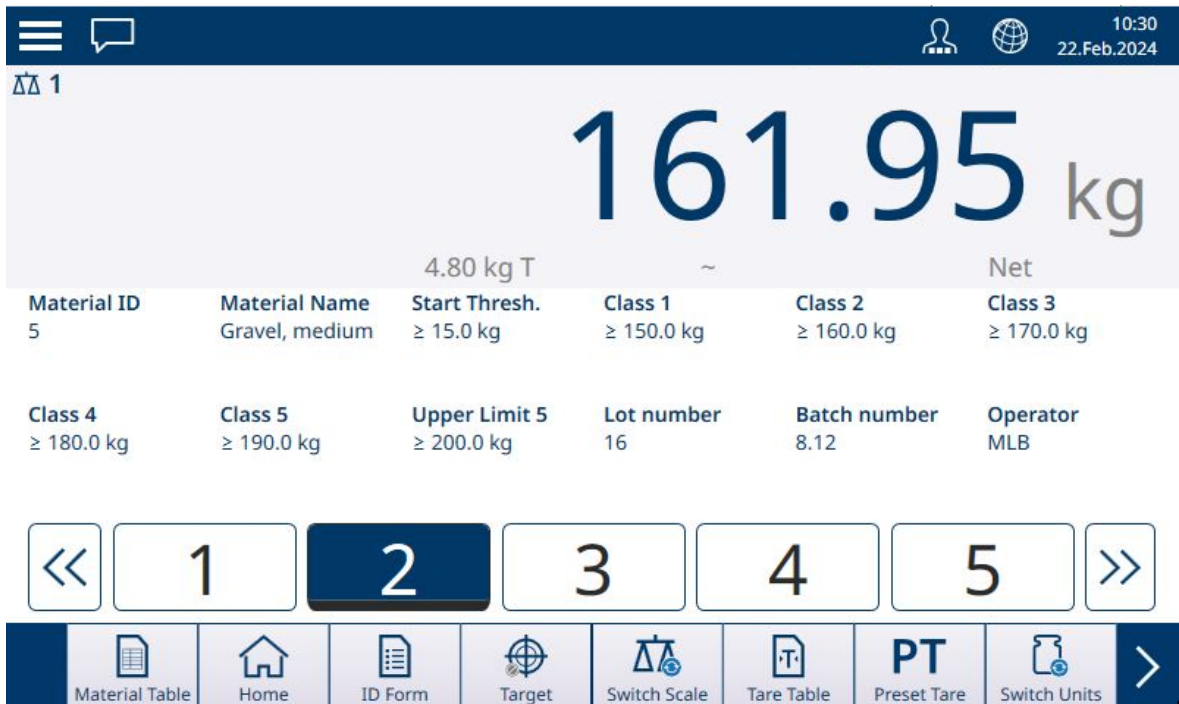
Figure 119: Classification Application View -- Class Displayed

4. Note the class into which the item's weight places it -- indicated either by the zone boxes, or by the ColorWeigh display.

Note: If scale weight exceeds the High Limit value for the highest class number, the Over indicator will display in red.
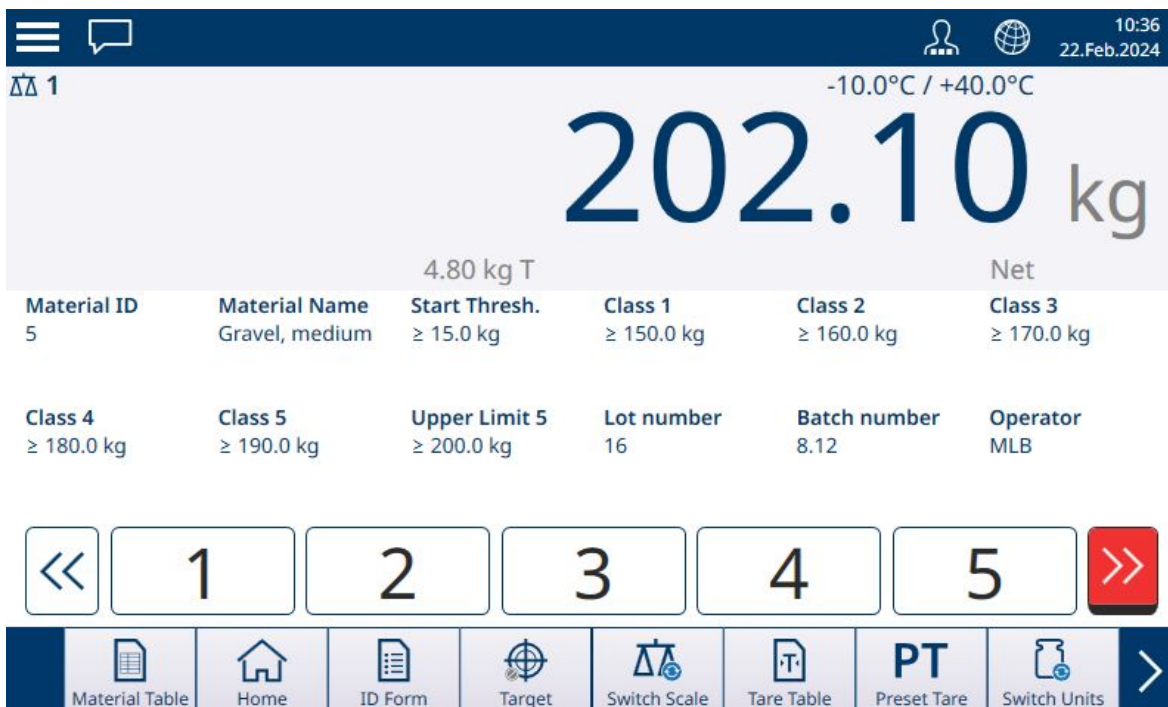
Figure 120: Classification Application View -- Highest Class Limit Exceeded

5. Remove the item from the scale and place it in the appropriate class container.
6. Repeat the process until all items are classified.

1.4.4 Manual Target Weighing - Filling

Filling is a simple 3-zone Application in which material is added to a container until the weight on the scale falls within the acceptable tolerance zone. Zones are represented by a bargraph, within which both position on the graph and color of the bar indicate whether the current weight is **Under** tolerance, in the **OK** zone, or **Over** tolerance.

See also

⊘ Manual Target Weighing: Start Threshold ▸ Page 61
⊘ Manual Target Weighing - Filling: Configuration ▸ Page 76

1.4.4.1 Manual Target Weighing - Filling: Configuration

Figure 121: Filling Configuration Screen

The following settings are used to configure Filling. Default values are shown in **bold**.

In Setup > Application	Parameter	Setting
Select Application	Manual Target - Filling	Enabled, **Disabled**
App Screen View	Refer to [App Screen View Configuration ▸ Page 12]	
Manual Filling	Tolerance Type	**Target Deviation**, Percentage
	Over Color	Blue, Cyan, Dark gray, Gray, Green, Orange, Red, Yellow
	OK Color	
	Under Color	Default values are: Under - **Red**, OK - **Green**, Over - **Red**
	Data Source	**Net Weight**, Gross Weight
Memory > Tare Table (Optional)	ID	[Assigned automatically]
	Name	Alphanumeric data entry
	Description	Alphanumeric data entry
	Tare Value	Numeric data entry
	Unit	g, **kg**, t, lb, oz, lb-oz
Memory > Material table	Manual Filling	Enabled, **Disabled**
	Target Value	Numeric data entry
	Unit	g, **kg**, t, lb, oz, lb-oz
	- Tolerance / + Tolerance	Numeric data entry
	- Tolerance / + Tolerance (Percentage)	Percent of target or absolute value, depending on Tolerance Type selected in **Manual Filling** configuration screen.

1.4.4.2 Manual Target Weighing - Filling: Operating Procedure

In the examples shown here, the target weight is 60 kg, with a tolerance band of -1.5 kg (58.5 kg displayed weight) to +3.0 kg (63.0 kg displayed weight). In the first image, filling has begun. The bar graph colors are defined in setup -- refer to [Manual Target Weighing - Filling: Configuration ▸ Page 79].

Tare operation during Filling is the same as for simple weighing and every other application. In the example shown below a preset tare is included in the Material record for a container weighing 15.0 kg.
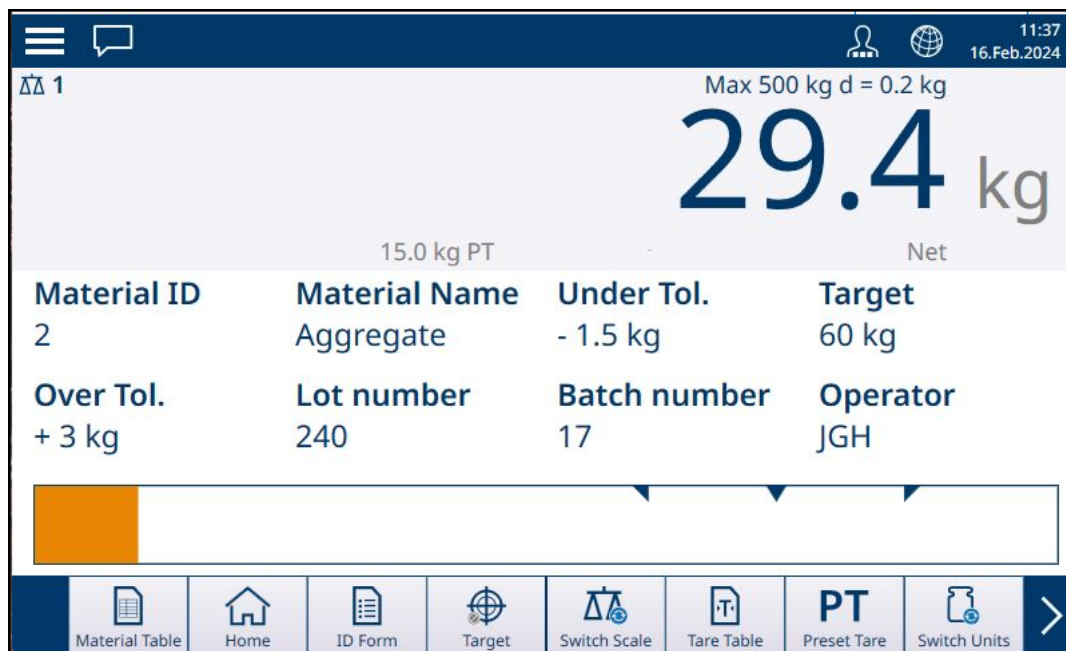
Figure 122: Filling Application View Screen - Under Tolerance, Vernier Not Displayed

In the image shown below, the filling process is approaching the tolerance band, and a Vernier display (white triangle) appears, giving a more precise indication of the relationship between scale weight and the target value.
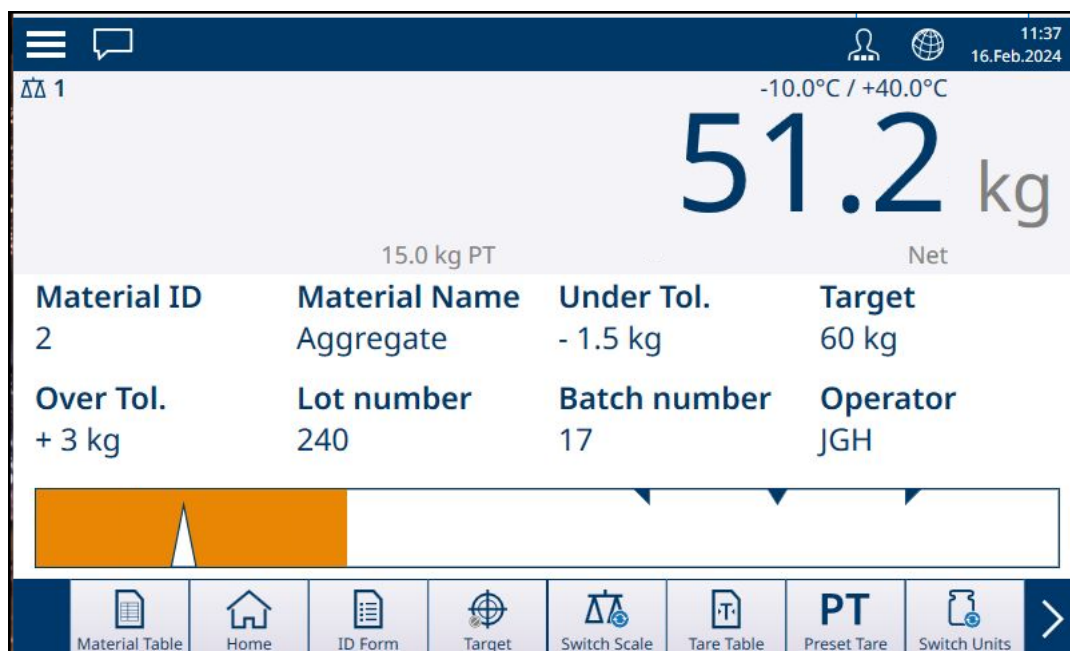
Figure 123: Filling Application View Screen - Under Tolerance, Vernier Displayed
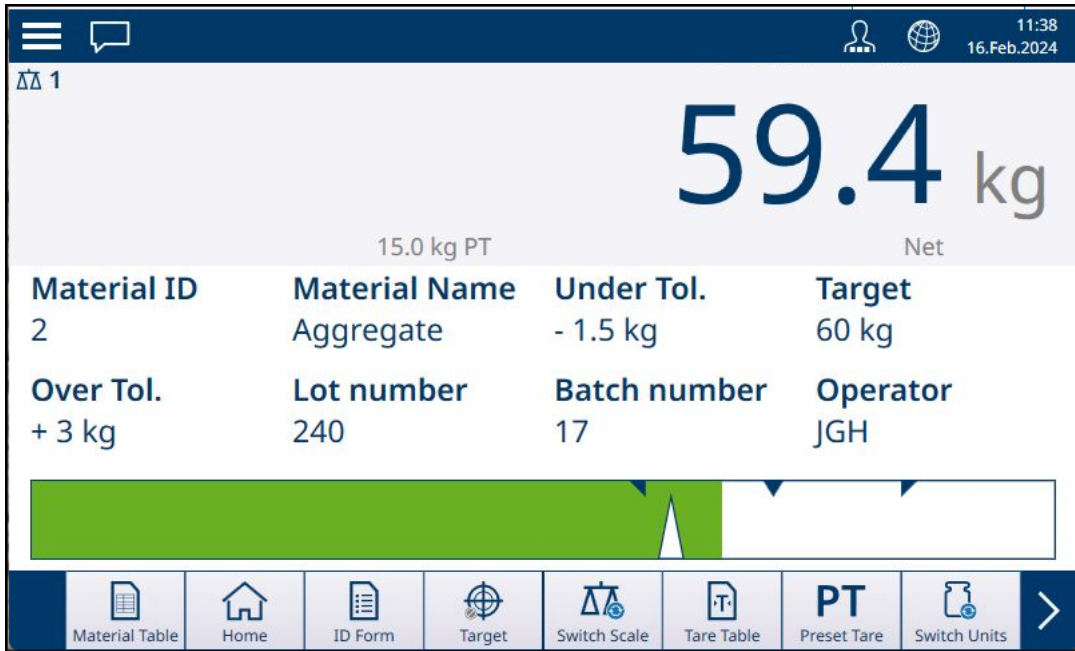
Figure 124: Filling Application View Screen - Within Tolerance

If the tolerance band is exceeded, the bar graph changes color and the Vernier disappears.
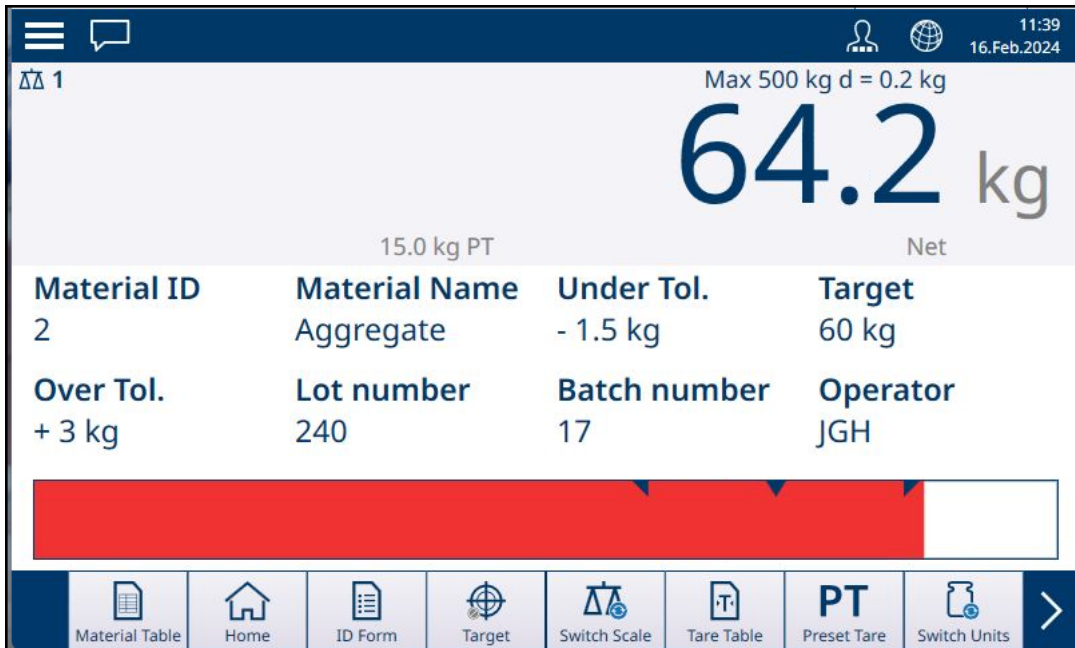
Figure 125: Filling Application view Screen - Over Tolerance

Note the triangle representing the Vernier indicator. This indicator changes to solid blue when the target weight is achieved.

Figure 126: Vernier Indicator Showing Target Matched

See also

   🔗 Manual Target Weighing: Start Threshold ▶ Page 61

Figure 127: Filling Configuration Screen

The following settings are used to configure Filling. Default values are shown in **bold**.

| In Setup > Application	Parameter	Setting
Select Application	Manual Target - Filling	Enabled, **Disabled**
App Screen View	Refer to [App Screen View Configuration ▶ Page 12]	
Manual Filling	Tolerance Type	**Target Deviation**, Percentage
	Over Color	Blue, Cyan, Dark gray, Gray, Green, Orange, Red, Yellow
	OK Color	
	Under Color	Default values are: Under - **Red**, OK - **Green**, Over - **Red**
	Data Source	**Net Weight**, Gross Weight
Memory > Tare Table (Optional)	ID	[Assigned automatically]
	Name	Alphanumeric data entry
	Description	Alphanumeric data entry
	Tare Value	Numeric data entry
	Unit	g, **kg**, t, lb, oz, lb-oz
Memory > Material table	Manual Filling	Enabled, **Disabled**
	Target Value	Numeric data entry
	Unit	g, **kg**, t, lb, oz, lb-oz
	- Tolerance / + Tolerance	Numeric data entry
	- Tolerance / + Tolerance (Percentage)	Percent of target or absolute value, depending on Tolerance Type selected in **Manual Filling** configuration screen.

1.4.4.2.2 Manual Target Weighing - Filling: Operating Procedure

This procedure assumes the IND700 is in App Screen View and the application is configured appropriately as described in [Configuration: Filling ▶ Page 79].

1. Touch the Material Table softkey 📄. From the list of materials, make a confirmation and confirm by touching the check mark.
2. Optionally, if the Material Table record does not specify a value, take a Tare 🔳, or load one from the Tare Table 🔳.

3. The Application Screen view will display, configured for simple filling, showing all the data specified in setup at [Application > App Screen View ▸ Page 12]. The weight display will be in Net mode, and the defined Tare value loaded.

4. Begin to fill the container and observe the bargraph as it approaches the OK tolerance zone.

5. Once the bargraph indicates that the Net weight is in the OK zone, remove the container from the scale, place a new container, and start the process again.

Refer to [Counting ▸ Page 34] and Totalization for details on how those Applications change the procedure when they are combined with Manual Filling.

1.4.5 Manual Target Weighing - Over/Under

In Over/Under weighing, scale weight is compared to a set of parameters which define zones of 'good' and 'bad' values.

In **3-zone** Over/Under target weighing, scale weight can be below, within, or above the Target zone. The 'good' zone defines the acceptable difference between scale weight and target weight.

In **5-zone** Over/Under target weighing, the acceptable weight range is divided into Low, Target, and High zones. The Under and Over zones define unacceptable weights.

Refer to [Manual Target Weighing: Tolerance Types ▸ Page 49] for a description of the types of zone.

See also

🔗 Manual Target Weighing ▸ Page 48

1.4.5.1 Manual Target Weighing - Over/Under: Configuration

When Over/Under is enabled in **Setup > Application > Select Application**, the **Over/Under menu** item will appear in the Application menu structure. Touch this menu to display the following two-page configuration options.

Figure 128: Target Weighing - Over/Under Configuration Screen, 5-Zones, Bargraph Visualization
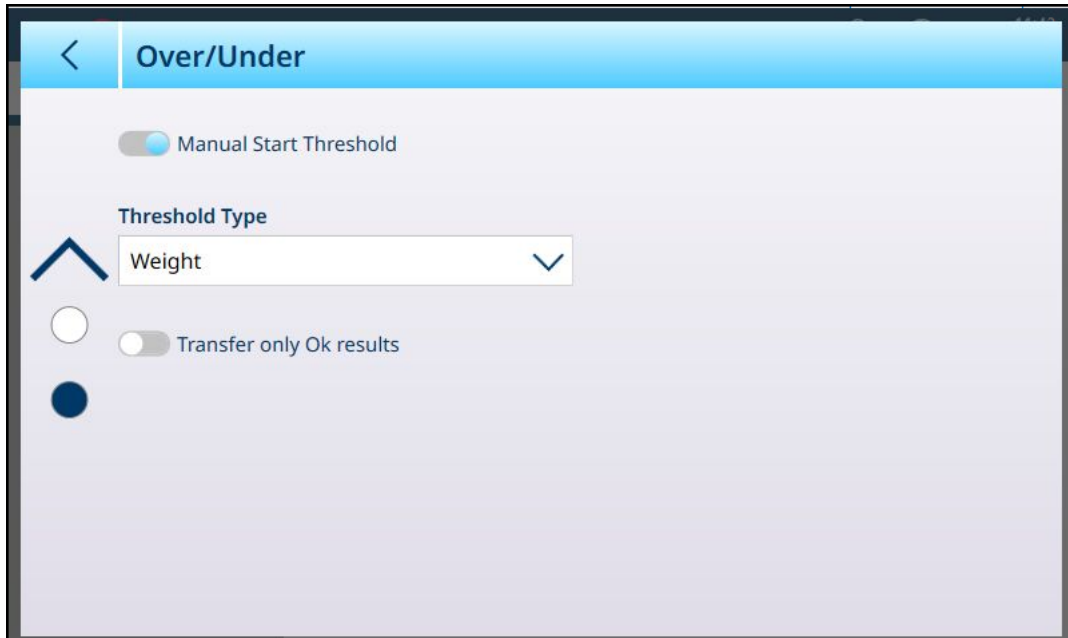
Figure 129: Over/Under Configuration Screen, 3-Zones, ColorWeigh Visualization

The following settings are used to configure Over/Under weighing. Default values are shown in **bold**.

Over/Under Configuration

In Setup > Application	Parameter	Setting
Select Application	Manual Target selected	Over/Under enabled
App Screen View	Refer to [App Screen View Configuration ▸ Page 12]	
Over/Under	Number of Zones	**3**, 5
	Visualization	**Bargraph**, ColorWeigh
	Tolerance Type	**Deviation**, Percentage, Absolute
	Data Source	**Net Weight**, Gross Weight
	Over Color	Blue, Cyan, Dark gray, Gray, Green, Orange, Red, Yellow
	High Color (if Number of Zones = 5)	Default values are: Over - **Red**, High - **Yellow**, OK - **Green**, Low - **Yellow**, Under - **Red**
	OK Color	
	Low Color (if Number of Zones = 5)	
	Under Color	
	Motion Check	Enabled, **Disabled** **If Enabled, the transaction will not be transferred if the terminal detects scale motion, even if the detected weight is within the tolerance band.**
	Transfer Only OK Results	Enabled, **Disabled** If Enabled, the transaction will not be transferred unless the terminal detects a scale weight within the tolerance band.
Memory > Tare Table [Optional]	ID	[Assigned automatically]
	Name	Alphanumeric data entry
	Description	Alphanumeric data entry
	Tare Value	Numeric data entry
	Unit	Numeric data entry
Memory > Material Table	ID	[Assigned automatically]
	Over/Under	Numeric data entry
	Unit	Numeric data entry

In Setup > Application	Parameter	Setting
If Over/Under > Tolerance Type = Deviation	-Tolerance (Under)	Numeric data entry
	-Tolerance (Low)	These values define the tolerance band/s within which the transaction result is considered acceptable.
	+Tolerance (High)	
	+Tolerance (Over)	
If Over/Under > Tolerance Type = Percentage	-Tolerance (% Under)	
	-Tolerance (% Low)	
	+Tolerance (% High)	
	+Tolerance (% Over)	
If Over/Under > Tolerance type = Absolute	Limit (Under)	
	Limit (Low)	
	Limit (High)	
	Limit (Over)	

1.4.5.2 Manual Target Weighing - Over/Under: Operating Procedure

This procedure assumes that the terminal is in **App Screen View**, is correctly configured for over/under weighing and that the necessary containers for filling are available.

1. Place a container on the scale.
2. Touch the Material Table softkey 📄. From the list, select and confirm a material record.
3. The Application Screen view will show the Material Table record fields, depending on the settings chosen in [App Screen View Configuration ▶ Page 12].
4. Optionally, if the Material Table record does not specify a tare value, take a tare 🔲 or load one from the Tare Table 🔲.
5. Begin to fill the container and observe the bargraph or ColorWeigh display as the weight approaches the OK zone.
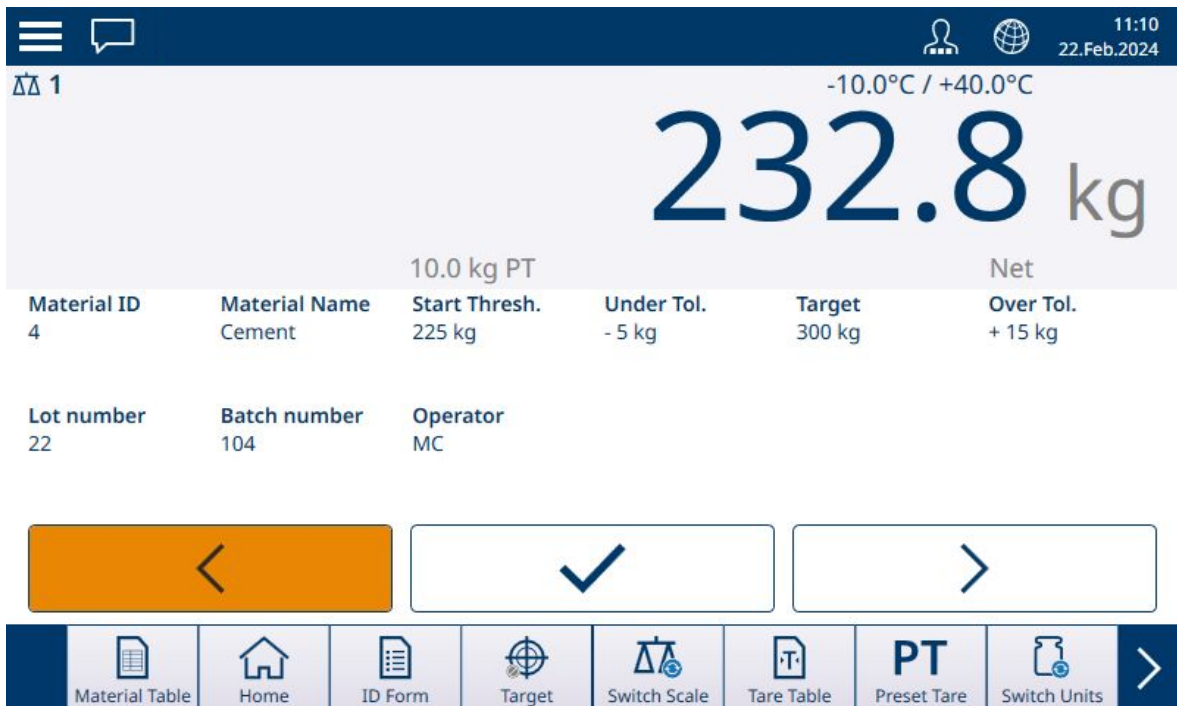

Figure 130: Over/Under, Bargraph Visualization, Under Tolerance

6. Once the Visualization indicates that the Net weight is in the OK zone, remove the container, place a new one on the scale, and start the process again.
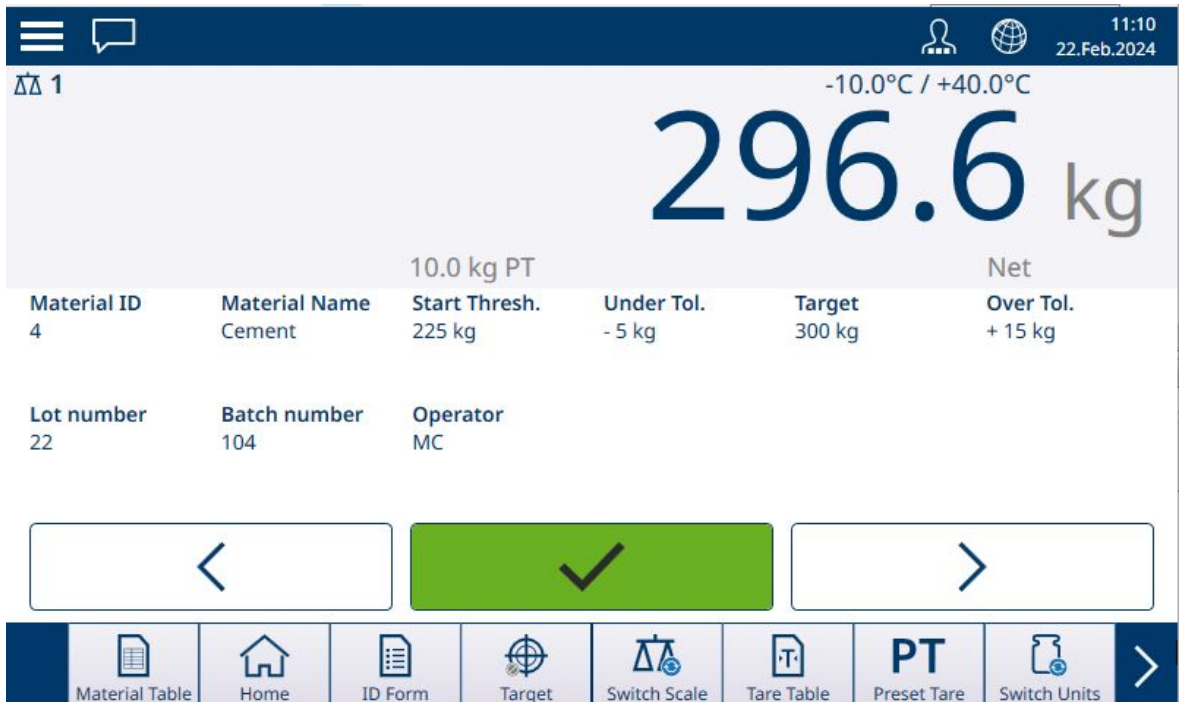
Figure 131: Over/Under Weighing Screen, ColorWeigh Visualization Showing Low Indication

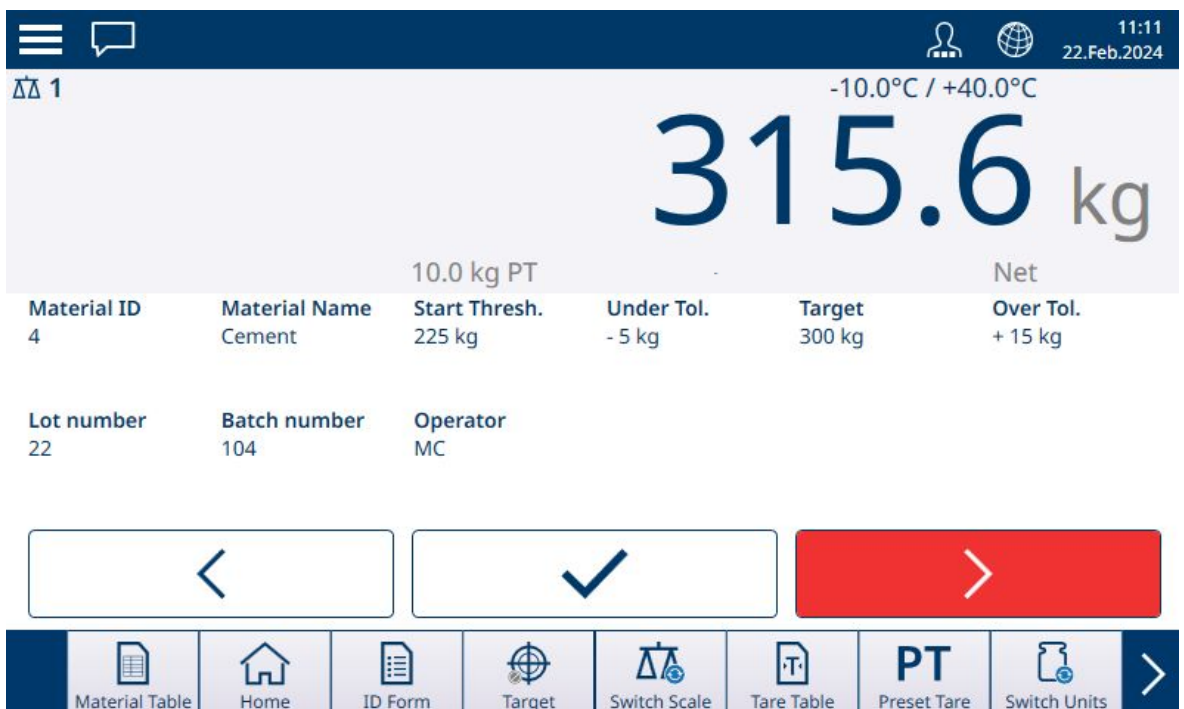If the Tolerance band is exceeded, the Over indicator will be colored.

Figure 132: Over/Under, Bargraph Visualization, Over Tolerance

Refer to [Counting ▸ Page 34] and [Totalization ▸ Page 43] for details on how those Applications change the procedure when they are combined with Over/Under weighing.

1.5 Comparators

The twenty Comparators in IND700 are simple, non-latching setpoints used to compare the active weight value or shared data variable either with an absolute target value or to a defined weight range. The source for the comparison can be Application related or Weight related.

Comparators are controlled either by coincidence (either below or above an absolute target value) or by comparison with a range. The **Operator** setting within Comparator setup determines the control mode in which a Comparator operates. For configuration information, refer to [Comparators Overview and Configuration ▶ Page 20]. Comparators can only be configured in setup; there is no softkey to give an Operator direct access to the **Setup > Application > Comparators** page.

Using a Comparator's Output

A Comparator's output can be used in either of two ways -- by outputting its state through a connection configured to use Shared Data as its assignment, or as a means to control a discrete output.

Target Value Comparators

The assigned discrete output for a Target Value comparator is triggered when the selected source is TRUE as determined by the selection in the comparator's **Operator** setting.

Comparator Setup Examples

Example:
- Source: Displayed Weight.
- Operator: ≤ (less than or equal to)
- Limit: 30 kg

The output is ON when the displayed weight is less than 30 kg and turns OFF when the measured value reaches 30 kg.

Range Comparators

In the case of a Range mode Comparator, the assigned output is triggered when the selected source is TRUE as determined by the Operator setting(s). The **Limit** setting establishes the lower of the two values that define the range. The **High Limit** setting defines the upper value of the range.

Example:
- Source: Gross Weight
- Operator: >_ _< (within a range)
- Limit: 300 kg
- High Limit: 800 kg

The output is ON when the measured gross weight is between 300 and 800 kg. If the weight falls below 300 kg or exceeds 800 kg, the output turns OFF.

Example:
- Source: Gross Weight
- Operator: _><_ (outside a range)
- Limit: 200 lb
- High Limit: 400 lb

The output is ON when the measured gross weight is 200 lbs or less and 400 lbs or higher. If the gross weight measures between 201 lbs and 399 lbs, the output turns OFF.

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