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1 Overview

Sizing Bypass Solutions is the Applicator module to dimension Endress+Hauser level instruments. You will be supported in many different use cases, such as the correct dimensioning, the selection of material and the ambient- and process conditions.

1.1 Basics

Before you start with Sizing Bypass Solutions you should know the level devices. The level devices can be found under Selection or Industry Applications. Sizing Bypass Solutions supports the engineering process.

Please note: Under “Settings” you can set your personal preferences of Sizing Bypass Solutions. Please have a look under Settings after you have done the first experience with Sizing Bypass Solutions to set your own preferences.

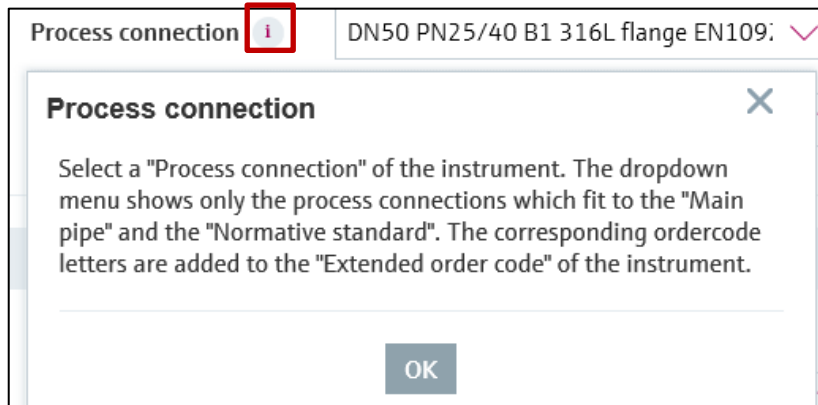
The default setting in Settings reduces the functionality to a minimum to enable a simple start for new users. The additional functions for Sizing Bypass Solutions can be activated on the corresponding page.

Sizing Bypass Solutions consists of many different pages, which are accessible via the tabs at the top of the sizing window. These pages are:

- **Sizing** - Your main working area to dimension a level transmitter
- **Installation check** - Graphical check of the different lengths
- **Extended Order Code** - Complete the full order code and add accessories
- **Settings** - Define the units of temperature, pressure and length or set your password level

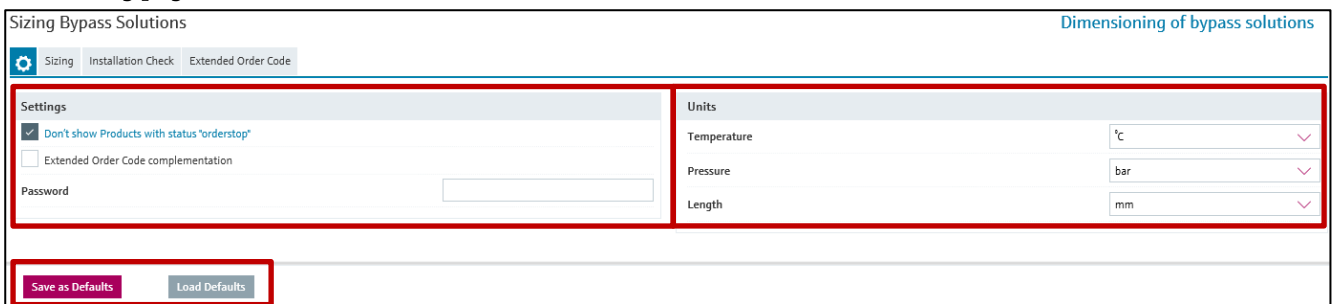
1.2 Parameter Help

The parameters help offers an immediately support in the software to understand the used parameters in Sizing Bypass Solutions without visiting the help pages. Parameters for which an explanation exists are marked with the magenta **i** button. A separate window with explanations will be opened. Close the window by clicking on the OK button.



1.3 Settings

The Setting page is divided in different sections.



On the left side you can choose different possibilities:

Don` t show products with status order stop	Makes old products selectable for calculation
Order code complementation	On Order code page the order code could be complemented with predefined order code templates. Recommended for advanced users!
Password	Passwordlevels

On the right side different “Units” for “Temperature”, for “Pressure” and for ”Length“ can be chosen.

These settings influence the dimensioning on the “Sizing”, the “Installation Check” and the “Extended Order Code” pages. On this page you can fine tune the units according to your preferences and save them with the button "Save as default". Each time you start Applicator Sizing Bypass Solutions, this default setting will be used. If you change the setting temporarily, the "Load default" button can be used to restore the previously defined default setting. Please adjust your current internet browser.

You can select different units, by clicking on the drop-down list (which shows the current units) and selecting from the list the units which then pops up. This causes the numeric value to be converted from the old units to the newly selected ones. Change the units before entering the numeric values otherwise after conversion the values will be probably not the expected ones.

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2 Sizing

The “Sizing” page is divided into three sections:

Sizing Bypass Solutions
Dimensioning of bypass solutions

⚙️ Sizing
Installation Check
Extended Order Code

General parameters

Application	Level	Bypass chamber	Bypass chamber FAX43
Main pipe	DN80/ 3'	Extended Order Code	FAX43-E1JAG1GCX
Normative standard	EN/ DIN		
TAG			

Process conditions

	Minimum	Nominal	Maximum	Unit
Process temperature	-10	25	50	°C
Process pressure	5	20	25	bar
Max. allowed working pressure			30	bar

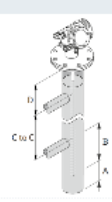
Instrument data

Instrument	LevelFlex FMP51
Probe	Rod 12 mm 316L
Process connection	DN80 PN10/16 B1 316L flange EN1092-1
Gas phase compensation	without Gas phase compensation

Bypass chamber construction

Bypass chamber material	Stainless steel 316L	Unit
Chamber design	Side - side	
Center to center length (C to C)	2 050	mm
Pipe schedule	10	
Process connection to vessel	DN40 B1, flange EN1092-1	
Pressure rating	PN10/16	

Diagramm



Calculation results

Instrument		Unit
Maximum probe/ coax diameter	12	mm
Calculated probe length	2 400	mm
Empty calibration (Zero / E)	2 250	mm
Full calibration (Span/ F)	2 050	mm

Bypass chamber

Inactive zone chamber top (D)	200	mm
Inactive zone chamber bottom (A+B)	200	mm
Gap end of probe to bottom (A)	50	mm
Total length bypass chamber	2 450	mm

Print Sizing
Add to shop basket
Configurator
Reset

2.1 Header Section

Please select the “Application” and the “Mainpipe” and the corresponding bypass chamber will be displayed.

Please select the “Normative Standard” and the dropdown menus of "Probe", "Process connection" of the instrument, "Process connection to vessel" and "Pressure Rating" and the "Units" will be adapted accordingly.







⚙️ Sizing
Installation Check
Extended Order Code









General parameters













Application	Level	Bypass chamber	Bypass chamber FAX43
Main pipe	DN80/ 3'	Extended Order Code	FAX43-E1JAG1GCX
Normative standard	EN/ DIN		
TAG			

2.2 Left Section

In this section the datas on the “Process conditions”, on the Instrument and on the bypass chamber shall be entered.

Process conditions				
	Minimum	Nominal	Maximum	Unit
Process temperature 	<input type="text" value="-10"/>	<input type="text" value="25"/>	<input type="text" value="50"/>	°C 
Process pressure 	<input type="text" value="5"/>	<input type="text" value="20"/>	<input type="text" value="25"/>	bar 
Max. allowed working pressure 			<input type="text" value="30"/>	bar 

Instrument data	
Instrument 	<input type="text" value="Levelflex FMP51"/> 
Probe 	<input type="text" value="Coax 316L mm"/> 
Process connection 	<input type="text" value="DN80 PN10/16 B1 316L flange EN1092-1"/> 
Gas phase compensation 	<input type="text" value="without Gas phase compensation"/> 

Bypass chamber construction	
	Unit
Bypass chamber material 	<input type="text" value="Stainless steel 316L"/> 
Chamber design 	<input type="text" value="Side - side"/> 
Center to center length (C to C) 	<input type="text" value="3 000"/> <input type="text" value="mm"/> 
Pipe schedule 	<input type="text" value="10"/> 
Process connection to vessel 	<input type="text" value="DN40 B1, flange EN1092-1"/> 
Pressure rating 	<input type="text" value="PN10/16"/> 

2.2.1 Process conditions

Some selections have limitations on the process temperature and on the pressure conditions which you can enter here. If the values are too high or too low a boundary violation comes up and will show you the limits. Then the values shall be adapted until the button “OK” gets a light grey colour, which shall be confirmed, and the boundary violation is closed. Due to the boundary violation you are sure, that your conditions match to the possible dimensioning of the instrument and the bypass chamber.

Boundary violation
✕

Violation Messages

Process pressure: The min. limit is bigger than the max. limit

Process pressure: The nominal value is greater than the high limit.

Process pressure: The maximum value is greater than the upper limit.

Violated Parameter						
	lowest	minimum	nominal	maximum	highest	Unit
Process pressure	-1	80	80	80	40	bar
Process temperature	-50	50	50	50	200	°C
Max. allowed working pressure	0		n.a.		160	bar

2.2.2 Instrument data

In the part “Instrument data” you can select the “Instrument”, the “Probe”, the “Process connection” and the “Gasphase compensation” according to your application. In each drop-down menu only the available product options are visible. Due to the selection the corresponding ordercode letters will be added to the “Extended order code”.

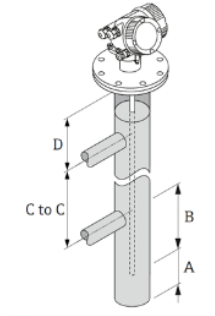
2.2.3 Bypass chamber construction

In the part “Bypass chamber construction” you can select the “Bypass chamber material”, the “Chamber design”, the “Pipe schedule”, the “Process connection to vessel” and the “Pressure rating” according to your application. In each drop-down menu only available product options are maintained and the corresponding ordercode letters will be added to the Extended order code.

2.3 Right Section

The right section contains the diagram with explanations of the different length abbreviations and the length calculation of the level instrument and the bypass chamber.

2.3.1 Diagram



In the diagram you find the abbreviations A, B, C to C and D. These letters correspond to:

- “Gap end of probe to bottom (A)”
- “Inactive zone chamber bottom (A+B)”
- “Center to center length (C to C)”
- “Inactive zone chamber top (D)”

2.3.2 Calculation Results

In this area you find the Calculation results in two parts. One part contains the Instrument data and the other part the bypass chamber data.

Calculation results		
Instrument		Unit
Maximum probe/ coax diameter 	12	mm
Calculated probe length 	2 400	mm
Empty calibration (Zero / E)	2 250	mm
Full calibration (Span/ F)	2 050	mm
Bypass chamber		
Inactive zone chamber top (D) 	200	mm
Inactive zone chamber bottom (A+B) 	200	mm
Gap end of probe to bottom (A) 	50	mm
Total length bypass chamber 	2 450	mm


In the part “Instrument” are the calculation results of the “Calculated probe length” and the maintained value of the probe diameter.

In “Bypass chamber” you find the maintained values of the “Gap end of probe to bottom (A)”, the “Inactive zone chamber bottom (A+B)” and the “Inactive zone chamber top (D)”. Additionally, the calculation results of “Total length bypass chamber” are displayed.

2.4 Warnings

If something does not match a warning pop-up in the part under “General Parameters”. Every warning or message is visualized and can be detailed viewed over the arrow downwards.

Please pay attention to the warnings and messages.

 1 Messages

1. The specified range may be reduced by the selected process connection. Observe the pressure temperature dependency. The corresponding values can be found in the standards.

In case you should have questions, please contact your next Endress+Hauser Sales Centre.

2.5 Navigation bar

At the bottom of each sizing page, a navigation bar can be found. With the help of the buttons you can decide how to proceed in your engineering process:

Print Sizing

Add to shop basket

Configurator

Save to buffer

Save

Print Sizing

Opens the print-setting window to start the Sizing reports.

Add to shop basket

Opens the E+H web shop with the currently selected product.

Save to buffer

Opens the project administration module and puts the sized product in the buffer store. From the buffer store the product and the sizing results can be pasted into a project. This button is only available in the offline version.

Save

This button is only enabled when Sizing was started from a tag in the Project administration module to save the resized product under the starting tag. The tag name is indicated in the field “Tag”. This field is editable.

Reset

A rectangular button with a grey background and the word "Reset" in white text.

This button resets the whole Sizing Bypass Solutions page and the intermediate Sizing results.

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3 Installation Check Page

For each dimensioning the “Installation check” page is available. It has the different parts: “General parameters”, “Input data” and “Sketch”.

This part “General parameters” is the same as on the Sizing tab.

Sizing
Installation Check
Extended Order Code

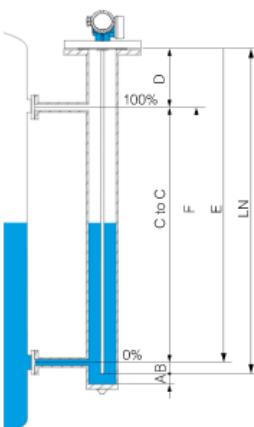
General parameters

Application	Level	Bypass chamber	Bypass chamber FAX43
Main pipe	DN80/ 3"	Extended Order Code	FAX43-E1JAG1GCK
Normative standard	EN/ DIN		
TAG			

Input data

Instrument	Unit	
Instrument	Levelflex FMPS1	
Minimum level	200	mm
Probe	Rod 12 mm 316L	
Process connection	DN80 PN10/16 B1 316L flange EN1092-1	
Gas phase compensation	without Gas phase compensation	
Calculated probe length	2 400	mm
Empty calibration (Zero / E)	2 250	mm
Full calibration (Span/ F)	2 050	mm
Bypass chamber construction		
Center to center length (C to C)	2 050	mm
Inactive zone chamber top (D)	200	mm
Inactive zone chamber bottom (A+B)	200	mm
Gap end of probe to bottom (A)	50	mm
Total length bypass chamber	2 450	mm

Sketch



3.1 Input Data

In the “Input data” all calculated parameters and maintained values from Tab Sizing are displayed giving you an overview over the relevant information to the sketch.

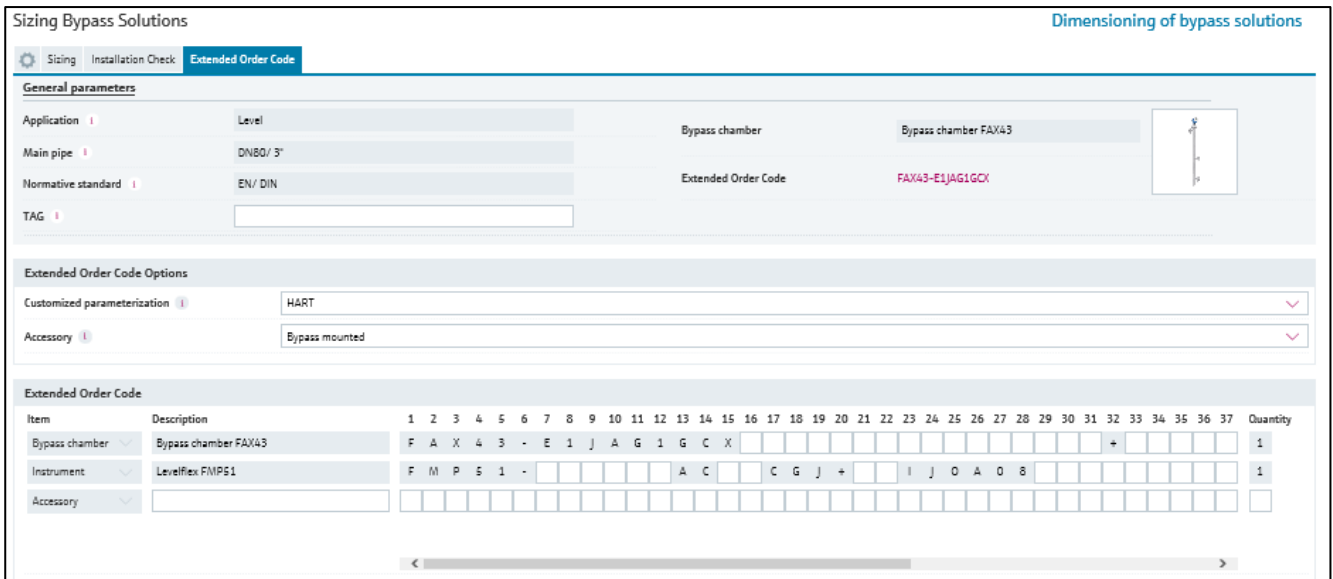
3.2 Sketch

The “Sketch” of your installation gives you an idea how your dimensioning of the instrument and the bypass chamber looks like. It does not have the scaled heights of the bypass chamber or the scaled length of the instrument. The exactly calculated values are in the part “Input data” visible. The “Sketch” is adapted if the “Instrument”, the “Probe” or the “Gas phase compensation” is changed.

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4 Extended Order Code

The Applicator is much more than just a Selection or Sizing tool. It also provides application-relevant order information. The order code page consists of the parts “Extended Order Code Options” and “Extended Order Code”



General parameters

Application: Level
 Main pipe: DN80/ 3"
 Normative standard: EN/ DIN
 TAG:
 Bypass chamber: Bypass chamber FAX43
 Extended Order Code: FAX43-E1JAG1GCX

Extended Order Code Options

Customized parameterization: HART
 Accessory: Bypass mounted

Extended Order Code

Item	Description	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	Quantity
Bypass chamber	Bypass chamber FAX43	F	A	X	4	3	-	E	1	J	A	G	1	G	C	X																							1
Instrument	Levelflex FMPS1	F	M	P	5	1	-							A	C			C	G	J	+			I	J	O	A	0	8									1	
Accessory																																							

4.1 Extended Order Code Options

Within the part the drop-down menus for “Accessory” and “Customized parameterization” are offered. The choice has directly an influence on the order code. The maintained letters will be added to the order code of the instrument.

4.2 Extended Order Code

Here you can find the partial order code with up to 60 characters. Those 60 characters are not always used for all devices. The characters not filled in automatically by Applicator can be completed manually or by using one of our configurators or price lists. Please refer to the documentation and configurators for the valid order codes.

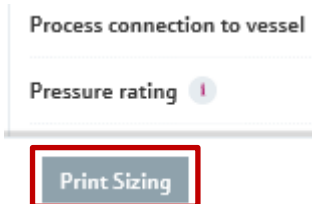
If you move your mouse over each letter you see the tooltips supporting, you with information about the order code options.

In further lines accessories can be added and described as text and order code. Each line is deleted with the dustbin icon placed at the end.

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5 Sizing Print-out

The reports of sizing results can be printed immediately from Sizing Bypass Solutions. The corresponding button can be found at the bottom of every sizing page.



On a print settings page the user has several possibilities:

- Setting the page format
- Selecting the language of the printout
- Selecting the kind of reports, “Condensed” or “Sizing” and/ or “Installation Check”.

Applicator Print Settings
✕

Add PDF to download
Print
Cancel

Page Format

Page size DIN A4 ▼

Page Margins [mm]

Top	Left	Bottom	Right
<input style="width: 40px;" type="text" value="0"/>	<input style="width: 40px;" type="text" value="15"/>	<input style="width: 40px;" type="text" value="0"/>	<input style="width: 40px;" type="text" value="5"/>

Orientation Portrait Landscape

Language English (English) ▼

Reports to print

Selection and Sizing reports

Sizing

Condensed

Installation Check

Save as Default

Miscellaneous

Header Data

Header Data Reset ^

Project Name

TAG

Customer

C.Project No.

Contact Person

These settings are valid for the current printout. The default settings are adjustable permanently in the settings menu.

Condensed print

This option means: Print the main data and the calculation results on one page.

Header data

Header data is constantly stored until being overwritten by new or changed entries. The printing of this additional information can be toggled via the “header data” checkbox.

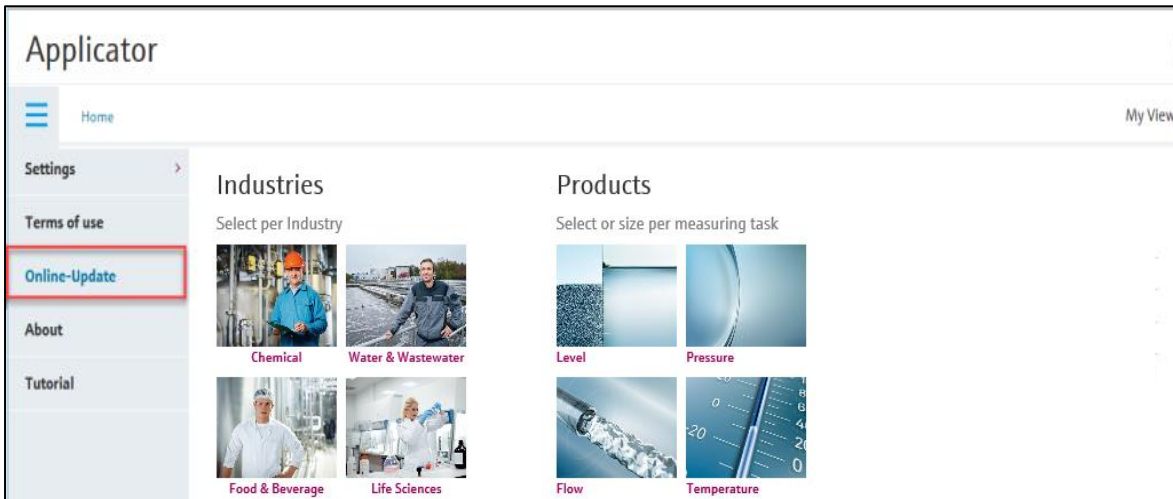
Please note: If the project module is available (local version), comprehensive print reports of several TAGs are possible. Please have a look in the help manual of the Project module.

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6 Online Update

The update process is important for every user to run the newest version of Applicator locally.

Applicator online users are always working with the latest version, containing the newest functionalities, bug fixes and updated system databases with newest products.



The newest information about Applicator developments and maintenance can be obtained via the Applicator newsletter, which can be subscribed during the installation and later in the settings menu.

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