IND500x Manual Formulation PAC

Application Software





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1 Introduction

1.1 IND500x Manual Formulation PAC

The IND500x Manual Formulation PAC includes the following applications:

- Formulation with or without recipe
- Formulation in vertical, additive or horizontal mode

The Manual Formulation PAC is enabled through the use of an "application hardware key". The key is inserted into a receptacle on the IND500x main board. It contains a specific code that enables access to the features and capabilities of this specific application solution.

1.2 Manual Formulation Features

1.2.1 Weight Display with Colored Bargraph

When formulating recipes, the device offers a colored bargraph indicating the filling status "low", "good" and "high" to comfortably fill in to a target.

The markings on the top of the bar stand for the target value and the tolerance range.

The white arrow indicates the position of the current weight in relation to the target weight.



Note

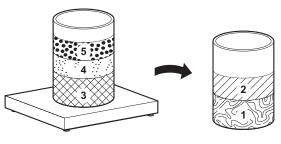
- The colors can be set to your needs under Application Setting -> General Setting [Application Setting >
 Page 20].
- If the weight is incorrect, e.g. by reasons such as underload, overload or connection issues, the colored bargraph will be hidden and will be shown again when there is a correct weight value.

1.2.2 Formulation Modes

The device offers the following formulation modes:

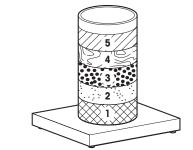
Vertical

In vertical formulation mode the materials are filled in a container once in one batch. Changing containers is possible.



Additive

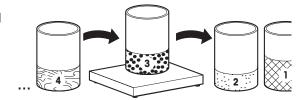
In additive formulation mode all the materials are filled in one container.



Horizontal

In horizontal formulation mode, each material is filled in a separate container.

This mode is not available when formulating without recipe.



1.2.3 Extension Fields

The device offers up to two extension fields to enter additional information on the recipes and materials processed.

- The extension fields are available on two levels: for the recipe and for the materials.
- The extension fields can either be optional or mandatory.

If printing is enabled, the content of the extension fields will be transferred together with the recipe head or with the material line.

i Note

In case of mandatory extension fields you cannot proceed to the next formulation step unless the mandatory extension fields are filled in.

Press softkey to open the extension fields.

1.3 Softkeys and Icons

The IND500x Manual Formulation PAC builds upon the flexible softkey concept of the standard IND500x terminal by providing new choices for programming softkeys in the Terminal branch of setup. These softkeys can be added to the home screen to provide access to the IND500x Manual Formulation PAC functionality.

Softkey Icons

There are a few new softkeys that are shown within Manual Formulation application.

Icon	Name	Icon	Name
	Application Entry	©	Application Setting
+	Add stored recipe total weight	_	Subtract stored recipe total weight
	Start	<u>O</u>	Recipe overview
Ш	Pause		Skip current material
	Correct recipe target	2	Open extension field
Q	Reset transaction table		View materials in the transaction table
	View copies in the transaction table		

Application Icons

A few new icons are shown in the Manual Formulation Application.

Icon	Name	Icon	Name
	Manual Formulation Application	ح	Recall Recipe List
Œ			Recipe Management
\blacksquare	Formulation without Recipe	1 2 2 2 2	Continue unfinished Recipe
	Additive formulation mode		Horizontal formulation mode
	Vertical formulation mode	<u></u>	Place container and tare
\triangle	Active Target	557	Application Setting -> General Setting
Ψ		(Q)	Application Setting -> Expert Configuration

1.4 Starting Manual Formulation

- 1 To start the Manual Formulation application, press softkey **!!!** .
- 2 Confirm "Manual Formulation" with the ENTER key.
 - → The Manual Formulation main screen is displayed.



- 3 To start the formulation procedure, select one of the following options and confirm with the checkmark:
 - → Formulation with Recipe [Formulation with Recipe ▶ Page 9]
 - → Formulation without Recipe [Formulation without Recipe ▶ Page 13]
 - → Continue Unfinished Recipes [Continue Unfinished Recipes ▶ Page 15]
- 4 For setting up the formulation process and editing recipes, press softkey ② [Application Setting > Page 20].

2 Setting up a Recipe

There are two ways to set up a recipe:

- by weighing in materials and then saving as a recipe, refer to [Formulation without Recipe ▶ Page 13]
- by entering materials and their weight values in the setup, see below

2.1 Recipe Settings

- 1 In the Manual Formulation application main screen press softkey 🐵 .
 - The Application Setting setup is opened.
- 2 Select Recipe Management and confirm with the ENTER key.
 - → The existing recipes are displayed.
- 3 Either select an existing recipe and press the softkey
 - Press softkey \(\bigcap\) to open a new recipe.
- 4 Enter the ID and the name of the recipe.
- 5 Select the unit of the target net total weight.
- 6 Select the formulation mode [Formulation Modes ▶ Page 4].
- 7 Set the Extension Fields 1 and 2 for additional information on the recipe [Extension Fields ▶ Page 4].
 - ⇒ Switch Extension Fields on or off
 - → If switched on: set the field to mandatory or not.
- 8 If you do not want a user with the "Operator" role to see the weight values of your recipe, set Stealth Mode to On.
 - The weight will only be indicated by the colors. Instead of the weight value, asterisks (*) are displayed.
 - For users with the "Supervisor" or "Administrator" roles, the weight value is displayed as usual.
- 9 If overfilling of a material is allowed, set Allow Overfill to On.
- 10 Confirm the formulation settings with the checkmark.
 - → The material list is opened.

2.2 Edtiting the Material List

i Note

You can open the material list at any step of the recipe settings by pressing the checkmark.

Either select an existing material and press the softkeyor -

Press the softkey \(\bigcap\) to create a new material.

- 2 Enter the ID and the name of the material.
- 3 Enter the target weight and its unit.
- 4 Set the absolute deviation from the target weight which will be tolerated as good.
- 5 Set the Extension Fields 1 and 2 for additional information on this material [Extension Fields ▶ Page 4].
 - Switch Extension Fields on or off
 - → If switched on: set the field to mandatory or not.
- 6 Confirm the material settings with the checkmark.
 - → The material list is displayed.
- 7 Repeat steps 1 to 6 for further materials of the recipe.

i Note

Using the softkeys 4 / 1 on the secondary softkey ribbon, the order of materials in the recipe can be changed.

2.3 Deleting a Recipe

- 1 In the list of recipes select the recipe you want to delete and press softkey
 - → A safety prompt is displayed.
- 2 Confirm deleting with the checkmark.
 - → The recipe is deleted from the IND500x database.

2.4 Data Import/Export via FTP Client

Using the FTP client communication interface, recipe and material data can be uploaded from a server or exported to a server, see IND500x User manual.

3 Formulation with Recipe

3.1 Recipes and Orders

The device can store up to 50 formulation recipes with up to 50 materials each to be recalled later for a specific formulation.

At the moment the recipe is recalled, an order number is assigned to the new formulation. The order number consists of the current date and a running number, restarting at 0001 every day.

The order number serves as identification of a specific formulation in the list of unfinished recipes [Continue Unfinished Recipes ▶ Page 15] and in the transaction data [Application Setting ▶ Page 20].

Example

Order No. 202210310022 was processed on October 31st 2022 as the 22nd order on that day.

3.2 Formulation Total Target Settings

When starting a recipe you can decide whether to use the total target as stored in the recipe or to adjust the total target to another weight or to a number of copies of the stored recipe.

Target method "By Weight"

 With this target method, you can enter a new total target weight. The materials will be adjusted accordingly.

Example

The stored total target weight is 3 kg. When you change the total target weight to 4.5 kg, all the material target weights are multiplied by 1.5.

Target method "By Copies of Recipe"

 With this target method, you can enter the number of copies you want to make from the recipe. This number does not need to be an integer.

Example

When you want to formulate 1.5 copies of the recipe, in a first turn the recipe is processed with the stored material weights. In a second turn, the recipe is processed with half of the stored material weights.





Setting the target weight using softkeys + and/or -

- With Target Method = By Weight, you can add/subtract the stored target weight to the new total target weight.
 - In the example above you can thus get target weights of 3 kg, 6 kg, 9 kg, 12 kg and so on.
- With Target Method = **By Copies of Recipe**, you can change the number of copies by 1. In the example above you can thus get 0.5, 1.5, 2.5, 3.5 copies and so on.

3.3 Formulation in Additive Mode

- 1 In the recipe list, select a recipe and confirm with the checkmark.
- 2 Select the target method [Formulation Total Target Settings ▶ Page 9] and confirm with the checkmark.
 - The following screen is displayed:



- 3 Follow the instructions on the screen.
- 4 Fill in the first material to the target, i.e. until the bargraph color is green.



- 5 If configured, press softkey \(\partial\) to enter extension fields [Extension Fields ▶ Page 4].
- 6 When the weight value is stable, press the checkmark to proceed to the next material.
 - → The scale is tared automatically and the net weight shows zero.
- 7 Repeat steps 4 to 6 for the next materials.
 - → When the last material is confirmed, an overview of the recipe is displayed.
- 8 Press to leave the recipe.

i Note

When in the Application Setting -> General Setting -> "Auto switch the material in Additive" is set to Enabled, you do not need to confirm the material with the checkmark. As soon as there is a stable weight value in the good range, the application will automatically switch to the next material.

3.4 Formulation in Vertical Mode

Note

In vertical formulation mode you can change containers during the formulation process.

- 1 Proceed as described before for additive formulation mode [Formulation in Additive Mode ▶ Page 10].
- 2 To change containers: When the last material of the first container is confirmed, remove the container with the previous materials.
- 3 Place the next container and press softkey 🕂 to tare the new container.
- 4 Proceed with the displayed material as described before for additive formulation mode.

3.5 Formulation in Horizontal Mode

Note

In horizontal formulation mode each material is filled in its own container.

- 1 Start formulation as described before for additive formulation mode [Formulation in Additive Mode > Page 10].
 - When a material is confirmed, you are asked to place a new container.
- 2 Remove the current container and place a new one.
- 3 Press softkey T to tare the new container.
- 4 Proceed with the displayed material as described before for additive formulation mode.

3.6 Material Overfilled

When an overfilled material weight is confirmed, a message is displayed offering the following possibilities to proceed:



Adjust weight

Remove the overfilled weight and proceed with the stored target weight.



Correct recipe target

 Adjust the recipe target according to the current overfilled material, so that in the end the percentages of the materials are the same as in the stored recipe.
 The previously filled materials have to be processed again and must be added according to the new material target.

i Note

- Allow Overfill must be set to On [Recipe Settings ▶ Page 7].
- Not available in horizontal formulation mode



 Proceed with the formulation although a material is overfilled. The other materials will not be adjusted.

i Note

- Allow Overfill must be set to On [Recipe Settings ▶ Page 7].
- Not available in horizontal formulation mode

3.7 Skipping a Material / Parking an Order

If e.g. you are out of a material, you can skip the material or park the recipe and finish them later.

Skipping a material

You can skip the material completely or you can skip the material when it is partly filled. The material must be finished within the current order.

- 1 Press softkey >> to the change to the second softkey ribbon.
- 2 Press softkey .
 - → A safety prompt is displayed.
- 3 Confirm skipping with the ENTER key.
 - The formulation application proceeds to the next material.
- 4 When all materials of the recipe are processed, the skipped material is displayed again to fill in to the material target.

Parking an order

When it is not possible to finish the order within the current formulation process, skipping the material is not appropriate. In such cases the order can be parked and finished later. Up to two orders can be parked.

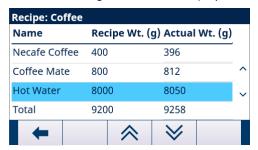
- 1 Press softkey >> to the change to the second softkey ribbon.
- 2 Press softkey II.
 - A safety prompt is displayed.
- 3 Confirm parking with the ENTER key.
 - The current recipe is left and the Manual Formulation main screen is displayed.

i Note

To finish parked orders refer to [Continue Unfinished Recipes ▶ Page 15].

3.8 Recipe Overview

A recipe overview is displayed when the recipe is finished or by pressing Q at any time of the formulation process. The following information is displayed:



	Name	Recipe Wt. (unit)	Actual Wt. (unit)	Tare Wt. (unit)
Material lines	Material name	Target weight in the weight unit	Weighed in	Container weight + weight of the previously weighed in materials
Total line	Total	Target weight in the weight unit	Total weighed in	First tare weight (container weight in additive mode)
				When the recipe is finished, the tare memory is cleared.

- 1 Use the LEFT/RIGHT navigation keys to navigate through the columns.
- 2 Use the UP/DOWN navigation keys to navigate through the materials.
- 3 Use the \vee / \wedge softkeys to navigate by pages through the materials.

4 Formulation without Recipe

In "Formulation without Recipe" the materials are filled in the same container.

In vertical mode, intermediate taring is possible if e.g. the container is too small for all materials. In additive mode taring is possible only once.

- 1 Select the application "Formulation without Recipe".
 - → A screen to tare the container is displayed.



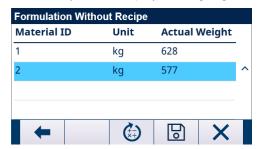
- 2 Follow the instructions on the screen.
- 3 Fill in the first material.
- 4 When the weight value is stable, press the checkmark to proceed to the next material.



- → The scale is set to zero and is ready for the next material
- 5 Repeat steps 3 and 4 for further materials.

Overview of the current formulation

Press softkey to display the weighings of the current formulation.



Adjusting a material

It is possible to adjust a material, i.e. adding material later.

- 1 In the formulation overview, select a material and press softkey 👶 .
 - A message is displayed.
- 2 Confirm the message with the ENTER key.
- 3 Add material.
 - The main weight display shows the added material, in the material line the total for the material is displayed.



4 When the weight value is stable, press the checkmark to proceed with the next material of the formulation.

Saving a formulation as a recipe

A formulation can be saved as a recipe for further usage.

- 1 In the formulation overview, press softkey 🗟 .
 - The screen to edit a recipe is displayed.
- 2 For further settings refer to [Recipe Settings ▶ Page 7].

Discarding the formulation

i Note

There is no safety prompt when discarding a formulation!

- In the formulation overview, press softkey X.
 - → The current formulation is discarded and the Manual Formulation main screen is displayed.

Leaving a formulation

"Formulation without Recipe" can be left at any time.

- 1 Press softkey .
 - A safety prompt is displayed.
- 2 Confirm the safety prompt with the ENTER key.
 - → The current formulation is left and the Manual Formulation main screen is displayed.

5 Continue Unfinished Recipes

- 1 In the Manual Formulation main screen select "Cont. Unfinished Recipes".
 - → The list of parked orders is displayed.



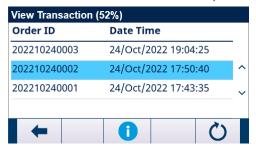
- 2 Select the order you want to finish and open the order using the checkmark.
- 3 Follow the instructions on the screen to finish the order.

Deleting a parked order

- 1 Select the order you want to delete and press softkey 🗓 .
 - → A safety prompt is displayed.
- 2 Confirm deleting with the ENTER key.
 - → The order is deleted from the list of parked orders.

6 View Transaction Data

1 In the Manual Formulation main screen press softkey (a) to open the Application Setting.



- 2 Select Transaction Data and confirm with the ENTER key.
 - → The transaction list is displayed.

Memory used

In the top line the memory used is displayed (52% in the example above).

When the used memory is 90% or more, a message is displayed to export the transaction data and reset the transaction data.

Navigation in the transaction table

- 1 Use the LEFT/RIGHT navigation keys to navigate through the columns.
- 2 Use the UP/DOWN navigation keys to navigate through the lines.

Columns of the transaction table

The transaction table shows the following columns:

- Order ID
- Date and Time when the order was started
- Recipe ID
- Recipe Name

Details on the transactions

- The "Record Material Line" option in "General setting".
- Select an order and press soft key 1 to display details of this order.

Reset transaction table

- 1 Press softkey O.
 - → A safety prompt is displayed.
- 2 Confirm deleting all transaction data with the ENTER key.
 - The transaction data is deleted from the IND500x database, the transaction table is empty.

7 Transfer Transaction Data

Three output templates are programmed for Manual Formulation. When Recipe Head, Material Line, or Recipe Tail operation needs to be printed, a Demand Print is triggered.

When printing is enabled, the transaction data are sent to the serial port via Demand Output protocol.

- When a material is finished, data will be transferred according to the printing configuration.
- If material line printing is enabled and the first material is finished, the recipe head will be transferred. For every material the material info will be transferred.
- If material line printing is disabled neither recipe head nor material info will be transferred.
- When one copy of the formulation order is finished, the recipe tail will be transferred
- The templates for recipe head, lot ticket for each material and final ticket for each copy are fixed.

Formulation Mode		Total Target Setting	
V	V Vertical		Target by weight
Α	Additive	С	Target by copies
Н	Horizontal		

- 1 Press the Setup softkey in the Home Page.
- 2 To find the Connections branch, follow the path: Setup>Communication>Connections.
- 3 In the Connections page, press the View Table key 🖳 and then the Add softkey 🛨 .
- 4 Select the Port, and the option Demand Output in the field Assignment.
- 5 To select the Demand Print Trigger and the Template, refer to the table that follows.

Category	Demand Print Trigger	Template
Recipe Head	Trigger 4	Template 6
		Date: 08/01/2022
		Time: 08:00:00
		Order ID: 202201080003
		Copy No. :1
		Mode: V/W (explanation see table below)
		Recipe ID: 20001
		Recipe Name: Coffee
		Ext1: abc
		Ext2: def
Material Line	Trigger 5	Template 7
		Date: 08/01/2022
		Time: 08:00:15
		Order ID: 202201080003
		Copy No. :1
		Material ID: 1001
		Material Name: Nescafe Coffee
		Recipe weight: 400g
		Deviation: 20g
		Actual Weight: 396g
		Tare: 637g
		Ext1: 001
		Ext2: 002

Category	Demand Print Trigger	Template
Recipe Tail	Trigger 6	Template 8
		Date: 08/01/2022
		Time: 08:01:00
		Order ID: 202201080003
		Copy No. :1
		Recipe ID: 20001
		Recipe Name: Coffee
		Recipe weight: 9200g
		Deviation: 240g
		Actual Weight: 9258g
		Tare: N/A

8 Application Setup

The menu tree of the IND500x Manual Formulation PAC is similar to the standard IND500x with the addition of a new branch under Application, called "PAC (Manual Formulation)". This is the branch that provides access to most of the programming steps for the Manual Formulation PAC functionality.

8.1 Security

The IND500x Manual Formulation PAC supports multiple users/passwords for setup security. After Master Reset, IND500x with Manual Formulation PAC application has 2 built-in users:

	Administrator	Operator		
User Name	Admin	Operator		
Access Level	Administrator	Operator		
Default User	Off	On		
Default Password	Empty	Empty		
The Admin cannot be deleted or renamed.				
The Operator can be de	leted or renamed on the setup.			

Password

The password provides access to the entire setup menu, unless the metrology switch is placed in the approved position. In this case, access to the scale and other metrologically significant areas is not permitted.

8.2 Access to Setup

The configuration of the IND500x Manual Formulation PAC is accessed through the Settings softkey . There are two ways to enter the Manual Formulation setup:

- Directly out of the Manual Formulation application. This "Application Setting" access includes communication settings for a connected printer/computer. So you do not have to leave the application for making all settings regarding your Manual Formulation application.
- Via the setup menu tree, see the IND500x User Manual. The settings under "Setup -> Application ->
 PAC (Manual Formulation)" are the same as in the "Application Setting" setup.

Navigation

Navigation in the PAC menu tree is the same as with the standard IND500x terminal.

- Use the UP and DOWN navigation keys to move focus through the branches of the setup menu tree.
- Press the RIGHT navigation key to expand a branch and the LEFT navigation key to collapse a branch.
- When the focus is on a sub-branch, Press the LEFT navigation key to quickly move the focus back to the main branch.
- When a leaf node (singular, non-expandable) branch such as Device or Display is in focus, press the ENTER key to display the setup screen for that function.

8.3 Application Setting

- Logged in as a supervisor or administrator.
- In the Manual Formulation main screen press softkey 💿 .
 - → The Application Setting setup is opened. The following setup items are available.

Factory settings are printed in **bold** in the following overview.

Level 1	Level 2	Level 3	Description	
General Setting	Auto switch the material in Additive	Disabled /Enabled	For Recipe Management -> Mode = Additive only When set to Enabled and there is a stable weight value and it meets the condition of the current material (in the green range), the application will automatically confirm the material and switch to the next one.	
	Color for less	Cyan, Dark Gray,	Factory setting: Cyan	
	Color in range	Normal Gray,	Factory setting: MT green	
	Color for overfill	MT Green, Orange, Red, Yellow, MT Blue	Factory setting: Red	
	Record Material Line	Off /On	If set to On, the material data is recorded in the log file.	
	Printing Enabled	Disabled /Enabled	If enabled, formulation data can be printed out or transferred to a computer.	
	Material Line Printing	Off /On	If set to On, the data of each material is printed or transferred.	
Recipe Management	ID		Recipe ID max. 20 alphanumeric characters up to 50 recipes	
	Name		Recipe Name max. 40 alphanumeric characters	
	Net Total		The unit of the net total of the recipe can be selected out of kg , lb, oz, t, ton, g.	
	Mode	Vertical	In vertical formulation mode the materials are filled in a container once in one batch.	
		Additive	In additive formulation mode, all materials are filled in one container.	
		Horizontal	In horizontal formulation mode, each material is filled in a separate container.	
	EXT1 Enabled/ Mandatory	EXT1 Enabled: Off/ On Mandatory: Off/ On	There are two extension fields available for additional information on the material.	
	EXT2 Enabled/ Mandatory	see EXT1	If mandatory is set to On, the extension field must be entered prior to proceed with the recipe.	
	Stealth Mode	Off/On	If set to On, no weight value is displayed but the colors will indicate the weighing state	
	Allow Overfill	On/Off	If set to On and a material is overfilled this will be accepted.	
Transaction Data	Order ID		Transaction data are displayed in a table	
	Date		with these columns.	
	Time			
	Recipe ID			
	Recipe Name			
Expert Configurati	on		Go to the main menu tree, see the IND500x User Manual.	

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