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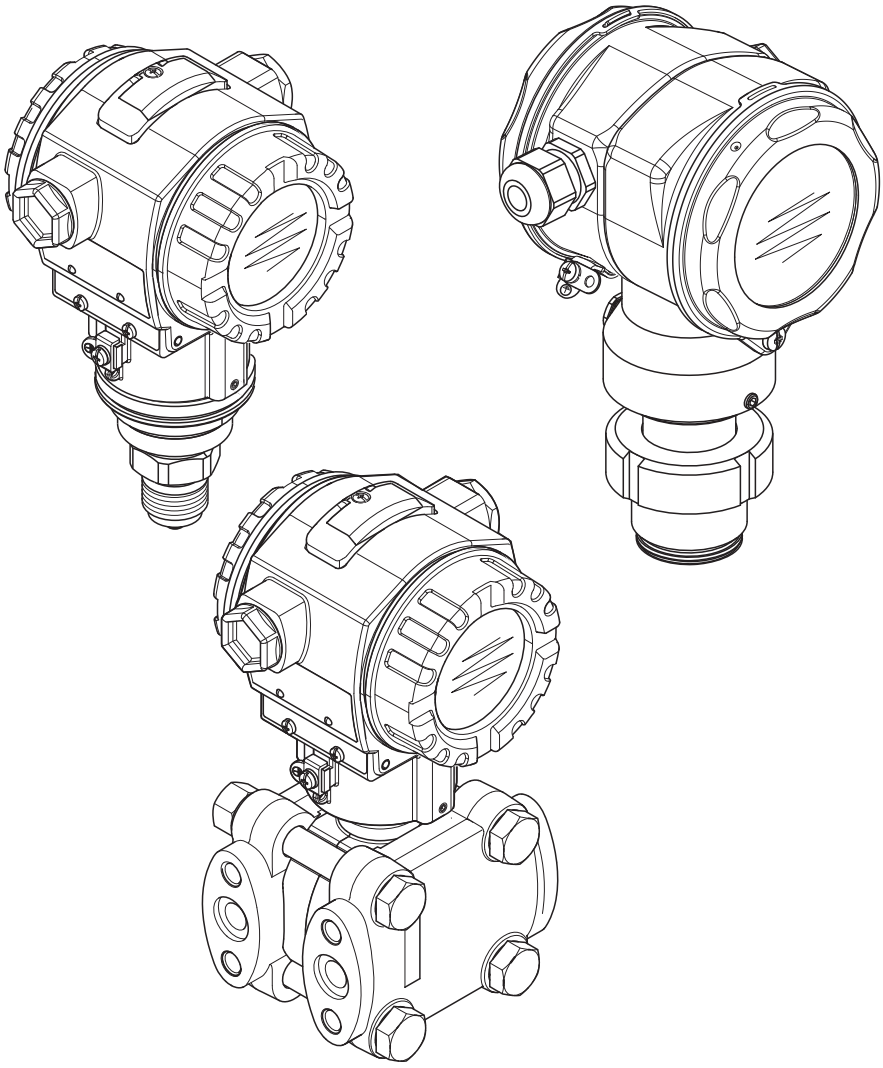
04.01.zz

Description of Instrument Functions
Cerabar S PMC71, PMP71, PMP75
Deltabar S FMD77, FMD78, PMD75
Deltapilot S FMB70

Process pressure / Differential pressure, Flow / Hydrostatic



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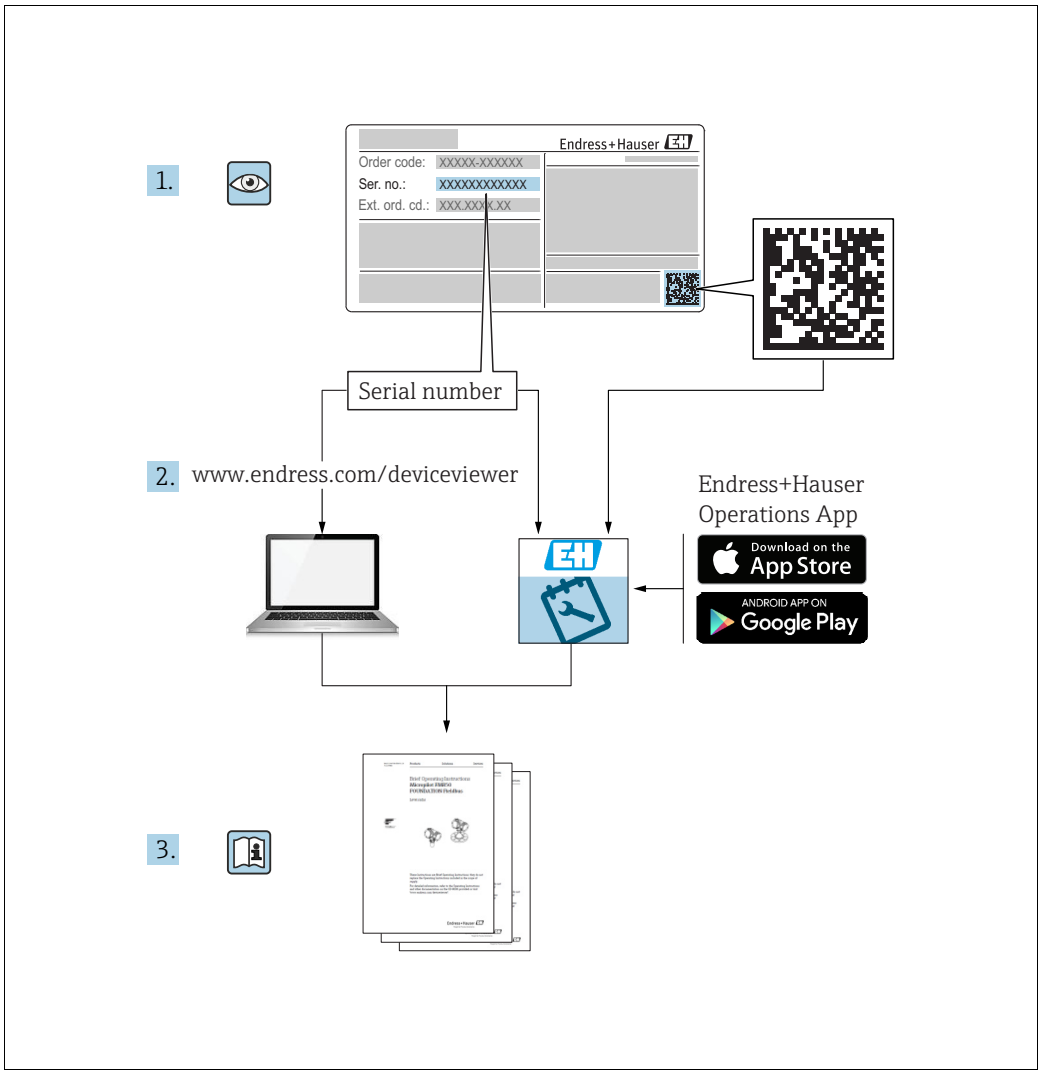


Make sure the document is stored in a safe place such that it is always available when working on or with the device.
To avoid danger to individuals or the facility, read the "Basic safety instructions" section carefully, as well as all other safety instructions in the document that are specific to working procedures.
The manufacturer reserves the right to modify technical data without prior notice. Your Endress+Hauser Sales Center will supply you with current information and updates to these Instructions.

Table of contents

1 Notes on use

Section 7 describes all the parameters in order of how they appear in the menu. Sections 4 to 6 provide typical examples of configuration.

Sections 1.1 to 1.2 describe ways of finding a certain parameter description more easily.

1.1 Finding parameter description using ID numbers

Each parameter is indicated on the onsite display with a unique identification number (ID). Section 2 lists all the parameters in numerical order. The page reference/link takes you to the parameter in question.
In FieldCare, additional parameters and, to an extent, other parameters are displayed. These parameters are not listed in Section 2. You can find these parameters using the index. → See also Section 1.3.

1.2 Finding function group using graphic representation

All the function groups are shown in table form in Section 3. The page reference/link takes you to the function group in question. In Section 7, all the parameters of a function group are compiled in a table.

1.3 Finding parameter description using parameter names (index)

The index lists all the parameters in alphabetical order. The page reference/link takes you to the parameter in question.

2 Finding parameter description using ID numbers

ID number	Parameter name	Description, see page
001	DENSITY UNIT	63 or 96
003	HEIGHT UNIT	63
004	FULL CALIB. – QUICK SETUP	50
004	FULL CALIB. – Level Selection "Level Easy Pressure"	60
004	FULL CALIB. – Level Selection "Level Easy Height"	64
005	FULL PRESSURE	60
006	FULL HEIGHT	65
007	ADJUST DENSITY	63 or 96
008	CALIBRATION MODE – Level Selection "Level Easy Pressure"	59
008	CALIBRATION MODE – Level Selection "Level Easy Height"	63
009	EMPTY HEIGHT	64
010	EMPTY CALIB. – QUICK SETUP	49
010	EMPTY CALIB. – Level Selection "Level Easy Pressure"	59 or 60
010	EMPTY CALIB. – Level Selection "Level Easy Height"	64
011	EMPTY PRESSURE	60
014	DOWNLOAD FUNCT.	122
020	LEVEL SELECTION	45
023	OUTPUT UNIT – Level Selection "Level Easy Pressure"	59
023	OUTPUT UNIT – Level Selection "Level Easy Height"	63
025	PROCESS DENSITY	96
046	ALARM STATUS	124
047	ENTER RESET CODE	121
048	INSERT PIN NO.	122
050	LEVEL BEFORE LIN	117
060	PRESS. ENG. UNIT	55, 58, 62, 66 or 91
075	CUSTOMER UNIT P	55, 58, 62, 67 or 91
079	LANGUAGE	43
247	DAMPING VALUE	47, 50, 52, 56, 61, 65, 76, 80, 89 or 94
250	SENSOR SER. No.	114
264	SOFTWARE VERSION	112
266	HARDWARE REV.	112
272	ADDITIONAL INFO.	112
301	PRESSURE – "Pressure" measuring mode	116
	PRESSURE – "Level" measuring mode	117
	PRESSURE – "Flow" measuring mode	118
311	MAX. FLOW	51 or 94
313	UNIT VOLUME – "Linear" level type	70 or 74
	UNIT VOLUME – "Pressure Linearized" level type	78
	UNIT VOLUME – "Height Linearized" level type	83
314	EMPTY CALIB. – QUICK SETUP	49
	EMPTY CALIB. – "Linear" level type	72
	EMPTY CALIB. – "Height Linearized" level type	86
315	FULL CALIB. – QUICK SETUP	50
	FULL CALIB. – "Pressure Linearized" level type	73
	FULL CALIB. – "Height Linearized" level type	86
316	ADJUST DENSITY – "Linear" level type	73
	ADJUST DENSITY – "Height Linearized" level type	87
	ADJUST DENSITY– "Level" extended setup	96
317	CUST. UNIT FACT. P	55, 58, 62, 67 or 91
318	TEMP. ENG. UNIT – "Pressure" measuring mode	95
	TEMP. ENG. UNIT – "Level" measuring mode	96
	TEMP. ENG. UNIT – "Flow" measuring mode	97
319	CALIB. OFFSET	53
323	SET.L.FL.CUT-OFF	97
329	FACT.U.U.TOTAL.1	105
330	FACT. U. U. TOTAL. 2	106
331	RESET TOTALISER 1	106

ID number	Parameter name	Description, see page
332	PminALARM WINDOW	126
333	PmaxALARM WINDOW	126
334	Tmin ALARM WINDOW	126
335	Tmax ALARM WINDOW	126
336	ALARM DELAY	125
339	DISPLAY CONTRAST	108
350	DEVICE DESIGN.	112
352	CONFIG RECORDER	112
354	DEVICE SERIAL No.	111
357	PCB TEMPERATURE	112
358	Allowed Min. TEMP	112
359	Allowed Max. TEMP	112
360	MAT. PROC. CONN. +	113
361	MAT. PROC. CONN. -	113
362	SEAL TYPE	114
363	DIP STATUS	112
365	MAT. MEMBRANE	114
366	FILLING FLUID	115
367	SENSOR TEMP.	116 or 118
368	Tmin SENSOR	115
369	Tmax SENSOR	115
370	TANK CONTENT	117
375	SUPPRESSED FLOW	118
378	MEAS. VAL. TREND	116 or 118
380	COUNTER:P > Pmax	119
382	RESET PEAKHOLD	120
383	MAX. MEAS. PRESS.	119
386	ELECTR. SERIAL NO.	111
389	MEASURING MODE	44
392	CALIBRATION MODE – "Linear" level type CALIBRATION MODE – "Height Linearized" level type	72 86
397	LIN. EDIT MODE	99
398	TOTALIZER 1 UNIT – "Volume p. cond." flow type	105
399	TOTALIZER 2 UNIT – "Volume p. cond." flow type	106
400	NEG. FLOW TOT. 1	105
401	ACK. ALARM MODE	124
404	COUNTER T>Tmax	119
409	OPERATING HOURS	121
413	SIMULATION MODE	123
414	SIM. PRESSURE	123
416	NEG. FLOW TOT. 2	106
419	MENU DESCRIPTOR	107
423	ALTERNATE DATA	108
434	CORRECTED PRESS. – "Pressure" measuring mode CORRECTED PRESS. – "Level" measuring mode CORRECTED PRESS. – "Flow" measuring mode	116 117 118
442	LOW FLOW CUT-OFF	97
467	COUNTER:P < Pmin	119
469	MIN. MEAS. PRESS.	119
471	MAX. MEAS. TEMP.	119
472	COUNTER T<Tmin	119
474	MIN. MEAS. TEMP.	119
476	SIM. ERROR NO.	124
480	ALARM DISPL. TIME	125
482	PROC.CONN.TYPE	113
484	PRESS.SENS LOLIM	114
485	PRESS.SENS HILIM	114
487	SENSOR H/WARE REV.	115
488	PCB COUNT:T > Tmax	119
490	PCB MAX. TEMP.	120
492	PCB COUNT:T < Tmin	120
494	PCB MIN. TEMP.	120
500	ACK. ALARM	124
549	MEASURING TABLE (display)	100
549	EDITOR TABLE, LINE-NUMB (enter values)	99

ID number	Parameter name	Description, see page
550	EDITOR TABLE, X-VAL. (enter values)	100
551	EDITOR TABLE, Y-VAL. (enter values)	99, 100
563	POS. INPUT VALUE	47, 49 or 53
564	LAST DIAG. CODE	124
570	Pmax PROC. CONN.	113
571	MASS FLOW UNIT	93
581	SENSOR MEAS.TYPE	114
584	SENSOR PRESSURE – "Pressure" measuring mode	116
	SENSOR PRESSURE – "Level" measuring mode	117
	SENSOR PRESSURE – "Flow" measuring mode	118
591	MINIMUM SPAN	114
595	SELECT ALARM TYPE	125
600	SELECT ALARM TYPE	125
603	RESET ALL ALARMS	125
607	CUST. UNIT FACT. V – "Linear" level type	71 or 74
	CUST. UNIT FACT. V – "Pressure Linearized" level type	79
	CUST. UNIT FACT. V – "Height Linearized" level type	84
608	CUSTOMER UNIT V – "Linear" level type	70 or 74
	CUSTOMER UNIT V – "Pressure Linearized" level type	78
	CUSTOMER UNIT V – "Height Linearized" level type	84
609	CUST. UNIT FACT. F	94
610	CUSTOMER UNIT F	93
627	TOT. 1 USER UNIT	105
628	TOT. 2 USER UNIT	106
634	MAX PRESS. FLOW	52 or 94
639	SIM.FLOW VALUE	123
640	FLOW-MEAS. TYPE	92
652	TOTALIZER 1	118
655	TOTAL. 1 OVERFLOW	118
657	TOTALIZER 2	118
658	TOTAL. 2 OVERFLOW	119
660	STD. FLOW UNIT	93
661	NORM FLOW UNIT	92
662	TOTALIZER 1 UNIT – "Mass" flow type	105
663	TOTALIZER 2 UNIT – "Mass" flow type	106
664	TOTALIZER 1 UNIT – "Gas. std. conditions" flow type	105
665	TOTALIZER 2 UNIT – "Gas. std. conditions" flow type	106
666	TOTALIZER 1 UNIT – "Gas. norm conditions" flow type	105
667	TOTALIZER 2 UNIT – "Gas. norm conditions" flow type	106
679	MEASURED VALUE – "Pressure"	116
	MEASURED VALUE – "Level"	116
	MEASURED VALUE – "Flow"	117
685	POS.ZERO ADJUST	46, 49, 51 or 53
688	MAIN DATA FORMAT	107
703	CUST. UNIT FACT. M – "Linear" level type	72
	CUST. UNIT FACT. M – "Pressure Linearized" level type	80
	CUST. UNIT FACT. M – "Height Linearized" level type	85
704	CUSTOMER UNIT M – "Linear" level type	71
	CUSTOMER UNIT M – "Pressure Linearized" level type	79
	CUSTOMER UNIT M – "Height Linearized" level type	85
705	CUST. UNIT FACT. H – "Linear" level type	70 or 75
	CUST. UNIT FACT. H – "Height Linearized" level type	83 or 88
706	CUSTOMER UNIT H – "Linear" level type	69 or 75
	CUSTOMER UNIT H – "Height Linearized" level type	83 or 87
708	HEIGHT UNIT – "Linear" level type	69 or 75
	HEIGHT UNIT – "Height Linearized" level type	82 or 87
709	MASS UNIT – "Linear" level type	71
	MASS UNIT – "Pressure Linearized" level type	79
	MASS UNIT – "Height Linearized" level type	84
710	EMPTY PRESSURE – "Linear" level type	72
	EMPTY PRESSURE – "Height Linearized" level type	86
711	FULL PRESSURE – "Linear" level type	73
	FULL PRESSURE – "Height Linearized" level type	86
712	LEVEL MAX.	85
713	TANK CONTENT MAX.	98
714	SIM. LEVEL	123

ID number	Parameter name	Description, see page
715	SIM. TANK CONT.	123
717	MEASURING TABLE (selection)	100
718	LEVEL MODE	67
755	LEVEL MIN.	85
759	TANK CONTENT MIN.	98
761	HYDR. PRESS MAX.	80
770	EDITOR TABLE (continue entries)	100
775	HYDR. PRESS MIN.	80
804	LIN. MEASURAND	69
805	LINd. MEASURAND	78
806	COMB.MEASURAND	82
808	TABLE SELECTION	99
809	EDITOR TABLE (select table)	99
810	ADJUST DENSITY – "Linear" level type ADJUST DENSITY – "Height Linearized" level type	73 86
811	PROCESS DENSITY	96
812	DENSITY UNIT – "Linear" level type DENSITY UNIT – "Height Linearized" level type	73 87
813	100 % POINT – "Linear" level type 100 % POINT – "Height Linearized" level type	76 88
814	ZERO POSITION – "Linear" level type ZERO POSITION – "Height Linearized" level type	76 88
815	TANK DESCRIPTION	100
831	HistoROM AVAIL.	122
832	HistoROM CONTROL	122
858	TANK VOLUME	74
859	TANK HEIGHT	75
990	IDENT NUMBER SEL	110
991	SET UNIT TO BUS	110
992	AI OUT VALUE	110
993	AI OUT STATUS	110
994	2ND CYCLIC VALUE	110
995	SEL. DISPLAY VAL.	111
996	PA INPUT VALUE	111
998	BUS ADDRESS	111
999	COND.STATUS DIAG	111

3 Graphic representation of function groups

The "Flow" measuring mode is only available for the Deltabar S differential pressure transmitter. The groups marked with "*" are only displayed for Deltabar S.

1st selection level	2nd selection level	3rd selection level (groups)	Function groups	Description, see page
LANGUAGE	LANGUAGE (079)			→ 43
MEASURING MODE	MEASURING MODE (389)			→ 44
QUICK SETUP pressure				→ 46
QUICK SETUP level				→ 48
QUICK SETUP Flow (Deltabar only)				→ 51
MANUFACTURER VIEW[1)]	→ OPERATING MENU	→ SETTINGS (557)	→ POSITION ADJUSTMENT	→ 53
			→ BASIC SETUP Pressure	→ 54
			→ BASIC SETUP Level, "Level Easy Pressure"	→ 57
			→ BASIC SETUP Level, "Level Easy Height"	→ 62
			→ BASIC SETUP Level, "Level Standard"	→ 66
			→ BASIC SETUP Flow *	→ 90
			→ EXTENDED SETUP Pressure	→ 95
			→ EXTENDED SETUP Level	→ 95
			→ EXTENDED SETUP Flow *	→ 96
			→ LINEARIZATION – Onsite display	→ 98
			→ LINEARIZATION – FieldCare	→ 101
			→ TOTALIZER SETUP *	→ 104
		→ DISPLAY (559)		→ 107
		→ TRANSMITTER INFO (560)	→ PA DATA	→ 110
			→ TRANSMITTER DATA	→ 111
			→ PROCESS CONNECTION	→ 113
			→ SENSOR DATA	→ 114
		→ PROCESS INFO (561)	→ PROCESS VALUES pressure	→ 116
			→ PROCESS VALUES level	→ 116
			→ PROCESS VALUES flow *	→ 117
			→ PEAK HOLD INDICATOR	→ 119
		→ OPERATING		→ 121
		→ DIAGNOSTICS	→ SIMULATION MODE	→ 123
			→ MESSAGES	→ 124
			→ USER LIMITS	→ 126

1) Only visible in FieldCare.

1st selection level	2nd selection level	3rd selection level (groups)	Function groups	Description, see page
PROFILE VIEW[1)]	→ PHYSICAL BLOCK	→ PB STANDARD PARAMETER		→ 128
		→ PB PARAMETER		→ 129
	→ TRANSDUCER BLOCK	→ TB STANDARD PARAMETER		→ 138
		→ TB PARAMETER		→ 139
	→ ANALOG INPUT BLOCK	→ AI STANDARD PARAMETER		→ 140
		→ AI PARAMETER		→ 141

1) Only visible in FieldCare.

4 Pressure measurement

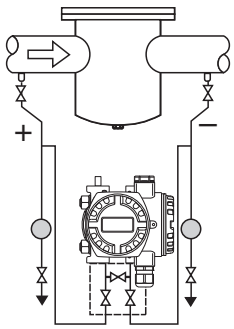
- The Cerabar S and the Deltabar S is configured for the pressure measuring mode as standard. The Deltapilot S is configured for the level measuring mode as standard. The measuring range and the unit in which the measured value is transmitted, as well as the digital output value of the Analog Input Block OUT, correspond to the data on the nameplate.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  – If you change the operating mode
  – If you change the values for PV SCALE
  – If you change the values for OUT SCALE
  – If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions Deltabar S (BA00294P), Section 6.7 "Differential pressure measurement", Cerabar S (BA00295P), Section 6.6 "Pressure measurement" or Deltapilot S (BA00356P), Section 6.5 "Pressure measurement".
- For a description of the parameters mentioned, see
  – Page 44, Table 2: MEASURING MODE
  – Page 53, Table 6: POSITION ADJUSTMENT
  – Page 54, Table 7: BASIC SETUP.
- For a description of further relevant parameters, see
  – Page 95, Table 15: EXTENDED SETUP
  – Page 116, Table 27: PROCESS VALUES.

⚠ WARNING

Changing the measuring mode affects the span (URV)!

This situation can result in product overflow.

▶ If the measuring mode is changed, the span setting (URV) must be verified in the "Calibration" → "Basic Setup" operating menu and, if necessary, reconfigured!

	Description	
1	Deltabar S: before configuring the device for your application, the pressure piping must be cleaned and the device filled with fluid. See Operating Instructions BA00294P, Section 6.7.	 P01-PMD75xxx-19-xx-xx-xx-000
2	Carry out position adjustment if necessary. See Page 53, Table 6: POSITION ADJUSTMENT	
3	If necessary, select the "Pressure" measuring mode via the MEASURING MODE parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE	
4	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.	
5	Result: The device is ready for pressure measurement.	

- You can also specify a customer-specific unit. See parameter description for PRESS. ENG. UNIT (→ Page 55).

5 Level measurement

5.1 Overview of level measurement

Measuring task	LEVEL SELECTION/ LEVEL MODE	Measured variable options	Description	Comment	Measured value display
The measured variable is in direct proportion to the measured pressure. Calibration is performed by entering two pressure-level value pairs.	LEVEL SELECTION: Level Easy Pressure	Via OUTPUT UNIT parameter: %, level, volume or mass units.	– Calibration with reference pressure – wet calibration, see Page 13, Section 5.2.1 – Calibration without reference pressure – dry calibration, see Page 16, Section 5.2.2	– Incorrect entries are possible – Customized units are not possible	The measured value display and the LEVEL BEFORE LIN parameter show the measured value.
The measured variable is in direct proportion to the measured pressure. Calibration is performed by entering the density and two height-level value pairs.	LEVEL SELECTION: Level Easy Height	Via OUTPUT UNIT parameter: %, level, volume or mass units.	– Calibration with reference pressure – wet calibration, see Page 18, Section 5.3.1 – Calibration without reference pressure – dry calibration, see Page 21, Section 5.3.2	– Incorrect entries are possible – Customized units are not possible	The measured value display and the LEVEL BEFORE LIN parameter show the measured value.
The measured variable is in direct proportion to the measured pressure.	LEVEL SELECTION: Level standard/ LEVEL MODE: Linear	Via LIN. MEASURAND parameter: – % (level) – Level – Volume – Mass	– Calibration with reference pressure – wet calibration, see Page 23, Section 5.4.1 – Calibration without reference pressure – dry calibration, see Page 25, Section 5.4.2	– Incorrect entries are rejected by the device – Customized level, volume and mass units are possible	The measured value display and the LEVEL BEFORE LIN parameter show the measured value.
The measured variable is not in direct proportion to the measured pressure as, for example, with containers with a conical outlet. A linearization table must be entered for the calibration.	LEVEL SELECTION: Level standard/ LEVEL MODE: Pressure linearized	Via LINd MEASURAND parameter: – Pressure + % – Pressure + Volume – Pressure + Mass	– Calibration with reference pressure: semiautomatic entry of linearization table, see Page 27, Section 5.5.1 – Calibration without reference pressure: manual entry of linearization table, see Page 30, Section 5.5.2	– Incorrect entries are rejected by the device – Customized level, volume and mass units are possible	The measured value display and the TANK CONTENT parameter show the measured value.
– Two measured variables are required or – The container shape is given by value pairs, such as height and volume. The 1st measured variable %-Height or height must be in direct proportion to the measured pressure. The 2nd measured variable volume, mass or % must not be in direct proportion to the measured pressure. A linearization table must be entered for the 2nd measured variable. The 2nd measured variable is assigned to the 1st measured variable by means of this table.	LEVEL SELECTION: Level standard/ LEVEL MODE: Height Linearized	Via COMB. MEASURAND parameter: – Height + Volume – Height + Mass – Height + % – %-Height + volume – %-Height + Mass – %-Height + %	– Calibration with reference pressure: wet calibration and semiautomatic entry of linearization table, see Page 33, Section 5.6.1 – Calibration without reference pressure: dry calibration and manual entry of linearization table, see Page 37, Section 5.6.2	– Incorrect entries are rejected by the device – Customized level, volume and mass units are possible	The measured value display and the TANK CONTENT parameter show the 2nd measured value (volume, mass or %). The LEVEL BEFORE LIN parameter displays the 1st measured value (%-Height or height).

5.2 "Level Easy Pressure" level selection

5.2.1 Calibration with reference pressure – wet calibration

Example:
In this example, the level in a tank should be measured in m. The maximum level is 3 m (9.8 ft). The pressure range is set to 0 to 300 mbar (4.5 psi).

Prerequisite:
- The measured variable is in direct proportion to the pressure.
- The tank can be filled or emptied.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  – If you change the operating mode
  – If you change the values for PV SCALE
  – If you change the values for OUT SCALE
  – If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions for Deltabar S (BA00294P) or Cerabar S (BA00295P), Section 6.6 "Level measurement" or Deltapilot S (BA00356P), Section 6.5 "Level measurement".
- The values entered for EMPTY CALIB. and FULL CALIB. must have a minimum interval of 1% for the "Level Easy Pressure" level mode. The value will be rejected with a warning message if the values are too close together. Further limit values are not checked; i.e. the values entered must be appropriate for the sensor and the measuring task so that the measuring device can measure correctly.
- For a description of the parameters mentioned, see
  – Page 44, Table 2: MEASURING MODE
  – Page 53, Table 6: POSITION ADJUSTMENT
  – Page 57, Table 8: LEVEL SELECTION "Level Easy Pressure"
- For a description of further relevant parameters, see
  – Page 95, Table 16: EXTENDED SETUP
  – Page 116, Table 28: PROCESS VALUES.

⚠ WARNING
Changing the measuring mode affects the span (URV)!
This situation can result in product overflow.
▶ If the measuring mode is changed, the span setting (URV) must be verified in the "Calibration" → "Basic Setup" operating menu and, if necessary, reconfigured!

	Description	
1	Deltabar S: Before you configure the device for your application, the pressure piping must be cleaned and filled with medium. See Operating Instructions BA00294P, Section 6.6.1	
2	Carry out position adjustment if necessary. See Page 53, Table 6: POSITION ADJUSTMENT	
3	If necessary, select the "Level" measuring mode via the MEASURING MODE parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE	
4	If necessary, select "Level Easy Pressure" level mode using the LEVEL SELECTION parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE "Level" → LEVEL SELECTION FieldCare: Menu path: MEASURING MODE "Level" → LEVEL SELECTION	

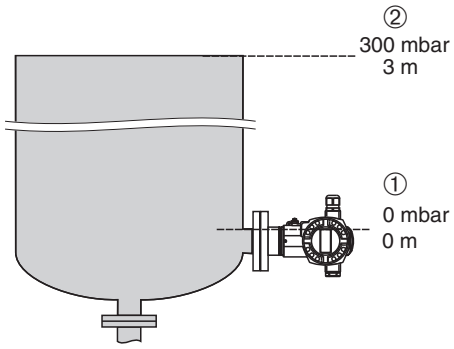


Fig. 1: Calibration with reference pressure – wet calibration

1 See Table, step 9.
2 See Table, step 10.

	Description
5	Onsite display: Select BASIC SETUP function group. Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETUP
6	Select a pressure unit via the PRESS. ENG. UNIT parameter, here mbar for example.
7	Select a level unit via the OUTPUT UNIT parameter, here m for example.
8	Select the "Wet" option via the CALIBRATION MODE parameter.
9	Hydrostatic pressure for the lower calibration point is present at the device, here 0 mbar for example.
	Select EMPTY CALIB. parameter.
	Enter the level value, here 0 m for example. Confirm the value to assign the pressure value present to the lower level value. To accept the displayed value you must first switch to the editing mode (see the "Editing values" section) and then press the "E" button to save the value.
10	Hydrostatic pressure for the upper calibration point is present at the device, here 300 mbar (4.5 psi) for example.
	Select FULL CALIB. parameter.
	Enter the level value, here 3 m (9.8 ft) for example. Confirm the value to assign the pressure value present to the upper level value. To accept the displayed value you must first switch to the editing mode (see the "Editing values" section) and then press the "E" button to save the value.
11	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.
12	Result: The measuring range is set for 0 to 3 m (9.8 ft).

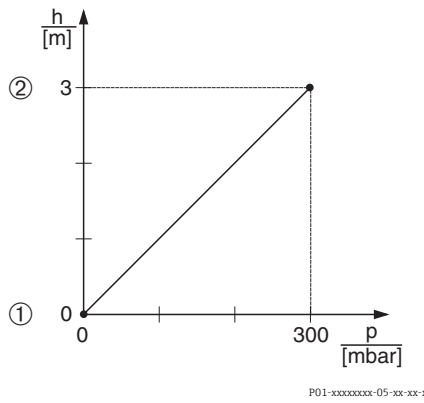


Fig. 2: Calibration with reference pressure – wet calibration

1 See Table, step 9.
2 See Table, step 10.

1. You can also perform calibration with reference pressure by means of the QUICK SETUP menu. → See Page 48 ff, Table 4: QUICK SETUP menu.
2. For this level mode, the measured variables %, level, volume and mass are available. → See also parameter description for OUTPUT UNIT, Page 59.
3. For operation using the onsite display, the parameters EMPTY CALIB. (→ Page 60) and FULL CALIB. (→ Page 60) also show the respective pressure present at the device. For operation using the FieldCare, the pressure present at the device is displayed in the PROCESS VALUES group.

5.2.2 Calibration without reference pressure – dry calibration

Example:
In this example, the volume in a tank should be measured in liters. The maximum volume of 1000 liters (264 US gal) corresponds to a pressure of 450 mbar (6.75 psi). The minimum volume of 0 liters corresponds to a pressure of 50 mbar (0.75 psi). The device is mounted below the level lower range value.

Prerequisite:
- The measured variable is in direct proportion to the pressure.
- This is a theoretical calibration i.e. the pressure and volume values for the lower and upper calibration point must be known.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  – If you change the operating mode
  – If you change the values for PV SCALE
  – If you change the values for OUT SCALE
  – If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions for Deltabar S (BA00294P) or Cerabar S (BA00295P), Section 6.6 "Level measurement" or Deltapilot S (BA00356P), Section 6.5 "Level measurement".
- The values entered for EMPTY CALIB. and FULL CALIB. must have a minimum interval of 1% for the "Level Easy Pressure" level mode. The value will be rejected with a warning message if the values are too close together. Further limit values are not checked; i.e. the values entered must be appropriate for the sensor and the measuring task so that the measuring device can measure correctly.
- Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partly filled, the MEASURED VALUE parameter does not display zero. → To perform a position adjustment see also Page 53, Table 6: Position adjustment.
- For a description of the parameters mentioned, see
  – Page 44, Table 2: MEASURING MODE
  – Page 57, Table 8: LEVEL SELECTION "Level Easy Pressure"
- For a description of further relevant parameters, see
  – Page 95, Table 16: EXTENDED SETUP
  – Page 116, Table 28: PROCESS VALUES.

	Description
1	Select the "Level" measuring mode via the MEASURING MODE parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE
2	If necessary, select "Level Easy Pressure" level mode using the LEVEL SELECTION parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE "Level" → LEVEL SELECTION FieldCare: Menu path: MEASURING MODE "Level" → LEVEL SELECTION
3	Onsite display: Select BASIC SETUP function group. Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETUP

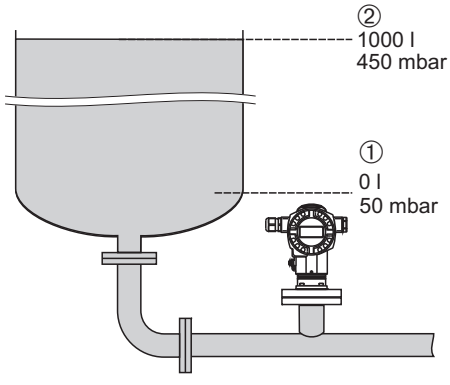


Fig. 3: Calibration without reference pressure – dry calibration

1 See Table, step 10.
2 See Table, step 11.
3 See Table, step 12.
4 See Table, step 13.

	Description
4	Select a pressure unit via the PRESS. ENG. UNIT parameter, here mbar for example.
5	Select a volume unit via the OUTPUT UNIT parameter, here l (liters) for example.
6	Select the "Dry" option via the CALIBRATION MODE parameter.
7	Enter the volume value for the lower calibration point via the EMPTY CALIB. parameter, here 0 l for example.
8	Enter the pressure value for the lower calibration point via the EMPTY PRESSURE parameter, here 50 mbar (0.75 psi) for example.
9	Enter the volume value for the upper calibration point via the FULL CALIB. parameter, here 1000 l (264 US gal) for example.
10	Enter the pressure value for the upper calibration point via the FULL PRESSURE parameter, here 450 mbar (6.75 psi) for example.
11	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.
12	Result: The measuring range is set for 0 to 1000 l (264 US gal).

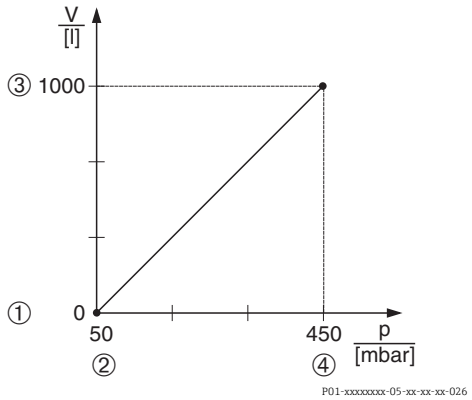


Fig. 4: Calibration with reference pressure – wet calibration

1 See Table, step 7.
2 See Table, step 8.
3 See Table, step 9.
4 See Table, step 10.

1. For this level mode, the measured variables %, level, volume and mass are available.
   → See also parameter description for OUTPUT UNIT, Page 59.

5.3 "Level Easy Height" level selection

5.3.1 Calibration with reference pressure – wet calibration

Example:
In this example, the volume in a tank should be measured in liters. The maximum volume of 1000 liters (264 US gal) corresponds to a level of 4.5 m (15 ft). The minimum volume of 0 liters corresponds to a level of 0.5 m (1.6 ft). The device is mounted below the level lower range value. The density of the fluid is 1 kg/dm^3.

Prerequisite:
- The measured variable is in direct proportion to the pressure.
- The tank can be filled or emptied.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  – If you change the operating mode
  – If you change the values for PV SCALE
  – If you change the values for OUT SCALE
  – If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions for Deltabar S (BA00294P) or Cerabar S (BA00295P), Section 6.6 "Level measurement" or Deltapilot S (BA00356P), Section 6.5 "Level measurement".
- The values entered for EMPTY CALIB./FULL CALIB., EMPTY PRESSURE/FULL PRESSURE and EMPTY HEIGHT/FULL HEIGHT must have a minimum interval of 1% for the "Level Easy Height" level mode. The value will be rejected with a warning message if the values are too close together. Further limit values are not checked; i.e. the values entered must be appropriate for the sensor and the measuring task so that the measuring device can measure correctly.
- For a description of the parameters mentioned, see
  – Page 44, Table 2: MEASURING MODE
  – Page 53, Table 6: POSITION ADJUSTMENT
  – Page 62, Table 9: LEVEL SELECTION "Level Easy Height"
- For a description of further relevant parameters, see
  – Page 95, Table 16: EXTENDED SETUP
  – Page 116, Table 28: PROCESS VALUES.

⚠ WARNING
Changing the measuring mode affects the span (URV)!
This situation can result in product overflow.
▶ If the measuring mode is changed, the span setting (URV) must be verified in the "Calibration" → "Basic Setup" operating menu and, if necessary, reconfigured!

	Description	
1	Deltabar S: Before you configure the device for your application, the pressure piping must be cleaned and filled with medium. See Operating Instructions BA00294P, Section 6.6.1	
2	Carry out position adjustment if necessary. See Page 53, Table 6: POSITION ADJUSTMENT	
3	Select the "Level" measuring mode via the MEASURING MODE parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE	

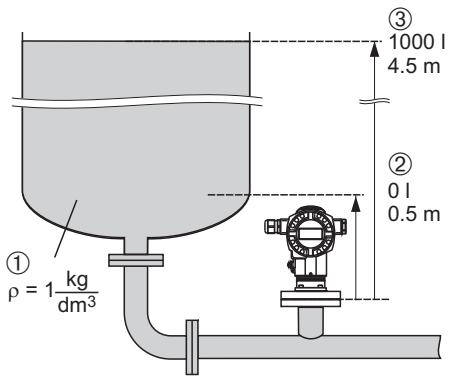
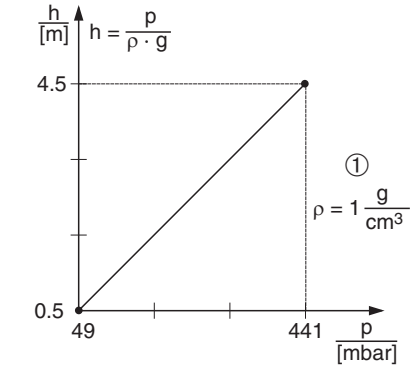


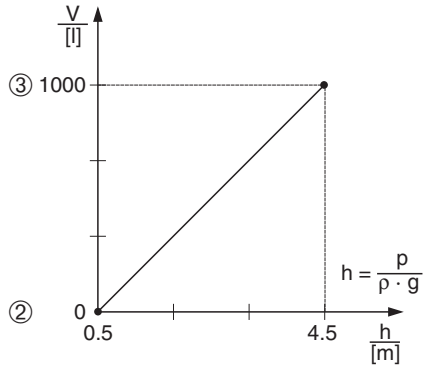
Fig. 5: Calibration with reference pressure – wet calibration

1 See Table, steps 10 and 11.
2 See Table, step 12.
3 See Table, step 13.

	Description
4	If necessary, select the "Level Easy Height" level mode using the LEVEL SELECTION parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE "Level" → LEVEL SELECTION FieldCare: Menu path: MEASURING MODE "Level" → LEVEL SELECTION
5	Onsite display: Select BASIC SETUP function group. Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETUP
6	Select a pressure unit via the PRESS. ENG. UNIT parameter, here mbar for example.
7	Select a volume unit via the OUTPUT UNIT parameter, here l (liters) for example.
8	Select a height unit via the HEIGHT UNIT parameter, here m for example.
9	Select the "Wet" option via the CALIBRATION MODE parameter.
10	Select a density unit via the DENSITY UNIT parameter, here g/cm³ for example.
11	Enter the density of the fluid using the ADJUST DENSITY parameter, here 1 g/cm³ for example.
12	Enter the volume value for the lower calibration point via the EMPTY CALIB. parameter, here 0 l for example. (The currently measured hydrostatic pressure is displayed as height, here 0.5 m (1.6 ft) for example.) To accept the displayed value you must first switch to the editing mode (see the "Editing values" section) and then press the "E" button to save the value.
13	Enter the volume value for the upper calibration point via the FULL CALIB. parameter, here 1000 l (264 US gal) for example. (The currently measured hydrostatic pressure is displayed as height, here 4.5 m (15 ft) for example.) To accept the displayed value you must first switch to the editing mode (see the "Editing values" section) and then press the "E" button to save the value.
14	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.
15	Result: The measuring range is set for 0 to 1000 l (264 US gal).



P01-xxxxxxxx-05-xx-xx-xx-029



P01-xxxxxxxx-05-xx-xx-xx-030

Fig. 6: Calibration with reference pressure – wet calibration

1 See Table, steps 10 and 11.
2 See Table, step 12.
3 See Table, step 13.

1. For this level mode, the measured variables %, level, volume and mass are available.
   → See also parameter description for OUTPUT UNIT, Page 63.

5.3.2 Calibration without reference pressure – dry calibration

Example:
In this example, the volume in a tank should be measured in liters. The maximum volume of 1000 liters (264 US gal) corresponds to a level of 4.5 m (15 ft). The minimum volume of 0 liters corresponds to a level of 0.5 m (1.6 ft). The device is mounted below the level lower range value. The density of the fluid is 1 kg/dm^3.

Prerequisite:
- The measured variable is in direct proportion to the pressure.
- This is a theoretical calibration i.e. the height and volume values for the lower and upper calibration point must be known.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  – If you change the operating mode
  – If you change the values for PV SCALE
  – If you change the values for OUT SCALE
  – If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions for Deltabar S (BA00294P) or Cerabar S (BA00295P), Section 6.6 or Deltapilot S (BA00356P), Section 6.5.
- The values entered for EMPTY CALIB./FULL CALIB., EMPTY PRESSURE/FULL PRESSURE and EMPTY HEIGHT/FULL HEIGHT must have a minimum interval of 1% for the "Level Easy Height" level mode. The value will be rejected with a warning message if the values are too close together. Further limit values are not checked; i.e. the values entered must be appropriate for the sensor and the measuring task so that the measuring device can measure correctly.
- Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partly filled, the MEASURED VALUE parameter does not display zero. → To perform a position adjustment see also Page 53, Table 6: Position adjustment.
- For a description of the parameters mentioned, see
  – Page 44, Table 2: MEASURING MODE
  – Page 62, Table 9: LEVEL SELECTION "Level Easy Height"
- For a description of further relevant parameters, see
  – Page 95, Table 16: EXTENDED SETUP
  – Page 116, Table 28: PROCESS VALUES.

	Description
1	Select the "Level" measuring mode via the MEASURING MODE parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE
2	If necessary, select the "Level Easy Height" level mode using the LEVEL SELECTION parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE "Level" → LEVEL SELECTION FieldCare: Menu path: MEASURING MODE "Level" → LEVEL SELECTION
3	Onsite display: Select BASIC SETUP function group. Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETUP

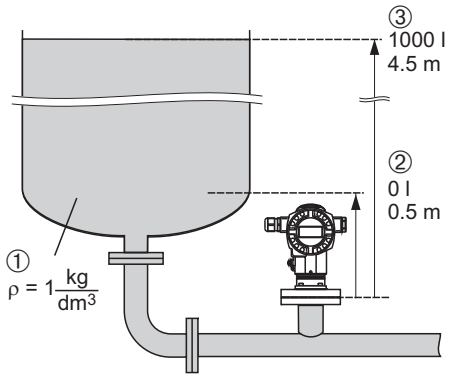


Fig. 7: Calibration without reference pressure – dry calibration

1 See Table, step 11.
2 See Table, steps 13 and 14.
3 See Table, steps 15 and 16.

	Description
4	Select a pressure unit via the PRESS. ENG. UNIT parameter, here mbar for example.
5	Select a volume unit via the OUTPUT UNIT parameter, here l (liters) for example.
6	Select a height unit via the HEIGHT UNIT parameter, here m for example.
7	Select the "Dry" option via the CALIBRATION MODE parameter.
8	Select a density unit via the DENSITY UNIT parameter, here kg/dm^3 for example.
9	Enter the density of the fluid using the ADJUST DENSITY parameter, here 1 kg/dm^3 for example.
10	Enter the volume value for the lower calibration point via the EMPTY CALIB. parameter, here 0 l (liters) for example.
11	Enter the height value for the lower calibration point via the EMPTY HEIGHT parameter, here 0.5 mbar (1.6 ft) for example.
12	Enter the volume value for the upper calibration point via the FULL CALIB. parameter, here 1000 l (liters) for example.
13	Enter the height value for the upper calibration point via the FULL HEIGHT parameter, here 4.5 mbar (15 ft) for example.
14	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.
15	Result: The measuring range is set for 0 to 1000 l (liters) (264 US gal).

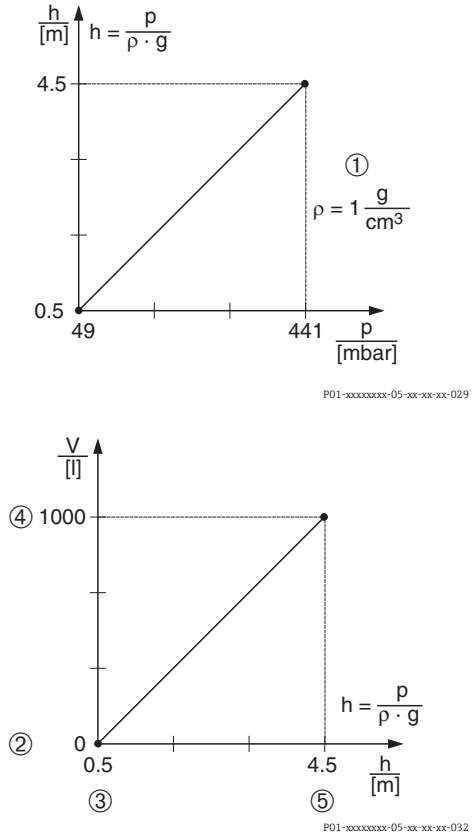


Fig. 8: Calibration with reference pressure – wet calibration

1 See Table, steps 8 and 9.
2 See Table, step 10.
3 See Table, step 11.
4 See Table, step 12.
5 See Table, step 13.

1. For this level mode, the measured variables %, level, volume and mass are available.
   → See also parameter description for OUTPUT UNIT, Page 63.

5.4 "Level Standard" level selection, "Linear" level type

5.4.1 Calibration with reference pressure – wet calibration

Example:
In this example, the level in a tank should be measured in m. The maximum level is 3 m (9.8 ft). The pressure range is set to 0 to 300 mbar (4.5 psi).

Prerequisite:
- The measured variable is in direct proportion to the pressure.
- The tank can be filled or emptied.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  – If you change the operating mode
  – If you change the values for PV SCALE
  – If you change the values for OUT SCALE
  – If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions for Deltabar S (BA00294P) or Cerabar S (BA00295P), Section 6.6 or Deltapilot S (BA00356P), Section 6.5.
- For a description of the parameters mentioned, see
  – Page 44, Table 2: MEASURING MODE
  – Page 53, Table 6: POSITION ADJUSTMENT
  – Page 66, Table 10: BASIC SETUP
  – Page 69, Table 11: BASIC SETUP – "Linear" level type.
- For a description of further relevant parameters, see
  – Page 95, Table 16: EXTENDED SETUP
  – Page 116, Table 22: PROCESS VALUES.

⚠ WARNING
Changing the measuring mode affects the span (URV)!
This situation can result in product overflow.
▶ If the measuring mode is changed, the span setting (URV) must be verified in the "Calibration" → "Basic Setup" operating menu and, if necessary, reconfigured!

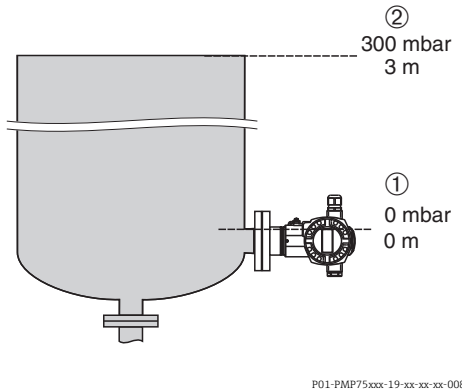
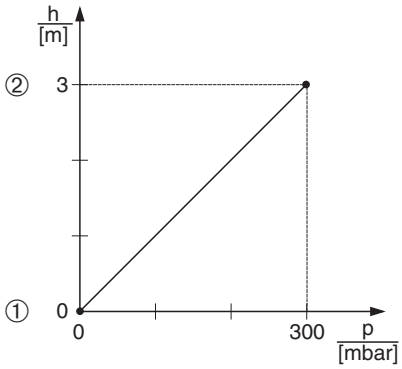
	Description	
1	Deltabar S: Before you configure the device for your application, the pressure piping must be cleaned and filled with medium. See Operating Instructions BA00294P, Section 6.6.1	 P01-PMP75xxx-19-xx-xx-xx-008
2	Carry out position adjustment if necessary. See Page 53, Table 6: POSITION ADJUSTMENT	
3	If necessary, select the "Level" measuring mode via the MEASURING MODE parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE	

Fig. 9: Calibration with reference pressure – wet calibration

1 See Table, step 11.
2 See Table, step 12.

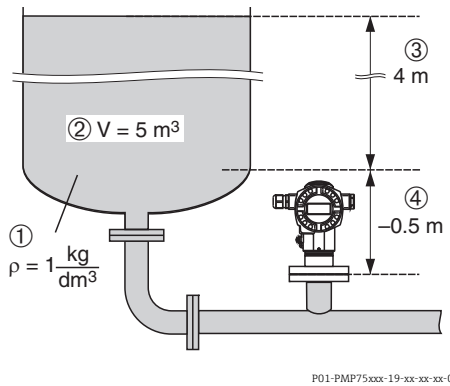
	Description	
4	If necessary, select "Level Standard" level mode using the LEVEL SELECTION parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE	 1 See Table, step 11. 2 See Table, step 12.
5	Onsite display: Select BASIC SETUP function group. Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETUP	
6	Select a pressure unit via the PRESS. ENG. UNIT parameter, here mbar for example.	
7	Select the "Linear" option by means of the LEVEL MODE parameter.	
8	Select the "Level" option by means of the LIN. MEASURAND parameter.	
9	Select a level unit via the HEIGHT UNIT parameter, here m for example.	
10	Select the "Wet" option via the CALIBRATION MODE parameter.	
11	The pressure for the lower calibration point is present at the device, here 0 mbar for example.	
	Select EMPTY CALIB. parameter.	
	Enter the level value, here 0 m for example. Confirm the value to assign the pressure value present to the lower level value.	
12	The pressure for the upper calibration point is present at the device, here 300 mbar (4.5 psi) for example.	
	Select FULL CALIB. parameter.	
	Enter the level value, here 3 m (9.8 ft) for example. Confirm the value to assign the pressure value present to the upper level value.	
13	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.	
14	Result: The corresponding pressure value has been assigned to the lower and upper level value. The device is ready for level measurement.	

1. You can also perform calibration with reference pressure by means of the QUICK SETUP menu. → See Page 48 ff, Table 4: QUICK SETUP menu.
2. You can also specify customer-specific units. See parameter description for PRESS. ENG. UNIT (→ Page 66), HEIGHT UNIT (→ Page 69), UNIT VOLUME (→ Page 70) and MASS UNIT (Page 71).
3. For this level type, the measured variables %, level, volume and mass are available. → See Page 69 ff.
4. The EMPTY PRESSURE (→ Page 72) and FULL PRESSURE (→ Page 73) parameters display the pressure values belonging to the EMPTY CALIB. and FULL CALIB. parameters.

5.4.2 Calibration without reference pressure – dry calibration

Example:
In this example, the volume in a tank should be measured in m^3. The maximum volume is 5 m^3 and the maximum height 4 m (13 ft). The density of the fluid is 1 kg/dm^3. The device is mounted below the level lower range value.

Prerequisite:
- The measured variable is in direct proportion to the pressure.
- This is a theoretical calibration, i.e. the tank volume, tank height and density of the fluid are known.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  – If you change the operating mode
  – If you change the values for PV SCALE
  – If you change the values for OUT SCALE
  – If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions for Deltabar S (BA00294P) or Cerabar S (BA00295P), Section 6.6 "Level measurement" or Deltapilot S (BA00356P), Section 6.5 "Level measurement".
- Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partly filled, the MEASURED VALUE parameter does not display zero. → To perform a position adjustment see also Page 53, Table 6: Position adjustment.
- For a description of the parameters mentioned, see
  – Page 44, Table 2: MEASURING MODE
  – Page 66, Table 10: BASIC SETUP
  – Page 69, Table 11: BASIC SETUP – "Linear" level type.
- For a description of further relevant parameters, see
  – Page 95, Table 16: EXTENDED SETUP
  – Page 116, Table 28: PROCESS VALUES.

	Description	
1	Select the "Level" measuring mode via the MEASURING MODE parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE	 *Fig. 10: Calibration without reference pressure – dry calibration* *1 See Table, step 9.* *2 See Table, step 10.* *3 See Table, step 11.* *4 See Table, step 12.*

	Description	
2	If necessary, select "Level Standard" level mode using the LEVEL SELECTION parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE "Level" → LEVEL SELECTION FieldCare: Menu path: MEASURING MODE "Level" → LEVEL SELECTION	
3	Onsite display: Select BASIC SETUP function group. Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETUP	
4	Select a pressure unit via the PRESS. ENG. UNIT parameter, here mbar for example.	
5	Select the "Linear" option by means of the LEVEL MODE parameter.	
6	Select the "Volume" option by means of the LIN. MEASURAND parameter.	
7	Select a volume unit via the UNIT VOLUME parameter, here m^3 for example.	
8	Select the "Dry" option via the CALIBRATION MODE parameter.	
9	Enter the value for density via the ADJUST DENSITY parameter, here 1 kg/dm^3 for example.	
10	Enter the tank volume via the TANK VOLUME parameter, here 5 m^3 for example.	
11	Enter the tank height via the TANK HEIGHT parameter, here 4 m (13 ft) for example.	
12	Enter the level offset via the ZERO POSITION parameter, here –0.5 m (-1.6 ft) for example.	
13	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.	
14	Result: The device is ready for level measurement.	

1. For this level type, the measured variables %, level, volume and mass are available. → See Page 69 ff.
2. You can also specify customer-specific units. See parameter description for PRESS. ENG. UNIT (→ Page 66), HEIGHT UNIT (→ Page 69), UNIT VOLUME (→ Page 70) and MASS UNIT (→ Page 71).

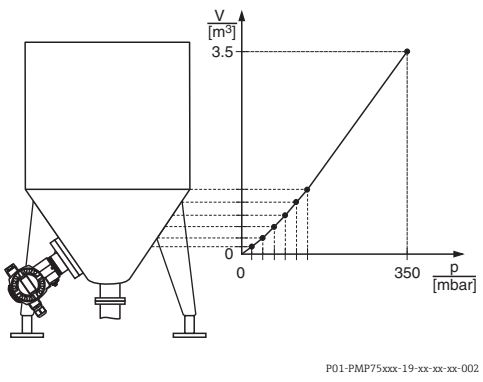
5.5 "Level standard" level selection, "Pressure linearized" level type

5.5.1 Semiautomatic entry of the linearization table

Example:
In this example, the volume in a tank with a conical outlet should be measured in m^3.

Prerequisite:
- The tank can be filled. The linearization characteristic must rise continuously.
- A minimum gap of 0.5 % of the distance between two points must be maintained. Spans for the "Pressure linearized" option: HYDR. PRESS MAX. – HYDR. PRESS MIN.; TANK CONTENT MAX. – TANK CONTENT MIN. Spans for the "Height linearized" option: LEVEL MAX. – LEVEL MIN.; TANK CONTENT MAX. – TANK CONTENT MIN.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  – If you change the operating mode
  – If you change the values for PV SCALE
  – If you change the values for OUT SCALE
  – If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions for Deltabar S (BA00294P) or Cerabar S (BA00295P), Section 6.6 "Level measurement" or Deltapilot S (BA00356P), Section 6.5 "Level measurement".
- For a description of the parameters mentioned, see
  – Page 44, Table 2: MEASURING MODE
  – Page 53, Table 6: POSITION ADJUSTMENT
  – Page 66, Table 10: BASIC SETUP
  – Page 69, Table 11: BASIC SETUP – "Pressure linearized" level type
  – Page 98, Table 18: LINEARIZATION – Onsite display
  – Page 101, Table 19: LINEARIZATION – FieldCare
- For a description of further relevant parameters, see
  – Page 95, Table 16: EXTENDED SETUP
  – Page 116, Table 28: PROCESS VALUES.

⚠ WARNING
Changing the measuring mode affects the span (URV)!
This situation can result in product overflow.
▶ If the measuring mode is changed, the span setting (URV) must be verified in the "Calibration" → "Basic Setup" operating menu and, if necessary, reconfigured!

	Description	
1	Deltabar S: Before you configure the device for your application, the pressure piping must be cleaned and filled with medium. See Operating Instructions BA00294P, Section 6.6.1.	
2	Carry out position adjustment if necessary. See Page 48, Table 6: POSITION ADJUSTMENT	

	Description
	Carry out basic setup:
3	If necessary, select the "Level" measuring mode via the MEASURING MODE parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE
4	If necessary, select "Level Standard" level mode using the LEVEL SELECTION parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE "Level" → LEVEL SELECTION FieldCare: Menu path: MEASURING MODE "Level" → LEVEL SELECTION
5	Onsite display: Select BASIC SETUP function group. Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETUP
6	Select a pressure unit via the PRESS. ENG. UNIT parameter, here mbar for example.
7	Select the "Pressure linearized" option by means of the LEVEL MODE parameter. See also the following note, point 3.
8	Select the "Volume" option by means of the LINd. MEASURAND parameter.
9	Select a volume unit via the UNIT VOLUME parameter, here m^3 for example.
10	Select HYDR. PRESS MIN. parameter.
	Enter the minimum hydrostatic pressure to be expected, here 0 mbar for example.
11	Select HYDR. PRESS MAX .
	Enter the maximum hydrostatic pressure to be expected, here 350 mbar (5.25 psi) for example.
	Carry out linearization:
12	Change the function group. Onsite display: Menu path: GROUP SELECTION →OPERATING MENU → SETTINGS → LINEARIZATION FieldCare: Menu path: MANUFACTURER VIEW → OPERATING MENU → SETTINGS → LINEARIZATION
13	Select TANK CONTENT MIN parameter.
	Specify the minimum tank contents to be expected, here 0 m^3 for example.
14	Select TANK CONTENT MAX parameter.
	Specify the maximum tank contents to be expected, here 3.5 m^3 for example. See also the following note, point 4.
15	Onsite display: Select the "Editor table" option by means of the TABLE SELECTION parameter.
16	Select the "Semiautomatic" option by means of the LIN. EDIT MODE parameter.

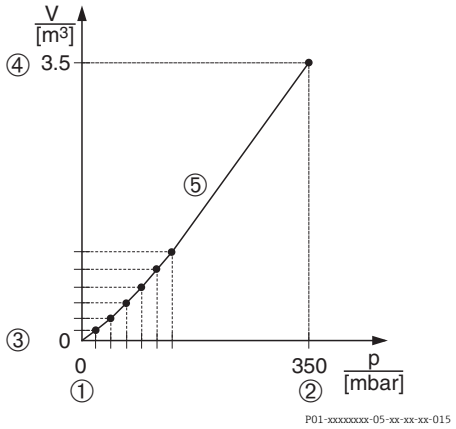


Fig. 11: Semiautomatic entry of the linearization table

1 See Table, step 10.
2 See Table, step 11.
3 See Table, step 13.
4 See Table, step 14.
5 See Table, steps 15 to 19.

	Description	
17	Select the "New table" option by means of the EDITOR TABLE parameter.	
18	Enter linearization table (min. 2 points, max. 32 points).	
	Fill the tank to the height of the 1st point.	
	LINE-NUMB: confirm value displayed.	
	X-VAL.: the hydrostatic pressure present is displayed. The X-VAL. displayed is saved by confirming the Y-value. See following line, Y-VAL.	
	Y-VAL.: enter the volume value, here 0 m^3 for example, and confirm the value.	
19	Onsite display: If you want to enter another point for the linearization table, select the "Next point" option and enter the point as described in step 18. FieldCare: You can enter further points for the linearization table as explained in step 18.	
20	If you want to finish entering the values and activate the linearization table, select the "Accept input table" option.	
21	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.	
22	Result: The linearization table has been entered and the device is ready for level measurement.	

1. For this level type, the measured variables %, volume and mass are available. → See Page 77 ff.
2. You can also specify customer-specific units. See parameter description for PRESS. ENG. UNIT (→ Page 66), HEIGHT UNIT (→ Page 78), UNIT VOLUME (→ Page 78) and MASS UNIT (→ Page 79).
3. Once you have selected the "Pressure linearized" level type, the warning message "W710 Set span too small. Not allowed." can appear. At this stage the linearization table already consists of two points as standard. It could be the case that the 2nd value, and thus the highest X-VAL. of the linearization table, is smaller than the minimum span permitted (→ MINIMUM SPAN, Page 114). The message disappears as soon as the highest X-VALUE is greater than the minimum span and the table entered is active.
4. Once you have entered the maximum tank contents to be expected for TANK CONTENT MAX., the alarm "A719 Y-Val of lin. table out of edit limits" can appear. At this stage the linearization table already consists of two points as standard. It could be the case that the 2nd value and thus the highest Y-VALUE of the linearization table is greater than the value entered for TANK CONTENT MAX. The message disappears as soon as no Y-VALUE is greater than the value for TANK CONTENT MAX. and the table entered is active.

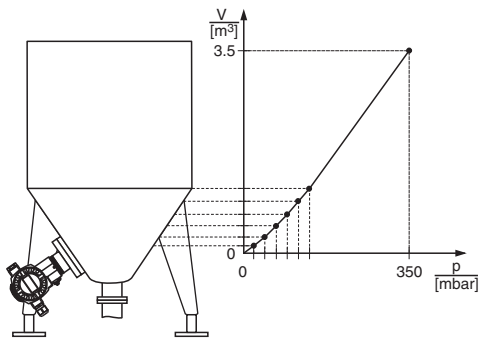
5.5.2 Manual entry of the linearization table

Example:
In this example, the volume in a tank with a conical outlet should be measured in m^3.

Prerequisite:
- This is a theoretical calibration, i.e. the points for the linearization table are known.
- A minimum gap of 0.5 % of the distance between two points must be maintained. Spans for the "Pressure linearized" option: HYDR. PRESS MAX. – HYDR. PRESS MIN.; TANK CONTENT MAX. – TANK CONTENT MIN. Spans for the "Height linearized" option: LEVEL MAX. – LEVEL MIN.; TANK CONTENT MAX. – TANK CONTENT MIN.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  – If you change the operating mode
  – If you change the values for PV SCALE
  – If you change the values for OUT SCALE
  – If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions for Deltabar S (BA00294P) or Cerabar S (BA00295P), Section 6.6 "Level measurement" or Deltapilot S (BA00356P), Section 6.5 "Level measurement".
- Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partly filled, the MEASURED VALUE parameter does not display zero. → To perform a position adjustment see also Page 53, Table 6: Position adjustment.
- For a description of the parameters mentioned, see
  – Page 53, Table 6: POSITION ADJUSTMENT
  – Page 57, Table 8: BASIC SETUP
  – Page 77, Table 12: BASIC SETUP – "Pressure linearized" level type
  – Page 98, Table 18: LINEARIZATION – Onsite display
  – Page 101, Table 19: LINEARIZATION – FieldCare
- For a description of further relevant parameters, see
  – Page 95, Table 16: EXTENDED SETUP
  – Page 116, Table 28: PROCESS VALUES.

⚠ WARNING
Changing the measuring mode affects the span (URV)!
This situation can result in product overflow.
▶ If the measuring mode is changed, the span setting (URV) must be verified in the "Calibration" → "Basic Setup" operating menu and, if necessary, reconfigured!

	Description
1	Perform calibration as per Section 5.5.1, steps 3 to 11.
	Carry out linearization:
2	Change the function group. Onsite display: Menu path: GROUP SELECTION →OPERATING MENU → SETTINGS → LINEARIZATION FieldCare: Menu path: MANUFACTURER VIEW → OPERATING MENU → SETTINGS → LINEARIZATION
3	Select TANK CONTENT MIN parameter.
	Specify the minimum tank contents to be expected, here 0 m^3 for example.
4	Select TANK CONTENT MAX parameter.
	Specify the maximum tank contents to be expected, here 3.5 m^3 for example. See also the following note, point 3.
5	Select the "Editor table" option by means of the TABLE SELECTION parameter.
6	Select the "Manual" option by means of the LIN. EDIT MODE parameter.
7	Select the "New table" option by means of the EDITOR TABLE parameter.
8	Enter linearization table (min. 2 points, max. 32 points).
	LINE-NUMB: confirm value displayed.
	X-VAL.: enter the pressure value and confirm.
	Y-VAL.: enter the volume value, here 0 m^3 for example, and confirm.
9	Onsite display: If you want to enter another point for the linearization table, select the "Next point" option and enter the point as described in step 8. FieldCare: You can enter further points for the linearization table as explained in step 8.
10	If you want to finish entering the values and activate the linearization table, select the "Accept input table" option.
11	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.
12	Result: The linearization table has been entered and the device is ready for level measurement.



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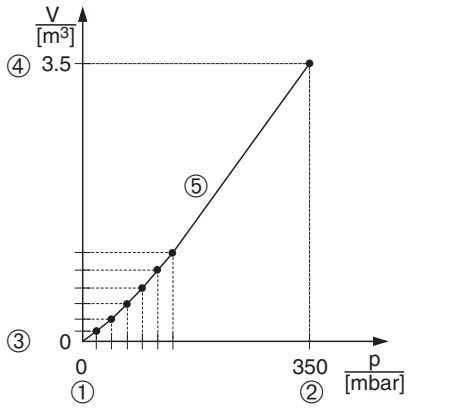

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Fig. 12: Manual entry of the linearization table

1 See Section 5.5.1, Table, step 10.
2 See Section 5.5.1, Table, step 11.
3 See Table, step 3.
4 See Table, step 4.
5 See Table, steps 5 to 9.

1. For this level type, the measured variables %, volume and mass are available. → See Page 77 ff.
2. You can also specify customer-specific units. See parameter description for PRESS. ENG. UNIT (→ Page 66), HEIGHT UNIT (→ Page 78), UNIT VOLUME (→ Page 78) and MASS UNIT (→ Page 79).

3. Once you have selected the "Pressure linearized" level type, the warning message "W710 Set span too small. Not allowed." can appear. At this stage the linearization table already consists of two points as standard. It could be the case that the 2nd value, and thus the highest X-VAL. of the linearization table, is smaller than the minimum span permitted (→ MINIMUM SPAN, Page 114). The message disappears as soon as the highest X-VALUE is greater than the minimum span and the table entered is active.

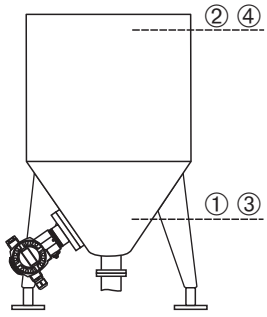
5.6 "Level standard" level selection, "Height linearized" level type

5.6.1 Wet calibration and semiautomatic entry of the linearization table

Example:
In this example, the height and the volume should be measured at the same time.

Prerequisite:
- The tank can be filled. The linearization characteristic must rise continuously.
- A minimum gap of 0.5 % of the distance between two points must be maintained. Spans for the "Pressure linearized" option: HYDR. PRESS MAX. – HYDR. PRESS MIN.; TANK CONTENT MAX. – TANK CONTENT MIN. Spans for the "Height linearized" option: LEVEL MAX. – LEVEL MIN.; TANK CONTENT MAX. – TANK CONTENT MIN.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  – If you change the operating mode
  – If you change the values for PV SCALE
  – If you change the values for OUT SCALE
  – If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions for Deltabar S (BA00294P) or Cerabar S (BA00295P), Section 6.6 or Deltapilot S (BA00356P), Section 6.5.
- For a description of the parameters mentioned, see
  – Page 53, Table 6: POSITION ADJUSTMENT
  – Page 66, Table 10: BASIC SETUP
  – Page 82, Table 13: BASIC SETUP – "Height linearized" level type
  – Page 98, Table 18: LINEARIZATION – Onsite display
  – Page 101, Table 19: LINEARIZATION – FieldCare
- For a description of further parameters, see
  – Page 95, Table 16: EXTENDED SETUP
  – Page 116, Table 28: PROCESS VALUES.

⚠ WARNING
Changing the measuring mode affects the span (URV)!
This situation can result in product overflow.
▶ If the measuring mode is changed, the span setting (URV) must be verified in the "Calibration" → "Basic Setup" operating menu and, if necessary, reconfigured!

	Description	
1	Deltabar S: Before you configure the device for your application, the pressure piping must be cleaned and filled with medium. See Operating Instructions BA00294P, Section 6.6.1	 P01-PMP75xxx-19-xx-xx-xx-004
2	Carry out position adjustment if necessary. See Page 53, Table 6: POSITION ADJUSTMENT	
	Perform calibration for the 1st measured variable:	
3	If necessary, select the "Level" measuring mode via the MEASURING MODE parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE	

	Description
4	If necessary, select "Level Standard" level mode using the LEVEL SELECTION parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE "Level" → LEVEL SELECTION FieldCare: Menu path: MEASURING MODE "Level" → LEVEL SELECTION
5	Onsite display: Select BASIC SETUP function group. Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETUP
6	Select a pressure unit via the PRESS. ENG. UNIT parameter, here mbar for example.
7	Select the "Height linearized" option by means of the LEVEL MODE parameter.
8	Select the "Height + Volume" option by means of the COMB. MEASURAND parameter.
9	Select the unit for the 1st measured value via the HEIGHT UNIT parameter, here m for example.
10	Select the unit for the 2nd measured variable via the UNIT VOLUME parameter, here m^3 for example.
11	Select LEVEL MIN parameter.
	Enter the minimum level to be expected, here 0 m for example.
12	Select LEVEL MAX parameter.
	Enter the maximum level to be expected, here 3 m (9.8 ft) for example. See also the following note, point 3.
13	Select the "Wet" option via the CALIBRATION MODE parameter (calibration mode for the 1st measured variable).
14	The pressure for the lower calibration point is present at the device, here 0 mbar for example.
	Select EMPTY CALIB. parameter.
	Enter the level value, here 0 m for example. Confirm the value to assign the pressure value present to the lower level value.
15	The pressure for the upper calibration point is present at the device, here 300 mbar (4.5 psi) for example.
	Select FULL CALIB. parameter.
	Enter the level value, here 3 m (9.8 ft) for example. Confirm the value to assign the pressure value present to the upper level value.
16	Result: The calibration for the 1st measured variable is carried out.
	Perform linearization (calibration for the 2nd measured variable)

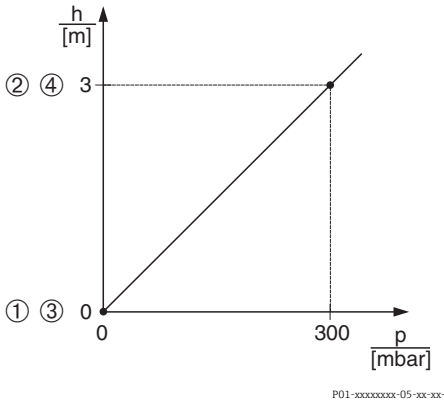
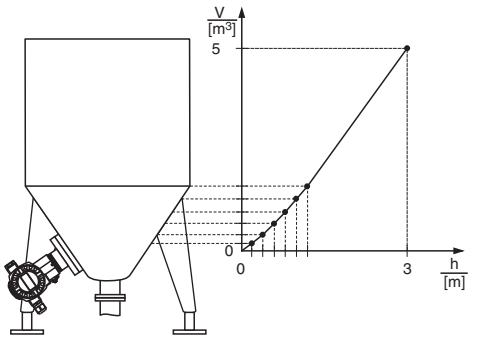


Fig. 13: Calibrating the 1st measured variable

1 See Table, step 11.
2 See Table, step 12.
3 See Table, step 14.
4 See Table, step 15.

	Description
17	Change the function group. Onsite display: Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → LINEARIZATION FieldCare: Menu path: MANUFACTURER VIEW → OPERATING MENU → SETTINGS →LINEARIZATION
18	Select TANK CONTENT MIN parameter.
	Specify the minimum tank contents to be expected, here 0 m^3 for example.
19	Select TANK CONTENT MAX parameter.
	Specify the maximum tank contents to be expected, here 5 m^3 for example.
20	Select the "Editor table" option by means of the TABLE SELECTION parameter.
21	Select the "Semiautomatic" option by means of the LIN. EDIT MODE parameter.
22	Select the "New table" option by means of the EDITOR TABLE parameter.
23	Enter linearization table (min. 2 points, max. 32 points).
	Fill the tank to the height of the 1st point.
	LINE-NUMB: confirm value displayed.
	X-VAL.: the hydrostatic pressure present is measured and converted to the corresponding level and displayed. The X-VAL. displayed is saved by confirming the Y-value. See following line, Y-VAL.
	Y-VAL.: enter the volume value, here 0 m^3 for example, and confirm the value.
24	Onsite display If you want to enter another point for the linearization table, select the "Next point" option and enter the point as described in step 23. FieldCare: You can enter further points for the linearization table as explained in step 23.
25	If you want to finish entering the values and activate the linearization table, select the "Accept input table" option.
26	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.
27	Result: – The linearization table has been entered. – The measured value display and the TANK CONTENT parameter display the 2nd measured value (here the volume). – The LEVEL BEFORE LIN parameter displays the 1st measured value (here the height). See also the following note, point 5.



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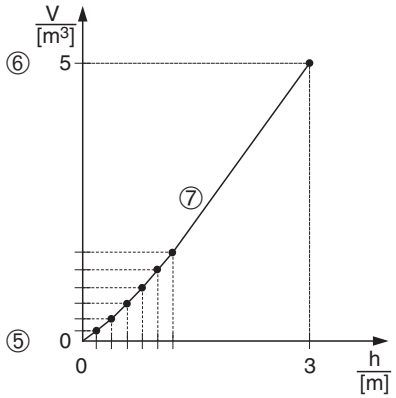

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Fig. 14: Calibrating the 2nd measured variable

5 See Table, step 18.
6 See Table, step 19.
7 See Table, steps 20 to 24.

1. For this level type, the measured variables "height + %", "height + volume", "height + mass", "%-height + %", "%-height + volume" and "%-height + mass" are available.
→ See Page 78 ff.

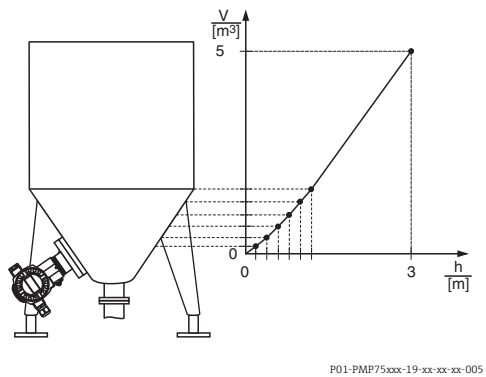
2. You can also specify customer-specific units. See parameter description for PRESS. ENG. UNIT (→ Page 66), HEIGHT UNIT (→ Page 82), UNIT VOLUME (→ Page 83) and MASS UNIT (→ Page 84).
3. Once you have entered the maximum level to be expected for LEVEL MAX., the alarm "A707 X-Val of lin. table out of edit limits" can appear. At this stage the linearization table already consists of two points as standard. It could be the case that the 2nd value and thus the highest X-VALUE of the linearization table is greater than the maximum level entered. The message disappears as soon as the highest X-VALUE is greater than the maximum level and the table entered is active.
4. You can use the MENU DESCRIPTOR parameter (→ Page 107) to specify which measured value should be displayed on the onsite display.

5.6.2 Dry calibration and manual entry of the linearization table

Example:
In this example, the height and the volume should be measured at the same time.

Prerequisite:
- This is a theoretical calibration, i.e. the points for the linearization table are known.
- A minimum gap of 0.5 % of the distance between two points must be maintained. Spans for the "Pressure linearized" option: HYDR. PRESS MAX. − HYDR. PRESS MIN.; TANK CONTENT MAX. − TANK CONTENT MIN. Spans for the "Height linearized" option: LEVEL MAX. − LEVEL MIN.; TANK CONTENT MAX. − TANK CONTENT MIN.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  − If you change the operating mode
  − If you change the values for PV SCALE
  − If you change the values for OUT SCALE
  − If you change the unit
  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions for Deltabar S (BA00294P) or Cerabar S (BA00295P), Section 6.6 "Level measurement" or Deltapilot S (BA00356P), Section 6.5 "Level measurement".
- Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partly filled, the MEASURED VALUE parameter does not display zero. → To perform a position adjustment see also Page 53, Table 6: Position adjustment.
- For a description of the parameters mentioned, see
  − Page 53, Table 6: POSITION ADJUSTMENT
  − Page 66, Table 10: BASIC SETUP
  − Page 82, Table 13: BASIC SETUP − "Height linearized" level type
  − Page 98, Table 18: LINEARIZATION − Onsite display
  − Page 101, Table 19: LINEARIZATION − FieldCare
- For a description of further parameters, see
  − Page 95, Table 16: EXTENDED SETUP
  − Page 116, Table 28: PROCESS VALUES.

⚠ WARNING
Changing the measuring mode affects the span (URV)!
This situation can result in product overflow.
▶ If the measuring mode is changed, the span setting (URV) must be verified in the "Calibration" → "Basic Setup" operating menu and, if necessary, reconfigured!

	Description	
	Perform calibration for the 1st measured variable:	
1	Perform calibration as per Section 5.6.1, steps 1 to 12.	
2	Select the "Dry" option via the CALIBRATION MODE parameter (calibration mode for the 1st measured variable).	
3	Select a density unit via the DENSITY UNIT parameter a, here kg/dm³ for example.	
4	Enter the density of the fluid using the ADJUST DENSITY parameter, here 1.0 kg/dm³ for example.	
5	If necessary, enter a level offset via the ZERO POSITION parameter, here 0 m for example.	
6	Result: The calibration for the 1st measured variable is carried out.	

	Description
	Perform linearization (calibration for the 2nd measured variable)
7	Change the function group. Onsite display: Menu path: GROUP SELECTION → OPERATING MENU →S ETTINGS →L INEARIZATION FieldCare: Menu path: MANUFACTURER VIEW → OPERATING MENU → SETTINGS → LINEARIZATION
8	Select TANK CONTENT MIN parameter.
	Specify the minimum tank contents to be expected, here 0 m^3 for example.
9	Select TANK CONTENT MAX parameter.
	Specify the maximum tank contents to be expected, here 5 m^3 for example.
10	Select the "Editor table" option by means of the TABLE SELECTION parameter.
11	Select the "Manual" option by means of the LIN. EDIT MODE parameter.
12	Select the "New table" option by means of the EDITOR TABLE parameter.
13	Enter linearization table (min. 2 points, max. 32 points).
	LINE-NUMB: confirm value displayed.
	X-VAL.: enter the height value and confirm.
	Y-VAL.: enter the volume value, here 0 m^3 for example, and confirm.
14	Onsite display If you want to enter another point for the linearization table, select the "Next point" option and enter the point as described in step 13. FieldCare: You can enter further points for the linearization table as explained in step 13.
15	If you want to finish entering the values and activate the linearization table, select the "Accept input table" option.
16	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.
17	Result: – The linearization table has been entered. – The measured value display and the TANK CONTENT parameter display the 2nd measured value (here the volume). – The LEVEL BEFORE LIN parameter displays the 1st measured value (here the height). See also the following note, point 3.

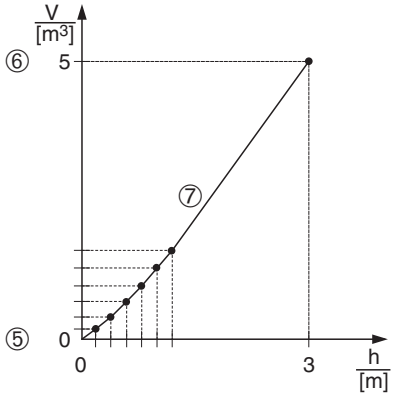


Fig. 15: Calibrating the 2nd measured variable

5 See Table, step 8.
6 See Table, step 9.
7 See Table, steps 10 to 14.

1. For this level type, the measured variables "height + %", "height + volume", "height + mass", "%-height + %", "%-height + volume" and "%-height + mass" are available.
→ See Page 78 ff.

2. You can also specify customer-specific units. See parameter description for PRESS. ENG. UNIT (Page 66), HEIGHT UNIT (→ Page 82), UNIT VOLUME (→ Page 83) and MASS UNIT (→ Page 84).
3. You can use the MENU DESCRIPTOR parameter (→ Page 107) to specify which measured value should be displayed on the onsite display.

6 Flow measurement

6.1 Calibration

Example:
In this example, a volume flow should be measured in m^3/h.

- The "Flow measurement" measuring mode is only available for the Deltabar S differential pressure transmitter.
- Please note that in the following instances, the onsite display or the MEASURED VALUE and the digital output value of the Analog Input Block OUT no longer display the same value:
  - If you change the operating mode
  - If you change the values for PV SCALE
  - If you change the values for OUT SCALE
  - If you change the unit

  → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110).
- See also Operating Instructions Deltabar S (BA00294P), Section 6.5 "Flow measurement".
- For a description of the parameters mentioned, see
  - Page 53, Table 6: POSITION ADJUSTMENT
  - Page 90 ff, Table 10: BASIC SETUP
- For a description of further parameters, see
  - Page 96, Table 17: EXTENDED SETUP
  - Page 117, Table 29: PROCESS VALUES.

⚠ WARNING
Changing the measuring mode affects the span (URV)!
This situation can result in product overflow.
▶ If the measuring mode is changed, the span setting (URV) must be verified in the "Calibration" → "Basic Setup" operating menu and, if necessary, reconfigured!

	Description
1	Before configuring the device for your application, the pressure piping must be cleaned and the device filled with fluid. See Operating Instructions BA00294P, Section 6.5.1.
2	Carry out position adjustment if necessary. See Page 53, Table 6: POSITION ADJUSTMENT
3	Select the "Flow" measuring mode via the MEASURING MODE parameter. Onsite display: Menu path: GROUP SELECTION → MEASURING MODE FieldCare: Menu path: MEASURING MODE
4	Onsite display: Select BASIC SETUP function group. Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETUP

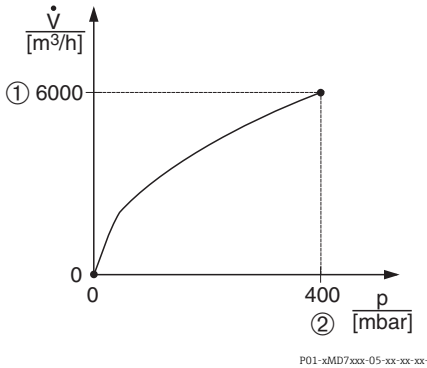


Fig. 16: Flow measurement calibration
1 See Table, step 7.
2 See Table, step 8.

	Description	
5	Select a pressure unit via the PRESS. ENG. UNIT parameter, here mbar for example.	
6	Select the "Volume p. cond." option by means of the FLOW-MEAS. TYPE parameter.	
7	Select a flow unit via the UNIT FLOW parameter, here m^3/h for example.	
8	Select MAX. FLOW parameter.	
	Enter the maximum flow value of the primary device, here 6000 m^3/h for example. See also layout sheet of primary device.	
9	Select MAX PRESS. FLOW parameter.	
	Enter the maximum pressure, here 400 mbar (6 psi) for example. See also layout sheet of primary device.	
10	If necessary, scale the OUT value of the Analog Input Block, see Page 142, parameter descriptions for PV SCALE and OUT SCALE or set the OUT value to equal the measured value, see Page 110, parameter description for SET UNIT TO BUS.	
11	Result: The device is configured for flow measurement.	

1. You can also perform calibration by means of the QUICK SETUP menu. → See Page 51 ff, Table 5: QUICK SETUP menu.
2. Using the FLOW-MEAS. TYPE parameter, you can choose between the following flow types:
   – Volume p. cond. (volume under operating conditions)
   – Gas norm. cond. (norm volume under norm conditions in Europe: 1013.25 mbar and 273.15 K (0 °C))
   – Gas std. cond. (standard volume under standard conditions in USA: 1013.25 mbar (14.7 psi) and 288. 15 K (15 °C/59 °F))
   – Mass
3. Depending on the flow type selected, you can choose between various units. You can also specify a customer-specific unit.
   See parameter description for PRESS. ENG. UNIT (→ Page 91), UNIT FLOW (→ Page 92), NORM FLOW UNIT (→ Page 92), STD. FLOW UNIT (→ Page 93) and MASS FLOW UNIT (→ Page 93).
4. In the lower measuring range, small flow quantities (creepages) can lead to large measured value fluctuations. You can activate low flow cut-off via the LOW FLOW CUT-OFF parameter (→ Page 97).

6.2 Totalizers

Example:
In this example, the volume flow should be totalized and displayed in the unit m^3E^3. Negative flows should be added to the flow rate.

- For a description of the parameters mentioned, see
  - Page 104 ff, Table 20: TOTALIZER SETUP
  - Page 117 ff, Table 29: PROCESS VALUES
- Totalizer 1 can be reset. Totalizer 2 cannot be reset.

	Description
1	Calibrate the device as per Section 6.1.
2	Change the function group. Onsite display: Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → TOTALIZER SETUP FieldCare: Menu path: MANUFACTURER VIEW → OPERATING MENU → SETTINGS → TOTALIZER SETUP
3	Select a flow unit via the TOTALIZER 1 UNIT parameter, here m^3 E^3 for example.
4	Use the NEG. FLOW TOT. 1 parameter to specify the totalizing mode for negative flows, here the "Positive" option for example.
5	Reset totalizer 1 to zero via the RESET TOTALIZER parameter.
6	Result: The TOTALIZER 1 and TOTAL. 1 OVERFLOW parameters display the totalized volume flow.

- You can also specify a customer-specific unit. → See parameter description for TOTALIZER 1 UNIT (→ Page 105) and TOTALIZER 2 UNIT (→ Page 106).
- The TOTALIZER 1 and TOTAL. 1 OVERFLOW parameters display the totalized flow value of the first totalizer. The TOTALIZER 2 and TOTAL. 2 OVERFLOW parameters display the totalized flow value of the second totalizer.
  → See Page 117 ff, PROCESS VALUES function group.
- You can use the MENU DESCRIPTOR parameter (→ Page 107) to specify which measured value should be displayed on the onsite display.
- Use the SEL_3RD_CYCL_VAL parameter (→ Page 130) to specify which Totalizer is transmitted via the bus as the third cyclic value.

7 Description of parameters

- The following tables list all the parameters as per the menu structure. Each table corresponds to a function group in the menu tree.
- The menu structure for onsite operation and the FieldCare are slightly different. The differences mainly affect the LANGUAGE parameter and the LINEARIZATION function group.
- In FieldCare, additional parameters are displayed. These parameters are marked accordingly.
- The menu path is indicated in the header of each table.
- The menu has a different structure depending on the measuring mode selected. This means that some function groups are only displayed for one measuring mode, e.g. the "LINEARIZATION" function group for the "Level" measuring mode. If certain requirements have to be met for a function group, these are listed in the first row of the table.
- Some parameters are only displayed if other parameters are appropriately configured. For example, the EMPTY CALIB. parameter is not displayed in the Quick Setup menu ("Level" measuring mode) unless the "Linear" option was selected for the LEVEL MODE parameter and the "Wet" option was selected for the CALIBRATION MODE parameter. There is a comment in the parameter description here stating: Note: prerequisite: LEVEL MODE = Linear and CALIBRATION MODE = Wet.
- Parameter names are written in upper case in the text.
- In the "Parameter name" column, the unique identification number (ID) of the parameter is indicated in brackets. This ID only appears on the onsite display.

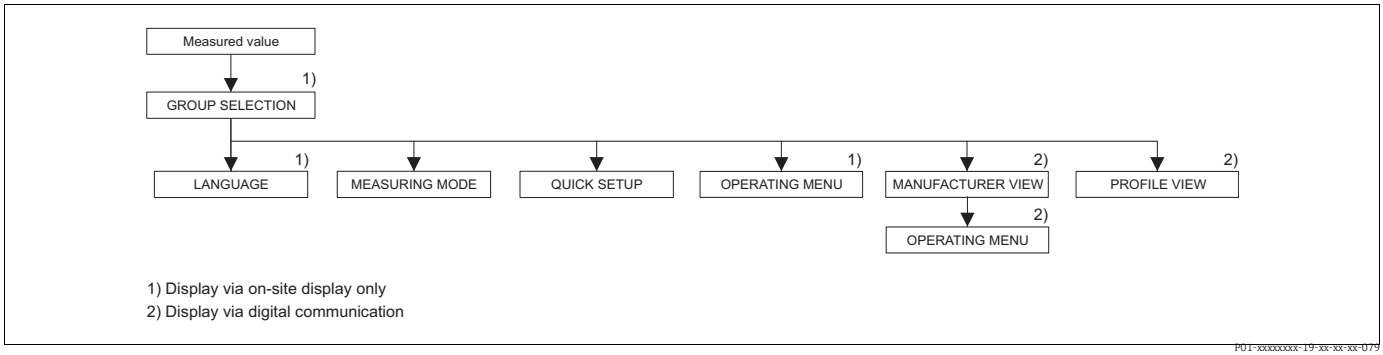


Fig. 17: 1st selection level in menu, LANGUAGE (→ see Page 43, Table 1) and MEASURING MODE (→ see Page 44, Table 2)

Table 1: GROUP SELECTION → LANGUAGE – Onsite display	
Parameter name	**Description**
LANGUAGE (079) Selection	Select the menu language for the onsite display. ▪ In FieldCare, the LANGUAGE parameter is arranged in the DISPLAY function group. ▪ Select the menu language for FieldCare by means of the "Language Button" in the configuration window. Select the menu language for the FieldCare frame via the "Extra" menu → "Options" → "Display" → "Language". **Factory setting**: English

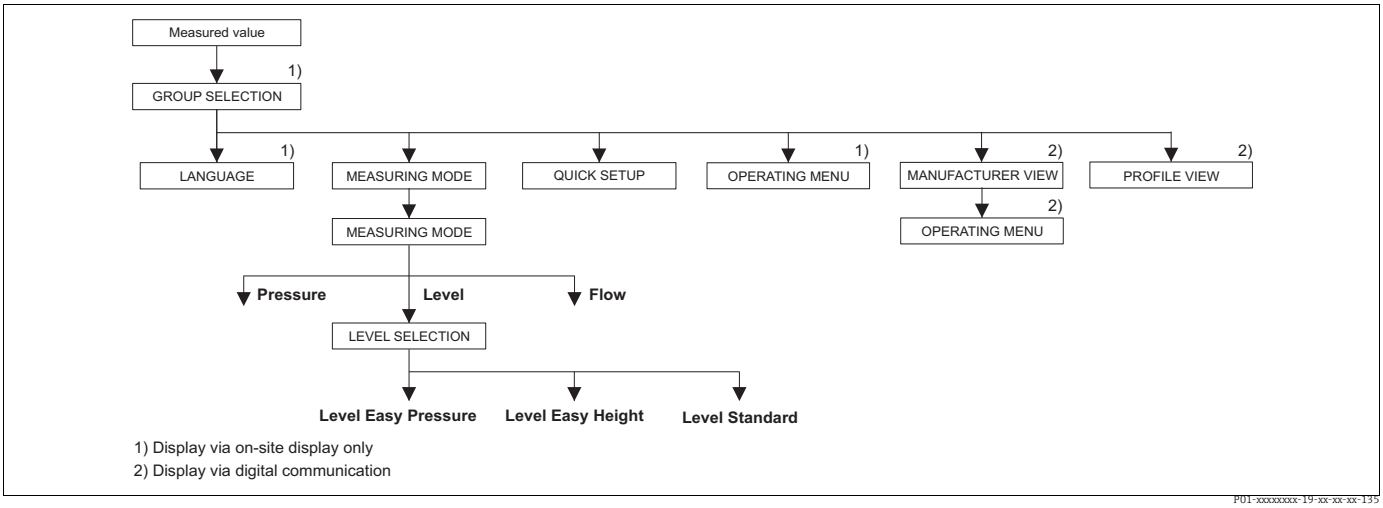
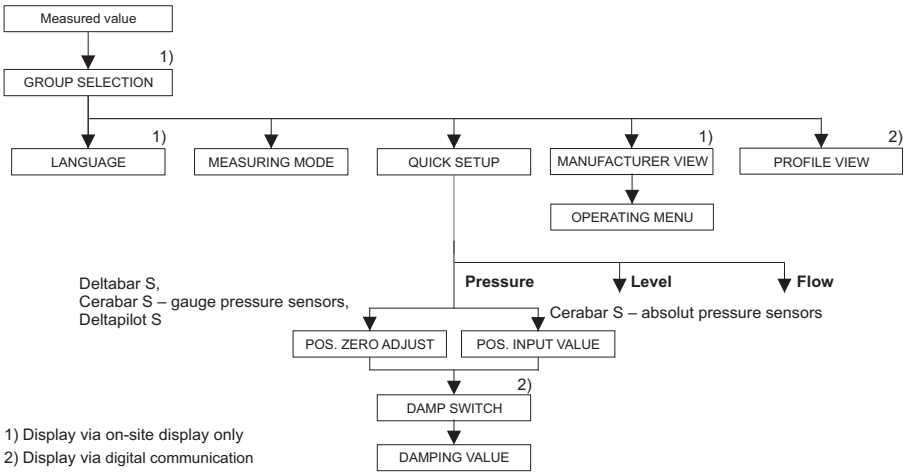


Fig. 18: "Level" measuring mode, LEVEL SELECTION parameter

Table 2: GROUP SELECTION → MEASURING MODE	
MEASURING MODE (389) Selection	Select the measuring mode. The operating menu is structured according to the selected measuring mode. ▪ When the measuring mode is changed, no conversion takes place. The device has to be recalibrated if the measuring mode is changed. **Options:** ▪ Pressure ▪ Level ▪ Deltabar S: Flow **Factory setting:** ▪ Cerabar S and Deltabar S: Pressure ▪ Deltapilot S: Level

Table 2: GROUP SELECTION → MEASURING MODE	
LEVEL SELECTION (020) Selection	Select level mode. **Prerequisite:** ▪ MEASURING MODE = Level ▪ In the "Level Easy Pressure" and "Level Easy Height" level modes, the values entered are not tested as extensively as in the "Level Standard" level mode. The values entered for EMPTY CALIB./FULL CALIB., EMPTY PRESSURE/FULL PRESSURE and EMPTY HEIGHT/FULL HEIGHT must have a minimum interval of 1% for the "Level Easy Pressure" and "Level Easy Height" level modes. The value will be rejected with a warning message if the values are too close together. Further limit values are not checked; i.e. the values entered must be appropriate for the sensor and the measuring task so that the measuring device can measure correctly. → For an overview of the different level modes and types, see Page 12, Section 5.1 "Overview of level measurement". ▪ The "Level Easy Pressure" and "Level Easy Height" level modes encompass fewer parameters than the "Level Standard" mode and are used for quick and easy configuration of a level application. ▪ Customer-specific units of fill level, volume and mass or a linearization table may only be entered in the "Level Standard" level mode. **Options:** ▪ Level Easy Pressure Specify two pressure-level value pairs for this level mode. The pressure measured value is converted directly to the unit which is selected via the OUTPUT UNIT parameter (→ Page 59). Two calibration modes, "Wet" and "Dry", are available. – Wet calibration takes place by filling and emptying the container. In the case of two different levels, the level, volume, mass or percentage value entered is assigned to the pressure measured at this point in time. – Dry calibration is a theoretical calibration. For this calibration, specify two pressure-level value pairs via the EMPTY CALIB., EMPTY PRESSURE, FULL CALIB. and FULL PRESSURE parameters. → Parameter descriptions see Page 60 ff. ▪ Level Easy Height For this level mode, specify a height unit, density and two height-level value pairs. The pressure measured value is converted to a height value using the density entered and the height unit. Two calibration modes, "Wet" and "Dry", are available. – Wet calibration takes place by filling and emptying the container. In the case of two different levels, the level, volume, mass or percentage value entered is assigned to the converted height value. – Dry calibration is a theoretical calibration. For this calibration, specify two height-level value pairs via the EMPTY CALIB., EMPTY HEIGHT, FULL CALIB. and FULL HEIGHT parameters. → Parameter descriptions see Page 64 ff. ▪ Level standard Once you have selected this level mode, you can use the LEVEL MODE parameter (→ Page 67) to choose between "Linear", "Pressure Linearized" and "Height Linearized". **Factory setting:** Level Easy Pressure
→ For LEVEL SELECTION = "Level Easy Pressure" see Page 57, Table 8. → For LEVEL SELECTION = "Level Easy Height" see Page 62, Table 9. → For LEVEL SELECTION = "Level standard" see Page 66, Table 10.	



P01-xxxxxxxx-19-xx-xx-xx-080

Fig. 19: Quick Setup menu for the "Pressure" measuring mode

Table 3: QUICK SETUP "Pressure"	
Parameter name	**Description**
This menu displays the most important parameters for the "Pressure" measuring mode. **Prerequisite**: ▪ MEASURING MODE = Pressure **Note:** See also – Page 54 ff, Table 7: BASIC SETUP – Page 95, Table 15: EXTENDED SETUP – Page 116 ff, Table 27: PROCESS VALUES – Page 11 ff, Section 4 "Pressure measurement".	
POS. ZERO ADJUST (685) Selection Slot: 2 Index 116	Position adjustment – the pressure difference between zero (set point) and the measured pressure need not be known. Due to the orientation of the device, there may be a shift in the measured value, i.e. for example, when the container is empty or partly filled, the MEASURED VALUE parameter does not display zero. **Example:** – MEASURED VALUE = 2.2 mbar (0.033 psi) – Correct the MEASURED VALUE via the POS. ZERO ADJUST parameter with the "Confirm" option. This means that you are assigning the value 0.0 to the pressure present. – MEASURED VALUE (after pos. zero adjust) = 0.0 mbar The CALIB. OFFSET parameter displays the resulting pressure difference (offset) by which the MEASURED VALUE was corrected. **Prerequisite:** ▪ This parameter is displayed for Deltabar S, Cerabar S with gauge pressure sensor or Deltapilot S. **Options**: ▪ Abort ▪ Confirm **Factory setting:** Abort

Table 3: QUICK SETUP "Pressure"	
Parameter name	**Description**
POS. INPUT VALUE (563) Entry Slot: 2 Index: 117	Position adjustment – the pressure difference between zero (set point) and the measured pressure need not be known. To correct the pressure difference, you need a reference measurement value (e. g. from a reference device). Due to the orientation of the device, there may be a shift in the measured value, i.e. for example, when the container is empty or partly filled, the MEASURED VALUE parameter does not display zero or the desired value. **Example:** – MEASURED VALUE = 0.5 mbar (0.0075 psi) – For the POS. INPUT VALUE parameter, specify the desired set point for the MEASURED VALUE, e.g. 2.0 mbar (0.03 psi). (MEASURED VALUE $_{new}$ = POS. INPUT VALUE) – MEASURED VALUE (after entry for POS. INPUT VALUE) = 2.0 mbar (0.03 psi) – The CALIB. OFFSET parameter displays the resulting pressure difference (offset) by which the MEASURED VALUE was corrected. CALIB. OFFSET = MEASURED VALUE $_{old}$ – POS. INPUT VALUE, here: CALIB. OFFSET = 0.5 mbar (0.0075 psi) – 2.0 mbar (0.03 psi) = – 1.5 mbar (-0.0225 psi)) **Prerequisite:** ▪ This parameter is displayed for Cerabar S with absolute pressure sensor. **Factory setting:** 0.0
DAMP SWITCH Display	Displays the switch position of DIP switch 2 which is used to switch the damping of the output signal on and off. **Display:** ▪ Off The output signal is not damped. ▪ On The output signal is damped. The attenuation constant is specified in the "DAMPING VALUE (274)" parameter. **Factory setting** On
DAMPING VALUE (274) Entry Slot: 2 Index: 79	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and OUT value of the Analog Input Block react to a change in the pressure. **Input range:** 0.0 to 999.0 s **Factory setting:** 2.0 s or as per order specifications The set damping time is only effective if DIP switch 2 is set to the "on" position.

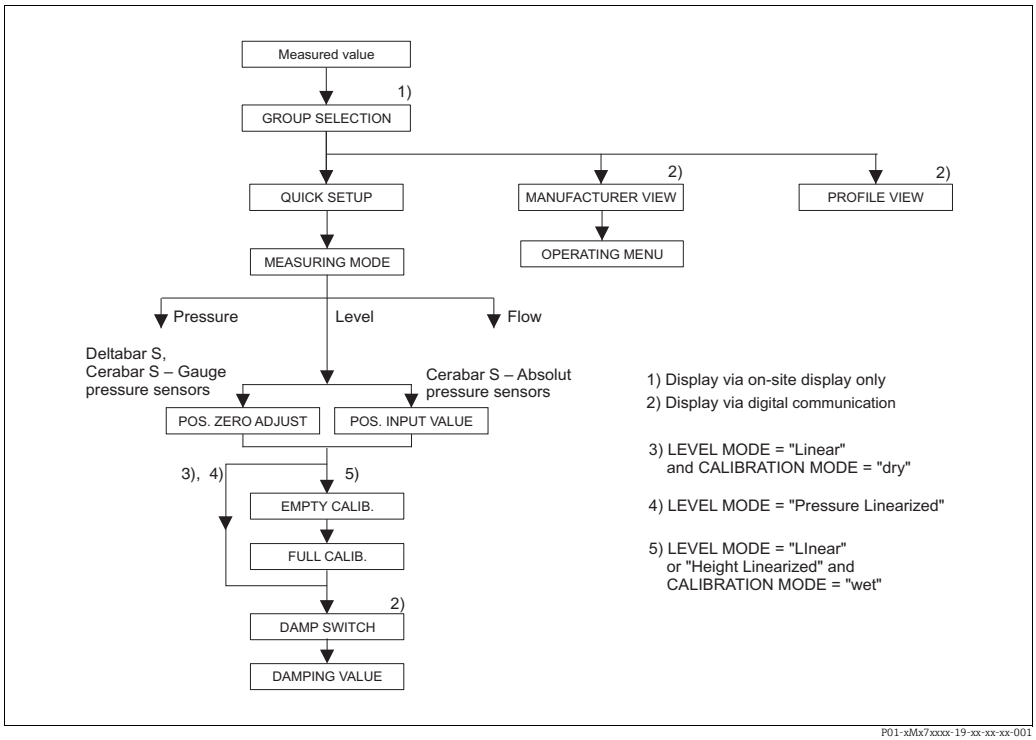


Fig. 20: Quick Setup menu for the "Level" measuring mode

Table 4: QUICK SETUP "Level"	
Parameter name	**Description**
This menu displays the most important parameters for the "Level" measuring mode. **Prerequisite**: ▪ MEASURING MODE = Level **Note:** See also – Page 66 ff, Tables 10 to 13: BASIC SETUP – Page 95 ff, Table 16: EXTENDED SETUP – Page 98 ff, Table 18 and 19: LINEARIZATION – Page 116 ff, Table 28: PROCESS VALUES – Page 12 ff, Section 5 "Level measurement".	
LEVEL SELECTION (020) Selection Slot: 2 Index: 248	Select level mode. → Parameter description, see Page 45. **Factory setting:** Level Easy Pressure

Table 4: QUICK SETUP "Level"	
Parameter name	**Description**
POS. ZERO ADJUST (685) Selection Slot: 2 Index: 116	Position adjustment – the pressure difference between zero (set point) and the measured pressure need not be known. Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partly filled, the MEASURED VALUE parameter does not display zero. **Example:** – MEASURED VALUE = 2.2 mbar (0.033 psi) – Correct the MEASURED VALUE via the POS. ZERO ADJUST parameter with the "Confirm" option. This means that you are assigning the value 0.0 to the pressure present. – MEASURED VALUE (after pos. zero adjust) = 0.0 mbar The CALIB. OFFSET parameter displays the resulting pressure difference (offset) by which the MEASURED VALUE was corrected. **Prerequisite:** ▪ This parameter is displayed for Deltabar S, Cerabar S with gauge pressure sensor or Deltapilot S. **Options**: ▪ Abort ▪ Confirm **Factory setting:** Abort
POS. INPUT VALUE (563) Entry Slot: 2 Index: 117	Position adjustment – the pressure difference between zero (set point) and the measured pressure need not be known. To correct the pressure difference, you need a reference measurement value (e. g. from a reference device). Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partly filled, the MEASURED VALUE parameter does not display zero or the desired value. **Example:** – MEASURED VALUE = 0.5 mbar (0.0075 psi) – For the POS. INPUT VALUE parameter, specify the desired set point for the MEASURED VALUE, e.g. 2.0 mbar (0.03 psi). (MEASURED VALUE $_{new}$ = POS. INPUT VALUE) – MEASURED VALUE (after entry for POS. INPUT VALUE) = 2.0 mbar (0.03 psi) – The CALIB. OFFSET parameter displays the resulting pressure difference (offset) by which the MEASURED VALUE was corrected. CALIB. OFFSET = MEASURED VALUE $_{old}$ – POS. INPUT VALUE, here: CALIB. OFFSET = 0.5 mbar (0.0075 psi) – 2.0 mbar (0.03 psi) = – 1.5 mbar (-0.0225 psi)) **Prerequisite:** ▪ This parameter is displayed for Cerabar S with absolute pressure sensor. **Factory setting:** 0.0
EMPTY CALIB. (314)/ (010) Entry Slot: 2 Index: 75	Enter level value for the lower calibration point (container empty). The container is either empty or part full. By entering a value for this parameter, you are assigning a level value to the pressure present at the device. **Prerequisite:** ▪ LEVEL SELECTION = Level Easy Pressure (→ see also Page 45), CALIBRATION MODE = Wet (→ see also Page 59) ▪ LEVEL SELECTION = Level Standard (→ see also Page 45), LEVEL MODE = Linear (→ see also Page 67), CALIBRATION MODE = Wet (→ see also Page 72) For this parameter, the onsite display shows the level value to be entered and the pressure present at the device. In order for the level value to be saved together with the pressure present at the device, the entry field for the level value must first be activated using the "+"- or "–" key before confirming with the "E" key. This applies also if the level value is to remain unchanged. **Factory setting:** 0.0

Table 4: QUICK SETUP "Level"	
Parameter name	**Description**
FULL CALIB. (315)/(004) Entry Slot: 2 Index: 76	Enter level value for the upper calibration point (container full). The container is either completely or almost full. By entering a value for this parameter, you are assigning a level value to the pressure present at the device. **Prerequisite:** ▪ LEVEL SELECTION = Level Easy Pressure (→ see also Page 45), CALIBRATION MODE = Wet (→ see also Page 59) ▪ LEVEL SELECTION = Level Standard (→ see also Page 45), LEVEL MODE = Linear (→ see also Page 67), CALIBRATION MODE = Wet (→ see also Page 72) For this parameter, the onsite display shows the level value to be entered and the pressure present at the device. In order for the level value to be saved together with the pressure present at the device, the entry field for the level value must first be activated using the "+"- or "–" key before confirming with the "E" key. This applies also if the level value is to remain unchanged. **Factory setting:** 100.0
DAMP SWITCH Display	Displays the switch position of DIP switch 2 which is used to switch the damping of the output signal on and off. **Display:** ▪ Off The output signal is not damped. ▪ On The output signal is damped. The attenuation constant is specified in the "DAMPING VALUE (274)" parameter. **Factory setting** On
DAMPING VALUE (247) Entry Slot: 2 Index: 79	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and OUT value of the Analog Input Block react to a change in the pressure. **Input range:** 0.0 to 999.0 s **Factory setting:** 2.0 s or as per order specifications The set damping time is only effective if DIP switch 2 is set to the "on" position.

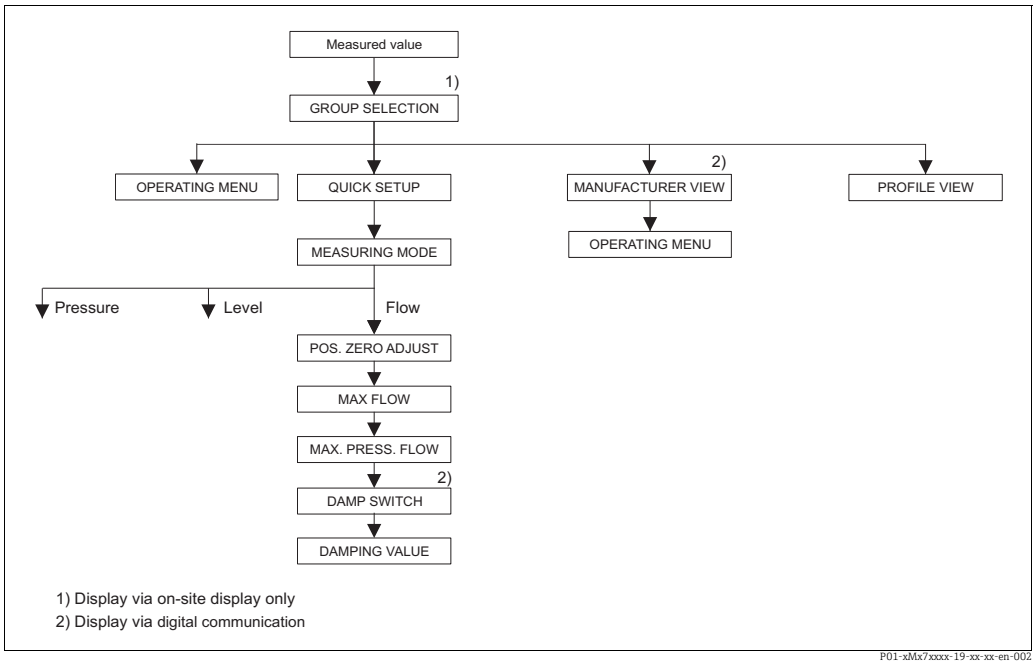


Fig. 21: Quick Setup menu, "Flow" measuring mode (Differential pressure transmitter Deltabar S only)

Table 5: QUICK SETUP "Flow"	
Parameter name	**Description**
This menu displays the most important parameters for the "Flow" measuring mode. **Prerequisite**: ▪ Deltabar S differential pressure transmitter ▪ MEASURING MODE = Flow **Note:** See also – Page 90 ff, Table 14: BASIC SETUP – Page 96 ff, Table 17: EXTENDED SETUP – Page 104 ff, Table 20: TOTALIZER SETUP – Page 40 ff, Section 6 "Flow measurement".	
POS. ZERO ADJUST (685) Selection Slot: 2 Index: 116	Position adjustment – the pressure difference between zero (set point) and the measured pressure need not be known. Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partly filled, the MEASURED VALUE parameter does not display zero. **Example:** – MEASURED VALUE = 2.2 mbar (0.033 psi) – Correct the MEASURED VALUE via the POS. ZERO ADJUST parameter with the "Confirm" option. This means that you are assigning the value 0.0 to the pressure present. – MEASURED VALUE (after pos. zero adjust) = 0.0 mbar The CALIB. OFFSET parameter displays the resulting pressure difference (offset) by which the MEASURED VALUE was corrected. **Options** ▪ Abort ▪ Confirm **Factory setting:** Abort
MAX. FLOW (311) Entry Slot: 2 Index: 80	Enter maximum flow of primary device. See also layout sheet of primary device. The maximum flow is assigned to the maximum pressure which you enter via MAX PRESS. FLOW. **Factory setting:** 1.0 m^3/s

Table 5: QUICK SETUP "Flow"	
Parameter name	**Description**
MAX PRESS. FLOW (634) Entry Slot: 2 Index: 81	Enter maximum pressure of primary device. → See layout sheet of primary device. This value is assigned to the maximum flow value (→ see MAX. FLOW). **Factory setting:** High sensor limit (→ See PRESS. SENS HILIM, Page 114)
DAMP SWITCH Display	Displays the switch position of DIP switch 2 which is used to switch the damping of the output signal on and off. **Display:** ▪ Off The output signal is not damped. ▪ On The output signal is damped. The attenuation constant is specified in the "DAMPING VALUE (274)" parameter. **Factory setting** On
DAMPING VALUE (247) Entry Slot: 2 Index: 79	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and OUT value of the Analog Input Block react to a change in the pressure. **Input range:** 0.0 to 999.0 s **Factory setting:** 2.0 s or as per order specifications The set damping time is only effective if DIP switch 2 is set to the "on" position.

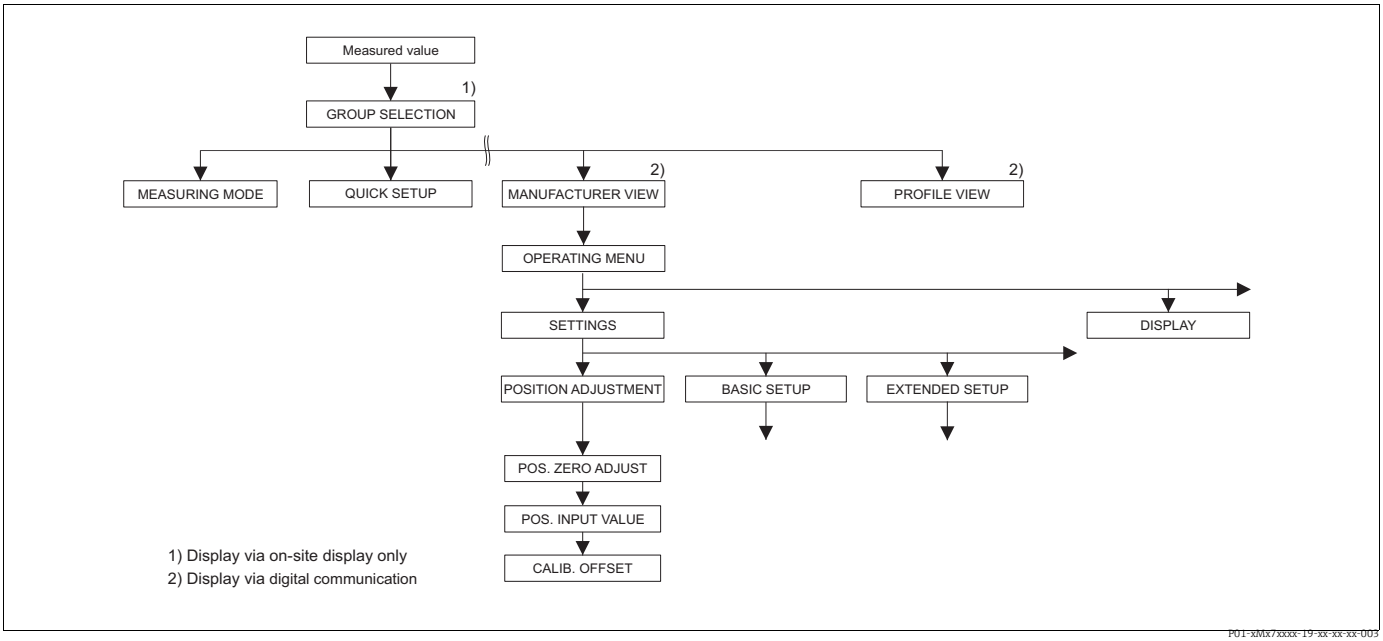


Fig. 22: POSITION ADJUSTMENT function group

Table 6: OPERATING MENU → SETTINGS → POSITION ADJUSTMENT	
Parameter name	**Description**
Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partly filled, the measured value does not display zero. Deltabar S, Cerabar S and Deltapilot S offer three different ways of performing a position adjustment. Recommendation: ▪ The pressure difference between zero (set point) and the measured pressure need not be known. – POS. ZERO ADJUST: Deltabar S or Cerabar S with gauge pressure sensor or Deltapilot S. – POS. INPUT VALUE: Cerabar S with absolute pressure sensor. ▪ The pressure difference between zero (set point) and the measured pressure is known. – CALIB. OFFSET: all	
POS. ZERO ADJUST (685) Selection Slot: 2 Index: 116	Position adjustment – the pressure difference between zero (set point) and the measured pressure need not be known. **Example:** – MEASURED VALUE = 2.2 mbar (0.033 psi) – Correct the MEASURED VALUE via the POS. ZERO ADJUST parameter with the "Confirm" option. This means that you are assigning the value 0.0 to the pressure present. – MEASURED VALUE (after pos. zero adjust) = 0.0 mbar The CALIB. OFFSET parameter displays the resulting pressure difference (offset) by which the MEASURED VALUE was corrected. **Options** ▪ Abort ▪ Confirm **Factory setting:** Abort
POS. INPUT VALUE (563) Entry Slot: 2 Index: 117	Position adjustment – the pressure difference between zero (set point) and the measured pressure need not be known. To correct the pressure difference, you need a reference measurement value (e. g. from a reference device). **Example:** – MEASURED VALUE = 0.5 mbar (0.0075 psi) – For the POS. INPUT VALUE parameter, specify the desired set point for the MEASURED VALUE, e.g. 2.0 mbar (0.03 psi). (MEASURED VALUE $_{new}$ = POS. INPUT VALUE) – MEASURED VALUE (after entry for POS. INPUT VALUE) = 2.0 mbar (0.03 psi) – The CALIB. OFFSET parameter displays the resulting pressure difference (offset) by which the MEASURED VALUE was corrected. CALIB. OFFSET = MEASURED VALUE $_{old}$ – POS. INPUT VALUE, here: CALIB. OFFSET = 0.5 mbar (0.0075 psi) – 2.0 mbar (0.03 psi) = – 1.5 mbar (-0.0225 psi)) **Factory setting:** 0.0
CALIB. OFFSET (319) Entry Slot: 2 Index: 118	Position adjustment - the pressure difference between zero (set point) and the measured pressure is known. (A reference pressure is not present at the device.) **Example:** – MEASURED VALUE = 2.2 mbar (0.033 psi) – Via the CALIB. OFFSET parameter, enter the value by which the MEASURED VALUE should be corrected. To correct the MEASURED VALUE to 0.0 mbar, you must enter the value 2.2 here. (MEASURED VALUE$_{new}$ = MEASURED VALUE$_{old}$ – CALIB. OFFSET) – MEASURED VALUE (after entry for calib. offset) = 0.0 mbar **Factory setting:** 0.0

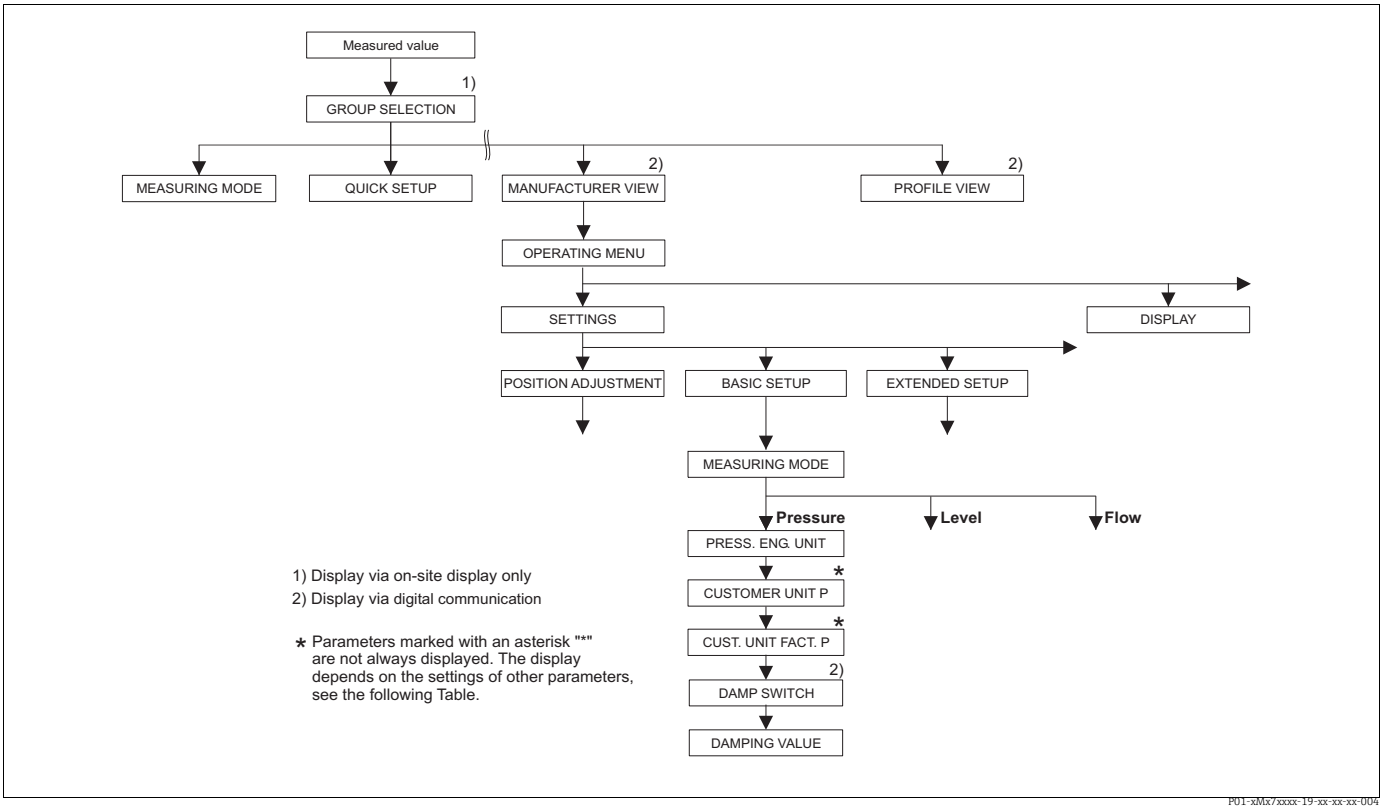


Fig. 23: BASIC SETUP function group for the "pressure" measuring mode

Table 7: OPERATING MENU → SETTINGS → BASIC SETUP "Pressure"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Pressure **Note:** See also – Page 46, Table 3: QUICK SETUP – Page 95, Table 15: EXTENDED SETUP – Page 116 ff, Table 27: PROCESS VALUES – Page 11 ff, Section 4 "Pressure measurement".	

Table 7: OPERATING MENU → SETTINGS → BASIC SETUP "Pressure"	
Parameter name	**Description**
PRESS. ENG. UNIT (060) Selection Slot: 2 Index: 30	Select pressure unit. If a new pressure unit is selected, all pressure-specific parameters are converted and displayed with the new unit. **Options** ▪ mbar, bar ▪ mmH2O, mH2O, inH2O, ftH2O ▪ Pa, hPa, kPa, MPa ▪ psi ▪ mmHg, inHg ▪ Torr ▪ g/cm^2, kg/cm^2 ▪ lb/ft^2 ▪ atm ▪ gf/cm^2, kgf/cm^2 ▪ User unit, → See also the following parameter description for CUSTOMER UNIT P and CUST. UNIT FACT. P. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** Depends on the sensor nominal measuring range mbar or bar or as per order specifications
CUSTOMER UNIT P (075) Entry Slot: 2 Index: 114	Enter text (unit) for customized pressure unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. P. **Prerequisite:** ▪ PRESS. ENG. UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
CUST. UNIT FACT. P (317) Entry Slot: 2 Index: 115	Enter conversion factor for a customer-specific pressure unit. The conversion factor must be entered in relation to the SI unit "Pa". → See also CUSTOMER UNIT P. **Prerequisite:** ▪ PRESS. ENG. UNIT = User unit **Example:** – You want the measured value to be displayed in "PU" (PU: packing unit). – MEASURED VALUE =10000 Pa i 1 PU – Entry CUSTOMER UNIT P: PU – Entry CUST. UNIT FACT. P: 0.0001 – Result: MEASURED VALUE = 1 PU **Factory setting:** 1.0

Table 7: OPERATING MENU → SETTINGS → BASIC SETUP "Pressure"	
Parameter name	**Description**
DAMP SWITCH Display	Displays the switch position of DIP switch 2 which is used to switch the damping of the output signal on and off. **Display:** ▪ Off The output signal is not damped. ▪ On The output signal is damped. The attenuation constant is specified in the "DAMPING VALUE (274)" parameter. **Factory setting** On
DAMPING VALUE (247) Entry Slot: 2 Index: 79	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and OUT value of the Analog Input Block react to a change in the pressure. **Input range:** 0.0 to 999.0 s **Factory setting:** 2.0 s or as per order specifications The set damping time is only effective if DIP switch 2 is set to the "on" position.

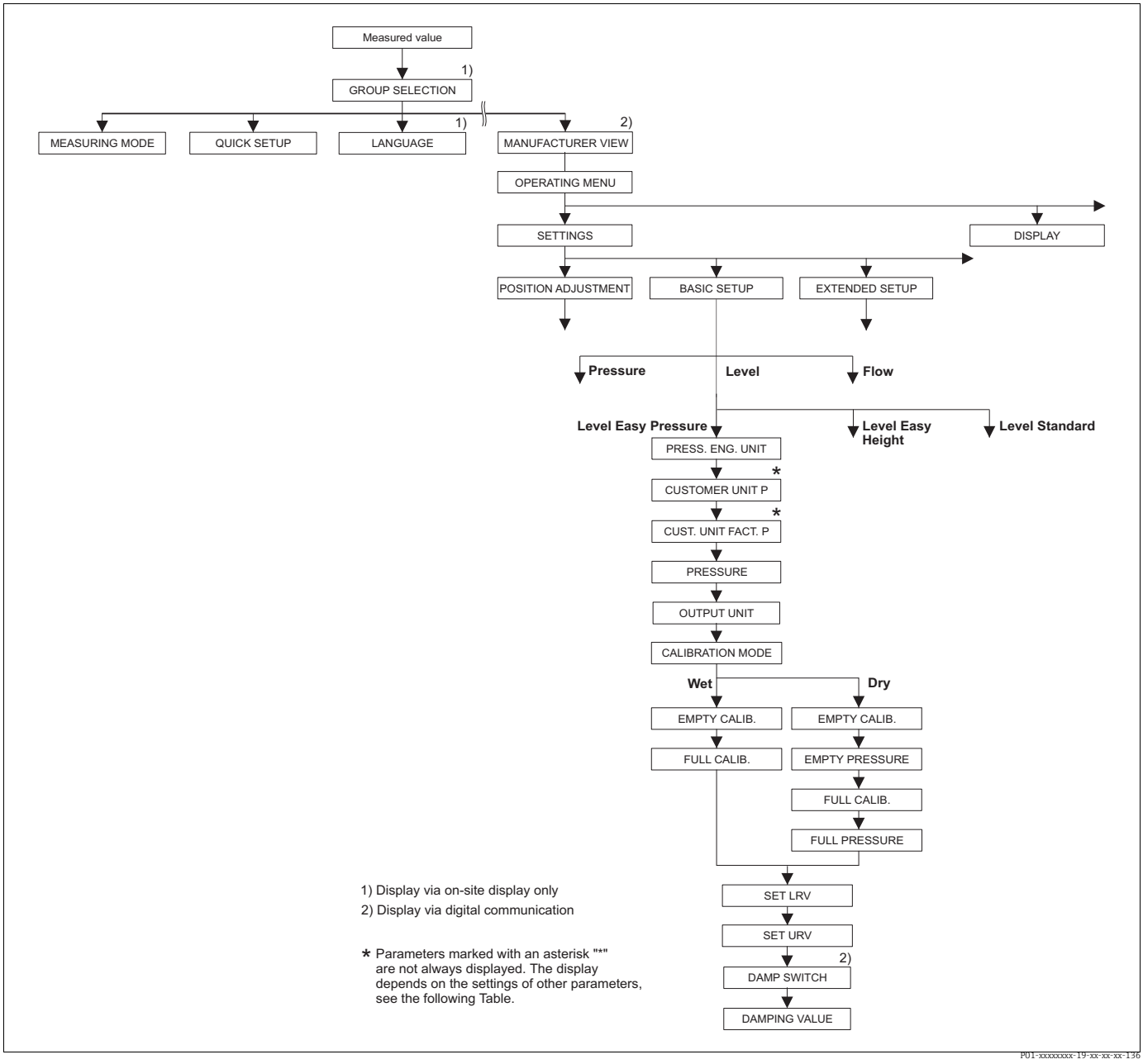


Fig. 24: BASIC SETUP function group for the "Level" measuring mode and "Level Easy Pressure" level selection

Table 8: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level Easy Pressure"
The following parameters are displayed if you have selected the "Level Easy Pressure" option for the LEVEL SELECTION parameter. Specify two pressure-level value pairs for this level mode. Two calibration modes, "Wet" and "Dry", are available. **Prerequisite**: ▪ MEASURING MODE = Level (→ see also Page 44.) ▪ LEVEL SELECTION = Level Easy Pressure (→ see also Page 45.)

Table 8: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level Easy Pressure"	
PRESS. ENG. UNIT (060) Selection Slot: 2 Index: 30	Select pressure unit. If a new pressure unit is selected, all pressure-specific parameters are converted and displayed with the new unit. **Options** ▪ mbar, bar ▪ mmH2O, mH2O, inH2O, ftH2O ▪ Pa, hPa, kPa, MPa ▪ psi ▪ mmHg, inHg ▪ Torr ▪ g/cm^2, kg/cm^2 ▪ lb/ft^2 ▪ atm ▪ gf/cm^2, kgf/cm^2 ▪ User unit, → See also the following parameter description for CUSTOMER UNIT P and CUST. UNIT FACT. P. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** Depends on the sensor nominal measuring range mbar or bar or as per order specifications
CUSTOMER UNIT P (075) Entry Slot: 2 Index: 114	Enter text (unit) for customized pressure unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. P. **Prerequisite:** ▪ PRESS. ENG. UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
CUST. UNIT FACT. P (317) Entry Slot: 2 Index: 115	Enter conversion factor for a customer-specific pressure unit. The conversion factor must be entered in relation to the SI unit "Pa". → See also CUSTOMER UNIT P. **Prerequisite:** ▪ PRESS. ENG. UNIT = User unit **Example:** – You want the measured value to be displayed in "PU" (PU: packing unit). – MEASURED VALUE =10000 Pa i 1 PU – Entry CUSTOMER UNIT P: PU – Entry CUST. UNIT FACT. P: 0.0001 – Result: MEASURED VALUE = 1 PU **Factory setting:** 1.0

Table 8: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level Easy Pressure"	
OUTPUT UNIT (023) Selection Slot: 2 Index: 249	Select unit for measured value display and MEASURED VALUE parameter (→ Page 116). The selected unit is used only to describe the measured value. This means that when selecting a new output unit, the measured value is not converted. Example: ▪ current measured value: 0.3 ft ▪ new output unit: m ▪ new measured value: 0.3 m (9.8 ft) **Options** ▪ % ▪ mm, cm, dm, m ▪ ft, inch ▪ cm^3, dm^3, m^3,m^3 E^3 ▪ l, hl ▪ ft^3, ft^3 E^3 ▪ gal, bbl, Igal ▪ g, kg, t ▪ lb, ton, oz **Factory setting:** %
CALIBRATION MODE (008) Selection Slot: 2 Index: 241	Select calibration mode. **Options:** ▪ Wet Wet calibration takes place by filling and emptying the container. In the case of two different levels, the level, volume, mass or percentage value entered is assigned to the pressure measured at this point in time. (→ See also this table, parameter descriptions for EMPTY CALIB. and FULL CALIB.) ▪ Dry Dry calibration is a theoretical calibration. For this calibration, specify two pressure-level value pairs via the following parameters: EMPTY CALIB., EMPTY PRESSURE, FULL CALIB. and FULL PRESSURE. **Factory setting:** Wet
EMPTY CALIB. (010) Entry Slot: 2 Index: 75	Enter level, volume, mass or percentage value for the lower calibration point (container empty). The container is either empty or part full. By entering a value for this parameter, you assign a level, volume, mass or percentage value to the pressure present at the device. The unit is selected via the OUTPUT UNIT parameter (→ Page 59). **Prerequisite:** ▪ CALIBRATION MODE = Wet For this parameter, the onsite display shows the level value to be entered and the pressure present at the device. In order for the level value to be saved together with the pressure present at the device, the entry field for the level value must first be activated using the "+"- or "–" key before confirming with the "E" key. This applies also if the level value is to remain unchanged. **Factory setting:** 0.0

Table 8: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level Easy Pressure"	
FULL CALIB. (004) Entry Slot: 2 Index: 76	Enter height, volume or mass value for the upper calibration point (container full). The container is either completely or almost full. By entering a value for this parameter, you assign a height, volume or mass value to the pressure present at the device. The unit is selected via the OUTPUT UNIT parameter (→ Page 59). **Prerequisite:** ▪ CALIBRATION MODE = Wet For this parameter, the onsite display shows the level value to be entered and the pressure present at the device. In order for the level value to be saved together with the pressure present at the device, the entry field for the level value must first be activated using the "+"- or "–" key before confirming with the "E" key. This applies also if the level value is to remain unchanged. **Factory setting:** 100.0
EMPTY CALIB. (010) Entry Slot: 2 Index: 75	Enter level, volume, mass or percentage value for the lower calibration point (container empty). The values entered for the EMPTY CALIB. and EMPTY PRESSURE parameters form the pressure-level value pair for the lower calibration point. The unit is selected via the OUTPUT UNIT parameter (→ Page 59). **Prerequisite:** ▪ CALIBRATION MODE = Dry **Factory setting:** 0.0
EMPTY PRESSURE (011) Entry Slot: 2 Index: 180	Enter pressure value for the lower calibration point (container empty). → See also EMPTY CALIB. **Prerequisite:** ▪ CALIBRATION MODE = Dry **Factory setting:** 0.0
FULL CALIB. (004) Entry Slot: 2 Index: 76	Enter height, volume, mass or percentage value for the upper calibration point (container full). The values entered for the FULL CALIB. and FULL PRESSURE parameters form the pressure-level value pair for the upper calibration point. The unit is selected via the OUTPUT UNIT parameter (→ Page 59). **Prerequisite:** ▪ CALIBRATION MODE = Dry **Factory setting:** 100.0
FULL PRESSURE (005) Entry Slot: 2 Index: 181	Enter pressure value for the upper calibration point (container full). → See also FULL CALIB. **Prerequisite:** ▪ CALIBRATION MODE = Dry **Factory setting:** 100.0
DAMP SWITCH Display	Displays the switch position of DIP switch 2 which is used to switch the damping of the output signal on and off. **Display:** ▪ Off The output signal is not damped. ▪ On The output signal is damped. The attenuation constant is specified in the "DAMPING VALUE (274)" parameter. **Factory setting** On

Table 8: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level Easy Pressure"	
DAMPING VALUE (247) Entry Slot: 2 Index: 79	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and OUT value of the Analog Input Block react to a change in the pressure. **Input range:** 0.0 to 999.0 s **Factory setting:** 2.0 s or as per order specifications The set damping time is only effective if DIP switch 2 is set to the "on" position.

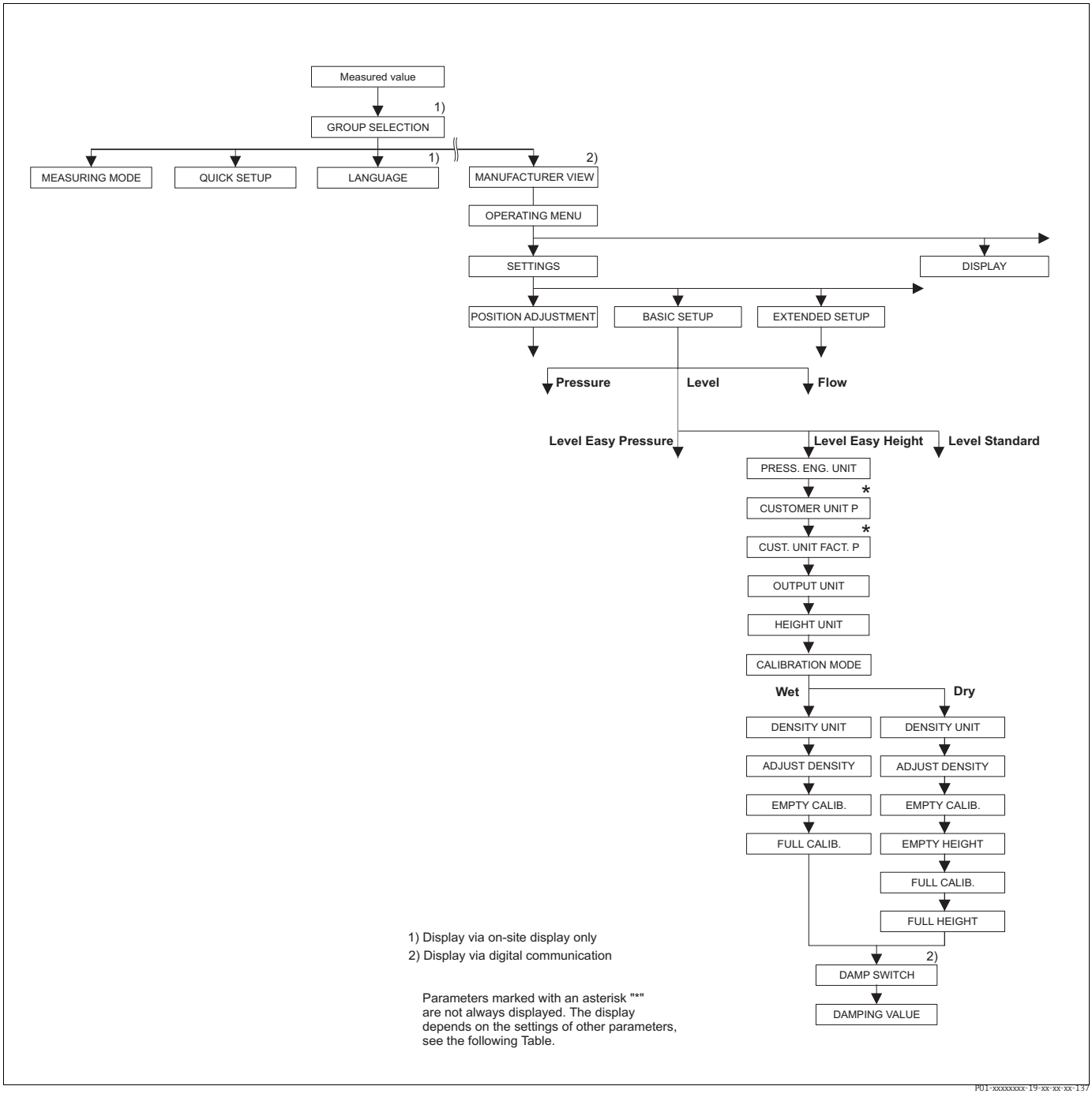


Fig. 25: BASIC SETUP function group for "Level" measuring mode and "Level Easy Height" level selection

Table 9: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level Easy Height"	
The following parameters are displayed if you have selected the "Level Easy Height" option for the LEVEL SELECTION parameter. For this level mode, specify a height unit, density and two height-level value pairs. The pressure measured value is converted to a height value using the density entered and the height unit. Two calibration modes, "Wet" and "Dry", are available. **Prerequisite**: ▪ MEASURING MODE = Level (→ see also Page 44.) ▪ LEVEL SELECTION = Level Easy Height (→ See also Page 45.)	
PRESS. ENG. UNIT (060) Selection Slot: 2 Index: 30	Select pressure unit. If a new pressure unit is selected, all pressure-specific parameters are converted and displayed with the new unit. **Options** ▪ mbar, bar ▪ mmH2O, mH2O, inH2O, ftH2O ▪ Pa, hPa, kPa, MPa ▪ psi ▪ mmHg, inHg ▪ Torr ▪ g/cm^2, kg/cm^2 ▪ lb/ft^2 ▪ atm ▪ gf/cm^2, kgf/cm^2 ▪ User unit, → See also the following parameter description for CUSTOMER UNIT P and CUST. UNIT FACT. P. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** Depends on the sensor nominal measuring range mbar or bar or as per order specifications
CUSTOMER UNIT P (075) Entry Slot: 2 Index: 114	Enter text (unit) for customized pressure unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. P. **Prerequisite:** ▪ PRESS. ENG. UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
CUST. UNIT FACT. P (317) Entry Slot: 2 Index: 115	Enter conversion factor for a customer-specific pressure unit. The conversion factor must be entered in relation to the SI unit "Pa". → See also CUSTOMER UNIT P. **Prerequisite:** ▪ PRESS. ENG. UNIT = User unit **Example:** – You want the measured value to be displayed in "PU" (PU: packing unit). – MEASURED VALUE =10000 Pa i 1 PU – Entry CUSTOMER UNIT P: PU – Entry CUST. UNIT FACT. P: 0.0001 – Result: MEASURED VALUE = 1 PU **Factory setting:** 1.0

Table 9: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level Easy Height"	
OUTPUT UNIT (023) Selection Slot: 2 Index: 249	Select unit for measured value display and MEASURED VALUE parameter (→ Page 116). The selected unit is used only to describe the measured value. This means that when selecting a new output unit, the measured value is not converted. Example: ▪ current measured value: 0.3 ft ▪ new output unit: m ▪ new measured value: 0.3 m (9.8 ft) **Options** ▪ % ▪ mm, cm, dm, m ▪ ft, inch ▪ cm^3, dm^3, m^3,m^3 E^3 ▪ l, hl ▪ ft^3, ft^3 E^3 ▪ gal, bbl, Igal ▪ g, kg, t ▪ lb, ton, oz **Factory setting:** %
HEIGHT UNIT (003) Selection Slot: 2 Index: 240	Select height unit. The measured pressure is converted to the chosen height unit using the DENSITY UNIT and ADJUST DENSITY parameters. **Options:** ▪ mm ▪ cm ▪ dm ▪ m ▪ inch ▪ ft **Factory setting:** m
CALIBRATION MODE (008) Selection Slot: 2 Index: 241	Select calibration mode. **Options:** ▪ Wet Wet calibration takes place by filling and emptying the container. The measured pressure is converted to the chosen height unit using the HEIGHT UNIT, DENSITY UNIT and ADJUST DENSITY parameters. In the case of two different levels, the level, volume, mass or percentage value entered is assigned to the converted height value. ▪ Dry Dry calibration is a theoretical calibration. For this calibration, specify two height-level value pairs via the EMPTY CALIB., EMPTY HEIGHT, FULL CALIB. and FULL HEIGHT parameters. **Factory setting:** Dry
DENSITY UNIT (001) Selection Slot: 2 Index: 244	Select density unit. The measured pressure is converted to a height using the HEIGHT UNIT, DENSITY UNIT and ADJUST DENSITY parameters. **Options:** ▪ g/cm^3 ▪ kg/dm^3 ▪ kg/m^3 ▪ US lb/in^3 ▪ US lb/ft^3 **Factory setting:** kg/dm^3
ADJUST DENSITY (007) Entry Slot: 2 Index: 245	Enter density of fluid. The measured pressure is converted to a height using the HEIGHT UNIT, DENSITY UNIT and ADJUST DENSITY parameters. **Factory setting:** 1.0

Table 9: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level Easy Height"	
EMPTY CALIB. (010) Entry Slot: 2 Index: 75	Enter level, volume, mass or percentage value for the lower calibration point (container empty). The container is either empty or part full. The measured pressure is converted to a height value using the HEIGHT UNIT, DENSITY UNIT and ADJUST DENSITY parameters and displayed. Using the parameter EMPTY CALIB., you assign a level, volume, mass or percentage value to the height value. The unit is selected via the OUTPUT UNIT parameter (→ Page 63). **Prerequisite:** ▪ CALIBRATION MODE = Wet For this parameter, the onsite display shows the level value to be entered and the pressure present at the device. In order for the level value to be saved together with the pressure present at the device, the entry field for the level value must first be activated using the "+"- or "–" key before confirming with the "E" key. This applies also if the level value is to remain unchanged. **Factory setting:** 0.0
FULL CALIB. (004) Entry Slot: 2 Index: 76	Enter level, volume, mass or percentage value for the upper calibration point (container full). The container is either completely or almost full. The measured pressure is converted to a height value using the HEIGHT UNIT, DENSITY UNIT and ADJUST DENSITY parameters and displayed. Using the parameter FULL CALIB., you assign a level, volume, mass or percentage value to the height value. The unit is selected via the OUTPUT UNIT parameter (→ Page 63). **Prerequisite:** ▪ CALIBRATION MODE = Wet For this parameter, the onsite display shows the level value to be entered and the pressure present at the device. In order for the level value to be saved together with the pressure present at the device, the entry field for the level value must first be activated using the "+"- or "–" key before confirming with the "E" key. This applies also if the level value is to remain unchanged. **Factory setting:** 100.0
EMPTY CALIB. (010) Entry Slot: 2 Index: 75	Enter level, volume, mass or percentage value for the lower calibration point (container empty). The values entered for the EMPTY CALIB. and EMPTY HEIGHT parameters form the height-level value pair for the lower calibration point. The unit is selected via the OUTPUT UNIT parameter (→ Page 63). **Prerequisite:** ▪ CALIBRATION MODE = Dry **Factory setting:** 0.0
EMPTY HEIGHT (009) Entry Slot: 2 Index: 242	Height value for the lower calibration point (container empty). The unit is selected via the HEIGHT UNIT parameter (→ Page 63). → See also EMPTY CALIB. **Prerequisite:** ▪ CALIBRATION MODE = Dry **Factory setting:** 0.0
FULL CALIB. (004) Entry Slot: 2 Index: 76	Enter level, volume, mass or percentage value for the upper calibration point (container full). The values entered for the FULL CALIB. and FULL HEIGHT parameters form the height-level value pair for the upper calibration point. The unit is selected via the OUTPUT UNIT parameter (→ Page 63). **Prerequisite:** ▪ CALIBRATION MODE = Dry **Factory setting:** 100.0

Table 9: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level Easy Height"	
FULL HEIGHT (006) Entry Slot: 2 Index: 243	Enter height value for the upper calibration point (container full). The unit is selected via the HEIGHT UNIT parameter (→ Page 63). → See also FULL CALIB. **Prerequisite:** ▪ CALIBRATION MODE = Dry **Factory setting:** Upper range limit (URL) is converted to a unit of height
DAMP SWITCH Display	Displays the switch position of DIP switch 2 which is used to switch the damping of the output signal on and off. **Display:** ▪ Off The output signal is not damped. ▪ On The output signal is damped. The attenuation constant is specified in the "DAMPING VALUE (274)" parameter. **Factory setting** On
DAMPING VALUE (247) Entry Slot: 2 Index: 79	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and OUT value of the Analog Input Block react to a change in the pressure. **Input range:** 0.0 to 999.0 s **Factory setting:** 2.0 s or as per order specifications The set damping time is only effective if DIP switch 2 is set to the "on" position.

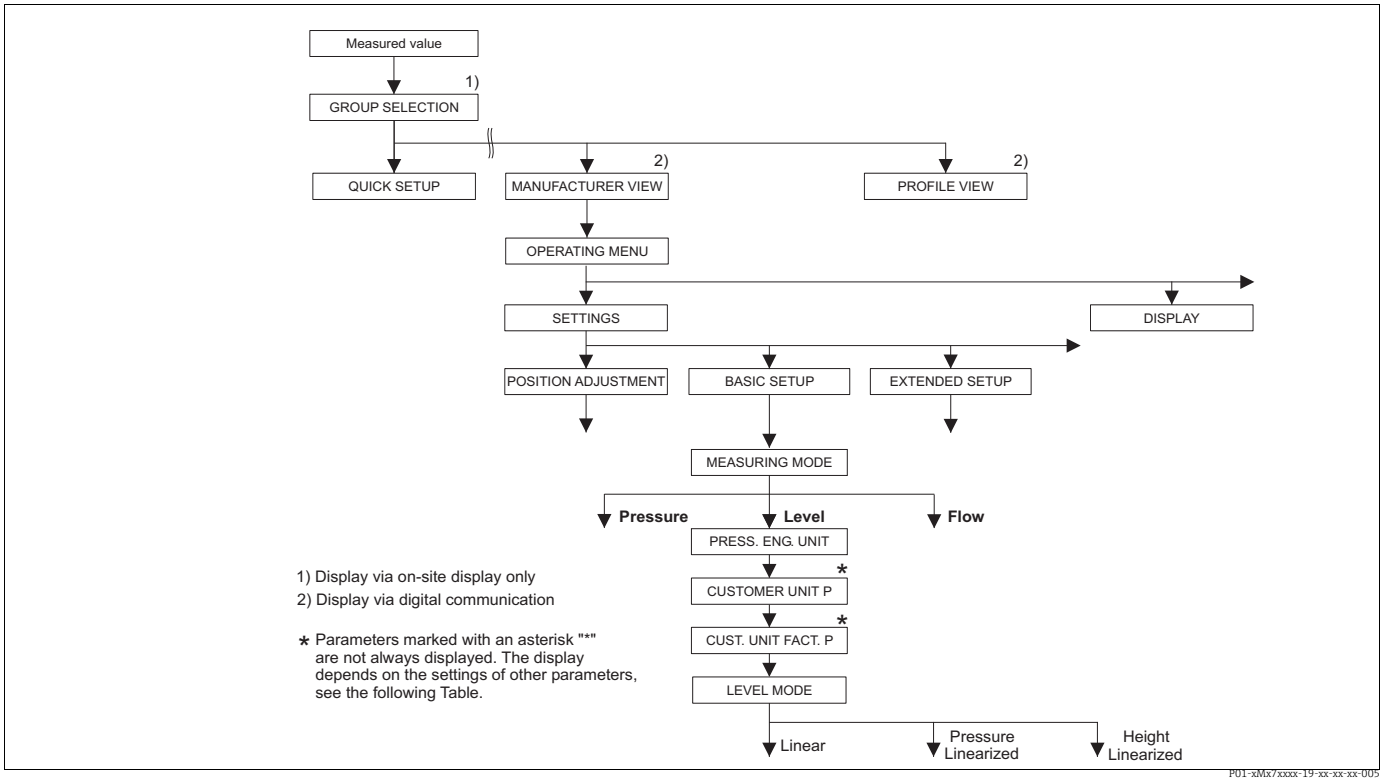


Fig. 26: BASIC SETUP function group for the "Level" measuring mode , depending on the setting for the LEVEL MODE parameter
→ See Page 68, Fig. 27 for LEVEL MODE = Linear,
→ See Page 77, Fig. 29 for LEVEL MODE = Pressure linearized,
→ See Page 81, Fig. 30 for LEVEL MODE = Height linearized

Table 10: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level standard"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Level **Note:** See also – Page 69 ff, Tables 11 to 13: BASIC SETUP – contd. – Page 95 ff, Table 16: EXTENDED SETUP – Page 98 ff, Table 18 and 19: LINEARIZATION – Page 116 ff, Table 28: PROCESS VALUES – Page 12 ff, Section 5 "Level measurement".	
MEASURING MODE Selection Slot: 2 Index: 154	Select the measuring mode. The operating menu is structured according to the selected measuring mode. When the measuring mode is changed, no conversion takes place. The digital output value of the Analog Input Block OUT no longer displays the same value as the onsite display or the MEASURED VALUE. The device has to be recalibrated if the measuring mode is changed. → See also Page 12, Section 5 "Level measurement". **Prerequisite:** ▪ FieldCare **Options**: ▪ Pressure ▪ Level ▪ Deltabar S: Flow **Factory setting:** Pressure
PRESS. ENG. UNIT (060) Selection Slot: 2 Index: 30	Select pressure unit. If a new pressure unit is selected, all pressure-specific parameters are converted and displayed with the new unit. **Options**: ▪ mbar, bar ▪ mmH2O, mH2O, inH2O, ftH2O ▪ Pa, hPa, kPa, MPa ▪ psi ▪ mmHg, inHg ▪ Torr ▪ g/cm^2, kg/cm^2 ▪ lb/ft^2 ▪ atm ▪ gf/cm^2, kgf/cm^2 ▪ User unit, → See also the following parameter description for CUSTOMER UNIT P and CUST. UNIT FACT. P. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** Depends on the sensor nominal measuring range mbar or bar or as per order specifications

Table 10: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL SELECTION "Level standard"	
Parameter name	**Description**
CUSTOMER UNIT P (075) Entry Slot: 2 Index: 114	Enter text (unit) for customized pressure unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. P. **Prerequisite:** ▪ PRESS. ENG. UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
CUST. UNIT FACT. P (317) Entry Slot: 2 Index: 115	Enter conversion factor for a customer-specific pressure unit. The conversion factor must be entered in relation to the SI unit "Pa". → See also CUSTOMER UNIT P. **Prerequisite:** ▪ PRESS. ENG. UNIT = User unit **Example:** – You want the measured value to be displayed in "PU" (PU: packing unit). – MEASURED VALUE =10000 Pa i 1 PU – Entry CUSTOMER UNIT P: PU – Entry CUST. UNIT FACT. P: 0.0001 – Result: MEASURED VALUE = 1 PU **Factory setting:** 1.0
LEVEL MODE (718) Selection Slot: 2 Index: 184	Select level type. **Options:** ▪ Linear: the measured variable (level, volume, mass or %) is in direct proportion to the measured pressure. → See also Page 69 ff, Table 11. ▪ Pressure linearized: the measured variable (volume, mass or %) is not in direct proportion to the measured pressure such as in the case of containers with a conical outlet. For the calibration, enter a linearization table with at least 2 and not more than 32 points. → See also Page 77 ff, Table 12. ▪ Height linearized: select this level type if you require two measured variables or if the container shape is given with value pairs, e.g. height and volume. The following combinations are possible: – Height + Volume – Height + Mass – Height + % – %-Height + volume – %-Height + Mass – %-Height + % Perform two calibrations for this level type. First for the measured variable height or %-height like for the "Linear" option and then for the measured variable volume, mass or % like for the "Pressure linearized" option. → See also Page 82 ff, Table 13. **Factory setting:** Linear
→ For LEVEL MODE = Linear, see Page 69, Table 11. → For LEVEL MODE = Pressure linearized, see Page 77, Table 12. → For LEVEL MODE = Height linearized, see Page 82, Table 13.	

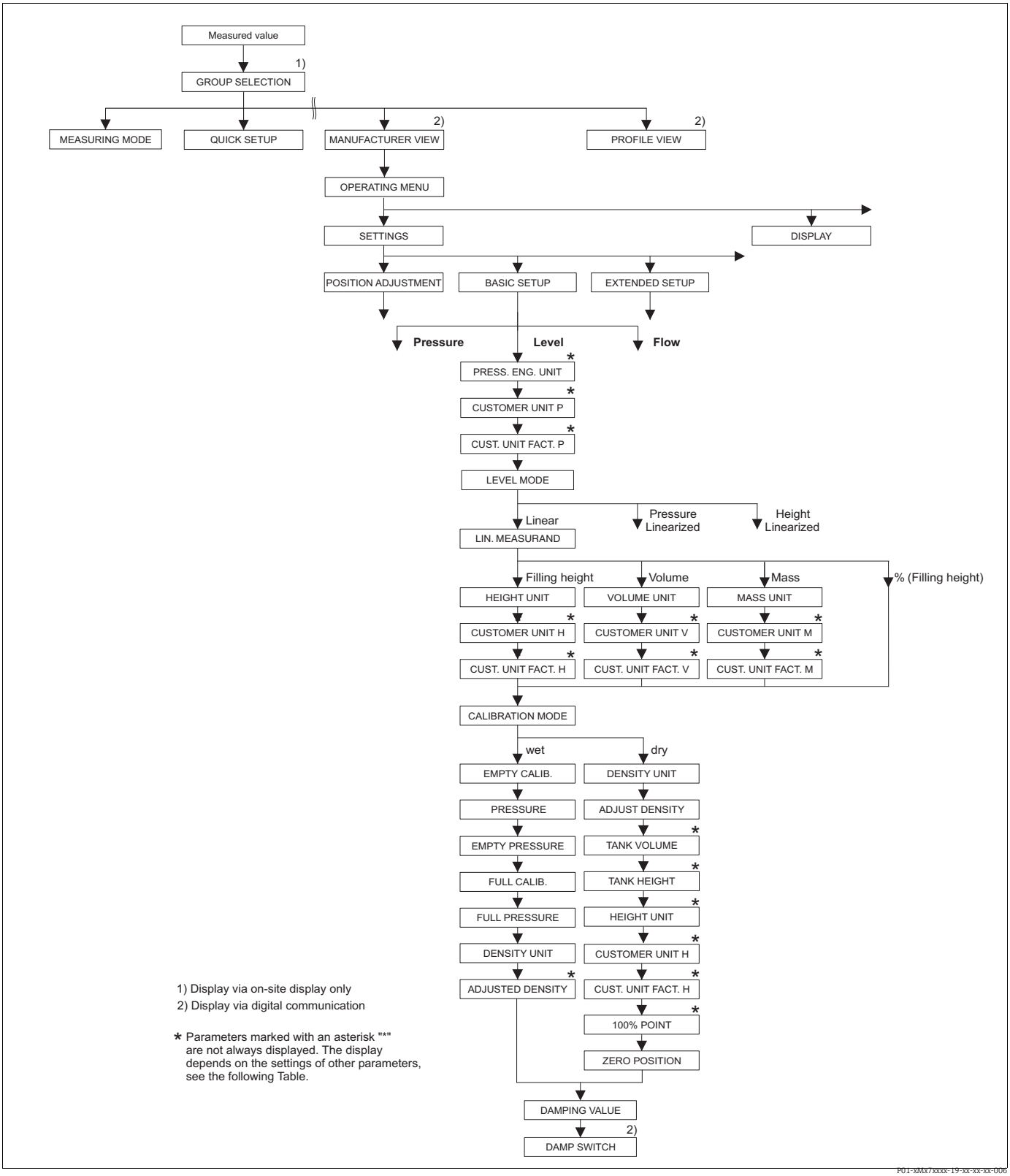


Fig. 27: BASIC SETUP function group for the "Level" measuring mode and "Linear" level type

Table 11: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Linear"	
Parameter name	**Description**
The following parameters are displayed if you selected the "Linear" option for the LEVEL MODE parameter. For this level type, the measured variable (level, volume, mass or %) is in direct proportion to the measured pressure. **Prerequisite**: ▪ MEASURING MODE = Level ▪ LEVEL MODE = Linear (→ see also Page 67). **Note:** See also – Page 66 ff, Table 10: BASIC SETUP – general – Page 95 ff, Table 16: EXTENDED SETUP – Page 116 ff, Table 28: PROCESS VALUES – Page 12 ff, Section 5 "Level measurement".	
LIN. MEASURAND (804) Selection Slot: 2 Index: 199	Select measured variable. **Options:** ▪ Level ▪ Volume ▪ Mass ▪ % (level) **Factory setting:** % (level)
HEIGHT UNIT (708) Selection Slot: 2 Index: 177	Select level unit. **Prerequisite:** ▪ LIN. MEASURAND = Level ▪ or dry calibration **Options:** ▪ mm ▪ cm ▪ dm ▪ m ▪ inch ▪ ft ▪ User unit, → see also the following parameter description for CUSTOMER UNIT H and CUST. UNIT FACT. H. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** m
CUSTOMER UNIT H (706) Entry Slot: 2 Index: 179	Enter text (unit) for customer-specific level unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. H. **Prerequisite:** ▪ LIN. MEASURAND = Level, HEIGHT UNIT = User unit ▪ or dry calibration Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _

Table 11: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Linear"	
Parameter name	**Description**
CUST. UNIT FACT. H (705) Entry Slot: 2 Index: 178	Enter conversion factor for a customer-specific level unit. The conversion factor must be entered in relation to the SI unit "m". → See also CUSTOMER UNIT H. **Prerequisite:** ▪ LIN. MEASURAND = Level, HEIGHT UNIT = User unit ▪ or dry calibration **Example:** – You want the measured value to be displayed in "PU" (PU: packing unit). – MEASURED VALUE = 0.5 m i 1 PU – Entry CUSTOMER UNIT H: PU – Entry CUST. UNIT FACT. H: 2 – Result: MEASURED VALUE = 1 PU **Factory setting:** 1.0
UNIT VOLUME (313) Selection Slot: 2 Index: 146	Select volume unit. **Prerequisite:** ▪ LIN. MEASURAND = Volume **Options:** ▪ l ▪ hl ▪ cm^3 ▪ dm^3 ▪ m^3 ▪ m^3 E^3 ▪ ft ▪ ft^3 E^3 ▪ gal ▪ Igal ▪ bbl ▪ User unit, → see also the following parameter description for CUSTOMER UNIT V and CUST. UNIT FACT. V. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** m^3
CUSTOMER UNIT V (608) Entry Slot: 2 Index: 147	Enter text (unit) for customer-specific volume unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. V **Prerequisite:** ▪ LIN. MEASURAND = Volume, UNIT VOLUME = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _

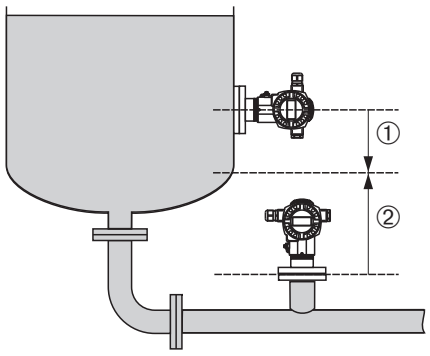
Table 11: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Linear"	
Parameter name	**Description**
CUST. UNIT FACT. V (607) Entry Slot: 2 Index: 148	Enter conversion factor for a customer-specific volume unit. The conversion factor must be entered in relation to the SI unit "m^3". → See also CUSTOMER UNIT V. **Prerequisite:** ▪ LIN. MEASURAND = Volume, UNIT VOLUME = User unit **Example:** – You want the measured value to be displayed in "buckets". – MEASURED VALUE = 0.01 m3 i 1 bucket – Entry CUSTOMER UNIT V: bucket – Entry CUST. UNIT FACT. V: 100 – Result: MEASURED VALUE = 1 bucket **Factory setting:** 1.0
MASS UNIT (709) Selection Slot: 2 Index: 174	Select mass unit. **Prerequisite:** ▪ LIN. MEASURAND = Mass **Options:** ▪ g ▪ kg ▪ t ▪ oz ▪ lb ▪ ton ▪ User unit, → see also the following parameter description for CUSTOMER UNIT M and CUST. UNIT FACT. M. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** kg
CUSTOMER UNIT M (704) Entry Slot: 2 Index: 176	Enter text (unit) for customer-specific mass unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. M. **Prerequisite:** ▪ LIN. MEASURAND = Mass, MASS UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _

Table 11: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Linear"	
Parameter name	**Description**
CUST. UNIT FACT. M (703) Entry Slot: 2 Index: 175	Enter conversion factor for a customer-specific mass unit. The conversion factor must be entered in relation to the SI unit "kg". → See also CUSTOMER UNIT M. **Prerequisite:** ▪ LIN. MEASURAND = Mass, MASS UNIT = User unit **Example:** – You want the measured value to be displayed in "buckets". – MEASURED VALUE = 10 kg i 1 bucket – Entry CUSTOMER UNIT M: bucket – Entry CUST. UNIT FACT. M: 0.1 – Result: MEASURED VALUE = 1 bucket **Factory setting:** 1.0
CALIBRATION MODE (392) Selection Slot: 2 Index: 121	Select calibration mode. **Options:** ▪ Wet Wet calibration takes place by filling and emptying the container. This calibration mode requires two pressure-level value pairs to be entered. In the case of two different levels, the level value is entered and the pressure measured at this moment is assigned to the level value. → See also the following parameter description for EMPTY CALIB., EMPTY PRESSURE, FULL CALIB. and FULL PRESSURE. ▪ Dry Dry calibration is a theoretical calibration which you can carry out even if the device is not mounted or the container is empty. – For the "Level" measured variable, the density of the fluid (→ see Page 73, ADJUST DENSITY) must be entered. – For the "Volume" measured variable, the density of the fluid and the tank volume and tank height must be entered (→ see Page 73, ADJUST DENSITY, TANK VOLUME and TANK HEIGHT). – For the "Mass" measured variable, the tank volume and the tank height must be entered (→ see Page 74, TANK VOLUME and TANK HEIGHT). The density must also be entered in the case of a zero point shift (level offset) (→ see Page 73, ADJUST DENSITY). – For the "%" measured variable, the density of the fluid must be entered and a level assigned to the 100 % point (→ see Page 73 and 76, ADJUST DENSITY and 100% POINT). If the measurement should not start at the mounting location of the device, a level offset must be entered (→ see Page 76, ZERO POSITION). **Factory setting:** Wet
EMPTY CALIB. (314) Entry Slot: 2 Index: 75	Enter level value for the lower calibration point (container empty). The container is either empty or part full. By entering a value for this parameter, you are assigning a level value to the pressure present at the device. → See also EMPTY PRESSURE. **Prerequisite:** ▪ CALIBRATION MODE = Wet **Factory setting:** 0.0
EMPTY PRESSURE (710) Display Slot: 2 Index: 180	Displays the pressure value for the lower calibration point (container empty). → See also EMPTY CALIB. **Prerequisite:** ▪ CALIBRATION MODE = Wet **Factory setting:** 0.0

Table 11: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Linear"	
Parameter name	**Description**
FULL CALIB. (315) Entry Slot: 2 Index: 76	Enter level value for the upper calibration point (container full). The container is either completely or almost full. By entering a value for this parameter, you are assigning a level value to the pressure present at the device. → See also FULL PRESSURE. **Prerequisite:** ▪ CALIBRATION MODE = Wet **Factory setting:** 100.0
FULL PRESSURE (711) Display Slot: 2 Index: 181	Displays the pressure value for the upper calibration point (container full). → See also FULL CALIB. **Prerequisite:** ▪ CALIBRATION MODE = Wet **Factory setting:** High sensor limit (→ See PRESS. SENS HILIM, Page 114)
ADJUSTED DENSITY (810) Display Slot: 2 Index: 122	Displays the density calculated from the upper and lower level point. **Prerequisite:** ▪ CALIBRATION MODE = Wet, LIN. MEASURAND = Level
DENSITY UNIT (812) Selection Slot: 2 Index: 127	Select density unit. **Prerequisite:** ▪ LIN. MEASURAND = Level, CALIBRATION MODE = Dry ▪ LIN. MEASURAND = % (level), CALIBRATION MODE = Dry ▪ LIN. MEASURAND = Volume, CALIBRATION MODE = Dry ▪ LIN. MEASURAND = Mass, CALIBRATION MODE = Dry **Options:** ▪ g/cm^3 ▪ kg/dm^3 ▪ kg/m^3 ▪ US lb/in^3 ▪ US lb/ft^3 **Factory setting:** kg/dm^3
ADJUST DENSITY (316) Entry Slot: 2 Index: 128	Enter density of fluid. **Prerequisite:** ▪ LIN. MEASURAND = Level, CALIBRATION MODE = Dry ▪ LIN. MEASURAND = % (level), CALIBRATION MODE = Dry ▪ LIN. MEASURAND = Volume, CALIBRATION MODE = Dry ▪ LIN. MEASURAND = Mass, CALIBRATION MODE = Dry **Factory setting:** 1 kg/dm^3

Table 11: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Linear"	
Parameter name	**Description**
UNIT VOLUME (313) Selection Slot: 2 Index: 146	Select volume unit. **Prerequisite:** ▪ LIN. MEASURAND = Volume **Options:** ▪ l ▪ hl ▪ cm^3 ▪ dm^3 ▪ m^3 ▪ m^3 E^3 ▪ ft ▪ ft^3 E^3 ▪ gal ▪ Igal ▪ bbl ▪ User unit, → see also the following parameter description for CUSTOMER UNIT V and CUST. UNIT FACT. V. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** m^3
CUSTOMER UNIT V (608) Entry Slot: 2 Index: 147	Enter text (unit) for customer-specific volume unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. V **Prerequisite:** ▪ LIN. MEASURAND = Volume, UNIT VOLUME = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
CUST. UNIT FACT. V (607) Entry Slot: 2 Index: 148	Enter conversion factor for a customer-specific volume unit. The conversion factor must be entered in relation to the SI unit "m^3". → See also CUSTOMER UNIT V. **Prerequisite:** ▪ LIN. MEASURAND = Volume, UNIT VOLUME = User unit **Example:** – You want the measured value to be displayed in "buckets". – MEASURED VALUE = 0.01 m3 i 1 bucket – Entry CUSTOMER UNIT V: bucket – Entry CUST. UNIT FACT. V: 100 – Result: MEASURED VALUE = 1 bucket **Factory setting:** 1.0
TANK VOLUME (858) Entry Slot: 2 Index: 129	Enter tank volume. **Prerequisite:** ▪ LIN. MEASURAND = Volume, CALIBRATION MODE = Dry ▪ LIN. MEASURAND = Mass, CALIBRATION MODE = Dry **Factory setting:** 1.0 m^3

Table 11: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Linear"	
Parameter name	**Description**
HEIGHT UNIT (708) Selection Slot: 2 Index: 177	Select level unit. **Prerequisite:** ▪ LIN. MEASURAND = % (level), CALIBRATION MODE = Dry **Options:** ▪ mm ▪ dm ▪ cm ▪ m ▪ inch ▪ ft ▪ User unit, → see also the following parameter description for CUSTOMER UNIT H and CUST. UNIT FACT. H. **Factory setting:** m
CUSTOMER UNIT H (706) Entry Slot: 2 Index: 179	Enter text (unit) for customer-specific level unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. H. **Prerequisite:** ▪ LIN. MEASURAND = % (level), CALIBRATION MODE = Dry, HEIGHT UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
CUST. UNIT FACT. H (705) Entry Slot: 2 Index: 178	Enter conversion factor for a customer-specific level unit. The conversion factor must be entered in relation to the SI unit "m". → See also CUSTOMER UNIT H. **Prerequisite:** ▪ LIN. MEASURAND = % (level), CALIBRATION MODE = Dry, HEIGHT UNIT = User unit **Example:** – You want the measured value to be displayed in "PU" (PU: packing unit). – MEASURED VALUE = 0.5 m i 1 PU – Entry CUSTOMER UNIT H: PU – Entry CUST. UNIT FACT. H: 2 – Result: MEASURED VALUE = 1 PU **Factory setting:** 1.0
TANK HEIGHT (859) Entry Slot: 2 Index: 130	Enter tank height. **Prerequisite:** ▪ LIN. MEASURAND = Volume, CALIBRATION MODE = Dry ▪ LIN. MEASURAND = Mass, CALIBRATION MODE = Dry **Factory setting:** 1.0 m

Table 11: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Linear"	
Parameter name	**Description**
100% POINT (813) Entry Slot: 2 Index: 131	Enter level value for 100% point. **Prerequisite:** ▪ LIN. MEASURAND = % (level), CALIBRATION MODE = Dry **Example:** – The 100 %-point should correspond to 4 m (13 ft). – Select the "m" unit via the HEIGHT UNIT parameter. – Enter the value "4" for this parameter (100% POINT). **Factory setting:** 1.0
ZERO POSITION (814) Entry Slot: 2 Index: 132	Enter value for level offset. If the measurement should not start at the mounting location of the device, e.g. for containers with a sump, carry out zero point shift (level offset). **Prerequisite:** ▪ CALIBRATION MODE = Dry **Factory setting:** 0.0  P01-PMP75xxx-19-xx-xx-xx-001 *Fig. 28: Zero point shift* *1 Device is mounted above the level lower range value: a positive value has to be entered for ZERO POSITION.* *2 Device is mounted below the level lower range value: a negative value has to be entered for ZERO POSITION.*
DAMP SWITCH Display	Displays the switch position of DIP switch 2 which is used to switch the damping of the output signal on and off. **Display:** ▪ Off The output signal is not damped. ▪ On The output signal is damped. The attenuation constant is specified in the "DAMPING VALUE (274)" parameter. **Factory setting** On
DAMPING VALUE (247) Entry Slot: 2 Index: 79	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and OUT value of the Analog Input Block react to a change in the pressure. **Input range:** 0.0 to 999.0 s **Factory setting:** 2.0 s or as per order specifications The set damping time is only effective if DIP switch 2 is set to the "on" position.

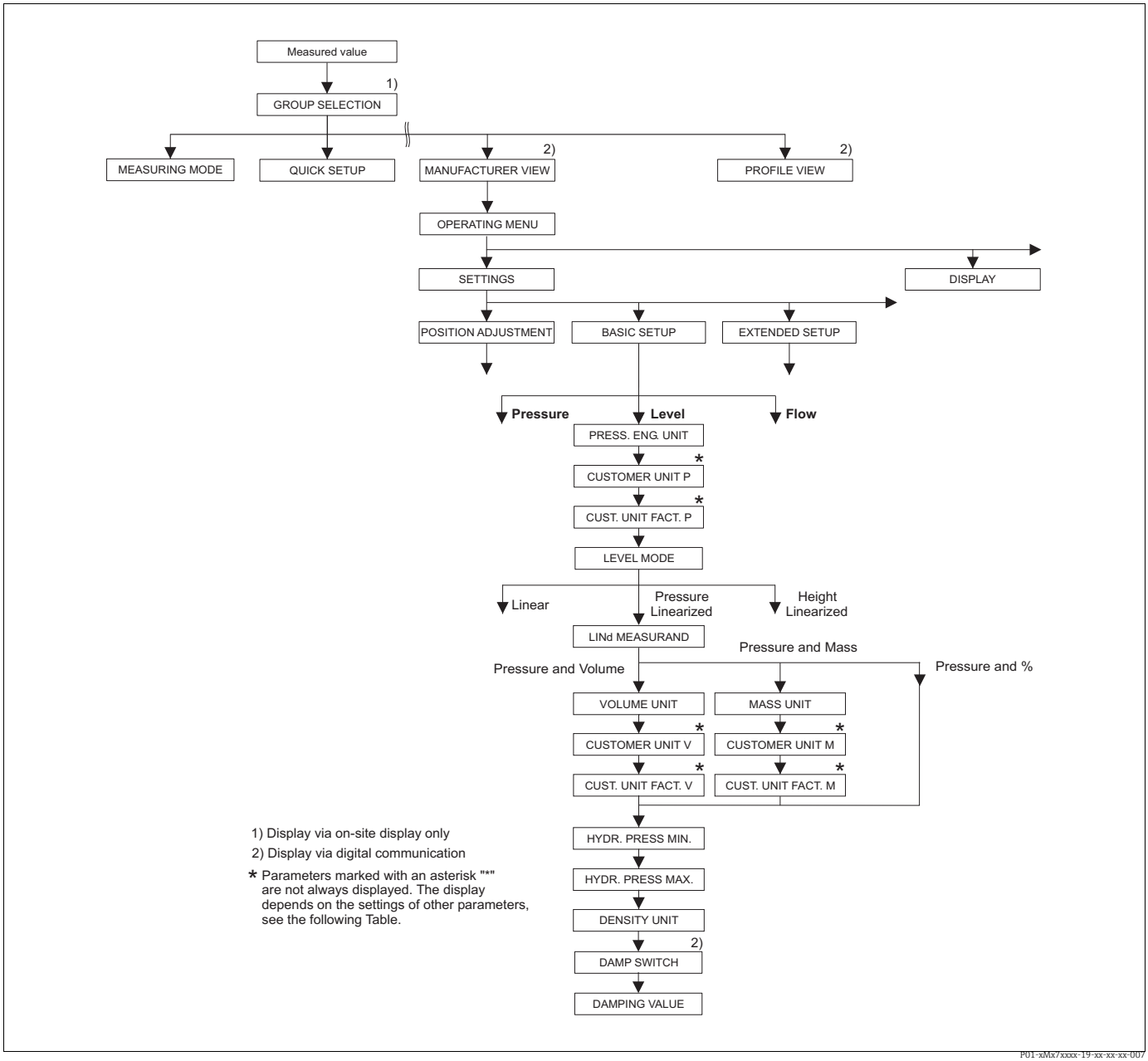


Fig. 29: BASIC SETUP function group for the "Level" measuring mode and the "Pressure linearized" level type, continue calibration with LINEARIZATION function group → see Page 98 ff.

Table 12: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Pressure linearized"	
Parameter name	**Description**
The following parameters are displayed if you selected the "Pressure linearized" option for the LEVEL MODE parameter. For this level type, the measured variable (volume, mass or %) is not in direct proportion to the measured pressure. For the calibration, enter a linearization table with at least 2 and not more than 32 points. **Prerequisite**: ▪ MEASURING MODE = Level ▪ LEVEL MODE = Pressure linearized (→ see also Page 67). **Note:** See also – Page 66 ff, Table 10: BASIC SETUP – general – Page 95 ff, Table 16: EXTENDED SETUP – Page 98 ff, Table 18 and 19: LINEARIZATION – Page 116 ff, Table 28: PROCESS VALUES – Page 12 ff, Section 5 "Level measurement".	

Table 12: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Pressure linearized"	
Parameter name	**Description**
LINd. MEASURAND (805) Selection Slot: 2 Index: 200	Select measured variable. **Options:** ▪ Pressure and Volume ▪ Pressure and Mass ▪ Pressure and % **Factory setting:** Pressure and %
UNIT VOLUME (313) Selection Slot: 2 Index: 146	Select volume unit. **Prerequisite:** ▪ LINd. MEASURAND = Pressure and Volume **Options:** ▪ l ▪ hl ▪ cm^3 ▪ dm^3 ▪ m^3 ▪ m^3 E^3 ▪ ft ▪ ft^3 E^3 ▪ gal ▪ Igal ▪ bbl ▪ User unit, → see also the following parameter description for CUSTOMER UNIT V and CUST. UNIT FACT. V. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** m^3
CUSTOMER UNIT V (608) Entry Slot: 2 Index: 147	Enter text (unit) for customer-specific volume unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. V **Prerequisite:** ▪ LINd. MEASURAND = Pressure and volume, UNIT VOLUME = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _

Table 12: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Pressure linearized"	
Parameter name	**Description**
CUST. UNIT FACT. V (607) Entry Slot: 2 Index: 148	Enter conversion factor for a customer-specific volume unit. The conversion factor must be entered in relation to the SI unit "m^3". → See also CUSTOMER UNIT V. **Prerequisite:** ▪ LINd. MEASURAND = Pressure and volume, UNIT VOLUME = User unit **Example:** – You want the measured value to be displayed in "buckets". – MEASURED VALUE = 0.01 m3 i 1 bucket – Entry CUSTOMER UNIT V: bucket – Entry CUST. UNIT FACT. V: 100 – Result: MEASURED VALUE = 1 bucket **Factory setting:** 1.0
MASS UNIT (709) Selection Slot: 2 Index: 174	Select mass unit. **Prerequisite:** ▪ LINd. MEASURAND = Pressure and Mass **Options:** ▪ g ▪ kg ▪ t ▪ oz ▪ lb ▪ ton ▪ User unit, → see also the following parameter description for CUSTOMER UNIT M and CUST. UNIT FACT. M. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** kg
CUSTOMER UNIT M (704) Entry Slot: 2 Index: 176	Enter text (unit) for customer-specific mass unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. M. **Prerequisite:** ▪ LINd. MEASURAND = Pressure and mass, UNIT MASS = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _

Table 12: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Pressure linearized"	
Parameter name	**Description**
CUST. UNIT FACT. M (703) Entry Slot: 2 Index: 175	Enter conversion factor for a customer-specific mass unit. The conversion factor must be entered in relation to the SI unit "kg". → See also CUSTOMER UNIT M. **Prerequisite:** ▪ LINd. MEASURAND = Pressure and mass, UNIT MASS = User unit **Example:** – You want the measured value to be displayed in "buckets". – MEASURED VALUE = 10 kg i 1 bucket – Entry CUSTOMER UNIT M: bucket – Entry CUST. UNIT FACT. M: 0.1 – Result: MEASURED VALUE = 1 bucket **Factory setting:** 1.0
HYDR. PRESS M (773) Entry Slot: 2 Index: 194	Enter the minimum hydrostatic pressure to be expected. The input limits for the calibration (editing limits) are derived from the value entered. The closer the value entered corresponds to the minimum hydrostatic pressure to be expected, the more accurate the measurement result. **Factory setting:** 0.0
HYDR. PRESS MAX. (774) Entry Slot: 2 Index: 190	Enter the maximum hydrostatic pressure to be expected. The input limits for the calibration (editing limits) are derived from the value entered. The closer the value entered corresponds to the maximum hydrostatic pressure to be expected, the more accurate the measurement result. **Factory setting:** High sensor limit (→ See PRESS. SENS HILIM, Page 114)
DAMP SWITCH Display	Displays the switch position of DIP switch 2 which is used to switch the damping of the output signal on and off. **Display:** ▪ Off The output signal is not damped. ▪ On The output signal is damped. The attenuation constant is specified in the "DAMPING VALUE (274)" parameter. **Factory setting** On
DAMPING VALUE (247) Entry Slot: 2 Index: 79	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and OUT value of the Analog Input Block react to a change in the pressure. **Input range:** 0.0 to 999.0 s **Factory setting:** 2.0 s or as per order specifications The set damping time is only effective if DIP switch 2 is set to the "on" position.

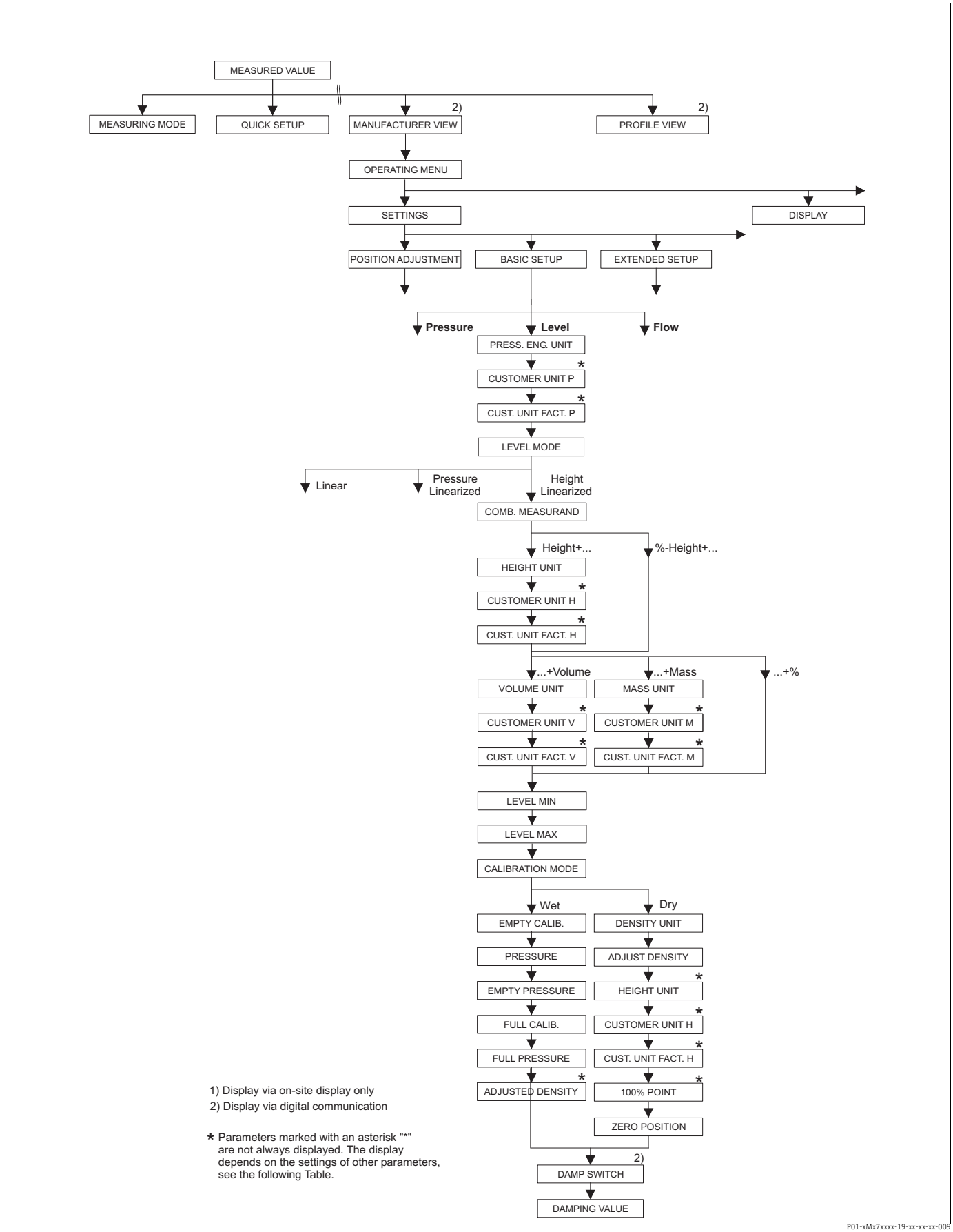


Fig. 30: BASIC SETUP function group for the "Level" measuring mode and the "Height linearized" level type, continue calibration with LINEARIZATION function group → see Page 98 ff.

Table 13: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Height linearized"	
Parameter name	**Description**
The following parameters are displayed if you selected the "Height linearized" option for the LEVEL MODE parameter. Select this level type if you require two measured variables or if the container shape is given with value pairs, e.g. height and volume. The following combinations are possible: ▪ Height and Volume ▪ Height and Mass ▪ Height and % ▪ %-Height and Volume ▪ %-Height and Mass ▪ %-Height and % The 1st measured variable (%-Height or height) must be in direct proportion to the measured pressure. The 2nd measured variable (volume, mass or %) must not be in direct proportion. A linearization table must be entered for the 2nd measured variable. The 2nd measured variable is assigned to the 1st measured variable by means of this table. **Prerequisite**: ▪ MEASURING MODE = Level ▪ LEVEL MODE = Height linearized (→ see also Page 67). **Note:** See also – Page 66 ff, Table 10: BASIC SETUP – general – Page 95 ff, Table 16: EXTENDED SETUP – Page 98 ff, Table 18 and 19: LINEARIZATION – Page 116 ff, Table 28: PROCESS VALUES – Page 12 ff, Section 5 "Level measurement".	
COMB. MEASURAND (806) Selection Slot: 2 Index: 201	Select measured variable. **Options:** ▪ Height and Volume ▪ Height and Mass ▪ Height and % ▪ %-Height and Volume ▪ %-Height and Mass ▪ %-Height and % **Factory setting:** %-Height and %
HEIGHT UNIT (708) Selection Slot: 2 Index: 177	Select level unit for the 1st measured variable. **Prerequisite:** ▪ COMB. MEASURAND = Height and Volume, height and Mass or height and % **Options:** ▪ mm ▪ dm ▪ cm ▪ m ▪ inch ▪ ft ▪ User unit, → see also the following parameter description for CUSTOMER UNIT H and CUST. UNIT FACT. H. **Factory setting:** m

Table 13: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Height linearized"	
Parameter name	**Description**
CUSTOMER UNIT H (706) Entry Slot: 2 Index: 179	Enter text (unit) for customer-specific level unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. H. **Prerequisite:** ▪ COMB. MEASURAND = Height and Volume, HEIGHT UNIT = User unit ▪ COMB. MEASURAND = Height and Mass, HEIGHT UNIT = User unit ▪ COMB. MEASURAND = Height and %, HEIGHT UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
CUST. UNIT FACT. H (705) Entry Slot: 2 Index: 178	Enter conversion factor for a customer-specific level unit. The conversion factor must be entered in relation to the SI unit "m". → See also CUSTOMER UNIT H. **Prerequisite:** ▪ COMB. MEASURAND = Height and Volume, HEIGHT UNIT = User unit ▪ COMB. MEASURAND = Height and Mass, HEIGHT UNIT = User unit ▪ COMB. MEASURAND = Height and %, HEIGHT UNIT = User unit **Example:** – You want the measured value to be displayed in "PU" (PU: packing unit). – MEASURED VALUE = 0.5 m i 1 PU – Entry CUSTOMER UNIT H: PU – Entry CUST. UNIT FACT. H: 2 – Result: MEASURED VALUE = 1 PU **Factory setting:** 1.0
UNIT VOLUME (313) Selection Slot: 2 Index: 146	Select the volume unit for the 2nd measured value. **Prerequisite:** ▪ COMB. MEASURAND = Height and Volume or %-Height and Volume **Options:** ▪ l ▪ hl ▪ cm^3 ▪ dm^3 ▪ m^3 ▪ m^3 E^3 ▪ ft ▪ ft^3 E^3 ▪ gal ▪ Igal ▪ bbl ▪ User unit, → see also the following parameter description for CUSTOMER UNIT V and CUST. UNIT FACT. V. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** m^3

Table 13: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Height linearized"	
Parameter name	**Description**
CUSTOMER UNIT V (608) Entry Slot: 2 Index: 147	Enter text (unit) for customer-specific volume unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. V **Prerequisite:** ▪ COMB. MEASURAND = Height and Volume, HEIGHT UNIT = User unit ▪ COMB. MEASURAND = %-Height and Volume, HEIGHT UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
CUST. UNIT FACT. V (607) Entry Slot: 2 Index: 148	Enter conversion factor for a customer-specific volume unit. The conversion factor must be entered in relation to the SI unit "m^3". → See also CUSTOMER UNIT V. **Prerequisite:** ▪ COMB. MEASURAND = Height and Volume, HEIGHT UNIT = User unit ▪ COMB. MEASURAND = %-Height and Volume, HEIGHT UNIT = User unit **Example:** – You want the measured value to be displayed in "buckets". – MEASURED VALUE = 0.01 m3 i 1 bucket – Entry CUSTOMER UNIT V: bucket – Entry CUST. UNIT FACT. V: 100 – Result: MEASURED VALUE = 1 bucket **Factory setting:** 1.0
MASS UNIT (709) Selection Slot: 2 Index: 174	Select the mass unit for the 2nd measured value. **Prerequisite:** ▪ COMB. MEASURAND = Height and Mass or %-Height and Mass **Options:** ▪ g ▪ kg ▪ t ▪ oz ▪ lb ▪ ton ▪ User unit, → see also the following parameter description for CUSTOMER UNIT M and CUST. UNIT FACT. M. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** kg

Table 13: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Height linearized"	
Parameter name	**Description**
CUSTOMER UNIT M (704) Entry Slot: 2 Index: 176	Enter text (unit) for customer-specific mass unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. M. **Prerequisite:** ▪ COMB. MEASURAND = Height and Mass, MASS UNIT = User unit ▪ COMB. MEASURAND = %-Height and Mass, MASS UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
CUST. UNIT FACT. M (703) Entry Slot: 2 Index: 175	Enter conversion factor for a customer-specific mass unit. The conversion factor must be entered in relation to the SI unit "kg". → See also CUSTOMER UNIT M. **Prerequisite:** ▪ COMB. MEASURAND = Height and Mass, MASS UNIT = User unit ▪ COMB. MEASURAND = %-Height and Mass, MASS UNIT = User unit **Example:** – You want the measured value to be displayed in "buckets". – MEASURED VALUE = 10 kg i 1 bucket – Entry CUSTOMER UNIT M: bucket – Entry CUST. UNIT FACT. M: 0.1 – Result: MEASURED VALUE = 1 bucket **Factory setting:** 1.0
LEVEL MIN (755) Entry Slot: 2 Index: 133	Enter the minimum level to be expected. The input limits for the calibration (editing limits) are derived from the value entered. The closer the value entered corresponds to the minimum level to be expected, the more accurate the measurement result. **Factory setting:** 0.0
LEVEL MAX (712) Entry Slot: 2 Index: 134	Enter the maximum level to be expected. The input limits for the calibration (editing limits) are derived from the value entered. The closer the value entered corresponds to the maximum level to be expected, the more accurate the measurement result. **Factory setting:** 100.0

Table 13: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Height linearized"	
Parameter name	**Description**
CALIBRATION MODE (392) Selection Slot: 2 Index: 121	Select the calibration mode for the calibration of the 1st measured variable. **Options:** ▪ Wet Wet calibration takes place by filling the container. This calibration mode requires two pressure-level value pairs to be entered. In the case of two different levels, the level value is entered and the pressure measured at this moment is assigned to the level value. → See also the following parameter description for EMPTY CALIB., EMPTY PRESSURE, FULL CALIB. and FULL PRESSURE. ▪ Dry Dry calibration is a theoretical calibration which you can carry out even if the device is not mounted or the container is empty. – For the "Level" measured variable, the density of the fluid (→ see Page 87, ADJUST DENSITY) must be entered. – For the "%" measured variable, the density of the fluid must be entered and a level assigned to the 100 % point (→ see Page 87, ADJUST DENSITY and 100% POINT). If the measurement should not start at the mounting location of the device, a level offset must be entered (→ see Page 88, ZERO POSITION). If you change to dry calibration after a wet calibration, the density must be entered correctly via the ADJUST DENSITY and PROCESS DENSITY parameters before changing the calibration mode. → See also Page 96. **Factory setting:** Wet
EMPTY CALIB. (314) Entry Slot: 2 Index: 75	Enter level value for the lower calibration point (container empty). The container is either empty or part full. By entering a value for this parameter, you are assigning a level value to the pressure present at the device. → See also EMPTY PRESSURE. **Prerequisite:** ▪ CALIBRATION MODE = Wet **Factory setting:** 0.0
EMPTY PRESSURE (710) Display Slot: 2 Index: 180	Displays the pressure value for the lower calibration point (container empty). → See also EMPTY CALIB. **Prerequisite:** ▪ CALIBRATION MODE = Wet
FULL CALIB. (315) Entry Slot: 2 Index: 76	Enter level value for the upper calibration point (container full). The container is either completely or almost full. By entering a value for this parameter, you are assigning a level value to the pressure present at the device. → See also FULL PRESSURE. **Prerequisite:** ▪ CALIBRATION MODE = Wet **Factory setting:** 100.0
FULL PRESSURE (711) Display Slot: 2 Index: 181	Displays the pressure value for the upper calibration point (container full). → See also FULL CALIB. **Prerequisite:** ▪ CALIBRATION MODE = Wet **Factory setting:** High sensor limit (→ See PRESS. SENS HILIM, Page 114)
ADJUSTED DENSITY (810) Display Slot: 2 Index: 122	Displays the density calculated from the upper and lower level point. **Prerequisite:** ▪ COMB. MEASURAND = Height and Volume, CALIBRATION MODE = Wet ▪ COMB. MEASURAND = Height and Mass, CALIBRATION MODE = Wet ▪ COMB. MEASURAND = Height and %, CALIBRATION MODE = Wet

Table 13: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Height linearized"	
Parameter name	**Description**
DENSITY UNIT (812) Selection Slot: 2 Index: 127	Select density unit. **Prerequisite:** ▪ CALIBRATION MODE = Dry **Options:** ▪ g/cm³ ▪ kg/dm³ ▪ kg/m³ ▪ US lb/in³ ▪ US lb/ft³ **Factory setting:** kg/dm³
ADJUST DENSITY (316) Entry Slot: 2 Index: 128	Enter density of fluid. **Prerequisite:** ▪ CALIBRATION MODE = Dry **Factory setting:** 1.0
HEIGHT UNIT (708) Selection Slot: 2 Index: 177	Select level unit. **Prerequisite:** ▪ COMB. MEASURAND = %-Height and Volume, CALIBRATION MODE = Dry ▪ COMB. MEASURAND = %-Height and Mass, CALIBRATION MODE = Dry ▪ COMB. MEASURAND = %-Height and %, CALIBRATION MODE = Dry **Options:** ▪ mm ▪ dm ▪ cm ▪ m ▪ inch ▪ ft ▪ User unit, → see also the following parameter description for CUSTOMER UNIT H and CUST. UNIT FACT. H. **Factory setting:** m
CUSTOMER UNIT H (706) Entry Slot: 2 Index: 179	Enter text (unit) for customer-specific level unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. H. **Prerequisite:** ▪ COMB. MEASURAND = %-Height and Volume, CALIBRATION MODE = Dry, HEIGHT UNIT = User unit ▪ COMB. MEASURAND = %-Height and Mass, CALIBRATION MODE = Dry, HEIGHT UNIT = User unit ▪ COMB. MEASURAND = %-Height and %, CALIBRATION MODE = Dry, HEIGHT UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _

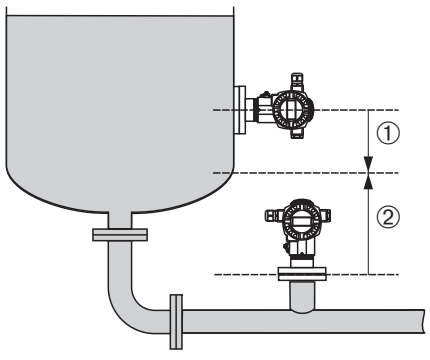
Table 13: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Height linearized"	
Parameter name	**Description**
CUST. UNIT FACT. H (705) Entry Slot: 2 Index: 178	Enter conversion factor for a customer-specific level unit. The conversion factor must be entered in relation to the SI unit "m". → See also CUSTOMER UNIT H. **Prerequisite:** ▪ COMB. MEASURAND = %-Height and Volume, CALIBRATION MODE = Dry, HEIGHT UNIT = User unit ▪ COMB. MEASURAND = %-Height and Mass, CALIBRATION MODE = Dry, HEIGHT UNIT = User unit ▪ COMB. MEASURAND = %-Height and %, CALIBRATION MODE = Dry, HEIGHT UNIT = User unit **Example:** – You want the measured value to be displayed in "PU" (PU: packing unit). – MEASURED VALUE = 0.5 m i 1 PU – Entry CUSTOMER UNIT H: PU – Entry CUST. UNIT FACT. H: 2 – Result: MEASURED VALUE = 1 PU **Factory setting:** 1.0
100% POINT (813) Entry Slot: 2 Index: 131	Enter level value for 100% point. **Prerequisite:** ▪ COMB. MEASURAND = %-Height and Volume, CALIBRATION MODE = Dry ▪ COMB. MEASURAND = %-Height and Mass, CALIBRATION MODE = Dry ▪ COMB. MEASURAND = %-Height and %, CALIBRATION MODE = Dry **Example:** – The 100 %-point should correspond to 4 m (13 ft). – Select the "m" unit via the HEIGHT UNIT parameter. – Enter the value "4" for this parameter (100% POINT). **Factory setting:** 1.0
ZERO POSITION (814) Entry Slot: 2 Index: 132	Enter value for level offset. If the measurement should not start at the mounting location of the device, e.g. for containers with a sump, carry out zero point shift (level offset). **Prerequisite:** ▪ CALIBRATION MODE = Dry  P01-PMP75xxx-19-xx-xx-xx-001 *Fig. 31: Zero point shift* *1 Device is mounted above the level lower range value: a positive value has to be entered for ZERO POSITION.* *2 Device is mounted below the level lower range value: a negative value has to be entered for ZERO POSITION.* **Factory setting:** 0.0

Table 13: OPERATING MENU → SETTINGS → BASIC SETUP "Level", LEVEL MODE "Height linearized"	
Parameter name	**Description**
DAMP SWITCH Display	Displays the switch position of DIP switch 2 which is used to switch the damping of the output signal on and off. **Display:** ▪ Off The output signal is not damped. ▪ On The output signal is damped. The attenuation constant is specified in the "DAMPING VALUE (274)" parameter. **Factory setting** On
DAMPING VALUE (247) Entry Slot: 2 Index: 79	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and OUT value of the Analog Input Block react to a change in the pressure. **Input range:** 0.0 to 999.0 s **Factory setting:** 2.0 s or as per order specifications The set damping time is only effective if DIP switch 2 is set to the "on" position.

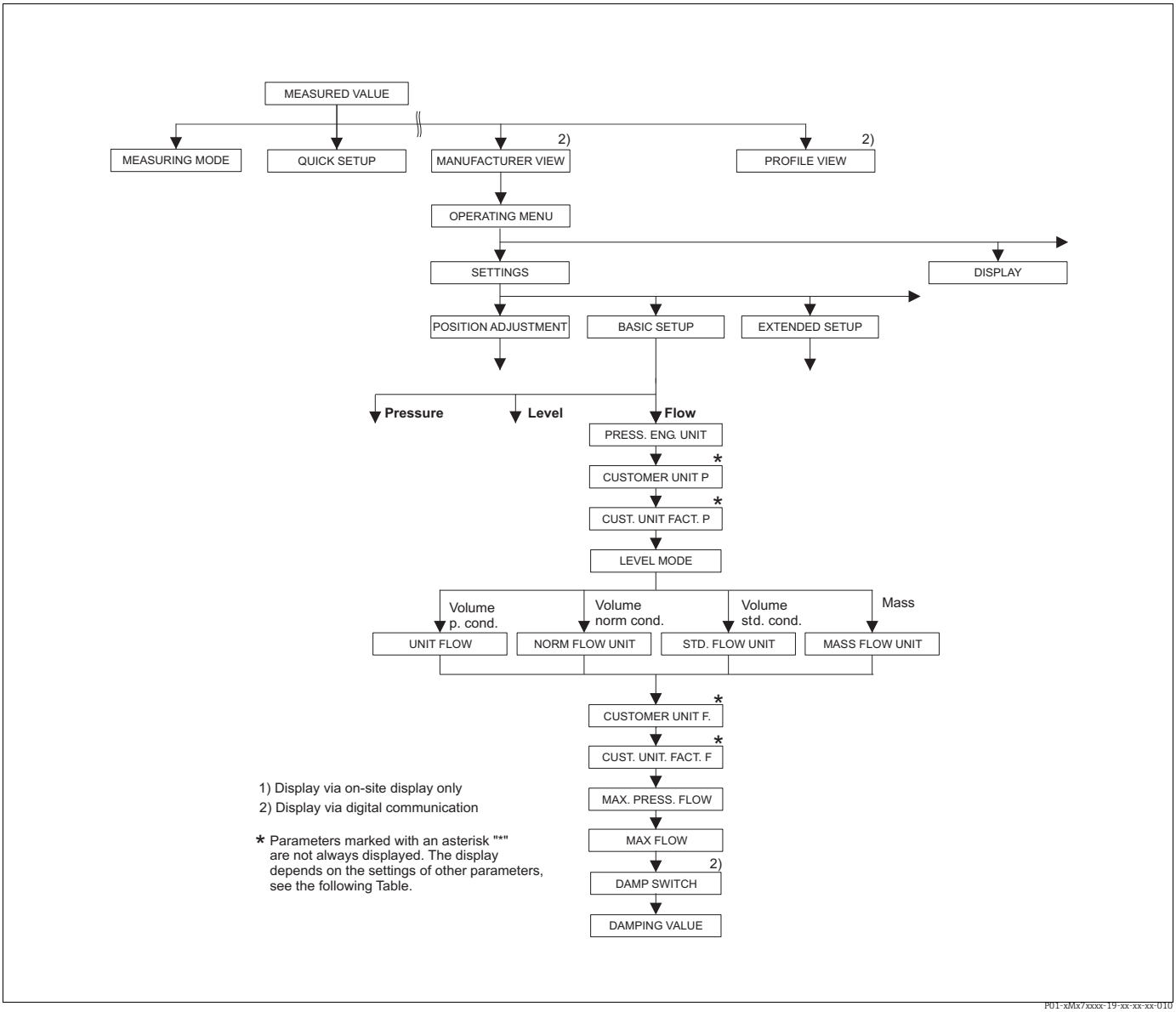


Fig. 32: BASIC SETUP function group for the "Flow" measuring mode

Table 14: OPERATING MENU → SETTINGS → BASIC SETUP "Flow"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Flow **Note:** See also – Page 51, Table 5: QUICK SETUP – Page 96, Table 17: EXTENDED SETUP – Page 104, Table 20: TOTALIZER SETUP – Page 117, Table 29: PROCESS VALUES. – Page 40 ff, Section 6 "Flow measurement".	

Table 14: OPERATING MENU → SETTINGS → BASIC SETUP "Flow"	
Parameter name	**Description**
PRESS. ENG. UNIT (060) Selection Slot: 2 Index: 30	Select pressure unit. If a new pressure unit is selected, all pressure-specific parameters are converted and displayed with the new unit. **Options:** ▪ mbar, bar ▪ mmH2O, mH2O, inH2O, ftH2O ▪ Pa, hPa, kPa, MPa ▪ psi ▪ mmHg, inHg ▪ Torr ▪ g/cm^2, kg/cm^2 ▪ lb/ft^2 ▪ atm ▪ gf/cm^2, kgf/cm^2 ▪ User unit, → see also the following parameter description for CUSTOMER UNIT P and CUST. UNIT FACT. P. Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** Depends on the sensor nominal measuring range mbar or bar or as per order specifications
CUSTOMER UNIT P (075) Entry Slot: 2 Index: 114	Enter text (unit) for customized pressure unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. P. **Prerequisite:** ▪ PRESS. ENG. UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
CUST. UNIT FACT. P (317) Entry Slot: 2 Index: 115	Enter conversion factor for a customer-specific pressure unit. The conversion factor must be entered in relation to the SI unit "Pa". → See also CUSTOMER UNIT P. **Prerequisite:** ▪ PRESS. ENG. UNIT = User unit **Example:** – You want the measured value to be displayed in "PU" (PU: packing unit). – MEASURED VALUE =10000 Pa i 1 PU – Entry CUSTOMER UNIT P: PU – Entry CUST. UNIT FACT. P: 0.0001 – Result: MEASURED VALUE = 1 PU **Factory setting:** 1.0

Table 14: OPERATING MENU → SETTINGS → BASIC SETUP "Flow"	
Parameter name	**Description**
FLOW-MEAS. TYPE (640) Selection Slot: 2 Index: 111	Select the flow type. **Options:** ▪ Volume p. cond. (volume under operating conditions) ▪ Vol. norm. cond. (norm volume under norm conditions in Europe: 1013.25 mbar and 273.15 K (0 °C)) ▪ Vol. std. cond. (standard volume under standard conditions in USA: 1013.25 mbar (14.7 psi) and 288.15 K (15 °C/59 °F)) ▪ Mass **Factory setting:** Volume p. cond.
UNIT FLOW (391) Selection Slot: 2 Index: 155	Select volume flow unit. When a new flow unit is selected, all flow-specific parameters are converted and displayed with the new unit within a flow mode (FLOW-MEAS. TYPE). When the flow mode is changed, conversion is not possible. **Prerequisite:** ▪ FLOW-MEAS. TYPE = Volume p. cond. **Options:** ▪ m3/s, m3/min, m3/h, m3/day ▪ l/s, l/min, l/h ▪ hl/s, hl/min, hl/day ▪ ft3/s, ft3/min, ft3/h, ft3/day ▪ ACFS, ACFM, ACFH, ACFD ▪ ozf/s, ozf/min ▪ US Gal/s, US Gal/min, US Gal/h, US Gal/day ▪ Imp. Gal/s, Imp. Gal/min, Imp. Gal/h ▪ bbl/s, bbl/min, bbl/h, bbl/day ▪ User unit, → see also this table, parameter description for CUSTOMER UNIT F and CUST. UNIT FACT. F Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** m^3/s
NORM FLOW UNIT (661) Selection Slot: 2 Index: 167	Select norm volume flow unit. When a new flow unit is selected, all flow-specific parameters are converted and displayed with the new unit within a flow mode (FLOW-MEAS. TYPE). When the flow mode is changed, conversion is not possible. **Prerequisite:** ▪ FLOW-MEAS. TYPE = Volume norm conditions **Options:** ▪ Nm3/s, Nm3/min, Nm3/h, Nm3/day ▪ User unit, → see also this table, parameter description for CUSTOMER UNIT F and CUST. UNIT FACT. F Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** Nm^3/s

Table 14: OPERATING MENU → SETTINGS → BASIC SETUP "Flow"	
Parameter name	**Description**
STD. FLOW UNIT (660) Selection Slot: 2 Index: 166	Select standard volume flow unit. When a new flow unit is selected, all flow-specific parameters are converted and displayed with the new unit within a flow mode (FLOW-MEAS. TYPE). When the flow mode is changed, conversion is not possible. **Prerequisite:** ▪ FLOW-MEAS. TYPE = Volume std. conditions **Options:** ▪ Sm3/s, Sm3/min, Sm3/h, Sm3/day ▪ SCFS, SCFM, SCFH, SCFD ▪ User unit, → see also this table, parameter description for CUSTOMER UNIT F and CUST. UNIT FACT. F Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** Sm^3/s
MASS FLOW UNIT (571) Selection Slot: 2 Index: 164	Select mass flow unit. When a new flow unit is selected, all flow-specific parameters are converted and displayed with the new unit within a flow mode (FLOW-MEAS. TYPE). When the flow mode is changed, conversion is not possible. **Prerequisite:** ▪ FLOW-MEAS. TYPE = Mass **Options:** ▪ g/s, kg/s, kg/min, kg/min, kg/h ▪ t/s, t/min, t/h, t/day ▪ oz/s, oz/min ▪ lb/s, lb/min, lb/h ▪ ton/s, ton/min, ton/h, ton/day ▪ User unit, → see also the following parameter description for CUSTOMER UNIT F and CUST. UNIT FACT. F Following a change in the unit, the digital output value of the Analog Input value OUT and the onsite display or the MEASURED VALUE no longer display the same value. → See also parameter description for PV SCALE, OUT SCALE (Page 142) and SET UNIT TO BUS (Page 110). **Factory setting:** kg/s
CUSTOMER UNIT F (610) Entry Slot: 2 Index: 112	Enter text (unit) for customer-specific flow unit. You can enter a maximum of eight alphanumeric characters here. → See also CUST. UNIT FACT. F. **Prerequisite:** ▪ UNIT FLOW = User unit ▪ NORM FLOW UNIT = User unit ▪ STD. FLOW UNIT = User unit ▪ MASS FLOW UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _

Table 14: OPERATING MENU → SETTINGS → BASIC SETUP "Flow"	
Parameter name	**Description**
CUST. UNIT FACT. F (609) Entry Slot: 2 Index: 113	Enter conversion factor for a customer-specific flow unit. The conversion factor must be entered in relation to an appropriate SI unit, e.g. m^3/s for the "Volume p. cond." flow mode. → See also CUSTOMER UNIT F. **Prerequisite:** ▪ UNIT FLOW = User unit ▪ NORM FLOW UNIT = User unit ▪ STD. FLOW UNIT = User unit ▪ MASS FLOW UNIT = User unit **Example:** – You want the measured value to be displayed in "bucket/h". – MEASURED VALUE =0.01 m3/s i 3600 bucket/h – Entry CUSTOMER UNIT F: bucket/h – Entry CUST. UNIT FACT. F: 360000 – Result: MEASURED VALUE = 3600 bucket/h **Factory setting:** 1.0
MAX. FLOW (311) Entry Slot: 2 Index: 80	Enter maximum flow of primary device. → See also layout sheet of primary device. The maximum flow is assigned to the maximum pressure which you enter via MAX PRESS. FLOW. **Factory setting:** 1.0
MAX PRESS. FLOW (634) Entry Slot: 2 Index: 81	Enter maximum pressure of primary device. → See layout sheet of primary device. This value is assigned to the maximum flow value (→ see MAX. FLOW). **Factory setting:** High sensor limit (→ See PRESS. SENS HILIM, Page 114)
DAMP SWITCH Display	Displays the switch position of DIP switch 2 which is used to switch the damping of the output signal on and off. **Display:** ▪ Off The output signal is not damped. ▪ On The output signal is damped. The attenuation constant is specified in the "DAMPING VALUE (274)" parameter. **Factory setting** On
DAMPING VALUE (247) Entry Slot: 2 Index: 79	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and OUT value of the Analog Input Block react to a change in the pressure. **Input range:** 0.0 to 999.0 s **Factory setting:** 2.0 s or as per order specifications The set damping time is only effective if DIP switch 2 is set to the "on" position.

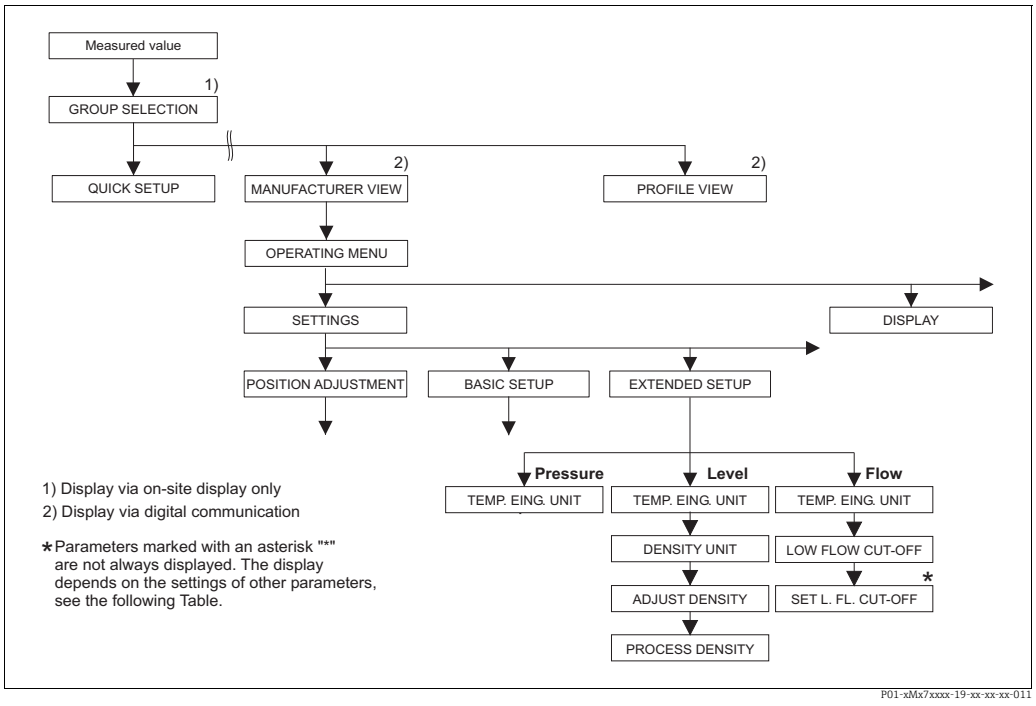


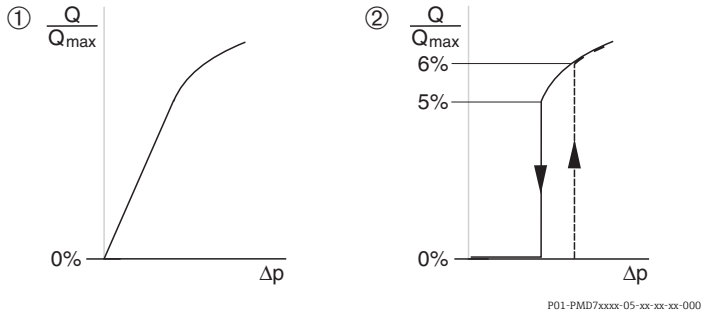
Fig. 33: EXTENDED SETUP function group
→ For the "Pressure" measuring mode, see Page 95, Table 15
→ For the "Level" measuring mode, see Page 95, Table 16
→ For the "Flow" measuring mode, see Page 96, Table 17

Table 15: OPERATING MENU → SETTINGS → EXTENDED SETUP "Pressure"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Pressure **Note:** ▶ See also Page 11 ff, Section 4 "Pressure measurement".	
TEMP. ENG. UNIT (318) Selection Slot: 2 Index: 44	Select the unit for the temperature measured values. → See also PCB TEMPERATURE (Page 112) and SENSOR TEMP. (Page 116). **Options:** ▪ °C ▪ °F ▪ K ▪ R **Factory setting:** °C

Table 16: OPERATING MENU → SETTINGS → EXTENDED SETUP "Level"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Level **Note:** ▶ See also Page 12 ff, Section 5 "Level measurement".	

Table 16: OPERATING MENU → SETTINGS → EXTENDED SETUP "Level"	
Parameter name	**Description**
TEMP. ENG. UNIT (318) Selection Slot: 2 Index: 44	Select the unit for the temperature measured values. → See also PCB TEMPERATURE (Page 112) and SENSOR TEMP. (Page 117). **Options:** ▪ °C ▪ °F ▪ K ▪ R **Factory setting:** °C
DENSITY UNIT (001)/(812) Selection Slot: 2 Index: 244	Select density unit. **Options:** ▪ g/cm^3 ▪ kg/dm^3 ▪ kg/m^3 ▪ US lb/in^3 ▪ US lb/ft^3 **Factory setting:** kg/dm^3
ADJUST DENSITY (007)/(316) Entry Slot: 2 Index: 245	Enter density of fluid. LIN. MEASURAND: "% (Level)", "Mass" and "Volume" and MEASURAND COMB.: If a change to dry calibration is made after a wet calibration using the CALIBRATION MODE parameter (→ Page 72 or 86), the density for this parameter must be entered correctly before changing the calibration mode. In the event that the pressure falls with increasing levels (LIN. MEASURED: Volume), such as in the case of a residual volume measurement, a negative value shall be entered for this parameter. **Factory setting:** 1.0
PROCESS DENSITY (025)/(811) Entry Slot: 2 Index: 246	Enter a new density value for density correction. The calibration was carried out with the medium water, for example. Now the container is to be used for another fluid with another density. The calibration is corrected appropriately by entering the new density value in the PROCESS DENSITY parameter. LIN. MEASURAND: "% (Level)", "Mass" and "Volume" and MEASURAND COMB.: If a change to dry calibration is made after a wet calibration using the CALIBRATION MODE parameter (→ Page 72 or 86), the density for this parameter must be entered correctly before changing the calibration mode. In the event that the pressure falls with increasing levels (LIN. MEASURED: Volume), such as in the case of a residual volume measurement, a negative value shall be entered for this parameter. **Factory setting:** 1.0

Table 17: OPERATING MENU → SETTINGS → EXTENDED SETUP "Flow"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Flow **Note:** ▶ See also Page 40 ff, Section 6 "Flow measurement".	

Table 17: OPERATING MENU → SETTINGS → EXTENDED SETUP "Flow"	
Parameter name	**Description**
TEMP. ENG. UNIT (318) Selection Slot: 2 Index: 44	Select the unit for the temperature measured value. → See also PCB TEMPERATURE (Page 112) and SENSOR TEMP. (Page 118). **Options:** ▪ °C ▪ °F ▪ K ▪ R **Factory setting:** °C
LOW FLOW CUT-OFF (442) Selection Slot: 2 Index: 158	Switches "low flow cut-off" function on and off. In the lower measuring range, small flow quantities (creepages) can lead to large measured value fluctuations. Switching on this function stops these flow quantities from being recorded. → See also SET. L. FL. CUT-OFF. **Options:** ▪ Off ▪ On **Factory setting:** Off
SET. L. FL. CUT-OFF (332) Entry Slot: 2 Index: 149	Enter switch-off point of low flow cut-off. The hysteresis between the switch-on point and the switch-off point is always 1 % of the end flow value. → See also LOW FLOW CUT-OFF. **Prerequisite:** ▪ LOW FLOW CUT-OFF = on **Input range:** Switch-off point: 0…50 % of end flow value (→ MAX. FLOW).  **Factory setting:** 5 % (of end flow value)

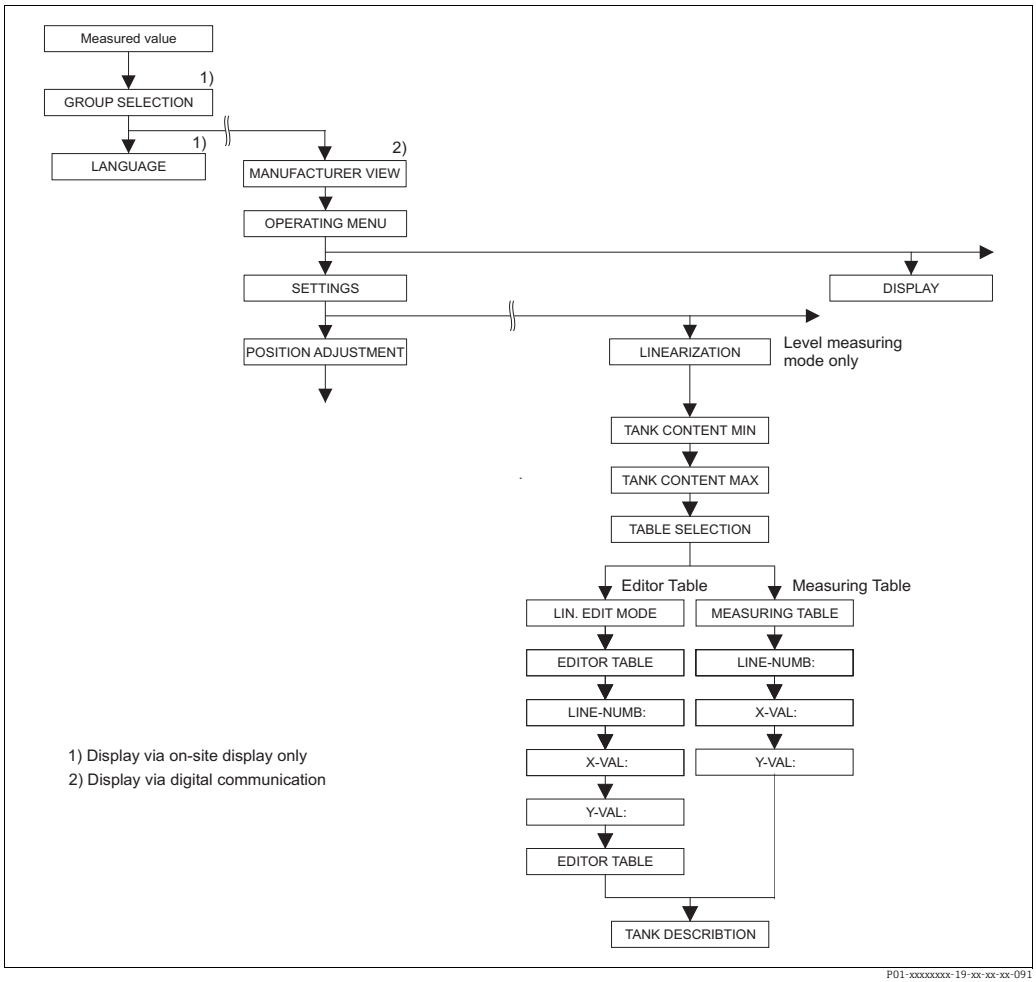


Fig. 34: LINEARIZATION function group for onsite display

Table 18: GROUP SELECTION → OPERATING MENU → SETTINGS → LINEARIZATION – Onsite display	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Level (→ see also Page 44.) ▪ LEVEL MODE = Pressure linearized or height linearized (→ see also Page 67.) **Note:** – See also Page 12 ff, Section 5 "Level measurement".	
TANK CONTENT MIN (759) Entry	Enter the minimum tank contents to be expected. The input limits for the calibration (editing limits) are derived from the value entered. The closer the value entered corresponds to the minimum tank content to be expected, the more accurate the measurement result. **Factory setting:** 0.0
TANK CONTENT MAX (713) Entry	Enter the maximum tank contents to be expected. The input limits for the subsequent calibration (editing limits) are derived from the value entered. The closer the value entered corresponds to the maximum tank content to be expected, the more accurate the measurement result. **Factory setting:** 100.0

Table 18: GROUP SELECTION → OPERATING MENU → SETTINGS → LINEARIZATION – Onsite display	
Parameter name	**Description**
TABLE SELECTION (808) Selection	Select table. The device works with a measuring and an editor table. The measuring table is used to calculate the measured value. To make sure measuring also runs properly when entering a new table, there is another table, the editor table, for entering new values. **Options:** ▪ View meas. table ▪ Editor table **Factory setting:** View meas. table
LIN. EDIT MODE (397) Selection	Select the entry mode for the linearization table. **Prerequisite:** ▪ TABLE SELECTION = Editor table **Options:** ▪ Manual: The container neither has to be filled nor emptied for this entry mode. Enter the value pairs for the linearization table. ▪ Semiautomatic: The container is filled or emptied in stages in this entry mode. The device automatically records the hydrostatic pressure. The associated volume, mass or %-value is entered. **Factory setting:** Manual
EDITOR TABLE (809) Selection	Select table. **Prerequisite:** ▪ TABLE SELECTION = Editor table **Options:** ▪ New table: Enter new linearization table. ▪ Edit measure table: The measuring table is loaded as an editor table so that changes can be made. → See also TAB. SELECTION ▪ Continue edit: Edit an editor table that already exists. → See also TABLE EDITOR (770) **Factory setting:** New table
TABLE EDITOR Entry ("Semiautomatic" edit mode) – LINE-NUMB (549) – Y-VAL. (551)	Enter table in the "Semiautomatic" editing mode. A linearization table must have at least 2 points and may not have more than 32 points. A point consists of LINE-NUMB, X-VAL. and Y-VAL. For this editing mode, the container is filled or emptied in stages. **Example:** Enter point for LEVEL MODE = Pressure Linearized – LINE-NUMB: confirm value displayed. – Y-VAL.: depending on the setting in the LINd. MEASURAND parameter, enter the volume, mass or % value. – X-VAL.: the hydrostatic pressure present is displayed and saved by confirming the Y-value. **Example:** Enter point for LEVEL MODE = Height Linearized – LINE-NUMB: confirm value displayed. – Y-VAL.: depending on the setting in the COMB. MEASURAND parameter, enter the volume, mass or % value. – X-VAL.: the hydrostatic pressure present is measured. Depending on the setting in the COMB. MEASURAND parameter, the measured pressure is converted to a level unit or a % and displayed. The value is saved by confirming the Y-value. **Factory setting:** LINE-NUMB = 1, X-VAL. = 0.0, Y-VAL. = 0.0

Table 18: GROUP SELECTION → OPERATING MENU → SETTINGS → LINEARIZATION – Onsite display	
Parameter name	**Description**
TABLE EDITOR Entry ("manual" edit mode) – LINE-NUMB (549) – Y-VAL. (551) – X-VAL. (550)	Enter table in the "manual" editing mode. A linearization table must have at least 2 points and may not have more than 32 points. A point consists of a line number, X-value and Y-value. The container neither has to be filled nor emptied for this editing mode. **Example:** Enter point for LEVEL MODE = Pressure Linearized – LINE-NUMB: confirm value displayed. – X-VAL.: enter pressure value. – Y-VAL.: depending on the setting in the LINd. MEASURAND parameter, enter the related volume, mass or % value. **Example:** Enter point for LEVEL MODE = Height Linearized – LINE-NUMB: confirm value displayed. – X-VAL.: the hydrostatic pressure present is measured. Depending on the setting in the COMB. MEASURAND parameter, enter a level value or % value. – Y-VAL.: depending on the setting in the COMB. MEASURAND parameter, enter the related volume, mass or % value. **Factory setting:** LINE-NUMB = 1, X-VAL. = 0.0, Y-VAL. = 0.0
EDITOR TABLE (770) Selection	Select the function for the editor table. **Options:** ▪ Next point: enter next point. ▪ Last input point: jump back to previous point to correct a mistake for example. ▪ Accept input table: save editor table as measuring table. This overwrites the old measuring table. ▪ Abort: save values entered up to this point for the editor table and display next parameter. The editor table is not activated as a measuring table. ▪ Insert point: see example below. ▪ Delete point: the current point is deleted. See example below. **Example:** Add point, in this case between the 4th and 5th point for example – Select point 5 via the EDITOR TABLE/LINE NUMB parameter. – Confirm current X and Y values with Enter. – Using the TABLE EDITOR (770) parameter, select the option "Insert point". – Point 5 is displayed for the TABLE EDITOR/LINE NUMB parameter. New values for the X-VAL and Y-VAL parameters. **Example:** delete point, in this case the 5th point for example – Select point 5 via the EDITOR TABLE/LINE NUMB parameter. – Using the TABLE EDITOR (770) parameter, select the option "Delete point". – The 5th point is deleted. All of the following points are pushed up one number i.e. following deletion, the 6th point becomes Point 5. **Factory setting:** Next point
MEASURING TABLE (549) Display	A point of the linearization table saved (measuring table) appears on the display The parameter first displays the first point of the linearization table. By entering a line number, you can directly display the corresponding point in the linearization table.
MEASURING TABLE (717) Selection	Select the function for the measuring table. **Options:** ▪ Next point: view next point of the measuring table. ▪ Last input point: view previous point of the measuring table. ▪ Abort: cancel measuring table display. Display next parameter. **Factory setting:** Next point
TANK DESCRIPTION (815) Entry	Enter tank description. (Max. 32 alphanumeric characters) **Factory setting:** _

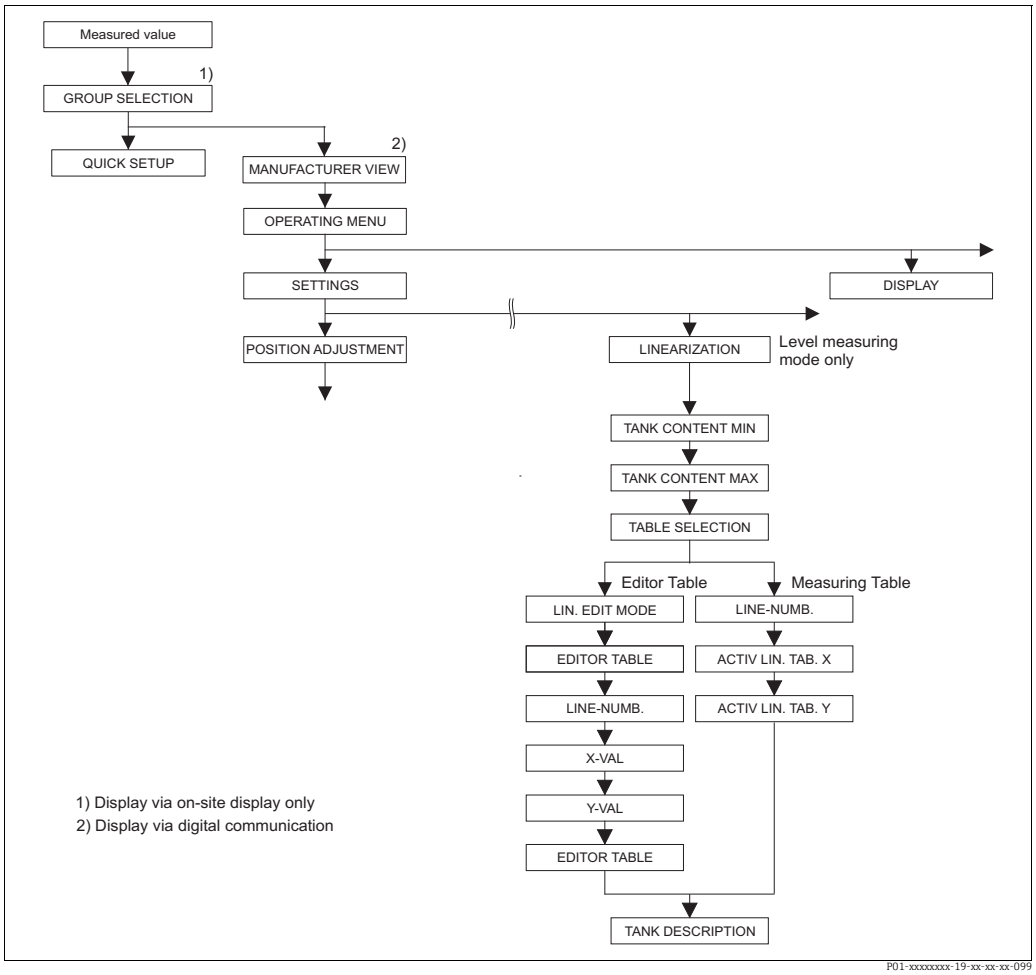


Fig. 35: LINEARIZATION function group for FieldCare

Table 19: MANUFACTURER VIEW → OPERATING MENU → SETTINGS → LINEARIZATION – FieldCare	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Level (→ see also Page 44.) ▪ LEVEL MODE = Pressure linearized or height linearized (→ see also Page 67.) **Note:** – See also Page 12 ff, Section 5 "Level measurement".	
TANK CONTENT MIN. Entry Slot: 2 Index: 189	Enter the minimum tank contents to be expected. The input limits for the calibration (editing limits) are derived from the value entered. The closer the value entered corresponds to the minimum tank content to be expected, the more accurate the measurement result. **Factory setting:** 0.0
TANK CONTENT MAX. Entry Slot: 2 Index: 188	Enter the maximum tank contents to be expected. The input limits for the subsequent calibration (editing limits) are derived from the value entered. The closer the value entered corresponds to the maximum tank content to be expected, the more accurate the measurement result. **Factory setting:** 100.0

Table 19: MANUFACTURER VIEW → OPERATING MENU → SETTINGS → LINEARIZATION – FieldCare	
Parameter name	**Description**
TABLE SELECTION Selection Slot: 2 Index: 202	Select table. The device works with a measuring and an editor table. The measuring table is used to calculate the measured value. To make sure measuring also runs properly when entering a new table, there is another table, the editor table, for entering new values. **Options:** ▪ View meas. table ▪ Editor table **Factory setting:** View meas. table
LIN. EDIT MODE Selection Slot: 2 Index: 120	Select the entry mode for the linearization table. **Prerequisite:** ▪ TABLE SELECTION = Editor table **Options:** ▪ Manual: The container neither has to be filled nor emptied for this entry mode. Enter the value pairs for the linearization table. ▪ Semiautomatic: The container is filled or emptied in stages in this entry mode. The device automatically records the hydrostatic pressure. The associated volume, mass or %-value is entered. **Factory setting:** Manual
TABLE EDITOR Selection Slot: 2 Index: 203	Select table. **Prerequisite:** ▪ TABLE SELECTION = Editor table **Options:** ▪ New table: Enter new linearization table. ▪ View meas. table: View the measuring table saved and change points if necessary. ▪ Continue edit: Edit an editor table that already exists. FieldCare: ▪ If you select the "View meas. table" option, the saved measuring table is loaded in FieldCare. Use the "Lin.-Tab." window to the view the entire table, change values if necessary and write the modified table to the device. ▪ If you change a value via the X-VAL. or Y-VAL. parameters, the table in the "Lin-Tab." window is not updated. To view the table saved in the device, this table must first be read out of the device. **Factory setting:** New table
LINE-NUMB Entry Slot: 2 Index: 55	Enter the line number for the linearization table. A linearization table must have at least 2 points and may not have more than 32 points. ▪ TABLE SELECTION = View meas. table Via this parameter you can select the point of the linearization table which should be displayed. ▪ TABLE SELECTION = Editor table Enter a point via the LINE-NUMB, X-VAL. and Y-VAL. parameters. → See also this table, parameter description for LIN. EDIT MODE, X-VAL. ("Manual" entry mode), X-VAL. ("Semiautomatic" entry mode) and Y-VAL. In FieldCare you can enter and view a complete linearization table in one go via the "Linearization Table (online/offline)" function.

Table 19: MANUFACTURER VIEW → OPERATING MENU → SETTINGS → LINEARIZATION – FieldCare	
Parameter name	**Description**
X-VAL. ("Manual" entry mode) Entry Slot: 2 Index: 162	Enter the pressure value for the linearization table. → See also LIN. EDIT MODE, LINE-NUMB and Y-VAL. **Prerequisite:** ▪ TABLE SELECTION = Editor table
X-VAL. ("Semiautomatic" entry mode) Display Slot: 2 Index: 186	In the "Semiautomatic" entry mode, the container is filled or emptied in stages. The X-VAL. displays the measured hydrostatic pressure. **Prerequisite:** ▪ TABLE SELECTION = Editor table **FieldCare:** The X-VAL. is saved by confirming the Y-value. → See also LIN. EDIT MODE, LINE-NUMB and Y-VAL.
Y-VAL. Entry Slot: 2 Index: 163	Enter the volume, mass or %-value belonging to the X-VAL. for the linearization table. **Prerequisite:** ▪ TABLE SELECTION = Editor table Depending on the setting in the LINd. MEASURAND or COMB. MEASURAND parameters, enter a volume, mass or %-value here. → See also this table, parameter description for LIN. EDIT MODE, LINE-NUMB, X-VAL. ("Manual" entry mode), X-VAL. ("Semiautomatic" entry mode).
TABLE EDITOR Selection Slot: 2 Index: 192	Select the function for the editor table. **Options:** ▪ Next point: without function ▪ Last input point: without function ▪ Accept input table: save editor table as measuring table. This overwrites the old measuring table. ▪ Abort: save values entered up to this point for the editor table and display next parameter. The editor table is not activated as a measuring table. ▪ Insert point: see example below. ▪ Delete point: the current point is deleted. See example below. **Example:** Add point, in this case between the 4th and 5th point for example – Select point 5 via the LINE NUMB parameter. – Using the TABLE EDITOR parameter, select the option "Insert point". – Point 5 is displayed for the LINE NUMB parameter. New values for the X-VAL and Y-VAL parameters. **Example:** delete point, in this case the 5th point for example – Select point 5 via the LINE NUMB parameter. – Using the TABLE EDITOR parameter, select the option "Delete point". – The 5th point is deleted. All of the following points are pushed up one number i.e. following deletion, the 6th point becomes Point 5. **Factory setting:** Next point
ACTIV LIN. TAB. X Display Slot: 2 Index: 185	An X-value of the linearization table already saved appears on the display You can select a point of the linearization table via the LINE-NUMB parameter. **Prerequisite:** ▪ TABLE SELECTION = View meas. table In FieldCare, you can view the entire saved table in the "Linearization Table (online/offline)" window.
ACTIV LIN. TAB. Y Display Slot: 2 Index: 193	A Y-value of the linearization table already saved appears on the display You can select a point of the linearization table via the LINE-NUMB parameter. **Prerequisite:** ▪ TABLE SELECTION = View meas. table In FieldCare, you can view the entire saved table in the "Tables" window.

Table 19: MANUFACTURER VIEW → OPERATING MENU → SETTINGS → LINEARIZATION – FieldCare	
Parameter name	**Description**
TANK DESCRIPTION Entry Slot: 2 Index: 119	Enter tank description. (Max. 32 alphanumeric characters) **Factory setting:** –

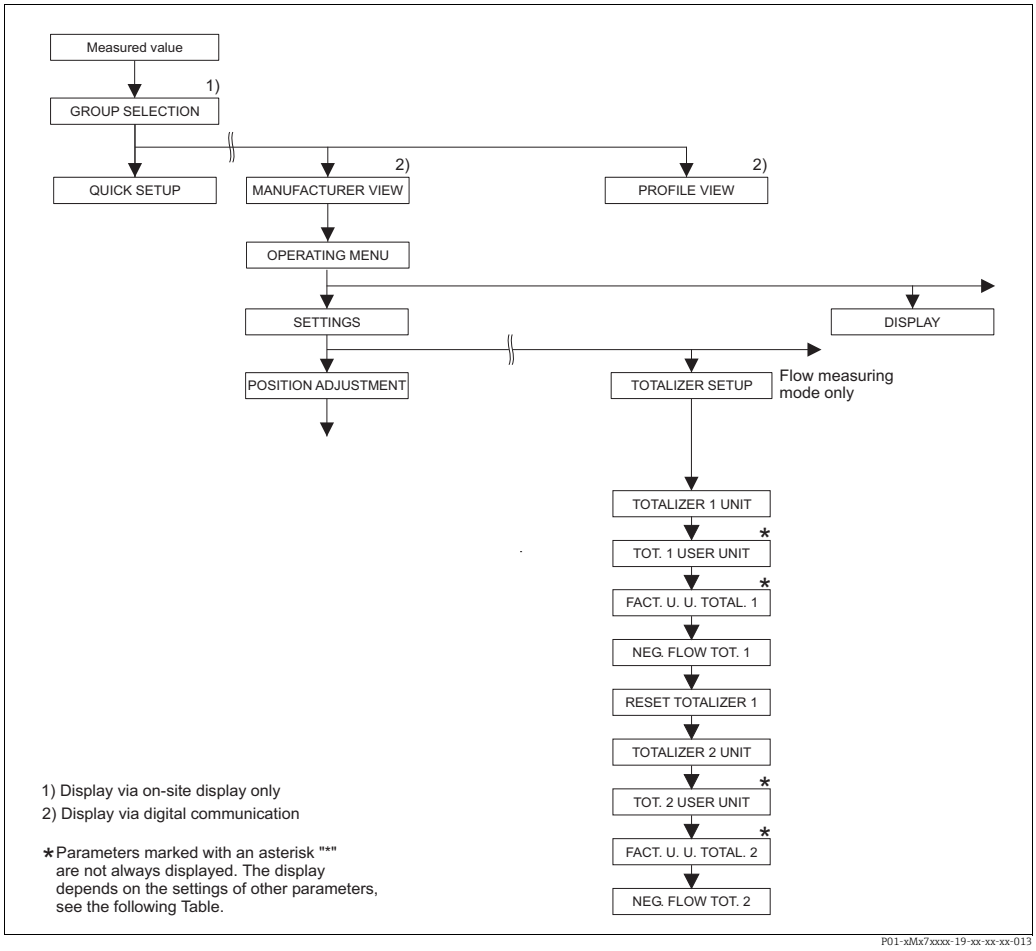


Fig. 36: TOTALIZER SETUP function group

Table 20: OPERATING MENU → SETTINGS → TOTALIZER SETUP	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Flow **Note:** ▶ See also Page 40 ff, Section 6 "Flow measurement".	

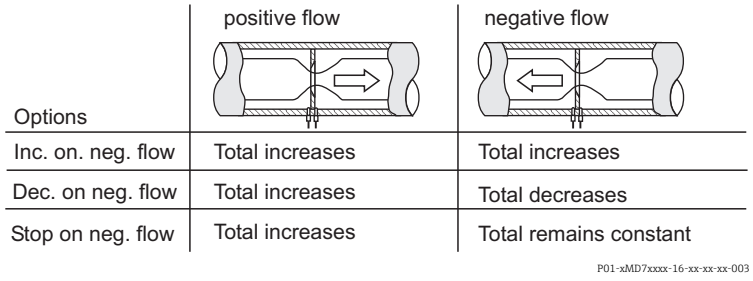
Table 20: OPERATING MENU → SETTINGS → TOTALIZER SETUP	
Parameter name	**Description**
TOTALIZER 1 UNIT (398), (662), (664), (666) Selection Slot: 2 Index: 102, 156, 168, 170, 172	Select unit for totalizer 1. Depending on the setting in the FLOW-MEAS. TYPE parameter (→ Page 92) this parameter offers a list of volume, norm volume, standard volume and mass units. When a new volume or mass unit is selected, totalizer-specific parameters are converted and displayed with the new unit within a unit group. When the flow mode is changed, the totalizer value is not converted. The index and the 3-digit ID number depend on the FLOW-MEAS. TYPE selected: – Index 102: TOTALIZER 1 UNIT (general) – Index 156 (398): FLOW-MEAS. TYPE "Volume p. cond." – Index 168 (662): FLOW-MEAS. TYPE "Mass" – Index 170 (664): FLOW-MEAS. TYPE "Vol. std. cond." – Index 172 (666): FLOW-MEAS. TYPE "Vol. norm cond." **Factory setting:** m^3
TOT. 1 USER UNIT (627) Entry Slot: 2 Index: 106	Enter text (unit) for customer-specific unit for totalizer 1. You can enter a maximum of eight alphanumeric characters here. → See also FACT. U. U. TOTAL. 1. **Prerequisite:** ▪ TOTALIZER 1 UNIT = User unit Only the first five characters are shown on the onsite display. For example, if "crates" is specified as the customer-specific unit, "crate" is displayed. If the unit contains a slash, up to eight characters can be shown on the onsite display. The maximum number of characters in the counter is again limited to five. For example, if "crates/m2" is specified as the customer-specific unit, "crate/m2" is displayed. FieldCare accepts units with eight characters at most. The fraction bar (slash) counts as one character. **Factory setting:** _ _ _ _ _ _ _ _
FACT. U. U. TOTAL. 1 (329) Entry Slot: 2 Index: 104	Enter conversion factor for a customer-specific unit for totalizer 1. The conversion factor must be entered in relation to an appropriate SI unit, e.g. m^3 for the "Volume p. cond." FLOW-MEAS. TYPE. → See also TOT. 1 USER UNIT. **Prerequisite:** ▪ TOTALIZER 1 UNIT = User unit **Example:** You want the measured value to be displayed in "buckets". – MEASURED VALUE =1 m3 i 100 buckets – Entry TOT. 1 USER UNIT: bucket – Entry FACT. U. U. TOTAL. 1: 100 – Result: MEASURED VALUE = 100 buckets **Factory setting:** 1.0
NEG. FLOW TOT. 1 (400) Selection Slot: 2 Index: 108	Specify way of counting negative flows for totalizer 1.  **Factory setting:** Positive

Table 20: OPERATING MENU → SETTINGS → TOTALIZER SETUP	
Parameter name	**Description**
RESET TOTALIZER1 (331) Selection Slot: 2 Index: 110	You reset totalizer 1 to zero with this parameter. **Options:** ▪ Abort (do not reset) ▪ Reset **Factory setting:** Abort
TOTALIZER 2 UNIT (399), (663), (665), (667) Selection Slot: 2 Index: 103, 157, 169, 171, 173	Select unit for totalizer 2. → See also TOTAL 1. ENG. UNIT. The index depends on the FLOW-MEAS. TYPE selected: – Index 103: TOTALIZER 2 UNIT (general) – Index 157 (399): FLOW-MEAS. TYPE "Volume p. cond." – Index 169 (663): FLOW-MEAS. TYPE "Mass" – Index 171 (665): FLOW-MEAS. TYPE "Vol. std. cond." – Index 173 (667): FLOW-MEAS. TYPE "Vol. norm cond." **Factory setting:** m^3
TOT. 2 USER UNIT (628) Entry Slot: 2 Index: 107	Enter text (unit) for customer-specific unit for totalizer 2. → See also TOT. 1 USER UNIT. **Prerequisite:** ▪ TOTALIZER 2 UNIT = User unit **Factory setting:** _ _ _ _ _ _ _ _
FACT. U. U. TOTAL. 2 (330) Selection Slot: 2 Index: 105	Enter conversion factor for a customer-specific unit for totalizer 2. → See also FACT. U. U. TOTAL. 1. **Prerequisite:** ▪ TOTALIZER 2 UNIT = User unit **Factory setting:** 1.0
NEG. FLOW TOT. 2 (416) Selection Slot: 2 Index: 109	Specify way of counting negative flows for totalizer 2. → See NEG. FLOW TOT. 1. **Factory setting:** Positive

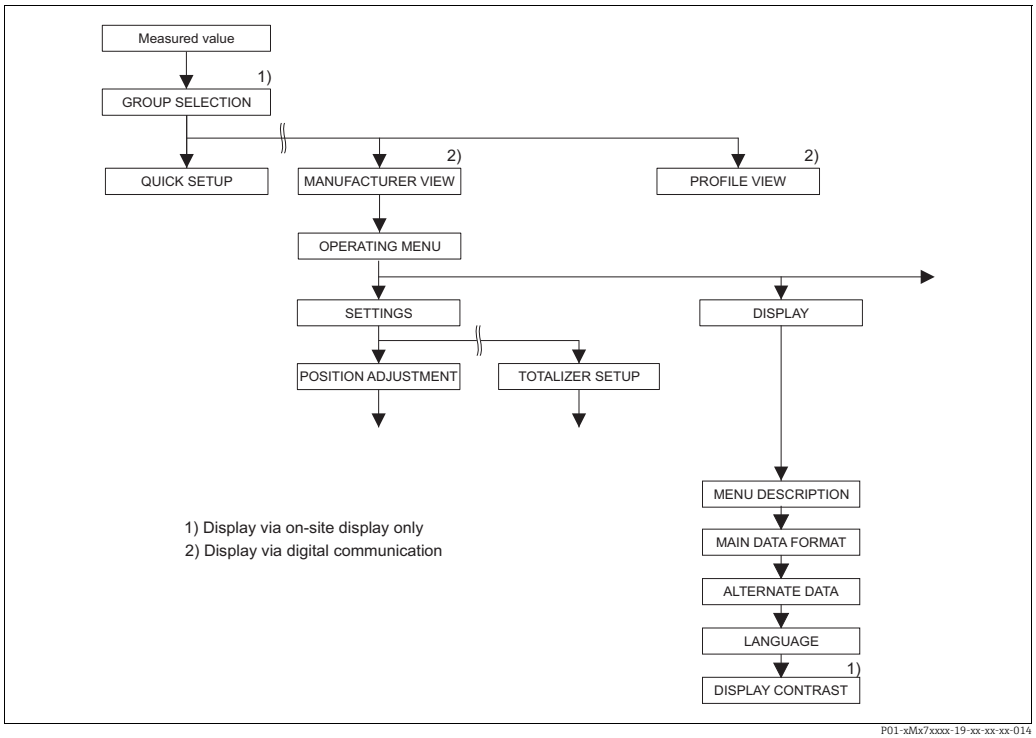


Fig. 37: DISPLAY group

Table 21: OPERATING MENU → DISPLAY	
Parameter name	**Description**
MENU DESCRIPTOR (416) Selection Slot: 0 Index: 80	Specify contents for the main line of the onsite display in the measuring mode. → See also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 5.1 "Onsite display". **Options:** ▪ Primary value (PV) ▪ Main measured value (%) ▪ Pressure ▪ Flow ▪ Level ▪ Tank content ▪ Temperature ▪ Error number ▪ Totalizer 1 ▪ Totalizer 2 The selection depends on the measuring mode chosen. **Factory setting:** Primary value (PV)
MAIN DATA FORMAT (688) Selection Slot: 0 Index: 81	Specifies the number of places after the decimal point for the value displayed in the main line. → See also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 5.1 "Onsite display". **Options:** ▪ Auto ▪ x.x ▪ x.xx ▪ x.xxx ▪ x.xxxx ▪ x.xxxxx **Factory setting:** Auto

Table 21: OPERATING MENU → DISPLAY	
Parameter name	**Description**
ALTERNATE DATA (423) Selection Slot: 0 Index: 82	Switch on "Alternating display" mode. In this display mode, the onsite display alternates between the following measured values depending on the measuring mode selected. – Pressure: main measured value (PV) or main measured value (%) (MEASURED VALUE), pressure (PRESSURE) and temperature (SENSOR TEMP.) – Level: main measured value (PV) or main measured value (%) (MEASURED VALUE), pressure (PRESSURE) and temperature (SENSOR TEMP.) – Flow: main measured value (PV) or main measured value (%) (MEASURED VALUE), pressure (PRESSURE), temperature (SENSOR TEMP.), totalizer 1 (TOTALIZER 1) and totalizer 2 (TOTALIZER 2) **Options:** ▪ Off ▪ On **Factory setting:** Off
LANGUAGE Selection Slot: 0 Index: 78	Select the menu language for the onsite display. ▪ In local operation, the LANGUAGE parameter is arranged directly under GROUP SELECTION (menu path: GROUP SELECTION → LANGUAGE, see also Page 43). ▪ Select the menu language for FieldCare by means of the "Language Button" in the configuration window. Select the menu language for the FieldCare frame via the "Extra" menu → "Options" → "Display" → "Language". **Factory setting**: English
DISPLAY CONTRAST (339) Entry Slot: 0 Index: 79	Adjust contrast of onsite display. You specify the contrast of the display with a number. Changes are only accepted as single steps, i.e. to change the value from "8" to "4", you need to save four times. You can also adjust the contrast of the display by means of the keys on the electronic insert or at the device. → See also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 5.2.3 "Function of operating keys". **Input range:** 4...13, 4: contrast weaker (brighter), 13: contrast stronger (darker). **Factory setting:** 8

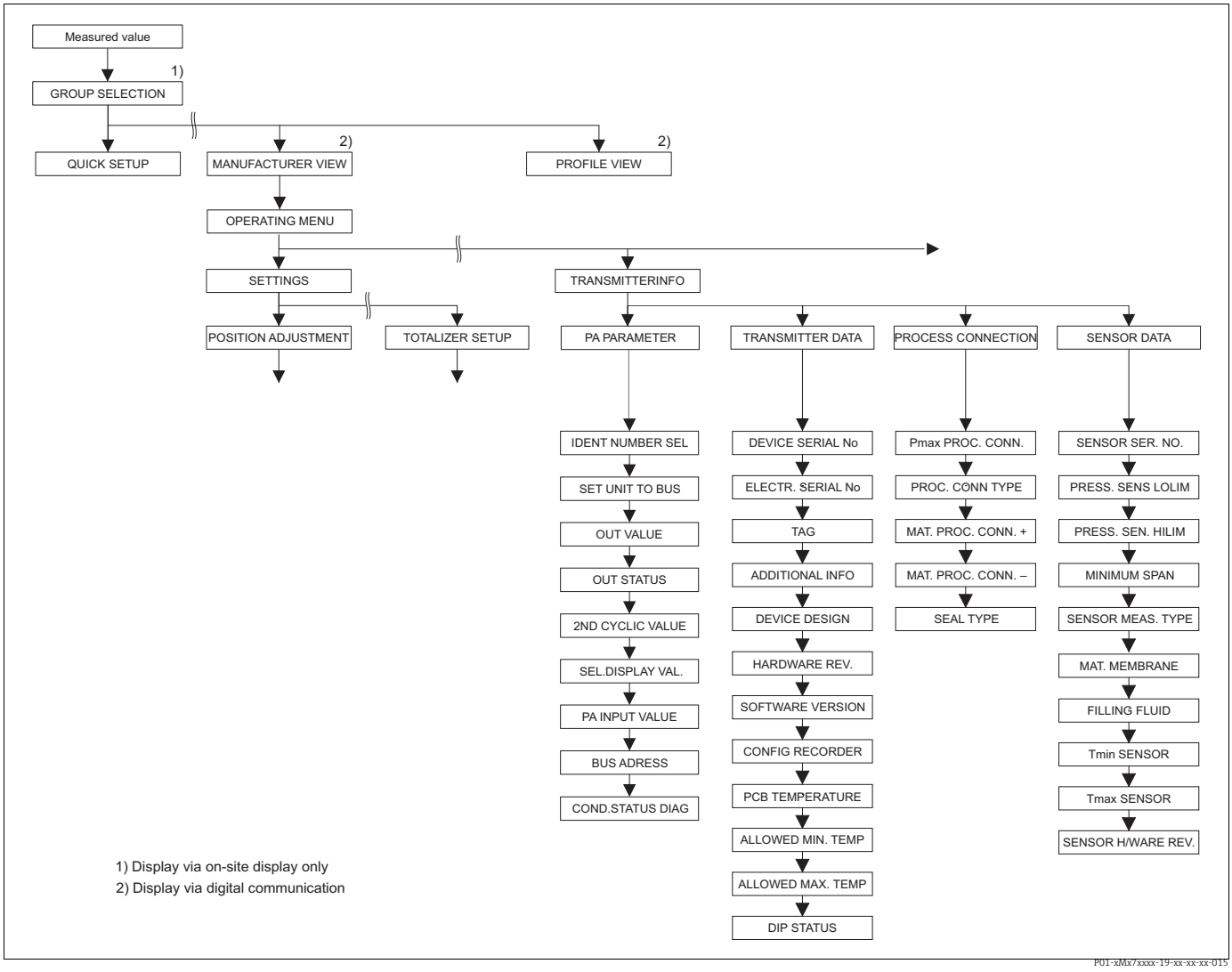


Fig. 38: TRANSMITTER INFO group
→ For the PA DATA function group, see Page 110, Table 23
→ For the TRANSMITTER DATA function group, see Page 111, Table 24
→ For the PROCESS CONNECTION function group, see Page 113, Table 25
→ For the SENSOR DATA function group, see Page 114, Table 26

Table 23: OPERATING MENU → TRANSMITTER INFO → PA DATA	
Parameter name	**Description**
IDENT_NUMBER_SEL. (990) Selection Slot: 0 Index: 40	Select device master file (GSD). **Cerabar S:** ▪ New Device (0x1541): Device-specific GSD (factory setting) ▪ Old Device (0x1501): Device-specific GSD, device acts like a Cerabar S PMC731, PMP731, PMC631 or PMP635. → See Operating Instructions BA00168P. ▪ Profile (0x9700): Profile GSD ▪ Auto. ID Num. **Deltabar S:** ▪ New Device (0x1542): Device-specific GSD (factory setting) ▪ Old Device (0x1504): Device-specific GSD, device acts like a Deltabar S FMD230, FMD630, FMD633, PMD230 or PMD235. → See Operating Instructions BA00167P. ▪ Profile (0x9700): Profile GSD ▪ Auto. ID Num. **Deltapilot S:** ▪ New Device (0x154F): Device-specific GSD ((factory setting) ▪ Old Device (0x1503): Device-specific GSD, device acts like a Deltapilot S DB50, DB50L, DB51, DB52 or DB53. → See Operating Instructions BA00164F. ▪ Profile (0x9700): Profile GSD ▪ Auto. ID Num.
SET UNIT TO BUS (991) Selection Slot: 0 Index: 61	The onsite display and the MEASURED VALUE parameter display the same value as standard. The digital output value of the Analog Input Block OUT works independently of the onsite display or the MEASURED VALUE. The following operating options are available so that the onsite display, the MEASURED VALUE and the digital output value display the same value: ▪ Set the values for the upper and lower PV SCALE limit (→ see Page 142) and OUT SCALE (→ see Page 142) as equal in the Analog Input Block ▪ By means of the SET UNIT TO BUS parameter, confirm the option "On". By confirming this, the scaling for PV SCALE and OUT SCALE are automatically set as equal. If you confirm the SET UNIT TO BUS parameter, please note that a change in the digital output value can affect the control system.
AI OUT VALUE (992) Display Slot: 1 Index: 26	Displays the output value of the Analog Input Block.
AI OUT STATUS (993) Display Slot: 1 Index: 26	Displays the status of the output value (AI OUT)
2ND CYCLIC VALUE Selection Slot: 0 Index: 68	Use this parameter to specify which value is transmitted via the bus as the second cyclic value. **Options**: ▪ Temperature (SENSOR TEMP. → see Page 116) ▪ Sensor Value: corresponds to the SENSOR PRESSURE parameter (→ see Page 116) ▪ Trimmed Value: corresponds to the CORRECTED PRESS. parameter (→ see Page 116) ▪ Secondary Value 1: corresponds to the PRESSURE parameter (→ see Page 116) **Factory setting:** Temperature

Table 23: OPERATING MENU → TRANSMITTER INFO → PA DATA	
Parameter name	**Description**
SEL. DISPLAY VAL. (995) Selection Slot: 0 Index: 63	Use this parameter to specify whether the primary value or a value of the PLC is shown on the onsite display. **Options**: ▪ Primary value (PV): the primary value is shown on the onsite display. ▪ PA Input Value: a value from the PLC is shown on the onsite display (→ see this Table, PA INPUT VALUE). **Example for the "Input Value" option, Deltabar S:** ▪ A Deltabar S measures a volume flow. The temperature and the pressure are also measured at the measuring point at the same time. All these measured values are sent to a PLC. The PLC calculates the steam mass from the volume flow, temperature and pressure measured values. Use the "PA Input Value" option to assign this calculated value to the onsite display. **Example for the "Input Value" option, Cerabar S or Deltapilot S:** ▪ Two devices measure the pressure drop by means of a filter. The differential pressure is formed in the PLC. Use the "PA Input Value" option to assign this calculated value to the onsite display. **Factory setting**: ▪ Primary value (PV)
PA INPUT VALUE (996) Display Slot: 0 Index: 62	The value displayed here is transmitted by the PLC to the device. The PA INPUT VALUE can be displayed on the onsite display (→ see also this table, SEL. DISPLAY VAL.). **Factory setting**: ▪ 0.0
BUS ADDRESS (998) Display Slot: 0 Index: 59	Displays the device address in the PROFIBUS PA network You can configure the address either locally on the electronic insert (hardware addressing) or via the software (software addressing). Using a DIP switch on the electronic insert, you specify whether the hardware address or the software address takes effect. → For further information on device addressing, see Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 5.3.5 "Device identification and addressing". **Factory setting:** 126
COND.STATUS DIAG (999) Display Slot: 0 Index: 43	Indicates the mode of a device that can be configured for status and diagnostic behavior. **Options:** ▪ Condensed status ▪ Classic status **Factory setting:** Condensed status

Table 24: OPERATING MENU → TRANSMITTER INFO → TRANSMITTER DATA	
Parameter name	**Description**
DEVICE SERIAL No (354) Display Slot: 0 Index: 28	Displays the serial number of the device (11 alphanumeric characters).
ELECTR. SERIAL No (386) Display Slot: 0 Index: 97	Displays the serial number of the main electronics (11 alphanumeric characters).

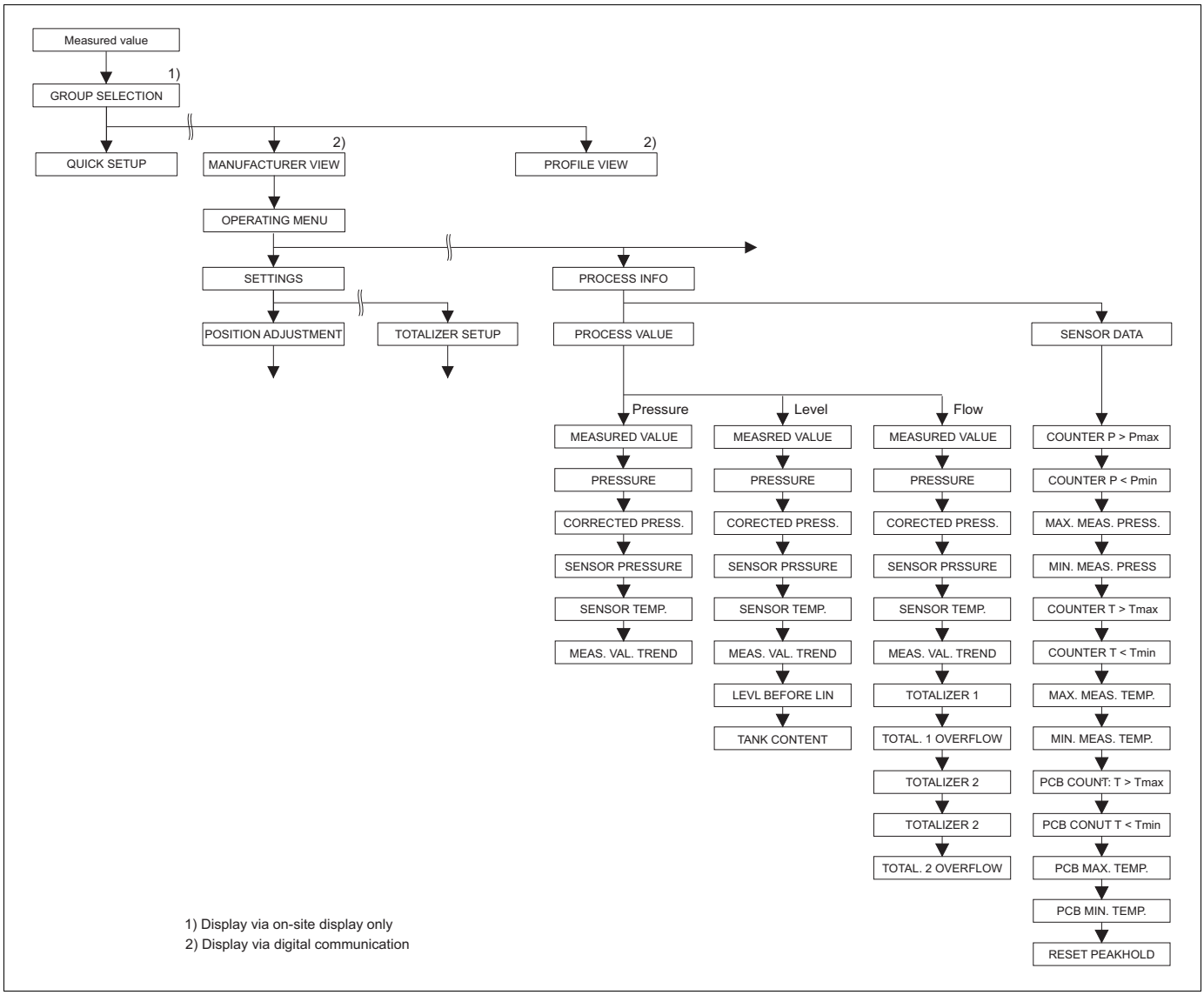
Table 24: OPERATING MENU → TRANSMITTER INFO → TRANSMITTER DATA	
Parameter name	**Description**
TAG (988) Entry Slot: 0 Index: 18	Enter tag name e.g. TAG number (max. 32 alphanumeric characters). **Factory setting:** _ or as per order specifications
ADDITIONAL INFO (272) Entry Slot: 0 Index: 36	Enter tag description (max. 32 alphanumeric characters). **Factory setting:** Empty field or as per order specifications
DEVICE DESIGN. (350) Display Slot: 0 Index: 69	Displays the device designation and order code.
HARDWARE REV. (266) Display Slot: 0 Index: 25	Displays the revision number of the main electronics. e.g.: V02.00.00
SOFTWARE VERSION (264) Display Slot: 0 Index: 24	Displays the software version. e.g.: V 04.01.00
CONFIG RECORDER (352) Display Slot: 0 Index: 74	Displays the configuration counter. This counter is increased by one with each change to a parameter or group. The counter counts to 65535 and then starts again at zero. Changes in the parameters of the DISPLAY function group do not increase the counter.
PCB TEMPERATURE (357) Display Slot: 0 Index: 98	Displays the measured temperature of the main electronics.
ALLOWED MIN. TEMP (358) Display Slot: 0 Index: 99	Displays the lower temperature limit of the main electronics.
ALLOWED MAX. TEMP (359) Display Slot: 0 Index: 100	Displays the upper temperature limit of the main electronics.
DIP STATUS (363) Display Slot: 0 Index: 41	Displays the status of DIP switch 1 on the electronic insert. You can lock or unlock parameters relevant to the measured value with DIP switch 1. If operation is locked by means of the INSERT PIN No. parameter, you can only unlock operation again by means of this parameter. (→ INSERT PIN No., see Page 122.) → See also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 5.7 "Locking/unlocking operation". **Display:** ▪ On (locking switched on) ▪ Off (locking switched off) **Factory setting:** Off (locking switched off)

Table 25: OPERATING MENU → TRANSMITTER INFO → PROCESS CONNECTION	
Parameter name	**Description**
Pmax PROC. CONN. (570) Entry Slot: 2 Index: 101	For entering and displaying the maximum permitted pressure of the process connection. **Factory setting:** In accordance with nameplate data (→ see also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 2.1.1 nameplate)
PROC. CONN. TYPE (482) Selection Slot: 2 Index: 41	For selecting and displaying the process connection type. **Options:** ▪ Not used ▪ Unknown ▪ Special ▪ Oval flange ▪ Thread female ▪ Thread male ▪ Flange ▪ Remote seal
MAT. PROC. CONN. + (360) Selection Slot: 2 Index: 42	For selecting and displaying the material of the process connection (P+). → See also parameter description for MAT. PROC. CONN. - **Options:** ▪ Not used ▪ Unknown ▪ Special ▪ Steel ▪ 304 st. steel ▪ 316 st. steel ▪ Alloy C ▪ Monel ▪ Tantalum ▪ Titanium ▪ PTFE (Teflon) ▪ 316L st. steel ▪ PVC ▪ Inconel ▪ PVDF ▪ ECTFE **Factory setting:** As per order specifications
MAT. PROC. CONN. - (361) Selection Slot: 2 Index: 150	For selecting and displaying the material of the process connection (P−). → See also parameter description for MAT. PROC. CONN. + **Prerequisite:** ▪ Deltabar S differential pressure transmitter

Table 25: OPERATING MENU → TRANSMITTER INFO → PROCESS CONNECTION	
Parameter name	**Description**
SEAL TYPE (362) Selection Slot: 2 Index: 40	For selecting and displaying the material of the process seal. **Options:** ▪ Not used ▪ Unknown ▪ Special ▪ FKM Viton ▪ NBR ▪ EPDM ▪ Urethane ▪ IIR ▪ Kalrez ▪ FKM Viton oxyg ▪ CR ▪ MVQ ▪ PTFE glass ▪ PTFE graphite ▪ PTFE oxygen ▪ Copper ▪ Copper f. oxygen **Factory setting:** As per order specifications

Table 26: OPERATING MENU → TRANSMITTER INFO → SENSOR DATA	
Parameter name	**Description**
SENSOR SER. No. (250) Display Slot: 2 Index: 33	Displays the serial number of the sensor (11 alphanumeric characters).
PRESS. SENS LOLIM (484) Display Slot: 2 Index: 26	Displays the lower measuring limit of the sensor.
PRESS. SENS HILIM (485) Display Slot: 2 Index: 25	Displays the upper measuring limit of the sensor.
MINIMUM SPAN (591) Display Slot: 2 Index: 29	Displays the smallest possible span.
SENSOR MEAS.TYPE (581) Display Slot: 2 Index: 32	Displays the sensor type. ▪ Deltabar S = differential ▪ Cerabar S with gauge pressure sensors = relative ▪ Cerabar S with absolute pressure sensors = absolute ▪ Deltapilot S = relative
MAT. MEMBRANE (365) Display Slot: 2 Index: 37	Displays the material of the process isolating diaphragm. **Factory setting:** As per version in the order code → See also Technical Information TI00382P (Deltapilot S), TI00383P (Cerabar S) or TI00416P (Deltapilot S), "Ordering information" section.

Table 26: OPERATING MENU → TRANSMITTER INFO → SENSOR DATA	
Parameter name	**Description**
FILLING FLUID (366) Display Slot: 2 Index: 38	Displays the filling fluid.
Tmin SENSOR (368) Display Slot: 2 Index: 98	Displays the lower nominal temperature limit of the sensor.
Tmax SENSOR (369) Display Slot: 2 Index: 99	Displays the upper nominal temperature limit of the sensor.
SENS H/WARE REV (487) Display Slot: 2 Index: 100	Displays the revision number of the sensor hardware. e.g.: 1



P01-xMx7xxxx-19-xx-xx-xx-016

Fig. 39: PROCESSINFO group
→ For the PROCESS VALUES function group, "Pressure" measuring mode, see Page 116, Table 27
→ For the PROCESS VALUES function group, "Level" measuring mode, see Page 116, Table 28
→ For the PROCESS VALUES function group, "Flow" measuring mode, see Page 117, Table 29
→ For the PEAK HOLD INDICATOR function group, see Page 119, Table 30

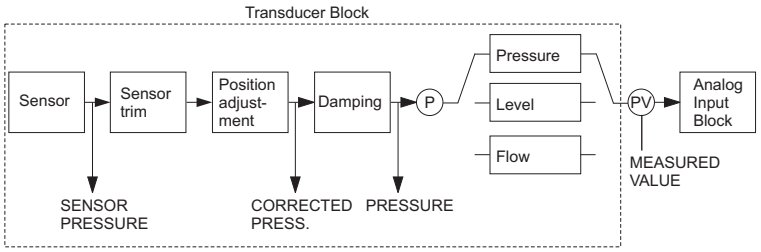
Table 27: OPERATING MENU → PROCESSINFO → PROCESS VALUES "Pressure"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Pressure	
MEASURED VALUE (679) Display Slot: 2 Index: 34	Displays the measured value In the "Pressure" measuring mode, this value corresponds to the PRESSURE parameter.
PRESSURE (301) Display Slot: 2 Index: 45	Displays the measured pressure after sensor recalibration, position adjustment and damping. This value corresponds to the MEASURED VALUE parameter in the "Pressure" measuring mode.  P01-xMD7xxxx-05-xx-xx-xx-000
CORRECTED PRESS. (434) Display Slot: 2 Index: 31	Displays the measured pressure after sensor trim and position adjustment and before damping. → See also PRESSURE diagram.
SENSOR PRESSURE (584) Display Slot: 2 Index: 24	Displays the measured pressure before sensor trim, position adjustment and damping. → See also PRESSURE diagram.
SENSOR TEMP. (367) Display Slot: 2 Index: 43	Displays the temperature currently measured in the sensor. This temperature can deviate from the process temperature.
MEAS. VAL. TREND (378) Display Slot: 2 Index: 92	Displays the trend of the pressure measured value. Possibilities: increasing, decreasing, constant

Table 28: OPERATING MENU → PROCESSINFO → PROCESS VALUES "Level"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Level	
MEASURED VALUE (679) Display Slot: 2 Index: 34	Displays the measured value In the "Level" measuring mode with "Linear" or "Pressure linearized" level type, this value corresponds to the LEVEL BEFORE LIN parameter In the "Level" measuring mode with "Height linearized" or "Pressure linearized" level type, this value corresponds to the TANK CONTENT parameter.

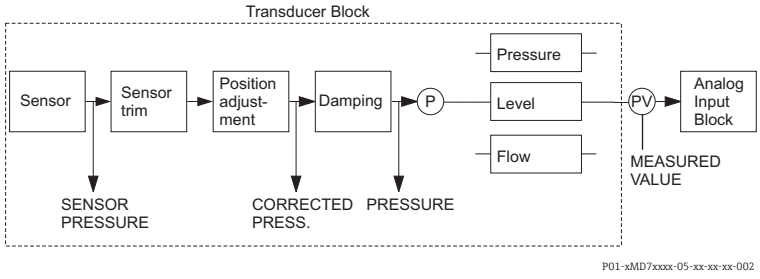
Table 28: OPERATING MENU → PROCESSINFO → PROCESS VALUES "Level"	
Parameter name	**Description**
PRESSURE (301) Display Slot: 2 Index: 45	Displays the measured pressure after sensor recalibration, position adjustment and damping. This value corresponds to the MEASURED VALUE parameter in the "Pressure" measuring mode. 
CORRECTED PRESS. (434) Display Slot: 2 Index: 31	Displays the measured pressure after sensor trim and position adjustment and before damping. → See also PRESSURE diagram.
SENSOR PRESSURE (584) Display Slot: 2 Index: 24	Displays the measured pressure before sensor trim, position adjustment and damping. → See also PRESSURE diagram.
SENSOR TEMP. (367) Display Slot: 2 Index: 43	Displays the temperature currently measured in the sensor. This temperature can deviate from the process temperature.
MEAS. VAL. TREND (378) Display Slot: 2 Index: 92	Displays the trend of the pressure measured value. Possibilities: increasing, decreasing, constant
LEVEL BEFORE LIN (050) Display Slot: 2 Index: 142	Displays the level value prior to linearization. **Prerequisite:** ▪ LEVEL MODE = Linear or Height linearized Depending on the setting for the LIN. MEASURAND or COMB. MEASURAND parameter, this parameter displays the current level in % or in a unit of level.
TANK CONTENT (370) Display Slot: 2 Index: 151	Displays the level value after linearization. **Prerequisite:** ▪ LEVEL MODE = Pressure linearized or Height linearized Depending on the settings for the LINd. MEASURAND or COMB. MEASURAND parameter, the current tank content is displayed in % or in a unit of volume or mass. This value corresponds to the MEASURED VALUE.

Table 29: OPERATING MENU → PROCESSINFO → PROCESS VALUES "Flow"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Flow	
MEASURED VALUE (679) Display Slot: 2 Index: 34	Displays the measured value In the "Flow" measuring mode, this value corresponds to the SUPPRESSED FLOW parameter.

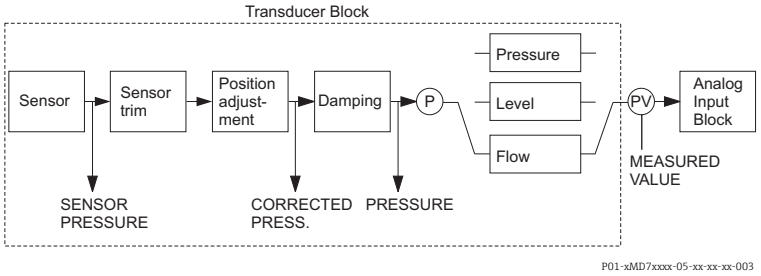
Table 29: OPERATING MENU → PROCESSINFO → PROCESS VALUES "Flow"	
Parameter name	**Description**
PRESSURE (301) Display Slot: 2 Index: 45	Displays the measured pressure after sensor recalibration, position adjustment and damping. This value corresponds to the MEASURED VALUE parameter in the "Pressure" measuring mode. 
CORRECTED PRESS. (434) Display Slot: 2 Index: 31	Displays the measured pressure after sensor trim and position adjustment and before damping. → See also PRESSURE diagram.
SENSOR PRESSURE (584) Display Slot: 2 Index: 24	Displays the measured pressure before sensor trim, position adjustment and damping. → See also PRESSURE diagram.
SENSOR TEMP. (367) Display Slot: 2 Index: 43	Displays the temperature currently measured in the sensor. This temperature can deviate from the process temperature.
MEAS. VAL. TREND (378) Display Slot: 2 Index: 92	Displays the trend of the pressure measured value. Possibilities: increasing, decreasing, constant
SUPPRESSED FLOW (375) Display Slot: 2 Index: 152	Displays the current flow. Depending on the flow mode selected (→ FLOW-MEAS. TYPE), a volume flow, mass flow, standard volume flow or corrected volume flow is displayed.
TOTALIZER 1 (652) Display Slot: 2 Index: 93	Displays the total flow value of totalizer 1. You can reset the value with the RESET TOTALIZER 1 parameter. The TOTAL. 1 OVERFLOW parameter displays the overflow. **Example:** The value 123456789 m^3 is displayed as follows: – TOTALIZER 1: 3456789 m^3 – TOTAL. 1 OVERFLOW: 12 E7
TOTAL. 1 OVERFLOW (655) Display Slot: 2 Index: 94	Displays the overflow value of totalizer 1. → See also TOTALIZER 1.
TOTALIZER 2 (657) Display Slot: 2 Index: 95	Displays the total flow value of totalizer 2. You cannot reset totalizer 2. The TOTAL. 2 OVERFLOW parameter displays the overflow. → See also example for TOTALIZER 1.

Table 29: OPERATING MENU → PROCESSINFO → PROCESS VALUES "Flow"	
Parameter name	**Description**
TOTAL. 2 OVERFLOW (658) Display Slot: 2 Index: 96	Displays the overflow value of totalizer 2. → See also TOTALIZER 2 and example for TOTALIZER 1.

Table 30: OPERATING MENU → PROCESSINFO → PEAK HOLD INDICATOR	
Parameter name	**Description**
COUNTER:P > Pmax (380) Display Slot: 2 Index: 89	Displays the overpressure counter of the sensor The limit value is: upper nominal pressure limit of sensor + 10 % of upper nominal pressure limit of sensor. You can reset this counter by means of the RESET PEAKHOLD parameter.
MAX. MEAS. PRESS. (383) Display Slot: 2 Index: 61	Displays the largest measured pressure value (peak hold indicator). You can reset this indicator by means of the RESET PEAKHOLD parameter.
COUNTER P < Pmin (467) Display Slot: 2 Index: 88	Displays the vacuum pressure counter of the sensor The limit value is: lower nominal pressure limit of sensor − 10 % of upper nominal pressure limit of sensor. You can reset this counter by means of the RESET PEAKHOLD parameter.
MIN. MEAS. PRESS. (469) Display Slot: 2 Index: 62	Displays the smallest measured pressure value (peak hold indicator). You can reset this indicator by means of the RESET PEAKHOLD parameter.
COUNTER:T > Tmax (404) Display Slot: 2 Index: 90	Displays the number of times the specified temperature range of the sensor has been overshot. You can reset this counter by means of the RESET PEAKHOLD parameter.
MAX. MEAS. TEMP. (471) Display Slot: 2 Index: 63	Displays the largest measured temperature in the sensor (peak hold indicator). You can reset this indicator by means of the RESET PEAKHOLD parameter.
COUNTER:T < Tmin (472) Display Slot: 2 Index: 91	Displays the number of times the specified temperature range of the sensor has been undershot. You can reset this counter by means of the RESET PEAKHOLD parameter.
MIN. MEAS. TEMP. (474) Display Slot: 2 Index: 64	Displays the smallest measured temperature in the sensor (peak hold indicator). You can reset this indicator by means of the RESET PEAKHOLD parameter.
PCB COUNT:T > Tmax (488) Display Slot: 0 Index: 101	Displays the number of times the specified temperature range of the electronics has been overshot.

Table 30: OPERATING MENU → PROCESSINFO → PEAK HOLD INDICATOR	
Parameter name	**Description**
PCB MAX. TEMP. (490) Display Slot: 0 Index: 102	Displays the largest electronics temperature measured.
PCB COUNT:T < Tmin (492) Display Slot: 0 Index: 103	Displays the number of times the specified temperature range of the electronics has been undershot.
PCB MIN. TEMP. (494) Display Slot: 0 Index: 104	Displays the smallest electronics temperature measured.
RESET PEAKHOLD (382) Selection Slot: 2 Index: 153	This parameter lists all the peak hold indicator parameters that can be reset. You can select the peak hold indicators you want to reset. **Options:** ▪ None ▪ Max. pressure ▪ Min. pressure ▪ Pmax history ▪ Pmin history ▪ Max. temp. ▪ Min. temp. ▪ Tmax history ▪ Tmin history ▪ Reset all **Factory setting:** None

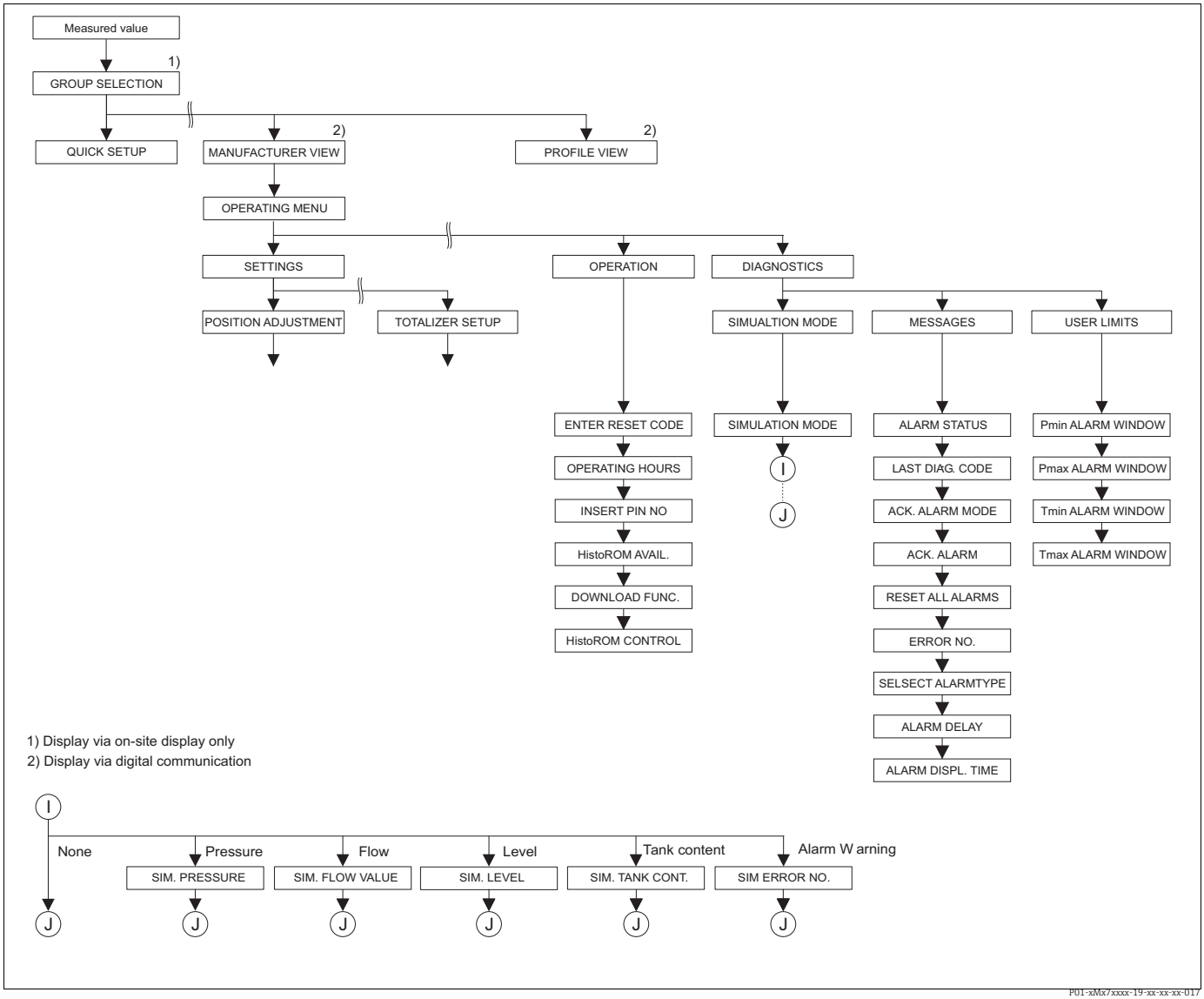


Fig. 40: OPERATING and DIAGNOSTICS group
→ For the OPERATING group, see Page 121, Table 31
→ For the SIMULATION function group, see Page 123, Table 32
→ For the MESSAGES function group, see Page 124, Table 33
→ For the USER LIMITS function group, see Page 126, Table 34

Table 31: OPERATING MENU → OPERATING	
Parameter name	**Description**
ENTER RESET CODE (047) Entry Slot: 0 Index: 35	Reset parameters completely or partially to factory values or delivery status. → See also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 5.8 "Factory setting" (reset). **Factory setting:** 0
OPERATING HOURS (409) Display Slot: 0 Index: 75	Displays the hours of operation. This parameter cannot be reset.

Table 31: OPERATING MENU → OPERATING	
Parameter name	**Description**
INSERT PIN NO (048) Entry Slot: 0 Index: 34	For entering a code to lock or unlock operation. ▪ The -symbol on the onsite display indicates that operation is locked. Parameters which refer to how the display appears, e.g. LANGUAGE and DISPLAY CONTRAST can still be altered. ▪ If operation is locked by means of the DIP-switch, you can only unlock operation again by means of the DIP-switch. If operation is locked by means of the onsite display or remote operation e.g. FieldCare, you can unlock operation again by means of the onsite display or using remote operation. → See also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 5.7 "Locking/unlocking operation". **Options:** ▪ Lock: enter the number 0. ▪ Unlock: enter the number 2457. **Factory setting:** 2457
HistoROM AVAIL. (831) Display Slot: 0 Index: 94	Indicates whether the optional HistoROM®/M-DAT memory module is connected to the electronic insert. → See also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 5.6 "HistoROM®/M-DAT (optional)". **Options:** ▪ Yes (HistoROM®/M-DAT is attached to the electronic insert) ▪ No (HistoROM®/M-DAT is not attached to the electronic insert)
DOWNLOAD FUNCT. (014) Selection Slot: 2 Index: 107	Select download function from HistoROM to device. The selection has no effect on an upload from the device to the HistoROM. **Prerequisite:** ▪ A HistoROM®/M-DAT is attached to the electronic insert (HistoROM AVAIL. = yes) **Options:** ▪ Configuration copy: For this option, all parameters apart from the DEVICE SERIAL No, DEVICE DESIGN., and the parameters of the POSITION ADJUSTMENT and PROCESS CONNECTION group are overwritten. ▪ Device replacement: With this option, all parameters except for DEVICE SERIAL No, DEVICE DESIGN. and the parameters of the POSITION ADJUSTMENT and PROCESS CONNECTION group are overwritten. ▪ Electronics replace: With this option, all parameters except for the parameters of the POSITION ADJUSTMENT group are overwritten. **Factory setting:** Copy config. (if HistoROM®/M-DAT is attached to the electronic insert)
HistoROM CONTROL (832) Selection Slot: 0 Index: 96	For selecting the direction for copying the data. → See also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 5.6. "HistoROM®/M-DAT (optional)". **Prerequisite:** ▪ A HistoROM®/M-DAT is attached to the electronic insert (HistoROM AVAIL. = yes) **Options:** ▪ Abort ▪ HistoROM → Device ▪ Device → HistoROM **Factory setting:** Abort (if HistoROM®/M-DAT is connected to the electronic insert)

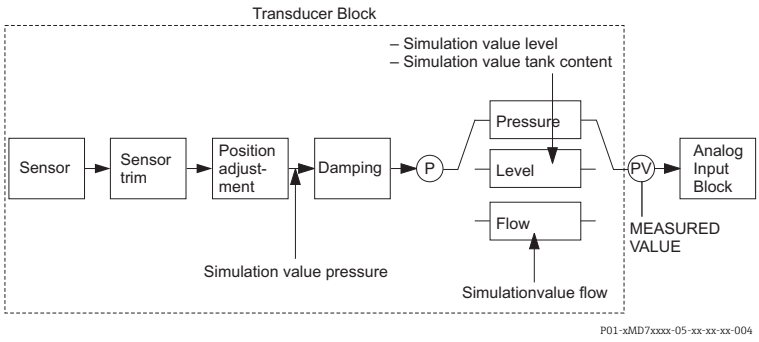
Table 32: OPERATING MENU → DIAGNOSTICS → SIMULATION	
Parameter name	**Description**
SIMULATION MODE (413) Selection Slot: 2 Index: 87	Switch on simulation and select simulation type. Any simulation running is switched off if the measuring mode or level type is changed. **Options**: ▪ None ▪ Pressure, → see also this table parameter description for SIM. PRESSURE ▪ Flow (only differential pressure transmitter), → see also this table parameter description for SIM. FLOW VALUE ▪ Level, → see also this table parameter description for SIM. LEVEL ▪ Tank content, → see also this table parameter description for SIM. TANK CONT. ▪ Alarm/warning, → see also this table parameter description for SIM. ERROR NO.  **Factory setting:** None
SIM. PRESSURE (414) Entry Slot: 2 Index: 205	Enter simulation value. → See also SIMULATION MODE. **Prerequisite:** ▪ SIMULATION MODE = Pressure **Factory setting:** Current pressure measured value
SIM.FLOW VALUE (639) Entry Slot: 2 Index: 165	Enter simulation value. → See also SIMULATION MODE. **Prerequisite:** ▪ MEASURING MODE = Flow and SIMULATION MODE = Flow
SIM. LEVEL (714) Entry Slot: 2 Index: 182	Enter simulation value. → See also SIMULATION MODE. **Prerequisite:** ▪ MEASURING MODE = Level and SIMULATION MODE = Level
SIM. TANK CONT. (715) Entry Slot: 2 Index: 183	Enter simulation value. → See also SIMULATION MODE. **Prerequisites:** ▪ MEASURING MODE = Level, LEVEL MODE = Pressure linearized and SIMULATION MODE = Tank content ▪ MEASURING MODE = Level, LEVEL MODE = Height linearized and SIMULATION MODE = Tank content

Table 32: OPERATING MENU → DIAGNOSTICS → SIMULATION	
Parameter name	**Description**
SIM. ERROR NO. (476) Entry Slot: 0 Index: 76	**⚠ CAUTION** **Note Dependencies when setting parameters!** ▶ The SIMULATION parameter overwrites actual fault conditions that occur (alarm/warning). If the simulated error is identical to an actual error that has occurred and simulation is quit, the fault conditions (alarm/warning) are still present but are no longer displayed! The device resumes its fault condition following a restart. Enter message number. → See also SIMULATION MODE. → See also these Operating Instructions, Section 9.1 "Messages", "Code" table column. **Prerequisite:** ▪ SIMULATION MODE = Alarm/Warning **Factory setting:** 613 (simulation active)

Table 33: OPERATING MENU → DIAGNOSTICS → MESSAGES	
Parameter name	**Description**
ALARM STATUS (046) Display Slot: 0 Index: 54	Displays the current messages present. → See also these Operating Instructions, Section 9.1. "Messages" and Section 9.3 "Confirming messages". **Onsite display** ▪ The measured value display shows the message with the highest priority. ▪ The ALARM STATUS parameter shows all the messages in descending order of priority. You can scroll through all the messages present with the O or S key. **FieldCare** ▪ The ALARM STATUS parameter shows the message with the highest priority.
LAST DIAG. CODE (564) Display Slot: 0 Index: 55	Displays the last messages that occurred and were eliminated. ▪ Onsite display: you can scroll through the last 15 messages with the O or S key. ▪ FieldCare: the last message appears on the display. ▪ Use the RESET ALL ALARMS parameter to delete the messages listed in the LAST DIAG. CODE parameter.
ACK. ALARM MODE (401) Selection Slot: 0 Index: 85	Switch on acknowledge alarm mode. → See also ACK. ALARM. **Options:** ▪ On ▪ Off **Factory setting:** Off
ACK. ALARM (500) Selection Slot: 0 Index: 86	Acknowledge alarm. **Prerequisite:** ▪ ACK. ALARM MODE = On **Options:** ▪ Abort ▪ Confirm The cause of the alarm must be eliminated, the message must be acknowledged via the ACK. ALARM parameter and, where applicable, the ALARM DISPL. TIME (→ Page 125) has to have elapsed before the device starts measuring again following an alarm. → See also these Operating Instructions, Section 9.3 "Confirming messages". **Factory setting:** Abort

Table 33: OPERATING MENU → DIAGNOSTICS → MESSAGES	
Parameter name	**Description**
RESET ALL ALARMS (603) Selection Slot: 0 Index: 65	Use this parameter to reset all the messages of the LAST DIAG. CODE parameter. **Options:** ▪ Abort ▪ Confirm **Factory setting:** Abort
ERROR NO. Entry Slot: 0 Index: 88	For "Error"-type messages, you can decide whether the device should behave as in the event of an alarm (A) or as in the event of a warning (W). Enter the corresponding message number for this parameter. → See also SELECT ALARMTYPE. → See also these Operating Instructions, Section 9.1 "Messages" and Section 9.2 "Response of outputs to errors".
SELECT ALARM TYPE (595) – Entry (600) – Selection Selection Slot: 0 Index: 87	For "Error"-type messages, you can decide whether the device should behave as in the event of an alarm (A) or as in the event of a warning (W). → See also ERROR No. → See also these Operating Instructions, Section 9.2 "Response of outputs to errors". **Options**: ▪ Alarm (A): the process variable in question is transmitted with the status BAD. ▪ Warning (W): device continues measuring **Operation onsite:** 1. Enter the corresponding message number for ERROR No. field. 2. Select "Alarm" or "Warning" option. **FieldCare:** 1. Enter the corresponding message number via the ERROR No. parameter. 2. Use the SELECT ALARMTYPE parameter to select the "Alarm" or "Warning" option. Individual "Error-type" messages can also be set via FieldCare in the menu path "PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PB STATUS CONFIG". The STATUS SELECT EVENT parameters allow you to set the status to Good, Uncertain or Bad if a message occurs.
ALARM DELAY (336) Entry Slot: 0 Index: 89	Enter the alarm response time for all "Error"-type messages. There is no alarm if the cause of the error is eliminated within the alarm delay time. **Input range:** 0…100 s **Factory setting:** 0.0 s
ALARM DISPL. TIME (480) Entry Slot: 0 Index: 90	Enter alarm display time. Once the cause of the error is rectified, the alarm display time starts running. The following applies if the setting for ACK. ALARM MODE = on: If an alarm appears and the alarm display time elapses before the alarm has been acknowledged, the message will be cleared once it has been acknowledged. → See also these Operating Instructions, Section 9.3 "Confirming messages". **Input range:** 0…999.9 s **Factory setting:** 0.0 s

Table 34: OPERATING MENU → DIAGNOSTICS → USER LIMITS	
Parameter name	**Description**
Pmin ALARM WINDOW (332) Entry Slot: 2 Index: 82	Customer-specific process monitoring – enter lower pressure limit. You can use the SELECT ALARMTYPE parameter to enter how the device responds if the operating pressure undershoots the specified value. → See also these Operating Instructions, Section 9.1 "Messages", table, Code E730 and Section 9.2. "Response of outputs to errors". **Factory setting:** Low sensor limit 110 % (→ For the low sensor limit, see PRESS. SENS LOLIM.)
Pmax ALARM WINDOW (333) Entry Slot: 2 Index: 83	Customer-specific process monitoring – enter upper pressure limit. You can use the SELECT ALARMTYPE parameter to enter how the device responds if the operating pressure undershoots the specified value. → See also these Operating Instructions, Section 9.1 "Messages", table, Code E731 and Section 9.2. "Response of outputs to errors". **Factory setting:** High sensor limit 110 % (→ For the high sensor limit, see PRESS. SENS HILIM.)
Tmin ALARM WINDOW (334) Entry Slot: 2 Index: 84	Customer-specific process monitoring – enter lower temperature limit. You can use the SELECT ALARMTYPE parameter to enter how the device responds if the operating pressure undershoots the specified value. → See also these Operating Instructions, Section 9.1 "Messages", table, Code E732 and Section 9.2. "Response of outputs to errors". **Factory setting:** Lower sensor temperature application limit – 10 K (→ For the lower temperature application limit, see Tmin SENSOR)
Tmax ALARM WINDOW (335) Entry Slot: 2 Index: 85	Customer-specific process monitoring – enter upper temperature limit. You can use the SELECT ALARMTYPE parameter to enter how the device responds if the operating pressure undershoots the specified value. → See also these Operating Instructions, Section 9.1 "Messages", table, Code E733 and Section 9.2. "Response of outputs to errors". **Factory setting:** Upper sensor temperature application limit +10 K (→ For the upper temperature application limit, see Tmax SENSOR)

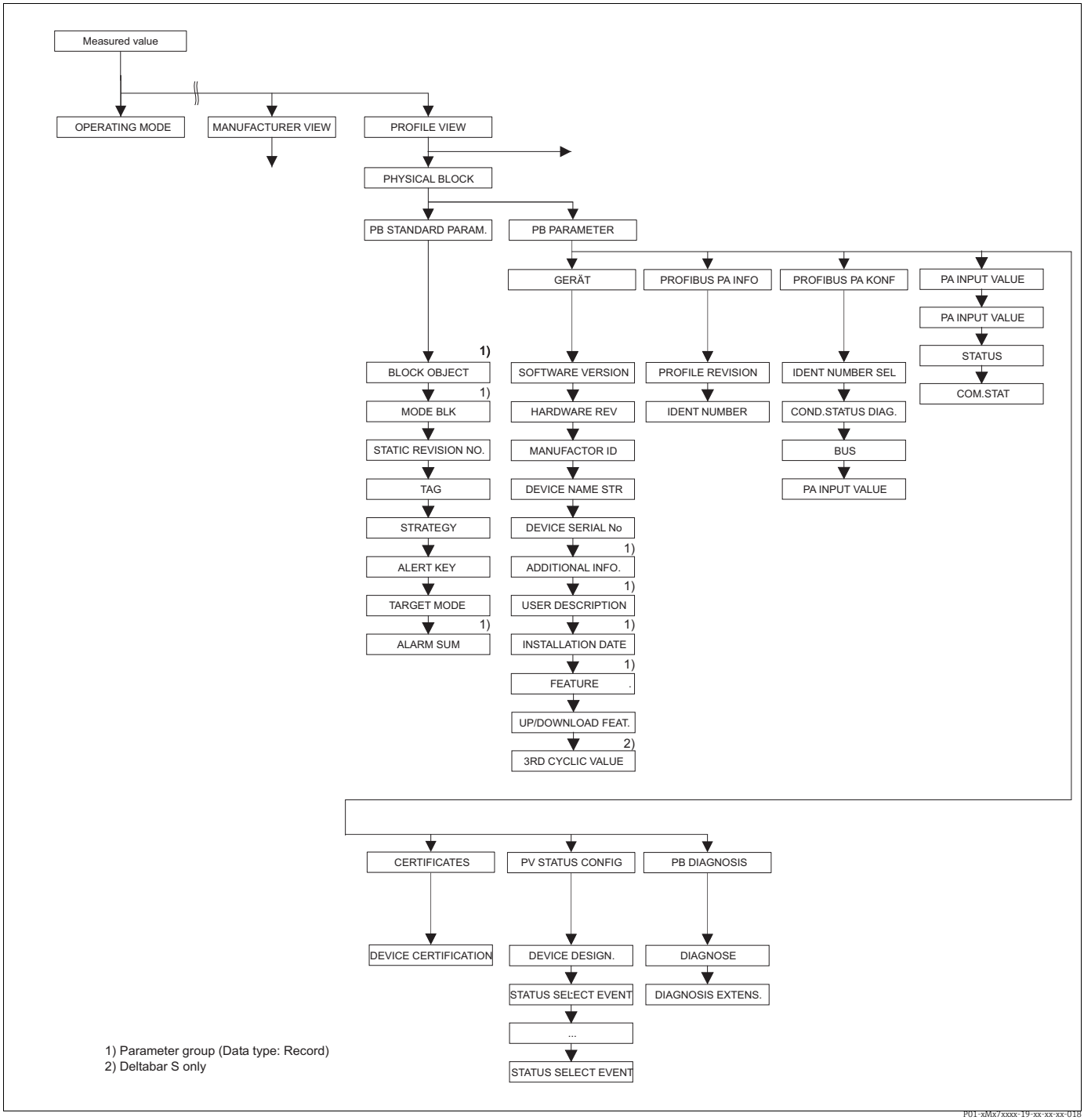


Fig. 41: PHYSICAL BLOCK group (Display only via digital communication)
→ For the function group PB STANDARD PARAM., see Page 128, Table 35
→ For the function group PB PARAMETER → DEVICE, see Page 129, Table 36
→ For the function group PB PARAMETER → PROFIBUS PA INFO, see Page 130, Table 37
→ For the function group PB PARAMETER → PROFIBUS PA CONF, see Page 131, Table 38
→ For the function group PB PARAMETER → PA INPUT VALUE, see Page 132, Table 39
→ For the function group PB PARAMETER → CERTIFICATES, see Page 132, Table 40
→ For the function group PB PARAMETER → PV STATUS CONFIG, see Page 132, Table 41
→ For the function group PB PARAMETER → PB DIAGNOSE, see Page 136, Table 42

Table 35: PROFILE VIEW → PHYSICAL BLOCK → PB STANDARD PARAMETER	
Parameter name	**Description**
BLOCK OBJECT Display Slot: 0 Index: 16	The BLOCK OBJECT parameter is a structured parameter consisting of 12 elements. This parameter describes the characteristics of the Physical Block. **RESERVED PROFILE PARAMETER** ▪ 250 = Is not used **BLOCK OBJECT** ▪ 1 = Physical Block **PARENT CLASS** ▪ 1 = Transmitter **CLASS** ▪ 250 = Is not used **DEVICE REV** ▪ Dev. Rev. 3 **DD REVISION** ▪ Is not supported by Profiles 3.0 **DEVICE REV. COMP** ▪ 3 **PROFILE** ▪ Number of the PROFIBUS PA profile within the PNO ▪ 0x40, 0x02 (compact class B) **PROFILE REVISION** ▪ Displays the profile version, here: 0x302 (Profiles 3.02) **EXECUTION TIME** ▪ Is not supported by Profiles 3.0 **NO. OF PARAMETER** ▪ Parameter number of the Physical Block, here: 115 **INDEX OF VIEW 1** ▪ Address of the VIEW_1 parameter, here: 0x0, 0x131 **NUMBER OF VIEW LISTS** ▪ 1 = The Block contains one "View object".
MODE BLK Display Slot: 0 Index: 22	The MODE BLK parameter is a structured parameter consisting of three elements. PROFIBUS makes a distinction between the following block modes: automatic mode (Auto), manual user intervention (MAN) and out of service (O/S). The Physical Block only works in the "Automatic (Auto)" mode. **ACTUAL** ▪ Displays the current block mode. ▪ Factory setting: Automatic (Auto) **PERMITTED** ▪ Displays the modes supported by the block. ▪ Factory setting: 8 = Automatic (Auto) **NORMAL** ▪ Displays the normal operating mode of the block. ▪ Factory setting: Automatic (Auto)
STATIC REVISION NO. Display Index: 0 Slot: 17	Displays the counter for static parameters of the Physical Block The counter is incremented by one with each change of a static parameter of the Physical Block. The counter counts to 65535 and then starts again at zero. **Factory setting:** 0
TAG Entry Slot: 0 Index: 18	Enter tag name e.g. TAG number (max. 32 alphanumeric characters). The parameter is also displayed in the TRANSMITTER DATA group (→ see Page 112). **Factory setting:** _ or as per order specifications

Table 35: PROFILE VIEW → PHYSICAL BLOCK → PB STANDARD PARAMETER	
Parameter name	**Description**
STRATEGY Entry Slot: 0 Index: 19	Enter user-specific value for grouping and thus faster evaluation of the blocks. Grouping takes place by entering the same numerical value for the STRATEGY parameter of the block in question. → See also STRATEGY parameter, Transducer Block (Page 138) and Analog Input Block (Page 141). **Input range:** 0...65535 **Factory setting:** 0
ALERT KEY Entry Slot: 0 Index: 20	Enter user-specific value (e.g. identification number of the plant unit). This information can be used by the control system to sort alarms and events that are generated by this block. **Input range:** 0...255 **Factory setting:** 0
TARGET MODE Selection Slot: 0 Index: 21	Select desired block mode. Only the "Automatic (Auto)" mode can be selected for the Physical Block. **Options:** ▪ Automatic (Auto) ▪ Out of service O/S **Factory setting:** Automatic (Auto)
ALARM SUM Display Slot: 0 Index: 23	The ALARM SUM parameter is a structured parameter consisting of four elements. **CURRENT STATE ALARM SUM** ▪ Displays the current alarms. ▪ Factory setting: 0x0, 0x0

Table 36: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → DEVICE	
Parameter name	**Description**
SOFTWARE VERSION Display Slot: 0 Index: 24	Displays the software version. e.g.: V04.01.00
HARDWARE REV. Display Slot: 0 Index: 25	Displays the revision number of the main electronics. e.g.: V02.00.00
MANUFACTURER ID Display Slot: 0 Index: 26	Displays the manufacturer ID in decimal numerical format. Here: 17 Endress+Hauser
DEVICE NAME STR Display Slot: 0 Index: 27	Displays the device designation. Options: Cerabar S, Deltabar S or Deltapilot S
DEVICE SERIAL No. Display Slot: 0 Index: 28	Displays the serial number of the device (11 alphanumeric characters).

Table 36: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → DEVICE	
Parameter name	**Description**
ADDITIONAL INFO. Entry Slot: 0 Index: 36	Enter tag description (max. 32 alphanumeric characters). **Factory setting:** Empty field or as per order specifications
USER DESCRIPTION Entry Slot: 0 Index: 37	Enter user-specific message, e.g. a description of the device within the application or system (max. 32 alphanumeric characters). **Factory setting:** _ or as per order specifications
INSTALLATION DATE Entry Slot: 0 Index: 38	Enter device installation date (max. 16 alphanumeric characters). **Factory setting:** Empty field
FEATURE Display Slot: 0 Index: 42	Displays optional features implemented in the device, and the status of these features. It indicates whether the feature is supported or not. The settings are based on the actual identification number of the device. In the "Ident_Number" profile, the features for the "Classic" and "Condensed" statuses are supported and set. Only the "Classic" status is supported in the compatibility mode (old identification number). Only the "Condensed" status is supported with the new identification number.
UP/DOWNLOAD FEATURE Display Slot: 0 Index: 56	Information for operating programs, such as FieldCare, that binary upload/ download is supported.
3RD CYCLIC VALUE Selection Slot: 0 Index: 93	Use this parameter to specify which value is transmitted via the bus as the third cyclic value. **Prerequisite**: ▪ Deltabar S **Options**: ▪ Totalizer 1 (→ see Page 118) ▪ Totalizer 2 (→ see Page 118) **Factory setting:** Totalizer 1

Table 37: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PROFIBUS PA INFO	
Parameter name	**Description**
PROFILE REVISION Display Slot: 0 Index: 64	Displays the profile version, here: 3.02.

Table 37: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PROFIBUS PA INFO	
Parameter name	**Description**
IDENT-NUMBER Display Slot: 0 Index: 66	Displays the device ID number and the selected device master file (GSD). Select the device master file (GSD) by means of the IDENT NUMBER SEL parameter (→ see Page 131). **Options for Deltabar S:** ▪ 0x9700: Profile GSD ▪ 0x1542: Device-specific GSD (factory setting) ▪ 0x1504: Device-specific GSD, device acts like a Deltabar S FMD230, FMD630, FMD633, PMD230 or PMD235. → See Operating Instructions BA00167P. **Options for Cerabar S:** ▪ 0x9700: Profile GSD ▪ 0x1541: Device-specific GSD (factory setting) ▪ 0x1501: Device-specific GSD, device acts like a Cerabar S PMC731, PMP731, PMC631 or PMP635. → See Operating Instructions BA00168P. **Options for Deltapilot S:** ▪ 0x9700: Profile GSD ▪ 0x154F: Device-specific GSD (factory setting) ▪ 0x1503: Device-specific GSD, device acts like a Deltapilot S DB50, DB50L, DB51, DB52 or DB53. → See Operating Instructions BA00164F.

Table 38: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PROFIBUS PA CONF	
Parameter name	**Description**
IDENT_NUMBER_SEL Selection Slot: 0 Index: 40	Select device master file (GSD). **Cerabar S:** ▪ 0x9700: Profile GSD ▪ 0x1541: Device-specific GSD (factory setting) ▪ 0x1501: Device-specific GSD, device acts like a Cerabar S PMC731, PMP731, PMC631 or PMP635. → See Operating Instructions BA00168P. **Deltabar S:** ▪ 0x9700: Profile GSD ▪ 0x1542: Device-specific GSD (factory setting) ▪ 0x1504: Device-specific GSD, device acts like a Deltabar S FMD230, FMD630, FMD633, PMD230 or PMD235. → See Operating Instructions BA00167P. **Deltapilot S:** ▪ 0x9700: Profile GSD ▪ 0x154F: Device-specific GSD (factory setting) ▪ 0x1503: Device-specific GSD, device acts like a Deltapilot S DB50, DB50L, DB51, DB52 or DB53. → See Operating Instructions BA00164F.
COND.STATUS DIAG Display Slot: 0 Index: 43	Indicates the mode of a device that can be configured for status and diagnostic behavior. **Options:** ▪ Condensed status ▪ Classic status **Factory setting:** Condensed status
BUS ADDRESS Display Slot: 0 Index: 59	Displays the device address in the PROFIBUS PA network You can configure the address either locally on the electronic insert (hardware addressing) or via the software (software addressing). Using a DIP switch on the electronic insert, you specify whether the hardware address or the software address takes effect. → For further information on device addressing, see Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S). **Factory setting:** 126

Table 39: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PA INPUT VALUE	
Parameter name	**Description**
PA INPUT VALUE Display Slot: 0 Index: 62	The PA INPUT VALUE parameter is a structured parameter consisting of three elements. The value and status displayed here are transmitted by the PLC to the device. The PA INPUT VALUE can be displayed on the onsite display (→ see also this table, SEL. DISPLAY VAL.). **VALUE** ▪ Factory setting: 0.0000000 **STATUS** ▪ Factory setting: 0 **COM_STAT** ▪ This element indicates whether a value is sent by the PLC to the device. 0: The PLC does not send any value with a status to the device. 1: The PLC sends a value with a status to the device. ▪ Factory setting: 0

Table 40: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → CERTIFICATES	
Parameter name	**Description**
DEVICE CERTIFICATION Display Slot: 0 Index: 33	Displays the certificate.

Table 41: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PV STATUS CONFIG	
Parameter name	**Description**
STATUS SELECT EVENT 115 Slot: 0 Index: 111 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 115 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 115. The GOOD and UNCERTAIN options are displayed as a warning.
STATUS SELECT EVENT 120 Slot: 0 Index: 112 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 120 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 120. The GOOD and UNCERTAIN options are displayed as a warning.

Table 41: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PV STATUS CONFIG	
Parameter name	**Description**
STATUS SELECT EVENT 715 Slot: 0 Index: 118 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 715 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 715. The GOOD and UNCERTAIN options are displayed as a warning.
STATUS SELECT EVENT 717 Slot: 0 Index: 120 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 717 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 717. The GOOD and UNCERTAIN options are displayed as a warning.
STATUS SELECT EVENT 718 Slot: 0 Index: 121 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 718 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 718. The GOOD and UNCERTAIN options are displayed as a warning.
STATUS SELECT EVENT 719 Slot: 0 Index: 119 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 719 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 719. The GOOD and UNCERTAIN options are displayed as a warning.

Table 41: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PV STATUS CONFIG	
Parameter name	**Description**
STATUS SELECT EVENT 726 Slot: 0 Index: 117 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 726 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 726. The GOOD and UNCERTAIN options are displayed as a warning.
STATUS SELECT EVENT 727 Slot: 0 Index: 110 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 727 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 727. The GOOD and UNCERTAIN options are displayed as a warning.
STATUS SELECT EVENT 730 Slot: 0 Index: 114 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 730 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 730. The GOOD and UNCERTAIN options are displayed as a warning.
STATUS SELECT EVENT 731 Slot: 0 Index: 113 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 731 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 731. The GOOD and UNCERTAIN options are displayed as a warning.

Table 41: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PV STATUS CONFIG	
Parameter name	**Description**
STATUS SELECT EVENT 732 Slot: 0 Index: 116 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 732 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 732. The GOOD and UNCERTAIN options are displayed as a warning.
STATUS SELECT EVENT 733 Slot: 0 Index: 115 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 733 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 733. The GOOD and UNCERTAIN options are displayed as a warning.
STATUS SELECT EVENT 740 Slot: 0 Index: 122 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 740 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 740. The GOOD and UNCERTAIN options are displayed as a warning.
STATUS SELECT EVENT 716 Slot: 0 Index: 123 Data type: enumerated Access: read, write	This parameter defines the status of the process value or the configured measuring channel in the Transducer Block if error event 716 occurs. See also ERROR No./SELECT ALARMTYPE. See also these Operating Instructions, Kap. 9.2 "Response of outputs to errors". **Options**: ▪ Bad: The process value or the measuring channel is transmitted with the status BAD. ▪ Uncertain: Device continues measuring. The process value or the measuring channel is transmitted with the status UNCERTAIN. ▪ Good: Device continues measuring within its physical limits. The process value or the measuring channel is transmitted with the status GOOD. A parameter change will automatically update the SELECT ALARMTYPE parameter for diagnostic event 716. The GOOD and UNCERTAIN options are displayed as a warning.

Table 42: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PB DIAGNOSIS	
Parameter name	**Description**
DIAGNOSTICS Display Slot: 0 Index: 29	This parameter displays pending profile alarms, bit-encoded. More than one alarm is possible at one time. If the highest-value bit of the fourth byte is set to 1, the DIAGNOSIS EXT. (→ see this Table) and DIAGNOSIS EXTENSION (→ see Page 136) parameters display further messages. **DIAGNOSIS A** ▪ Default value: 0x0, 0x0, 0x00, 0x00
DIAGNOSIS EXTENSION Display Slot: 0 Index: 30	This parameter displays pending manufacturer-specific alarms and warnings, bit-encoded. More than one alarm is possible at one time. In addition, the DIAGNOSIS EXTENSION parameter (→ see Page 136) can display further alarms and warnings. **DIAGNOSIS EXTENSION 1, 2** ▪ Factory setting: 0x0, 0x0 **DIAGNOSIS EXTENSION 3, 4** ▪ Factory setting: 0x0, 0x0 **DIAGNOSIS EXTENSION 5, 6** ▪ Factory setting: 0x0, 0x0
DIAGNOSIS EXTENSION Display Slot: 0 Index: 91	This parameter displays pending manufacturer-specific alarms and warnings, bit-encoded. More than one alarm is possible at one time. In addition, the DIAGNOSIS EXTENSION parameter (→ see Page 136) can display further alarms and warnings. **DIAGNOSIS EXTENSION 7, 8** ▪ Factory setting: 0x0, 0x0 **DIAGNOSIS EXTENSION 9** ▪ Factory setting: 0x0, 0x0

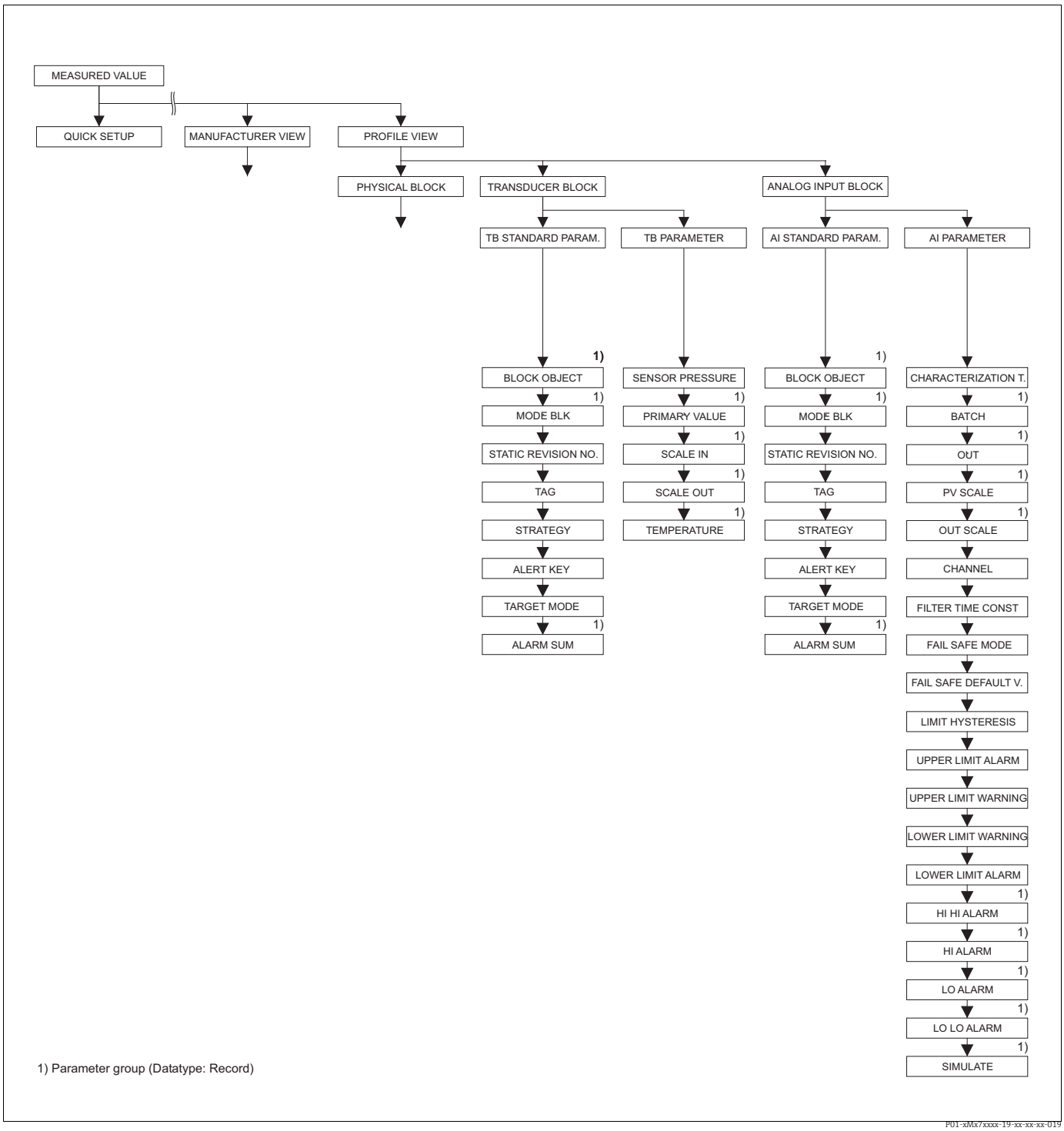


Fig. 42: TRANSDUCER BLOCK and ANALOG INPUT BLOCK group (Display only via digital communication)
→ For the TB STANDARD PARAM. function group, see Page 138, Table 43
→ For the TB PARAMETER function group, see Page 139, Table 44
→ For the AI STANDARD PARAMETER function group, see Page 140, Table 45
→ For the AI PARAMETER function group, see Page 141, Table 46

Table 43: PROFILE VIEW → TRANSDUCER BLOCK → TB STANDARD PARAMETER	
Parameter name	**Description**
BLOCK OBJECT Display Slot: 2 Index: 16	The BLOCK OBJECT parameter is a structured parameter consisting of 12 elements. This parameter describes the characteristics of the Physical Block. **RESERVED PROFILE PARAMETER** ▪ 250 = Is not used **BLOCK OBJECT** ▪ 1 = Physical Block **PARENT CLASS** ▪ 1 = Transmitter **CLASS** ▪ 250 = Is not used **DEVICE REV** ▪ Dev. Rev. 3 **DD REVISION** ▪ Is not supported by Profiles 3.0 **DEVICE REV. COMP** ▪ 3 **PROFILE** ▪ Number of the PROFIBUS PA profile within the PNO ▪ 0x40, 0x02 (compact class B) **PROFILE REVISION** ▪ Displays the profile version, here: 0x302 (Profiles 3.02) **EXECUTION TIME** ▪ Is not supported by Profiles 3.0 **NO. OF PARAMETER** ▪ Parameter number of the Physical Block, here: 115 **INDEX OF VIEW 1** ▪ Address of the VIEW_1 parameter, here: 0x0, 0x131 **NUMBER OF VIEW LISTS** ▪ 1 = The Block contains one "View object".
MODE BLK Display Slot: 2 Index: 22	The MODE BLK parameter is a structured parameter consisting of three elements. PROFIBUS makes a distinction between the following block modes: automatic mode (Auto), manual user intervention (MAN) and out of service (O/S). The Transducer Block only works in the "Automatic (Auto)" mode. ACTUAL, PERMITTED and NORMAL are set to "Automatic (Auto)".
STATIC REVISION NO. Display Index: 2 Slot: 17	Displays the counter for static parameters of the Physical Block The counter is incremented by one with each change of a static parameter of the Physical Block. The counter counts to 65535 and then starts again at zero. **Factory setting:** 0
TAG Entry Slot: 2 Index: 18	Enter tag name e.g. TAG number (max. 32 alphanumeric characters). **Factory setting:** _ or as per order specifications
STRATEGY Entry Slot: 2 Index: 19	Enter user-specific value for grouping and thus faster evaluation of the blocks. Grouping takes place by entering the same numerical value for the STRATEGY parameter of the block in question. → See also STRATEGY parameter, Transducer Block (Page 129) and Analog Input Block (Page 141). **Input range:** 0...65535 **Factory setting:** 0

Table 43: PROFILE VIEW → TRANSDUCER BLOCK → TB STANDARD PARAMETER	
Parameter name	**Description**
ALERT KEY Entry Slot: 2 Index: 20	Enter user-specific value (e.g. identification number of the plant unit). This information can be used by the control system to sort alarms and events that are generated by this block. **Input range:** 0...255 **Factory setting:** 0
TARGET MODE Selection Slot: 2 Index: 21	Select desired block mode. Only the "Automatic (Auto)" mode can be selected for the Transducer Block. **Options:** ▪ Automatic (Auto) **Factory setting:** Automatic (Auto)
ALARM SUM Display Slot: 2 Index: 23	The ALARM SUM parameter is a structured parameter consisting of four elements. **CURRENT STATE ALARM SUM** ▪ Displays the current alarms. ▪ Factory setting: 0x0, 0x0

Table 44: PROFILE VIEW → TRANSDUCER BLOCK → TB PARAMETER	
Parameter name	**Description**
SENSOR PRESSURE Display Slot: 2 Index: 24	Displays the measured pressure before sensor trim, position adjustment and damping. → See also Page 116, PRESSURE figure.
PRIMARY VALUE Display Slot: 2 Index: 34	The PRIMARY VALUE parameter is a structured parameter consisting of two elements. **MEASURED VALUE** ▪ Depending on the settings for the MEASURING MODE, LEVEL MODE and unit parameters, a value for pressure, level, volume, mass or flow is displayed here. **MEASURED STATUS** ▪ Displays the status of the measured value.
SCALE IN Entry Slot: 2 Index: 50	The SCALE IN parameter is a structured parameter consisting of two elements. **SCALE_IN_100** ▪ Enter the upper limit for the input value of the Transducer Block. ▪ Factory setting: upper measuring limit (→ For the high sensor limit, see PRESS. SENS HILIM.) **SCALE_IN_0** ▪ Enter the lower limit for the input value of the Transducer Block. ▪ Factory setting: 0
SCALE OUT Entry Slot: 2 Index: 51	The SCALE OUT parameter is a structured parameter consisting of two elements. **SCALE _OUT_100** ▪ Enter the upper limit for the output value of the Transducer Block. ▪ Factory setting: upper measuring limit (→ For the high sensor limit, see PRESS. SENS HILIM.) **SCALE_OUT_0** ▪ Enter the lower limit for the output value of the Transducer Block. ▪ Factory setting: 0

Table 44: PROFILE VIEW → TRANSDUCER BLOCK → TB PARAMETER	
Parameter name	**Description**
TEMPERATURE Display Slot: 2 Index: 43	The TEMPERATURE parameter is a structured parameter consisting of two elements. **SENSOR TEMP.** ▪ Displays the temperature currently measured in the sensor. This temperature can deviate from the process temperature. **TEMP. STATUS** ▪ Displays the status of the temperature measured.

Table 45: PROFILE VIEW → ANALOG INPUT BLOCK → AI STANDARD PARAMETER	
Parameter name	**Description**
BLOCK OBJECT Display Slot: 1 Index: 16	The BLOCK OBJECT parameter is a structured parameter consisting of 12 elements. This parameter describes the characteristics of the Physical Block. **RESERVED PROFILE PARAMETER** ▪ 250 = Is not used **BLOCK OBJECT** ▪ 1 = Physical Block **PARENT CLASS** ▪ 1 = Transmitter **CLASS** ▪ 250 = Is not used **DEVICE REV** ▪ Dev. Rev. 3 **DD REVISION** ▪ Is not supported by Profiles 3.0 **DEVICE REV. COMP** ▪ 3 **PROFILE** ▪ Number of the PROFIBUS PA profile within the PNO ▪ 0x40, 0x02 (compact class B) **PROFILE REVISION** ▪ Displays the profile version, here: 0x302 (Profiles 3.02) **EXECUTION TIME** ▪ Is not supported by Profiles 3.0 **NO. OF PARAMETER** ▪ Parameter number of the Physical Block, here: 115 **INDEX OF VIEW 1** ▪ Address of the VIEW_1 parameter, here: 0x0, 0x131 **NUMBER OF VIEW LISTS** ▪ 1 = The Block contains one "View object".
MODE BLK Display Slot: 1 Index: 22	The MODE BLK parameter is a structured parameter consisting of three elements. PROFIBUS makes a distinction between the following block modes: automatic mode (Auto), manual user intervention (MAN) and out of service (O/S). **ACTUAL** ▪ Displays the current block mode. ▪ Factory setting: Automatic (Auto) **PERMITTED** ▪ Displays the modes supported by the block. ▪ Factory setting: 152 = Automatic (Auto), manual user intervention or out of service **NORMAL** ▪ Displays the normal operating mode of the block. ▪ Factory setting: Automatic (Auto)

Table 45: PROFILE VIEW → ANALOG INPUT BLOCK → AI STANDARD PARAMETER	
Parameter name	**Description**
STATIC REVISION NO. Display Index: 1 Slot: 17	Displays the counter for static parameters of the Physical Block The counter is incremented by one with each change of a static parameter of the Physical Block. The counter counts to 65535 and then starts again at zero. **Factory setting:** 0
TAG Entry Slot: 1 Index: 18	Enter tag name e.g. TAG number (max. 32 alphanumeric characters). The parameter is also displayed in the TRANSMITTER DATA group (→ see Page 112). **Factory setting:** _ or as per order specifications
STRATEGY Entry Slot: 1 Index: 19	Enter user-specific value for grouping and thus faster evaluation of the blocks. Grouping takes place by entering the same numerical value for the STRATEGY parameter of the block in question. → See also STRATEGY parameter, Physical Block (Page 129) and Transducer Block (Page 138). **Input range:** 0...65535 **Factory setting:** 0
ALERT KEY Entry Slot: 1 Index: 20	Enter user-specific value (e.g. identification number of the plant unit). This information can be used by the control system to sort alarms and events that are generated by this block. **Input range:** 0...255 **Factory setting:** 0
TARGET MODE Selection Slot: 0 Index: 21	Select desired block mode. **Options:** ▪ Automatic (Auto) ▪ Manual (Man) ▪ Out of Service (O/S) **Factory setting:** Automatic (Auto)
ALARM SUM Display Slot: 1 Index: 23	The ALARM SUM parameter is a structured parameter consisting of four elements. **CURRENT STATE ALARM SUM** ▪ Displays the current alarms. ▪ Factory setting: 0x0, 0x0

Table 46: PROFILE VIEW → ANALOG INPUT BLOCK → AI PARAMETER	
Parameter name	**Description**
AI_BATCH Entry Slot: 1 Index: 16	The BATCH parameter is a structured parameter consisting of four elements. This parameter is used in batch processes in accordance with IEC 61512 Part 1 (ISA S88). The BATCH parameter is needed in a decentral automation system to identify the input channels used. In addition, the errors occurring in the current BATCH process can also be displayed. **BATCH ID** ▪ Enter an ID of a batch application in order to be able to assign alarms etc. **BATCH UNIT** ▪ Enter the recipe code necessary for the batch application or the related unit, such as reactor. **BATCH OPERATION** ▪ Enter recipe currently available. **BATCH PHASE** ▪ Enter the current recipe phase.

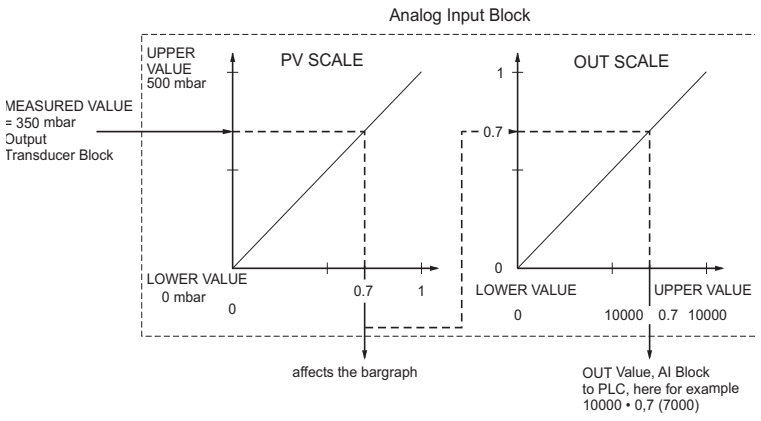
Table 46: PROFILE VIEW → ANALOG INPUT BLOCK → AI PARAMETER	
Parameter name	**Description**
OUT Display Slot: 1 Index: 26	The OUT parameter is a structured parameter consisting of two elements. **AI OUT VALUE** ▪ Displays the output value of the Analog Input Block. **AI OUT STATUS** ▪ Displays the status of the OUT value. If the "MAN" (manual) block mode was selected by means of the MODE BLK parameter, the output value OUT and its status can be specified manually here.
PV_SCALE Entry Slot: 1 Index: 27	Scales the input value of the Analog Input Block. → See also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 6.8 or 6.7 "Scaling the OUT Value". **LOWER VALUE**: ▪ Enter the lower limit for the input value of the Analog Input Block. ▪ Factory setting: 0 **UPPER VALUE**: ▪ Enter the upper limit for the input value of the Analog Input Block. ▪ Factory setting: 100 **Example:** 
OUT SCALE Entry Slot: 1 Index: 28	Scales the output value of the Analog Input Block. → See also this Table, PV SCALE parameter description. → See also Operating Instructions BA00294P (Deltabar S), BA00295P (Cerabar S) or BA00356P (Deltapilot S), Section 6.8 or 6.7 "Scaling the OUT Value". **LOWER VALUE**: ▪ Enter the lower limit for the output value of the Analog Input Block. ▪ Factory setting: 0 **UPPER VALUE**: ▪ Enter the upper limit for the output value of the Analog Input Block. ▪ Factory setting: 100 **UNIT**: ▪ Select unit. The unit selected here does not have any effect on the scaling. This unit is not displayed on the onsite display and in the operating program. ▪ Factory setting: % **DECIMAL POINT**: ▪ Specify the number of places after the decimal point for the OUT Value. ▪ Factory setting: 0
CHANNEL Entry Slot: 1 Index: 30	This parameter is used for the assignment between the logical hardware channel of the Transducer Block and the input of the Analog Input Block. **Factory setting:** Primary value (PV)

Table 46: PROFILE VIEW → ANALOG INPUT BLOCK → AI PARAMETER	
Parameter name	**Description**
FILTER TIME CONST Entry Slot: 1 Index: 32	Enter the filter time constant for the 1st order digital filter. This time is needed for 63 % of a change in the Analog Input Block (input value) to take effect in OUT (output value). → See also parameter description for DAMPING VALUE (e.g. Page 47). If the "MAN" (manual) block mode was selected by means of the MODE BLK parameter, the time entered here has no effect on the OUT value here. **Factory setting:** 0.0 s
FAIL SAFE MODE Selection Slot: 1 Index: 33	If the Analog Input Block receives an input value or simulation value with the status BAD, the Analog Input Block continues working with the failsafe mode defined by means of this parameter. The following options are available by means of the FAIL SAFE MODE parameter: ▪ Last valid value The last valid value is used for further processing with the status UNCERTAIN. ▪ Fsafe Value The value specified by means of the FAIL SAFE DEFAULT VALUE parameter is used for further processing with the status UNCERTAIN. → See this table, FAIL SAFE DEFAULT VALUE parameter description. ▪ BAD status The current value is used for further processing with the status BAD. The failsafe mode is also activated if the "Out of Service O/S" option was selected by means of the TARGET MODE parameter. **Factory setting:** Last valid value
FAIL SAFE DEFAULT VALUE Entry Slot: 1 Index: 34	Enter the value for the "Fsafe Value" option selected by means of the FAIL SAFE MODE parameter. → See also this table, FAIL SAFE MODE parameter description. **Factory setting:** 0.0000 %

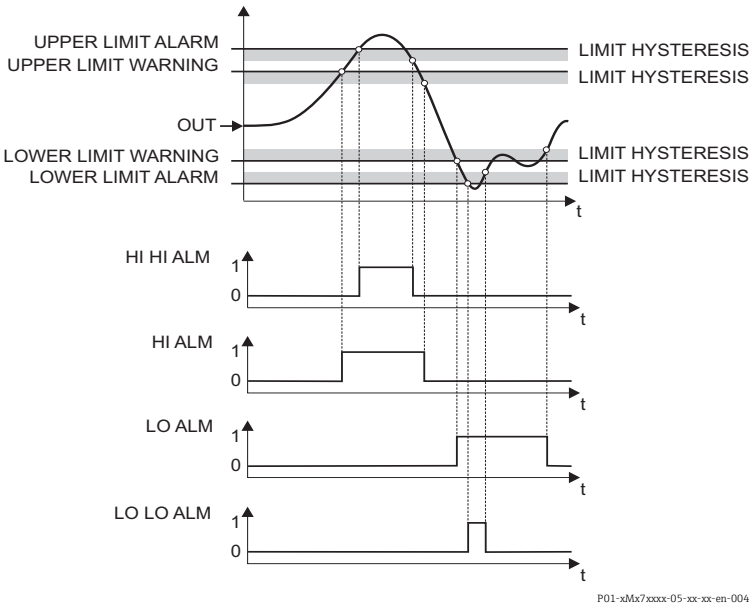
Table 46: PROFILE VIEW → ANALOG INPUT BLOCK → AI PARAMETER	
Parameter name	**Description**
LIMIT HYSTERESIS Entry Slot: 1 Index: 35	Enter hysteresis value for the upper and lower alarm value or critical alarm value. The alarm conditions remain active as long as the measured value is within the hysteresis. The hysteresis affects the following alarm or critical alarm limit values: The hysteresis affects the following alarm or critical alarm limit values: ▪ HI HI ALM: upper critical alarm limit value ▪ HI ALM: upper alarm limit value ▪ LO ALM: lower alarm limit value ▪ LO LO ALM: lower critical alarm limit value  *Fig. 43: Illustration of the output value OUT with limit values and hysteresis as well as the alarms HI HI ALM, HI ALM, LO ALM and LO LO ALM* **Input range:** 0.0…50.0 % with regard to the range of the OUT_SCALE group (→ see Page 142) **Factory setting:** 0.5000 %
UPPER LIMIT ALARM Entry Slot: 1 Index: 37	Enter upper critical limit value. If the output value OUT overshoots this limit value, the HI HI ALM parameter displays an alarm. → See also this table, LIMIT HYSTERESIS parameter description. **Factory setting:** 3.4028e+038 %
UPPER LIMIT WARNING Entry Slot: 1 Index: 39	Enter upper limit value. If the output value OUT overshoots this limit value, the HI ALM parameter displays an alarm. → See also this table, LIMIT HYSTERESIS parameter description. **Factory setting:** 3.4028e+038 %
LOWER LIMIT WARNING Entry Slot: 1 Index: 41	Enter lower limit value. If the output value OUT undershoots this limit value, the LO ALM parameter displays an alarm. → See also this table, LIMIT HYSTERESIS parameter description. **Factory setting:** –3.4028e+038 %
LOWER LIMIT ALARM Entry Slot: 1 Index: 43	Enter lower critical limit value. If the output value OUT undershoots this limit value, the LO LO ALM parameter displays an alarm. → See also this table, LIMIT HYSTERESIS parameter description. **Factory setting:** –3.4028e+038 %

Table 46: PROFILE VIEW → ANALOG INPUT BLOCK → AI PARAMETER	
Parameter name	**Description**
HI HI ALARM Display Slot: 1 Index: 46	The HI HI ALARM parameter is a structured parameter consisting of four elements. The parameter displays the status of the upper critical limit value alarm. → See also Page 144, LIMIT HYSTERESIS, figure. **STATUS** ▪ Displays the current status of the HI HI ALARM e.g. alarm still active, alarm reported to the host system etc. ▪ Factory setting: no alarm **ALARM OUTPUT VALUE** ▪ Displays the value that violated the upper critical limit (UPPER LIMIT ALARM). ▪ Factory setting: 0.0000 %
HI ALARM Display Slot: 1 Index: 47	The HI ALARM parameter is a structured parameter consisting of four elements. The parameter displays the status of the upper limit value alarm. → See also Page 144, LIMIT HYSTERESIS, figure. **STATUS** ▪ Displays the current status of the HI ALARM e.g. alarm still active, alarm reported to the host system etc. ▪ Factory setting: no alarm **WARNING OUTPUT VALUE** ▪ Displays the value that violated the upper limit (UPPER LIMIT WARNING). ▪ Factory setting: 0.0000 %
LO ALARM Display Slot: 1 Index: 48	The LO ALARM parameter is a structured parameter consisting of four elements. The parameter displays the status of the lower limit value alarm. → See also Page 144, LIMIT HYSTERESIS, figure. **STATUS** ▪ Displays the current status of the LO ALARM e.g. alarm still active, alarm reported to the host system etc. ▪ Factory setting: no alarm **WARNING OUTPUT VALUE** ▪ Displays the value that violated the lower limit (LOWER LIMIT WARNING). ▪ Factory setting: 0.0000 %
LO_LO_ALARM Display Slot: 1 Index: 49	The LO LO ALARM parameter is a structured parameter consisting of four elements. The parameter displays the status of the lower critical limit value alarm. → See also Page 144, LIMIT HYSTERESIS, figure. **STATUS** ▪ Displays the current status of the LO LO ALARM e.g. alarm still active, alarm reported to the host system etc. ▪ Factory setting: no alarm **ALARM OUTPUT VALUE** ▪ Displays the value that violated the lower critical limit (LOWER LIMIT ALARM). ▪ Factory setting: 0.0000 %

Table 46: PROFILE VIEW → ANALOG INPUT BLOCK → AI PARAMETER	
Parameter name	**Description**
SIMULATE Entry Slot: 1 Index: 50	The SIMULATE parameter is a structured parameter consisting of three elements. The input value and status of the Analog Input Block can be simulated by means of this parameter. As this value runs through the complete algorithm, the behavior of the Analog Input Block can be checked. **SIMUL. ENABLED** ▪ No: Simulation mode switched off ▪ Yes: Simulation mode switched on **SIMULATION VALUE** ▪ This element is displayed if the simulation mode was activated by means of the SIMUL. ENABLED parameter. Depending on the settings for the MEASURING MODE, LEVEL MODE and unit parameters, you can enter a value for pressure, level, volume, mass or flow here. ▪ Factory setting: 0.0 **STATUS (SIMUL.)** ▪ This element is displayed if the simulation mode was activated by means of the SIMUL. ENABLED parameter. Enter the status for the simulation value. ▪ Factory setting: 128 (GOOD)

8 Slot/index tables

8.1 Slot/index tables

The device parameters are listed in the following tables. You can access the parameters by means of the slot and index number. The individual blocks each contain standard parameters, block parameters and manufacturer-specific parameters.
If you use the FieldCare as an operating program, input screens are available as a user interface.

8.1.1 General explanatory remarks

Object type
- Record: contains data structure (DS)
- Array: group of a certain data type
- Simple: contains individual data types such as Float

Data type
- DS: data structure, contains data types such as Unsigned8, Octet String etc.
- Float: IEEE 754 format
- Integer:
  - Integer8: value range = −128…127
  - Integer16: value range = 327678…−327678
  - Integer32: value range =32 = -2^{31}…2^{31}
- Octet String: binary coded
- Visible String: ASCII coded
- Unsigned:
  - Unsigned8: value range = 0…255
  - Unsigned16: value range = 0…65535
  - Unsigned32: value range = 0…4294967295

Storage Class
- Cst: constant parameter
- D: dynamic parameter
- N: nonvolatile parameter
- S: static parameter

8.1.2 Device management

Parameter	Slot	Index	Object type	Data type	Size (byte)	Storage Class	Read	Write
Directory object header	1	0	Array	Unsigned16	12	Cst	x	
Composite list directory entries	1	1	Array	Unsigned16	24	Cst	x	
GAP directory continuous	1	2 – 8						
GAP reserved	1	9 – 15						

8.1.3 Physical Block

Parameter	Slot	Index	Object type	Data type	Size (byte)	Storage Class	Read	Write
Physical Block standard parameters								
BLOCK OBJECT	0	16	Record	DS-32	20	Cst	x	
STATIC REVISION NO.	0	17	Simple	Unsigned16	2	N	x	
TAG_DESC	0	18	Simple	Visible String	32	S	x	x
STRATEGY	0	19	Simple	Unsigned16	2	S	x	x
ALERT KEY	0	20	Simple	Unsigned8	1	S	x	x
TARGET MODE	0	21	Simple	Unsigned8	1	S	x	x
MODE BLK	0	22	Record	DS-37	3	D	x	
ALARM SUM	0	23	Record	DS-42	8	D	x	
Physical Block parameters								
SOFTWARE VERSION	0	24	Simple	Visible String	16	Cst	x	
HARDWARE REV.	0	25	Simple	Visible String	16	Cst	x	
MANUFACTOR ID	0	26	Simple	Unsigned16	2	Cst	x	
DEVICE NAME STR.	0	27	Simple	Visible String	16	Cst	x	
DEVICE SERIAL No.	0	28	Simple	Visible String	16	Cst	x	
DIAGNOSIS	0	29	Simple	Octet String	4	D	x	
DIAGNOSIS EXTENSION	0	30	Simple	Octet String	6	D	x	
DEVICE CERTIFICATION	0	33	Simple	Visible String	32	Cst	x	
INSERT PIN No	0	34	Simple	Unsigned16	2	N	x	x
ADDITIONAL INFO	0	36	Simple	Visible String	32	S	x	x
USER DESCRIPTION	0	37	Simple	Visible String	32	S	x	x
INSTALLATION DATE	0	38	Simple	Visible String	16	S	x	x
IDENT NUMBER SEL	0	40	Simple	Unsigned8	1	S	x	x
DIP STATUS	0	41	Simple	Unsigned8	1	D	x	
FEATURE	0	42	Record	DS-68	8	N	x	
COND.STATUS DIAG	0	43	Simple	Unsigned8	1	S	x	x
Physical Block, Endress+Hauser parameters								
ALARM STATUS	0	54	Simple	Unsigned16	2	D	x	
LAST DIAG. CODE	0	55	Simple	Unsigned16	2	D	x	
UP_DOWN_FEAT	0	56	Simple	Unsigned8	1	Cst	x	
UP/DOWNLOAD CTRL	0	57	Simple	Unsigned8	1	D		x
UP/DOWN PARAM	0	58	Simple	OctetString	20	D	x	x
BUS.ADDRESS	0	59	Simple	Unsigned8	1	D	x	
SET_UNIT_TO_BUS	0	61	Simple	Unsigned8	1	S	x	x
PA INPUT VALUE	0	62	Record	E+H specific	6	D	x	x
SEL. DISPLAY VAL.	0	63	Simple	Unsigned8	1	S	x	x
PROFILE_REV	0	64	Simple	Visible String	32	Cst	x	
RESET ALL ALARMS	0	65	Simple	Unsigned8	1	S	x	x
IDENT_NUMBER	0	66	Simple	Unsigned16	2	D	x	
2ND CYCLIC VALUE	0	68	Simple	Unsigned8	1	S	x	
DEVICE DESIGN.	0	69	Simple	Visible String	32	S	x	
CONFIG RECORDER	0	74	Simple	Unsigned16	2	D	x	
OPERATING HOURS	0	75	Simple	Unsigned32	4	D	x	
SIM. ERROR NO.	0	76	Simple	Unsigned16	2	D	x	x
SIM. MESSAGES	0	77	Simple	Unsigned8	1	D	x	x
LANGUAGE	0	78	Simple	Unsigned8	1	N	x	x
DISPLAY CONTRAST	0	79	Simple	Unsigned8	1	S	x	x
MENU DESCRIPTOR	0	80	Simple	Unsigned8	1	N	x	x
MAIN DATA FORMAT	0	81	Simple	Unsigned8	1	D	x	x
ALTERNATE DATA	0	82	Simple	Unsigned8	1	N	x	x
UNIT TEXT	0	83	Simple	Visible String	8	S	x	x
USER DESCRIPTION	0	84	Simple	Visible String	32	S	x	x
ACK. ALARM MODE	0	85	Simple	Unsigned8	1	S	x	x
ACK. ALARM	0	86	Simple	Unsigned8	1	D	x	x
SELECT ALARM TYPE	0	87	Simple	Unsigned8	1	S	x	x
ERROR NO.	0	88	Simple	Unsigned16	2	D	x	x
ALARM DELAY	0	89	Simple	Float	4	S	x	x
ALARM DISPL. TIME	0	90	Simple	Float	4	S	x	x
3RD CYCLIC VALUE	0	93	Simple	Unsigned8	1	S	x	x
HistoROM AVAIL.	0	94	Simple	Unsigned8	1	D	x	
HIST. SAVING CYCL	0	95	Simple	Unsigned8	1	S	x	x
HistoROM CONTROL	0	96	Simple	Unsigned8	1	S	x	x
ELECTR. SERIAL NO.	0	97	Simple	Visible String	32	Cst	x	

Parameter	Slot	Index	Object type	Data type	Size (byte)	Storage Class	Read	Write
PCB TEMPERATURE	0	98	Simple	Float	4	D	x	
Allowed Min. TEMP	0	99	Simple	Float	4	Cst	x	
Allowed Max. TEMP	0	100	Simple	Float	4	Cst	x	
PCB COUNT: T>Tmax	0	101	Simple	Unsigned16	2	D	x	
PCB MAX. TEMP.	0	102	Simple	Float	4	D	x	
PCB COUNT: T < Tmin	0	103	Simple	Unsigned16	4	D	x	
PCB MIN. TEMP.	0	104	Simple	Float	4	D	x	
MAIN DATA FORMAT	0	106	Simple	Unsigned8	1	D	x	
DOWNLOAD FUNCT.	0	107	Simple	Unsigned8	1	N	x	x
STATUS LOCKING	0	108	Simple	Unsigned8	1	S	x	x
DEVICE STATUS	0	109	Simple	Unsigned8	1	S	x	
STATUS SELECT EVENT 727	0	110	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 115	0	111	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 120	0	112	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 731	0	113	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 730	0	114	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 733	0	115	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 732	0	116	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 726	0	117	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 715	0	118	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 720	0	119	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 717	0	120	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 718	0	121	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 740	0	122	Simple	Unsigned8	1	S	x	x
STATUS SELECT EVENT 716	0	123	Simple	Unsigned8	1	S	x	x
STATUS SELECT	0	124	Record	14xUnsigned 8	14	S	x	x
SWITCH_STATUS_LIST	0	125	Record	2x Unsigned8	2	D	x	
SENSOR SER. No.	0	126	Simple	Visible String	16	S	x	

8.1.4 Analog Input Block

Parameter	Slot	Index	Object type	Data type	Size (byte)	Storage Class	Read	Write
Analog Input Block standard parameters								
BLOCK OBJECT	1	16	Record	DS-32	20	Cst	x	
STATIC REVISION NO.	1	17	Simple	Unsigned16	2	N	x	
TAG_DESC	1	18	Simple	Visible String	32	S	x	x
STRATEGY	1	19	Simple	Unsigned16	2	S	x	x
ALERT KEY	1	20	Simple	Unsigned8	1	S	x	x
TARGET MODE	1	21	Simple	Unsigned8	1	S	x	x
MODE BLK	1	22	Record	DS-37	3	D	x	
ALARM SUM	1	23	Record	DS-42	8	D	x	
Analog Input Block parameters								
BATCH	1	24	Record	DS-67	10	S	x	x
OUT	1	26	Record	DS-33	5	D	x	x[1)]
PV SCALE	1	27	Array	Float	8	S	x	x
OUT SCALE	1	28	Record	DS-36	11	S	x	x
LIN TYPE	1	29	Simple	Unsigned8	1	S	x	x
CHANNEL	1	30	Simple	Unsigned16	2	S	x	x
FILTER TIME CONST	1	32	Simple	Float	4	S	x	x
FAIL SAFE MODE	1	33	Simple	Unsigned8	1	S	x	x
FAIL SAFE DEFAULT VALUE	1	34	Simple	Float	4	S	x	x
LIMIT HYSTERESIS	1	35	Simple	Float	4	S	x	x
UPPER LIMIT ALARM	1	37	Simple	Float	4	S	x	x
UPPER LIMIT WARNING	1	39	Simple	Float	4	S	x	x
LOWER LIMIT WARNING	1	41	Simple	Float	4	S	x	x
LOWER LIMIT ALARM	1	43	Simple	Float	4	S	x	x
HI_HI_ALM	1	46	Record	DS-39	16	D	x	
HI_ALM	1	47	Record	DS-39	16	D	x	
LO_ALM	1	48	Record	DS-39	16	D	x	
LO_LO_ALARM	1	49	Record	DS-39	16	D	x	
SIMULATE	1	50	Record	DS-50	6	S	x	x
VIEW_1_FB	1	61	Simple	Octet String	18	D	x	

1) If MODE BLK Actual = Manual (MAN)

8.1.5 Transducer Block

Parameter	Slot	Index	Object type	Data type	Size (byte)	Storage Class	Read	Write
Transducer Block standard parameters								
BLOCK OBJECT	2	16	Record	DS-32	20	Cst	x	
STATIC REVISION NO.	2	17	Simple	Unsigned16	2	N	x	
TAG_DESC	2	18	Simple	Visible String	32	S	x	x
STRATEGY	2	19	Simple	Unsigned16	2	S	x	x
ALERT KEY	2	20	Simple	Unsigned8	1	S	x	x
TARGET MODE	2	21	Simple	Unsigned8	1	S	x	x
MODE BLK	2	22	Record	DS-37	3	D	x	
ALARM SUM	2	23	Record	DS-42	8	D	x	
SENSOR PRESSURE	2	24	Simple	Float	4	D	x	
PRESS.SENS HILIM	2	25	Simple	Float	4	N	x	
PRESS.SENS LOLIM	2	26	Simple	Float	4	N	x	
HIGH SENSOR TRIM	2	27	Simple	Float	4	S	x	x
LOW SENSOR TRIM	2	28	Simple	Float	4	S	x	x
MINIMUM SPAN	2	29	Simple	Float	4	N	x	
PRESS. ENG. UNIT	2	30	Simple	Unsigned16	2	S	x	
TRIMMED_VALUE (Corrected Press.)	2	31	Record	DS-33	5	D	x	
SENSOR MEAS.TYPE	2	32	Simple	Unsigned16	2	N	x	
SENSOR SER. No.	2	33	Simple	Unsigned32	4	N	x	
PRIMARY VALUE (Measured Value)	2	34	Record	DS-33	5	D	x	
PRIM_VALUE_UNIT	2	35	Simple	Unsigned16	2	S	x	x
PRIM_VALUE_TYPE	2	36	Simple	Unsigned16	2	S	x	x
MAT. MEMBRANE	2	37	Simple	Unsigned16	2	S	x	
FILLING FLUID	2	38	Simple	Unsigned16	2	S	x	
SEAL TYPE	2	40	Simple	Unsigned16	2	S	x	x
PROC.CONN.TYPE	2	41	Simple	Unsigned16	2	S	x	x
MAT.PROC.CONN. +	2	42	Simple	Unsigned16	2	S	x	x
TB TEMPERATURE (Sensor Temp.)	2	43	Record	DS-33	5	D	x	
TEMP. ENG UNIT	2	44	Simple	Unsigned16	2	S	x	x
SEC_VALUE_1 (PRESSURE)	2	45	Record	DS-33	5	D	x	
SEC_VALUE1_UNIT	2	46	Simple	Unsigned16	2	S	x	x
SEC_VALUE_2	2	47	Record	DS-33	5	D	x	
SEC_VALUE2_UNIT	2	48	Simple	Unsigned16	2	S	x	x
LIN_TYP	2	49	Simple	Unsigned8	1	S	x	x
SCALE_IN	2	50	Array	Float	8	S	x	x
SCALE_OUT	2	51	Array	Float	8	S	x	x
LOW_FLOW_CUT_OFF	2	52	Simple	Float	4	S	x	x
FLOW_LIN_SQUARE	2	53	Simple	Float	4	S	x	x
TAB_ACTUAL_NUMB	2	54	Simple	Unsigned8	1	N	x	
LINE-NUMB	2	55	Simple	Unsigned8	1	D	x	x
TAB_MAX_NR	2	56	Simple	Unsigned8	1	N	x	
TAB_MIN_NR	2	57	Simple	Unsigned8	1	N	x	
TAB_OP_CODE	2	58	Simple	Unsigned8	1	D	x	x
TAB_STATE	2	59	Simple	Unsigned8	1	D	x	
TAB_XY_VALUE	2	60	Array	Float	8	D	x	x
MAX. MEAS. PRESS.	2	61	Simple	Float	4	N	x	x[1)]
MIN. MEAS. PRESS.	2	62	Simple	Float	4	N	x	x [1]
MAX. MEAS.TEMP.	2	63	Simple	Float	4	N	x	x [1]
MIN. MEAS. TEMP.	2	64	Simple	Float	4	N	x	x [1]
EMPTY CALIB.	2	75	Simple	Float	4	S	x	x
FULL CALIB.	2	76	Simple	Float	4	S	x	x
TANK CONTENT UNIT	2	77	Simple	Unsigned16	2	N	x	
UNIT FLOW	2	78	Simple	Unsigned16	2	N	x	x
DAMPING VALUE	2	79	Simple	Float	4	S	x	x
MAX FLOW	2	80	Simple	Float	4	S	x	x
MAX PRESS. FLOW	2	81	Simple	Float	4	S	x	x
PminALARM WINDOW	2	82	Simple	Float	4	S	x	x
PmaxALARM WINDOW	2	83	Simple	Float	4	S	x	x
TminALARM WINDOW	2	84	Simple	Float	4	S	x	x
TmaxALARM WINDOW	2	85	Simple	Float	4	S	x	x
SIMULATED VALUE	2	86	Simple	Float	4	D	x	x
SIMULATION MODE	2	87	Simple	Unsigned8	1	D	x	x
COUNTER P>Pmin	2	88	Simple	Unsigned16	2	D	x	
COUNTER P<Pmax	2	89	Simple	Unsigned16	2	D	x	
COUNTER T>Tmax	2	90	Simple	Unsigned16	2	D	x	

Parameter	Slot	Index	Object type	Data type	Size (byte)	Storage Class	Read	Write
COUNTER T<Tmin	2	91	Simple	Unsigned16	2	D	x	
MEAS. VAL. TREND	2	92	Simple	Unsigned8	1	D	x	
TOTALIZER 1	2	93	Simple	Visible String	8	D	x	
TOTAL. 1 OVERFLOW	2	94	Simple	Visible String	8	D	x	
TOTALIZER 2	2	95	Simple	Visible String	8	D	x	
TOTAL. 2 OVERFLOW	2	96	Simple	Visible String	8	D	x	
TEMP Abs RANGE	2	97	Simple	Float	4	Cst	x	
Tmin SENSOR	2	98	Simple	Float	4	Cst	x	
Tmax SENSOR	2	99	Simple	Float	4	Cst	x	
SENSOR H/WARE REV.	2	100	Simple	Unsigned8	1	Cst	x	
Pmax PROC. CONN.	2	101	Simple	Float	4	S	x	x
TOTAL. 1 ENG. UNIT	2	102	Simple	Unsigned16	2	S	x	x
TOTAL. 2 ENG. UNIT	2	103	Simple	Unsigned16	2	S	x	x
FACT.U.U.TOTAL.1	2	104	Simple	Float	4	S	x	x
FACT.U.U.TOTAL.2	2	105	Simple	Float	4	S	x	x
TOT. 1 USER UNIT	2	106	Simple	Visible String	8	S	x	x
TOT. 2 USER UNIT	2	107	Simple	Visible String	8	S	x	x
NEG. FLOW TOT. 1	2	108	Simple	Unsigned8	1	S	x	x
NEG. FLOW TOT. 2	2	109	Simple	Unsigned8	1	S	x	x
RESET TOTALISER1	2	110	Simple	Unsigned8	1	S	x	x
FLOW-MEAS. TYPE	2	111	Simple	Unsigned8	1	S	x	x
CUSTOMER UNIT F	2	112	Simple	Visible String	8	S	x	x
CUST.UNIT FACT.F	2	113	Simple	Float	4	S	x	x
CUSTOMER UNIT P	2	114	Simple	Visible String	8	S	x	x
CUST.UNIT FACT.P	2	115	Simple	Float	4	S	x	x
POS.ZERO ADJUST	2	116	Simple	Unsigned8	1	D	x	x
POS. INPUT VALUE	2	117	Simple	Float	4	S	x	x
CALIB. OFFSET	2	118	Simple	Float	4	S	x	x
TANK DESCRIPTION	2	119	Simple	Visible String	32	S	x	x
LIN. EDIT MODE	2	120	Simple	Unsigned8	1	N	x	x
CALIBRATION MODE	2	121	Simple	Unsigned8	1	S	x	x
ADJUST DENSITY	2	122	Simple	Float	4	N	x	
LEVEL UNIT TXT	2	123	Simple	Visible String	8	S	x	x
CUST.UNIT FACT.L	2	124	Simple	Float	4	S	x	x
CUST. UNIT CONT.	2	125	Simple	Visible String	8	S	x	x
FACTOR TANK CONT.	2	126	Simple	Float	4	S	x	x
DENSITY UNIT	2	127	Simple	Unsigned16	2	S	x	x
ADJUST DENSITY	2	128	Simple	Float	4	S	x	x
TANK VOLUME	2	129	Simple	Float	4	S	x	x
TANK HEIGHT	2	130	Simple	Float	4	S	x	x
100% POINT	2	131	Simple	Float	4	S	x	x
ZERO POSITION	2	132	Simple	Float	4	S	x	x
LEVEL MIN.	2	133	Simple	Float	4	S	x	x
LEVEL MAX.	2	134	Simple	Float	4	S	x	x
PROCESS DENSITY	2	135	Simple	Float	4	S	x	x
MAX TURNDOWN	2	136	Simple	Float	4	S	x	
SENSOR CHANGES	2	137	Simple	Unsigned16	2	S	x	
P PEAKHOLD.STEP	2	138	Simple	Float	4	S	x	
T PEAKHOLD.STEP	2	139	Simple	Float	4	S	x	
ACC. OF GRAVITY	2	140	Simple	Float	4	S	x	
CREEP FLOW HYST.	2	141	Simple	Float	4	S	x	
LEVEL BEFORE LIN.	2	142	Simple	Float	4	D	x	
ENG. UNIT LEVEL	2	145	Simple	Unsigned16	2	S	x	x
UNIT VOLUME	2	146	Simple	Unsigned16	2	S	x	x
CUSTOMER UNIT V	2	147	Simple	Visible String	8	S	x	x
CUST.UNIT FACT.V	2	148	Simple	Float	4	S	x	x
SET.L.FL.CUT-OFF	2	149	Simple	Float	4	S	x	x
MAT.PROC.CONN. -	2	150	Simple	Unsigned16	2	S	x	x
TANK CONTENT	2	151	Simple	Float	4	D	x	
SUPPRESSED FLOW	2	152	Simple	Float	4	D	x	
RESET PEAKHOLD	2	153	Simple	Unsigned8	1	D	x	x
MEASURING MODE	2	154	Simple	Unsigned8	1	S	x	x
UNIT FLOW	2	155	Simple	Unsigned16	2	S	x	x
TOTALIZER 1 UNIT (Volume p. cond.)	2	156	Simple	Unsigned16	2	S	x	x
TOTALIZER 2 UNIT (Volume p. cond.)	2	157	Simple	Unsigned16	2	S	x	x
LOW FLOW CUT-OFF	2	158	Simple	Unsigned8	1	S	x	x
LO TRIM MEASURED	2	159	Simple	Float	4	N	x	
HI TRIM MEASURED	2	160	Simple	Float	4	N	x	

Parameter	Slot	Index	Object type	Data type	Size (byte)	Storage Class	Read	Write
PERCENT UNIT	2	161	Simple	Unsigned16	2	Cst	x	x
X-VAL:	2	162	Simple	Float	4	N	x	x
Y-VAL:	2	163	Simple	Float	4	N	x	x
MASS FLOW UNIT	2	164	Simple	Unsigned16	2	S	x	x
SIM. FLOW VALUE	2	165	Simple	Float	4	D	x	x
STD. FLOW UNIT	2	166	Simple	Unsigned16	2	S	x	x
NORM FLOW UNIT	2	167	Simple	Unsigned16	2	S	x	x
TOTALIZER 1 UNIT (Mass p. cond.)	2	168	Simple	Unsigned16	2	S	x	x
TOTALIZER 2 UNIT (Mass p. cond.)	2	169	Simple	Unsigned16	2	S	x	x
TOTALIZER 1 UNIT (Gas. std. conditions)	2	170	Simple	Unsigned16	2	S	x	x
TOTALIZER 2 UNIT (Gas. std. conditions)	2	171	Simple	Unsigned16	2	S	x	x
TOTALIZER 1 UNIT – (Gas. norm conditions)	2	172	Simple	Unsigned16	2	S	x	x
TOTALIZER 2 UNIT – (Gas. norm conditions)	2	173	Simple	Unsigned16	2	S	x	x
MASS UNIT	2	174	Simple	Unsigned16	2	S	x	x
CUST.UNIT FACT.M	2	175	Simple	Float	4	S	x	x
CUSTOMER UNIT M	2	176	Simple	Visible String	8	S	x	x
HEIGHT UNIT	2	177	Simple	Unsigned16	2	S	x	x
CUST.UNIT FACT.H	2	178	Simple	Float	4	S	x	x
CUSTOMER UNIT H	2	179	Simple	Visible String	8	S	x	x
EMPTY PRESSURE	2	180	Simple	Float	4	N	x	
FULL PRESSURE	2	181	Simple	Float	4	N	x	
SIM. LEVEL	2	182	Simple	Float	4	D	x	x
SIM. TANK CONT.	2	183	Simple	Float	4	D	x	x
LEVEL MODE	2	184	Simple	Float	4	S	x	x
ACTIV LIN.TAB.X	2	185	Simple	Float	4	N	x	
X-VAL (semi-autom.):	2	186	Simple	Float	4	D	x	
TANK CONTENT MAX.	2	188	Simple	Float	4	S	x	x
TANK CONTENT MIN.	2	189	Simple	Float	4	S	x	x
HYDR. PRESS MAX.	2	190	Simple	Float	4	S	x	x
TAB. ACTIVATE	2	191	Simple	Unsigned8	1	D	x	
TABLE EDITOR	2	192	Simple	Unsigned8	1	N	x	x
ACTIVE LIN. TAB. Y	2	193	Simple	Float	4	N	x	x
HYDR. PRESS MIN.	2	194	Simple	Float	4	S	x	x
VALUE LIN. MIN.	2	195	Simple	Float	4	S	x	x
VALUE LIN. MAX.	2	196	Simple	Float	4	S	x	x
TOTALIZER 1	2	197	Simple	Float	4	D	x	
TOTALIZER 2	2	198	Simple	Float	4	D	x	
LIN. MEASURAND	2	199	Simple	Unsigned8	1	S	x	x
LINd. MEASURAND	2	200	Simple	Unsigned8	1	S	x	x
COMB.MEASURAND	2	201	Simple	Unsigned8	1	S	x	x
TABLE SELECTION	2	202	Simple	Unsigned8	1	S	x	x
TABLE EDITOR	2	203	Simple	Unsigned8	1	S	x	x
AREA UNIT	2	204	Simple	Unsigned16	2	S	x	x
SIM. PRESSURE	2	205	Simple	Float	4	D	x	x
PRESSURE ABS RNG	2	206	Simple	Float	4	Cst	x	
PRESSURE INVERT	2	207	Simple	Unsigned8	1	N	x	x
HEIGHT UNIT	2	240	Simple	Unsigend16	2	S	x	x
CALIBRATION MODE	2	241	Simple	Unsigned8	1	S	x	x
EMPTY HEIGHT	2	242	Simple	Float	4	S	x	x
FULL HEIGHT	2	243	Simple	Float	4	S	x	x
DENSITY UNIT	2	244	Simple	Unsigned16	2	S	x	x
ADJUST DENSITY	2	245	Simple	Float	4	S	x	x
PROCESS DENSITY	2	246	Simple	Float	4	S	x	x
MEAS.LEVEL EASY	2	247	Simple	Float	4	N	x	x
LEVEL SELECTION	2	248	Simple	Unsigned8	1	S	x	x
OUTPUT UNIT	2	249	Simple	Unsigned16	2	S	x	x

1) can only be reset

9 Troubleshooting

9.1 Messages

The following table lists all the possible messages that can occur.
The device differentiates between the error types "Alarm", "Warning" and "Error".
You may specify whether the instrument should react as if for an "Alarm" or "Warning" for "Error" messages. → See "Error type/NA 64" column and Section 9.2 "Response of outputs to errors".

In addition, the "Message type/NA 64" column classifies the messages in accordance with NAMUR Recommendation NA 64:
- Break down: indicated with "B"
- Maintenance need: indicated with "C" (check request)
- Function check: indicated with "I" (in service)

Error message display on the onsite display:
- The measured value display shows the message with the highest priority. → See "Priority" column.
- The ALARM STATUS parameter shows all the messages present in descending order of priority. You can scroll through all the messages present with the S-key or O-key.

Message display via FieldCare:
- The ALARM STATUS parameter shows the message with the highest priority. → See "Priority" column.
- If the device detects a defect in the onsite display during initialization, special error messages are generated. → For the error messages, see Page 160, Section 9.1.1 "Onsite display error messages".
- For support and further information, please contact Endress+Hauser Service.
- The PROFIBUS status is updated depending on the message type, or depending on the setting for flexible alarms

Code	Corresponds to NA 64	Message category NE 107	Message/ description	Cause	Measure	Priority
101 (A101)	Alarm B	Failure (F)	F>Sensor electronic EEPROM error	– Electromagnetic effects are greater than specifications in the technical data. (→ See Technical Information). This message normally only appears briefly. – Sensor defect.	– Wait a few minutes. – Restart the device. Perform reset (Code 2506 or 33062). – Block off electromagnetic effects or eliminate source of disturbance. – Replace sensor.	17
102 (W102)	Warning C	Maintenance required (M)	M>Checksum error in EEPROM: peakhold segment	– Main electronics defect. Correct measurement can continue as long as you do not need the peak hold indicator function.	– Replace main electronics.	51
106 (W106)	Warning C	Function check (C)	C>Downloading - please wait	– Downloading.	– Wait for download to complete.	50
110 (A110)	Alarm B	Failure (F)	F>Checksum error in EEPROM: configuration segment	– The supply voltage is disconnected when writing. – Electromagnetic effects are greater than specifications in the technical data. (→ See Technical Information.) – Main electronics defect.	– Reestablish supply voltage. Perform reset (Code 1 or 40864) if necessary. Carry out calibration again. – Block off electromagnetic effects or eliminate sources of disturbance. – Replace main electronics.	6

Code	Corresponds to NA 64	Message category NE 107	Message/ description	Cause	Measure	Priority
113 (A113)	Alarm B	Failure (F)	F>ROM failure in transmitter electronic	– Main electronics defect.	– Replace main electronics.	1
115 (E115)	Error B Factory setting: Warning	Out of specification (S)	S>Sensor overpressure	– Overpressure present. – Sensor defect.	– Reduce pressure until message disappears. – Replace sensor.	29
116 (W116)	Warning C	Maintenance required (M)	M>Download error, repeat download	– The file is defect. – During the download, the data are not correctly transmitted to the processor, e.g. because of open cable connections, spikes (ripple) on the supply voltage or electromagnetic effects.	– Use another file. – Check cable connection PC – transmitter. – Block off electromagnetic effects or eliminate sources of disturbance. – Perform reset (Code 1 or 40864) and carry out calibration again. – Repeat download.	36
120 (E120)	Error B Factory setting: Warning	Out of specification (S)	S>Sensor low pressure	– Pressure too low. – Sensor defect.	– Increase pressure until message disappears. – Replace sensor.	30
121 (A121)	Alarm B	Failure (F)	F>Checksum error in factory segment of EEPROM	– Main electronics defect.	– Replace main electronics.	5
122 (A122)	Alarm B	Failure (F)	F>Sensor not connected	– Cable connection sensor –main electronics disconnected. – Electromagnetic effects are greater than specifications in the technical data. (→ See Technical Information.) – Main electronics defect. – Sensor defect.	– Check cable connection and repair if necessary. – Block off electromagnetic effects or eliminate source of disturbance. – Replace main electronics. – Replace sensor.	13
130 (A130)	Alarm B	Failure (F)	F>EEPROM is defect.	– Main electronics defect.	– Replace main electronics.	10
131 (A131)	Alarm B	Failure (F)	F>Checksum error in EEPROM: min/max segment	– Main electronics defect.	– Replace main electronics.	9
132 (A132)	Alarm B	Failure (F)	F>Checksum error in totalizer EEPROM	– Main electronics defect.	– Replace main electronics.	7
133 (A133)	Alarm B	Failure (F)	F>Checksum error in History EEPROM	– An error occurred when writing. – Main electronics defect.	– Perform reset (Code 1 or 40864) and carry out calibration again. – Replace main electronics.	8
602 (W602)	Warning C	Function check (C)	C>Linearization curve not monoton	– The linearization table is not monotonic increasing or decreasing.	– Add to or correct linearization table. Then accept linearization table again.	55

Code	Corresponds to NA 64	Message category NE 107	Message/ description	Cause	Measure	Priority
604 (W604)	Warning C	Function check (C)	C>Linearization table not valid. Less than 2 points or points too close	No min. span applies for the Y-points as of software version "03.10.xx".		58
				– The linearization table consists of less than 2 points.	– Add to linearization table. Accept linearization table again if necessary.	
				– At least 2 points in the linearization table are too close together. A minimum gap of 0.5 % of the distance between two points must be maintained. Spans for the "Pressure linearized" option: HYDR. PRESS MAX. – HYDR. PRESS MIN.; TANK CONTENT MAX. – TANK CONTENT MIN. Spans for the "Height linearized" option: LEVEL MAX – LEVEL MIN; TANK CONTENT MAX. – TANK CONTENT MIN.	– Correct linearization table and accept again.	
613 (W613)	Warning I	Function check (C)	C>Simulation is active	– Simulation is switched on, i.e. the device is not measuring at present.	– Switch off simulation.	58
616 (W616)	Warning I	Function check (C)	C>Simulation is active (AI)	– Simulation of the AI Block is switched on, i.e. the Main Process Value (AI OUT VALUE) that is output does not correspond to the sensor signal.	– Switch off simulation of the AI Block (ANALOGINPUT BLOCK → Set the AI STANDARD PARAMETER → TARGET MODE to Automatic and set AI PARAMETER/SIMULATE to No).	58
700 (W700)	Warning C	Maintenance required (M)	M>Last configuration not stored	– An error occurred when writing or reading configuration data or the power supply was disconnected.	– Perform reset (Code 1 or 40864) and carry out calibration again.	52
				– Main electronics defect.	– Replace main electronics.	
702 (W702)	Warning C	Maintenance required (M)	M>HistoROM data not consistent.	– Data were not written correctly to the HistoROM, e.g. if the HistoROM was detached during the writing process.	– Repeat upload. – Perform reset (Code 1 or 40864) and carry out calibration again.	53
				– HistoROM does not have any data.	– Copy suitable data to the HistoROM. (→ See Operating Instructions, "Copying configuration data" section.)	
703 (A703)	Alarm B	Failure (F)	F>Measurement error	– Fault in the main electronics.	– Briefly disconnect device from the power supply.	22
				– Main electronics defect.	– Replace main electronics.	
704 (A704)	Alarm B	Function check (C)	C>Measurement error	– Fault in the main electronics.	– Briefly disconnect device from the power supply.	12
				– Main electronics defect.	– Replace main electronics.	
705 (A705)	Alarm B	Failure (F)	F>Measurement error	– Fault in the main electronics.	– Briefly disconnect device from the power supply.	21
				– Main electronics defect.	– Replace main electronics.	

Code	Corresponds to NA 64	Message category NE 107	Message/ description	Cause	Measure	Priority
706 (W706)	Warning C	Maintenance required (M)	M>Configuration in HistoROM and device not identical	– Configuration (parameters) in the HistoROM and in the device is not identical.	– Copy data from the device to the HistoROM. (→ See Operating Instructions, "Copying configuration data" section.) – Copy data from the HistoROM to the device. (→ See Operating Instructions, "Copying configuration data" section.) The message remains if the HistoROM and the device have different software versions. The message goes out if you copy the data from the device to the HistoROM. – Device reset codes such as 1 or 40864 do not have any effect on the HistoROM. That means that if you do a reset, the configurations in the HistoROM and in the device may not be the same.	57
707 (A707)	Alarm B	Function check (C)	C>X-VAL. of lin. table out of edit limits.	– At least one X-VALUE in the linearization table is either below the value for HYDR. PRESS MIN. or MIN. LEVEL or above the value for HYDR. PRESS. MAX. or LEVEL MAX.	– Carry out calibration again.	37
710 (W710)	Warning C	Function check (C)	B>Set span too small. Not allowed.	– Values for calibration (e.g. lower range value and upper range value) are too close together. – The sensor was replaced and the customer-specific configuration does not suit the sensor. – Unsuitable download carried out.	– Adjust calibration to suit sensor. (→ See parameter description for MINIMUM SPAN) – Adjust calibration to suit sensor. – Replace sensor with a suitable sensor. – Check configuration and perform download again.	49
713 (A713)	Alarm B	Function check (C)	C>100% POINT level out of edit limits	– The sensor was replaced.	– Carry out calibration again.	38
715 (E715)	Error C Factory setting: Warning	Out of specification (S)	S>Sensor over temperature	– The temperature measured in the sensor is greater than the upper nominal temperature of the sensor. (→ See parameter description for Tmax SENSOR) – Unsuitable download carried out.	– Reduce process temperature/ ambient temperature. – Check configuration and perform download again.	32
716 (E716)	Error B Factory setting: Alarm	Failure (F)	F>Process isolating diaphragm broken	– Sensor defect.	– Replace sensor. – Reduce pressure.	24
717 (E717)	Error C Factory setting: Warning	Out of specification (S)	S>Transmitter over temperature	– The temperature measured in the electronics is greater than the upper nominal temperature of the electronics (+88 °C +190 °F). – Unsuitable download carried out.	– Reduce ambient temperature. – Check configuration and perform download again.	34

Code	Corresponds to NA 64	Message category NE 107	Message/ description	Cause	Measure	Priority
718 (E718)	Error C Factory setting: Warning	Out of specification (S)	S>Transmitter under temperature	– The temperature measured in the electronics is smaller than the lower nominal temperature of the electronics (−43 °C -45 °F). – Unsuitable download carried out.	– Increase ambient temperature. Insulate device if necessary. – Check configuration and perform download again.	35
719 (A719)	Alarm B	Function check (C)	C>Y-VAL of lin. table out of edit limits	– At least on Y-VALUE in the linearization table is below the MIN. TANK CONTENT or above the MAX. TANK CONTENT.	– Carry out calibration again.	39
720 (E720)	Error C Factory setting: Warning	Out of specification (S)	S>Sensor under temperature	– The temperature measured in the sensor is smaller than the lower nominal temperature of the sensor. (→ See parameter description for Tmin SENSOR) – Unsuitable download carried out. – Loose connection at sensor cable	– Increase process temperature/ ambient temperature. – Check configuration and perform download again. – Wait a short period of time and tighten the connection, or avoid loose connection.	33
721 (A721)	Alarm B	Function check (C)	C>ZERO POSITION level out of edit limits	– LEVEL MIN or LEVEL MAX has been changed.	– Perform reset (Code 35710) and carry out calibration again.	40
722 (A722)	Alarm B	Function check (C)	C>EMPTY CALIB. or FULL CALIB. out of edit limits	– LEVEL MIN or LEVEL MAX has been changed.	– Perform reset (Code 35710) and carry out calibration again.	41
723 (A723)	Alarm B	Function check (C)	C>MAX. FLOW out of edit limits	– FLOW-MEAS. TYPE has been changed.	– Carry out calibration again.	42
725 (A725)	Alarm B	Failure (F)	F>Sensor connection error, cycle disturbance	– Electromagnetic effects are greater than specifications in the technical data. (→ See Technical Information.) – Setscrew loose. – Sensor or main electronics defect.	– Block off electromagnetic effects or eliminate source of disturbance. – Retighten setscrew with 1 Nm (0.74 lbf ft). (See Operating Instructions, "Rotating the housing" section). – Replace sensor or main electronics.	25
726 (E726)	Error C Factory setting: Warning	Out of specification (S)	S>Sensor temperature error - overrange	– Electromagnetic effects are greater than specifications in the technical data. (→ See Technical Information.) – Process temperature is outside permitted range. – Sensor defect.	– Block off electromagnetic effects or eliminate source of disturbance. – Check temperature present, reduce or increase if necessary. – If the process temperature is within the permitted range, replace sensor.	31

Code	Corresponds to NA 64	Message category NE 107	Message/ description	Cause	Measure	Priority
727 (E727)	Error C Factory setting: Warning	Out of specification (S)	S>Sensor pressure error - overrange	– Electromagnetic effects are greater than specifications in the technical data. (→ See Technical Information.) – Pressure is outside permitted range. – Sensor defect.	– Block off electromagnetic effects or eliminate source of disturbance. – Check pressure present, reduce or increase if necessary. – If the pressure is within the permitted range, replace sensor.	28
728 (A728)	Alarm B	Failure (F)	F>RAM error	– Fault in the main electronics. – Main electronics defect.	– Briefly disconnect device from the power supply. – Replace main electronics.	2
729 (A729)	Alarm B	Failure (F)	F>RAM error	– Fault in the main electronics. – Main electronics defect.	– Briefly disconnect device from the power supply. – Replace main electronics.	3
730 (E730)	Error C Factory setting: Warning	Out of specification (S)	S>LRV user limits exceeded	– Pressure measured value has undershot the value specified for the Pmin ALARM WINDOW parameter. – Loose connection at sensor cable	– Check system/pressure measured value. – Change value for Pmin ALARM WINDOW if necessary. (→ See parameter description for PminALARM WINDOW) – Wait a short period of time and tighten the connection, or avoid loose connection.	46
731 (E731)	Error C Factory setting: Warning	Out of specification (S)	S>URV user limits exceeded	– Pressure measured value has overshot the value specified for the Pmax ALARM WINDOW parameter.	– Check system/pressure measured value. – Change value for Pmax ALARM WINDOW if necessary. (→ See parameter description for PmaxALARM WINDOW)	45
732 (E732)	Error C Factory setting: Warning	Out of specification (S)	S>LRV Temp. User limits exceeded	– Temperature measured value has undershot the value specified for the Tmin ALARM WINDOW parameter. – Loose connection at sensor cable	– Check system/temperature measured value. – Change value for Tmin ALARM WINDOW if necessary. (→ See parameter description for TminALARM WINDOW) – Wait a short period of time and tighten the connection, or avoid loose connection.	48
733 (E733)	Error C Factory setting: Warning	Out of specification (S)	S>URV Temp. User limits exceeded	– Temperature measured value has overshot the value specified for the Tmax ALARM WINDOW parameter.	– Check system/temperature measured value. – Change value for Tmax ALARM WINDOW if necessary. (→ See parameter description for TmaxALARM WINDOW)	47
736 (A736)	Alarm B	Failure (F)	F>RAM error	– Fault in the main electronics. – Main electronics defect.	– Briefly disconnect device from the power supply. – Replace main electronics.	4
737 (A737)	Alarm B	Failure (F)	F>Measurement error	– Fault in the main electronics. – Main electronics defect.	– Briefly disconnect device from the power supply. – Replace main electronics.	20
738 (A738)	Alarm B	Failure (F)	F>Measurement error	– Fault in the main electronics. – Main electronics defect.	– Briefly disconnect device from the power supply. – Replace main electronics.	19

Code	Corresponds to NA 64	Message category NE 107	Message/ description	Cause	Measure	Priority
739 (A739)	Alarm B	Failure (F)	F>Measurement error	– Fault in the main electronics. – Main electronics defect.	– Briefly disconnect device from the power supply. – Replace main electronics.	23
740 (E740)	Error C Factory setting: Warning	Maintenance required (M)	M>Calculation overflow, bad configuration	– Level measuring mode: Level mode* "LINd. MEASURAND.": the measured pressure has undershot the value for HYDR. PRESS. MIN. or overshot the value for HYDR. PRESS MAX. (*For other level modes: The measured level did not reach the LEVEL MIN value or exceeded the LEVEL MAX value.) – Flow measuring mode: the measured pressure has undershot the value for MAX. PRESS FLOW. – Pressure measuring mode: Main electronics defect.	– Check configuration and carry out calibration again if necessary. – Select a device with a suitable measuring range. – See parameter description LEVEL MIN. these Operating Instructions, Page 2. – Check configuration and carry out calibration again if necessary. – Select a device with a suitable measuring range. – Replace main electronics.	27
741 (A741)	Alarm B	Function check (C)	C>TANK HEIGHT out of edit limits	– LEVEL MIN or LEVEL MAX has been changed.	– Perform reset (Code 35710) and carry out calibration again.	43
742 (A742)	Alarm B	Failure (F)	F>Sensor connection error (upload)	– Electromagnetic effects are greater than specifications in the technical data. (→ See Technical Information.) This message normally only appears briefly. – Cable connection sensor –main electronics disconnected. – Sensor defect.	– Wait a few minutes. – Perform reset (Code 35710) and carry out calibration again. – Check cable connection and repair if necessary. – Replace sensor.	18
743 (A743)	Alarm B	Failure (F)	F>Electronic PCB error during initialization	– Electromagnetic effects are greater than specifications in the technical data. (→ See Technical Information.) This message normally only appears briefly. – Main electronics defect.	– Wait a few minutes. – Restart the device. Perform reset (Code 2506 or 33062). – Replace main electronics.	14
744 (A744)	Alarm B	Failure (F)	F>Main electronic PCB error	– Electromagnetic effects are greater than specifications in the technical data. (→ See Technical Information.) – Main electronics defect.	– Restart the device. Perform reset (Code 2506 or 33062). – Block off electromagnetic effects or eliminate source of disturbance. – Replace main electronics.	11
745 (W745)	Warning C	Maintenance required (M)	M>Sensor data unknown	– Sensor does not suit the device (electronic sensor nameplate). Device continues measuring.	– Replace sensor with a suitable sensor.	54
746 (W746)	Warning C	Function check (C)	C>Sensor connection error - initializing	– Electromagnetic effects are greater than specifications in the technical data. (→ See Technical Information). This message normally only appears briefly. – Overpressure or low pressure present.	– Wait a few minutes. – Restart the device. Perform reset (Code 1 or 40864). – Block off electromagnetic effects or eliminate source of disturbance. – Reduce or increase pressure.	26

Code	Corresponds to NA 64	Message category NE 107	Message/ description	Cause	Measure	Priority
747 (A747)	Alarm B	Failure (F)	F>Sensor software not compatible to electronics	– Sensor does not suit the device (electronic sensor nameplate).	– Replace sensor with a suitable sensor.	16
748 (A748)	Alarm B	Failure (F)	F>Memory failure in signal processor	– Electromagnetic effects are greater than specifications in the technical data. (→See Technical Information.) – Main electronics defect.	– Block off electromagnetic effects or eliminate source of disturbance. – Replace main electronics.	15
750 (A750)	Warning C	Function check (C)	C>Configuration not permitted	– By means of the operation profile, options were selected for the configuration of the device but the options do not suit one another. For example, if the option "1" (linearization table) was selected for LIN_TYPE and the unit "1347 (m^3/s)" was selected for PRIMARY_VALUE_UNIT.	– Check configuration. – Perform reset (Code 1 or 40864) and carry out calibration again.	44

9.1.1 Onsite display error messages

If the device detects a defect in the onsite display during initialization, the following error messages can be displayed:

Message	Measure
Initialization, VU Electr. Defect A110	Exchange onsite display.
Initialization, VU Electr. Defect A114	
Initialization, VU Electr. Defect A281	
Initialization, VU Checksum Err. A110	
Initialization, VU Checksum Err. A112	
Initialization, VU Checksum Err. A171	

9.2 Response of outputs to errors

The device differentiates between the message types "Alarm", "Warning" and "Error".
→ See the following table and Page 153, Section 9.1 "Messages".

Output	A (Alarm)	W (Warning)	E (Error: Alarm/Warning)
PROFIBUS	The process variable in question is transmitted with the status BAD.	Device continues measuring. The process variable in question is transmitted with the status UNCERTAIN.	For this error, you can enter whether the device should react as in the event of an alarm or as in the event of a warning. The output status is transmitted accordingly with the status BAD, UNCERTAIN, or GOOD. To configure the status for this error, you can configure the "SELECT ALARM TYPE" or the relevant parameter in Fieldcare (menu path: PROFILE VIEW → PHYSICAL BLOCK → PB PARAMETER → PV STATUS CONFIG. Note: it is only possible to configure the "GOOD" status for output via Fieldcare in the "PV STATUS CONFIG" menu path.
Bar Graph (onsite display)	The bar graph assumes the values specified via the FAIL SAFE MODE[1)] and FAIL SAFE DEFAULT VALUE [1)] parameters. → See also Section 9.2.1.	Device continues measuring.	For this error, you can enter whether the device should react as in the event of an alarm or as in the event of a warning. See corresponding "Alarm" or "Warning" column.
Onsite display	– The measured value and message are displayed alternately – Measured value display: -symbol is permanently displayed. Message display – A + 3-digit number such as A122 and – Description	– The measured value and message are displayed alternately – Measured value display: -symbol flashes. Message display: – W + 3-digit number such as W613 and – Description	– The measured value and message are displayed alternately – Measured value display: see corresponding "Alarm" or "Warning" column Message display: – E + 3-digit number such as E713 and – Description
Remote operation (FieldCare)	In the case of an alarm, the ALARM STATUS[2)] parameter displays a 3-digit number such as 122 for "Sensor connection error, incorrect data."	In the case of a warning, the ALARM STATUS[2] parameter displays a 3-digit number such as 613 for "Simulation is active".	In the case of an error, the ALARM STATUS[2] parameter displays a 3-digit number such as 731 for "Pmax ALARM WINDOW undershot".

1) Parameters are displayed via remote operation (e.g. FieldCare) only.
Menu path: PROFILE VIEW → ANALOG INPUT BLOCK → AI PARAMETER → FAIL SAFE MODE

2) Menu path onsite display: GROUP SELECTION → OPERATING MENU → DIAGNOSTICS → MESSAGES
Menu path FieldCare: MANUFACTOR VIEW → OPERATING MENU → DIAGNOSTICS → MESSAGES

9.2.1 Analog Input Block

If the Analog Input Block receives an input value or simulation value with the status BAD, the Analog Input Block continues working with the failsafe mode defined by means of the FAIL SAFE MODE[1] parameter.

The following options are available by means of the FAIL SAFE MODE[1] parameter:
- Last valid value
  The last valid value is used for further processing with the status UNCERTAIN.
- Fsafe Value
  The value specified by means of the FAIL SAFE DEFAULT VALUE[1] parameter is used for further processing with the status UNCERTAIN.
- BAD status
  The current value is used for further processing with the status BAD.

Factory setting:
- FAIL SAFE MODE[1]: Fsafe Value
- FAIL SAFE DEFAULT VALUE[1]: 0

- The failsafe mode is also activated if the "Out of Service O/S" option was selected by means of the TARGET MODE[2] parameter.
- The FAIL SAFE MODE and FAIL SAFE DEFAULT VALUE parameters are available via remote operation (e.g. FieldCare) only.

1) Menu path: PROFILE VIEW → ANALOG INPUT BLOCK → AI PARAMETER
2) Menu path: PROFILE VIEW → ANALOG INPUT BLOCK → AI STANDARD PARAMETER

9.2.2 Setting the status of the flexible alarms

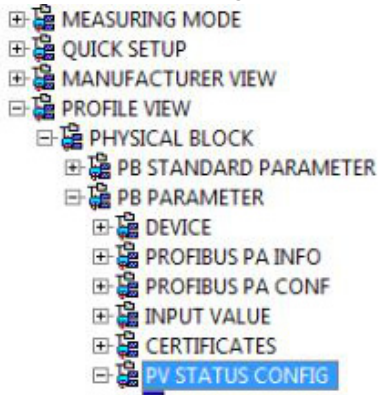
The event category can be defined individually for the following events - regardless of the event group to which they are assigned in the default setting:
- **115**: Sensor overpressure
- **120:** Sensor low pressure
- **715:** Sensor over temperature
- **716:** Process isolating diaphragm broken
- **717:** Transmitter over temperature
- **718:** Transmitter under temperature
- **720:** Sensor under temperature
- **726:** Sensor temperature error - overrange
- **727:** Sensor pressure error - overrange
- **730:** LRV user limits exceeded
- **731:** URV user limits exceeded
- **732:** LRV Temp. User limits exceeded
- **733:** URV Temp. User limits exceeded
- **740:** Calculation overflow, bad configuration

To change the measured value status (Bad, Uncertain, Good) assigned to an event, select the desired status from the picklist.

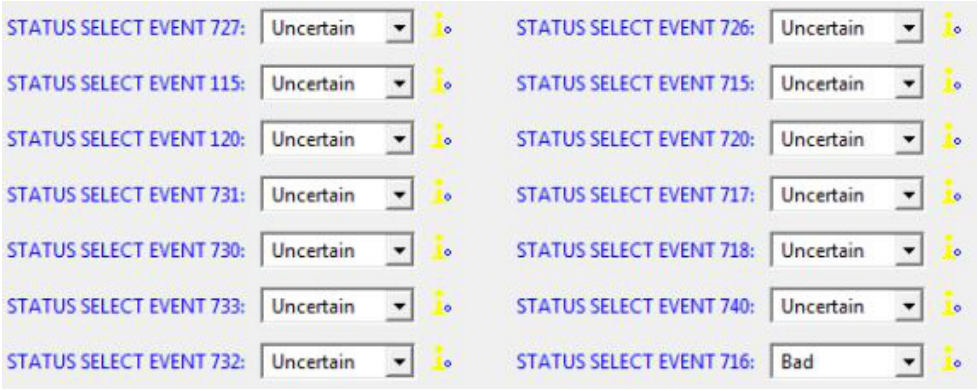
Example

The status "Bad" should be used for error 115 "Sensor overpressure" instead of the status "Uncertain".

1. In the FieldCare navigation window navigate to **PROFILE VIEW → PB Parameter**



2. In the default setting, all the bits have "Uncertain" for "Status Select Events", apart from 716.



3. Select the "Bad" option for the row "Status Select Event 115". Press the Enter key to confirm.

9.3 Confirming messages

Depending on the settings for the ALARM DISPL. TIME and ACK. ALARM MODE parameters, the following measures should be taken to clear a message:

Settings [1]	Measures
– ALARM DISPL. TIME = 0 s – ACK. ALARM MODE = off	– Rectify cause of the message (see also Section 9.1).
– ALARM DISPL. TIME > 0 s – ACK. ALARM MODE = off	– Rectify cause of the message (see also Section 9.1). – Wait for the alarm display time to elapse.
– ALARM DISPL. TIME = 0 s – ACK. ALARM MODE = On	– Rectify cause of the message (see also Section 9.1). – Confirm message using ACK. ALARM parameter.
– ALARM DISPL. TIME > 0 s – ACK. ALARM MODE = On	– Rectify cause of the message (see also Section 9.1). – Confirm message using ACK. ALARM parameter. – Wait for the alarm display time to elapse. If a message appears and the alarm display time elapses before the message has been acknowledged, the message will be cleared once it has been acknowledged.

1) ALARM DISPL. TIME and ACK. ALARM MODE parameters are located in the MESSAGES menu.

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