Operating Instructions – Description of Device Functions
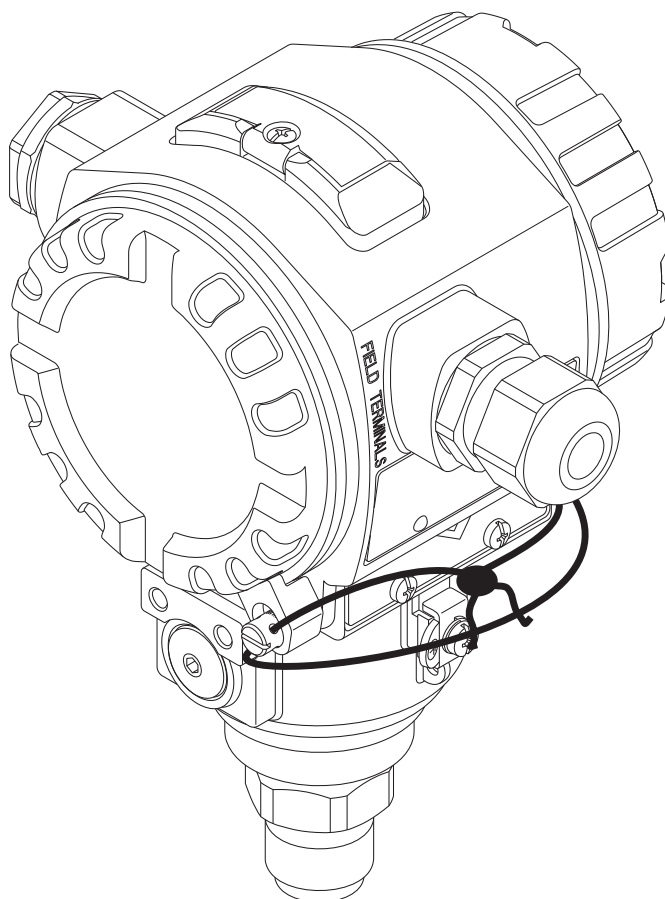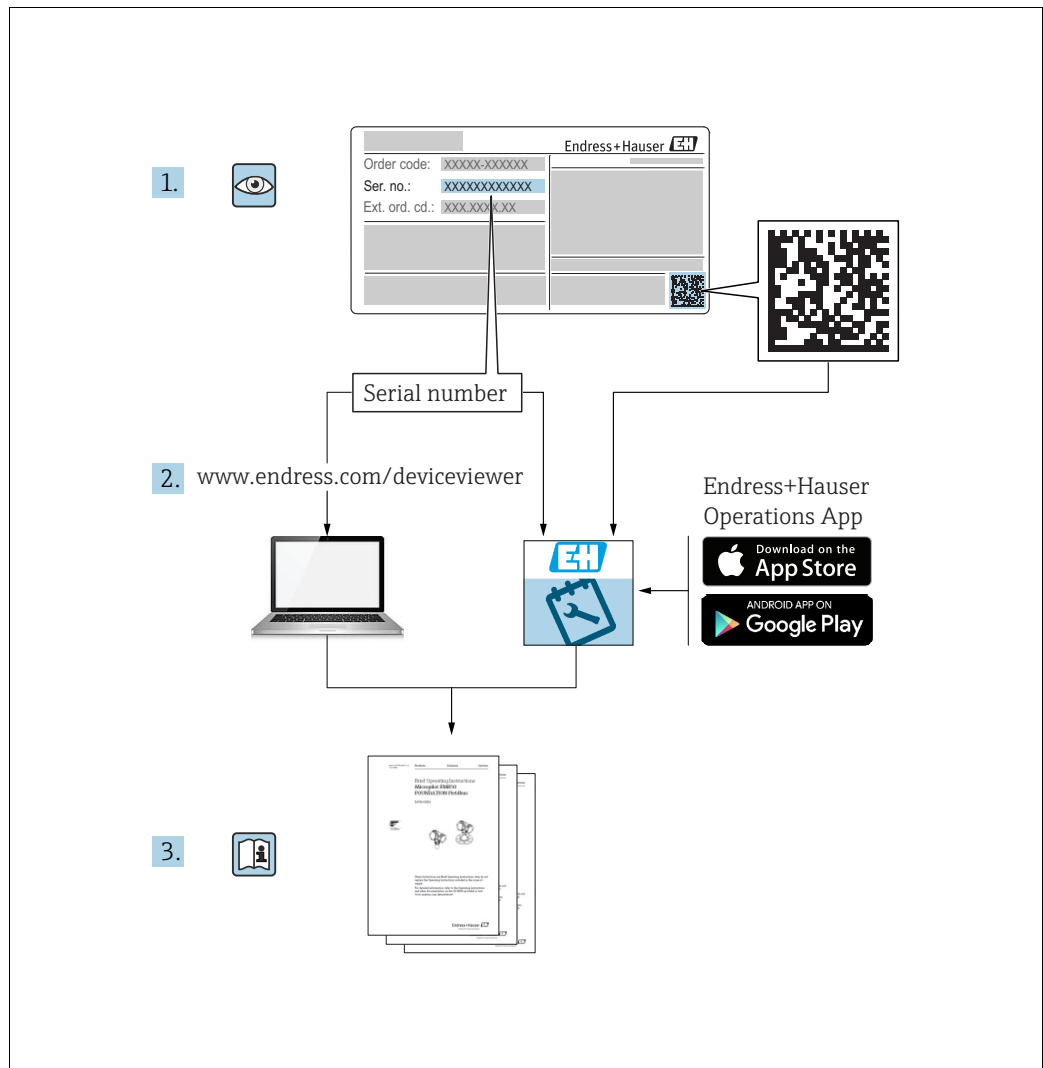# Cerabar S PMP71
with MID Part Certificate

Process pressure measurement

HART
COMMUNICATION PROTOCOL

Endress+Hauser

People for Process Automation

A0023555

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 5 describes all the parameters in the order of how they appear in the menu. Section 4 describe typical configuration examples.

Section 1.1 to Section 1.3 describe ways of finding a certain parameter description more easily.

1.1   Finding parameter description using ID numbers

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

1.2   Finding function group using graphic representation

Section 3 provides an outline of all of the function groups in tables. The page reference/link takes you to the function group in question. In Section 5, all of the parameters in a function group are summarized 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.

Endress+Hauser

2 Finding parameter description using ID numbers

ID number	Parameter name	Description, see Page
014	DOWNLOAD SELECT	33
015	FULL PRESSURE	See [1]
016	EMPTY PRESSURE	See [1]
017	FULL CALIB.	See [1]
018	EMPTY CALIB.	See [1]
021	SET LRV	See [1]
022	SET URV	See [1]
036	PREAMBLE NUMBER	25
042	CURR. TRIM 20mA	38
043	OFFSET 4mA TRIM	38
044	OFFSET 20mA TRIM	38
045	CURR. TRIM 4mA	38
046	ALARM STATUS	35
047	ENTER RESET CODE	32
048	INSERT PIN No	33
055	CUST. TAG NUMBER	26
060	PRESS. ENG. UNIT	16
075	CUSTOMER UNIT P	16
079	LANGUAGE	11
245	SET LRV – "Pressure" measuring mode	13 or 16
246	SET URV – "Pressure" measuring mode	13 or 16
247	DAMPING TIME	13, 17
250	SENSOR SER. No.	29
254	OUTPUT CURRENT	21
264	SOFTWARE VERSION	26
266	HARDWARE REV.	26
270	SIM. CURRENT	34
271	HART MESSAGE	25
272	ADDITIONAL INFO.	26
301	PRESSURE – "Pressure" measuring mode	31
305	LONG TAG NUMBER	26
309	GET LRV	17
310	GET URV	17
317	CUST.UNIT FACT.P	16
318	TEMP. ENG. UNIT – "Pressure" measuring mode	18
319	CALIB. OFFSET	14
332	Pmin ALARM WINDOW	36
333	Pmax ALARM WINDOW	36
334	Tmin ALARM WINDOW	37
335	Tmax ALARM WINDOW	37
336	ALARM DELAY	36
339	DISPLAY CONTRAST	20
342	SET MAX. ALARM	23
343	SET MIN. CURRENT	23
345	BUS ADDRESS	24
350	DEVICE DESIGN.	26
352	CONFIG RECORDER	26
354	DEVICE SERIAL No	26
357	PCB TEMPERATURE	26
358	ALLOWED MIN. TEMP	26
359	ALLOWED MAX. TEMP	26
360	MAT. PROC. CONN. +	27
362	SEAL TYPE	28
363	DIP STATUS	27
365	MAT.	29
366	FILLING FLUID	29
367	SENSOR TEMP.	31
368	Tmin SENSOR	29
369	Tmax SENSOR	29
378	MEAS. VAL. TREND	31
386	ELECTR. SERIAL NO.	26
388	OUTPUT FAIL MODE	22

ID number	Parameter name	Description, see Page
389	MEASURING MODE	12, 15
401	ACK. ALARM MODE	35
409	OPERATING HOURS	32
413	SIMULATION MODE	34
414	SIM. PRESSURE	34
419	MENU DESCRIPTOR	19
423	ALTERNATE DATA	19
432	MANUFACTOR ID	25
434	CORRECTED PRESS. – "Pressure" measuring mode	31
476	SIM. ERROR NO.	34
480	ALARM DISPL. TIME	36
481	HART DATE	25
482	PROC. CONN. TYPE	27
484	PRESS. SENS LOLIM	29
485	PRESS. SENS HILIM	29
487	SENS H/WARE REV	29
500	ACK. ALARM	35
563	POS. INPUT VALUE	13 or 14
564	LAST DIAG. CODE	35
570	Pmax PROC. CONN.	27
581	SENSOR MEAS.TYPE	29
584	SENSOR PRESSURE – "Pressure" measuring mode	31
591	MINIMUM SPAN	29
595	SELECT ALARMTYPE	36
597	ALT.CURR.OUTPUT	22
600	SELECT ALARMTYPE	36
603	RESET ALL ALARMS	35
679	MEASURED VALUE – "Pressure"	30
688	MAIN DATA FORMAT	19
694	CURR. CHARACT. – "Pressure"	22
696	CURR. CHARACT. – "Height"	22
699	DEVICE REVISION	24
764	CURR. CHARACT. – "Tank content"	22
802	DEVICE TYPE, Cerabar S	24
831	HistoROM AVAIL.	33
832	HistoROM CONTROL	33
836	SAFETY LOCKSTATE	See [1]
838	SAFETY PASSWORD	See [1]
840	DIGITS SET	20
841	DIGITS SET	See [1]
844	ACK. ALARM MODE	See [1]
845	MEASURING MODE	See [1]
847	CALIB. OFFSET	See [1]
852	SET LRV	See [1]
853	SET URV	See [1]
855	DAMPING TIME	See [1]
856	CONF. PASSWORD	See [1]
875	CURRENT OUTPUT	See [1]

[1]   For further information, see the Cerabar S Functional Safety Manual (SD00190P).

3   Graphic representation of function groups

1st Selection level	2nd Selection level (groups)		Function groups		Description, see Page
LANGUAGE	LANGUAGE (079)			→	11
OPERATING MODE	OPERATING MODE (389)			→	11
QUICK SETUP pressure				→	12
OPERATING MENU (555)	→ SETTINGS (557)		→ POSITION ADJUSTMENT	→	14
			→ BASIC SETUP pressure	→	15
			→ EXTENDED SETUP pressure	→	18
	→ SAFETY CONFIRM.			→	See [1]
	→ DISPLAY (558)			→	19
	→ OUTPUT (559)			→	21
	→ TRANSMITTER INFO (560)		→ HART DATA	→	24
			→ TRANSMITTER DATA	→	26
			→ PROCESS CONNECTION	→	27
			→ SENSOR DATA	→	29
	→ PROCESSINFO (561)		→ PROCESS VALUES pressure	→	30
	→ OPERATING			→	32
	→ DIAGNOSTICS (562)		→ SIMULATION MODE	→	34
			→ MESSAGES	→	35
			→ USER LIMITS	→	36
	→ SERVICE (561)		→ SYSTEM 2	→	38

1)   For further information, see the Cerabar S Functional Safety Manual (SD00190P).

4   Pressure measurement

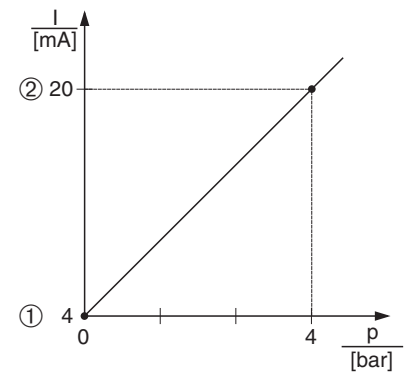## 4.1   Calibration with reference pressure

Example:
In this example, a device with a 10 bar (150 psi) sensor is configured for the 0 to +4 bar (60 psi) measuring range, i.e. 0 bar is assigned to the 4 mA value and 4 bar (60 psi) to the 20 mA value.

Prerequisite:
- The pressure values 0 bar and 4 bar (60 psi) can be specified. The device is already installed, for example.

- See also Operating Instructions for Cerabar S (BA00412P), "Pressure measurement" section.
- For a description of the parameters mentioned, see
  – Page 11, Table 1: MEASURING MODE
  – Page 14, Table 3: POSITION ADJUSTMENT
  – Page 15, Table 4: BASIC SETUP.
- For a description of further relevant parameters, see
  – Page 18, Table 5: EXTENDED SETUP
  – Page 30, Table 12: PROCESS VALUES.

	Description	
1	Carry out position adjustment if necessary. See Page 14, Table 5: POSITION ADJUSTMENT.	
2	If necessary, select the "Pressure" measuring mode via the MEASURING MODE parameter. **⚠ 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! Onsite display: Menu path: GROUP SELECTION → MEASURING MODE Digital communication Menu path: OPERATING MENU → SETTINGS→ BASIC SETUP → MEASURING MODE

Fig. 1:   Calibration with reference pressure
1   See Table, Step 5.
2   See Table, Step 6. |
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	The pressure for the lower range value (4 mA value) is present at the device, here 0 mbar for example.	
	Select GET LRV parameter.	
	Confirm value present. The pressure value present is assigned to the lower current value (4 mA).	
6	The pressure for the upper range value (20 mA value) is present at the device, here 300 mbar (4.5 psi) for example.	
	Select GET URV parameter.	
	Confirm value present. The pressure value present is assigned to the upper current value (20 mA).	
7	Result: The measuring range is configured for 0 to +300 mbar (4.5 psi).	

You can also specify a customer-specific unit. See parameter description for PRESS. ENG. UNIT (→ Page 16).

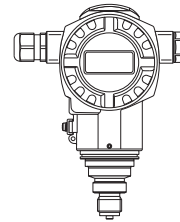## 4.2   Calibration without reference pressure

Example:
In this example, a device with a 400 mbar (6 psi) sensor is configured for the 0 to +300 mbar (4.5 psi) measuring range, i.e. 0 mbar is assigned to the 4 mA value and 300 mbar (4.5 psi) to the 20 mA value.
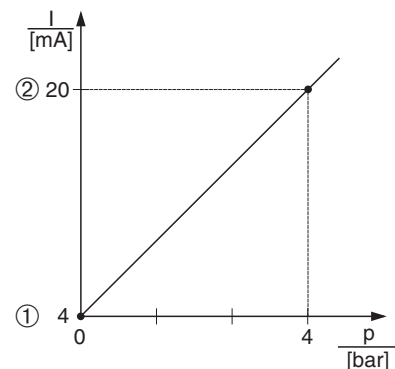
Prerequisite:
• This is a theoretical calibration, i.e. the pressure values for the lower range and upper range value are known.

• See also Operating Instructions for Cerabar S (BA00412P), "Pressure measurement" section.

- Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partially filled, the MEASURED VALUE parameter does not display zero. → For information on how to perform position adjustment, see also Page 14, Table 3: Position adjustment.
- For a description of the parameters mentioned, see
  - Page 11, Table 1: MEASURING MODE
  - Page 14, Table 3: POSITION ADJUSTMENT
  - Page 15, Table 4: BASIC SETUP.
- For a description of further relevant parameters, see
  - Page 18, Table 5: EXTENDED SETUP
  - Page 30, Table 12: PROCESS VALUES.

	Description	
1	If necessary, select the "Pressure" measuring mode via the MEASURING MODE parameter. **⚠ 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! Onsite display: Menu path: GROUP SELECTION → MEASURING MODE Digital communication Menu path: OPERATING MENU → SETTINGS → BASIC SETUP → MEASURING MODE	P01-PMP71xxx-19-xx-xx-xx-000
2	Onsite display: Select BASIC SETUP function group. Menu path: GROUP SELECTION → OPERATING MENU → SETTINGS → BASIC SETUP	
3	Select a pressure unit via the PRESS. ENG. UNIT parameter, here mbar for example.	
4	Select SET LRV parameter.	
	Enter value, here 0 mbar, for the SET LRV parameter and confirm. This pressure value is assigned to the lower current value (4 mA).	P01-MIDxxxxx-05-xx-xx-xx-004 *Fig. 2: Calibration without reference pressure* *1 See Table, Step 4.* *2 See Table, Step 5.*
5	Select SET URV parameter.	
	Enter the value for the "SET URV" parameter (here 300 mbar (4.5 psi)) and confirm. This pressure value is assigned to the upper current value (20 mA).	
6	Result: The measuring range is configured for 0 to +300 mbar (4.5 psi).	

- You can also perform calibration without reference pressure by means of the QUICK SETUP menu. → See Page 12 ff, Table 2: QUICK SETUP menu.
- You can also specify a customer-specific unit. See parameter description for PRESS. ENG. UNIT (→ Page 16).

5 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 overall menu structure is illustrated in Section 7.1.
- The menu structure for local operation and digital communication are slightly different. The differences mainly affect the MEASURING MODE and LANGUAGE parameters.
- In the operating program or HART handheld terminal, additional parameters are displayed. These parameters are marked accordingly .
- The menu path is indicated in the header of each table. You can use this path to get to the parameters in question.
- 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. 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.
- 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.
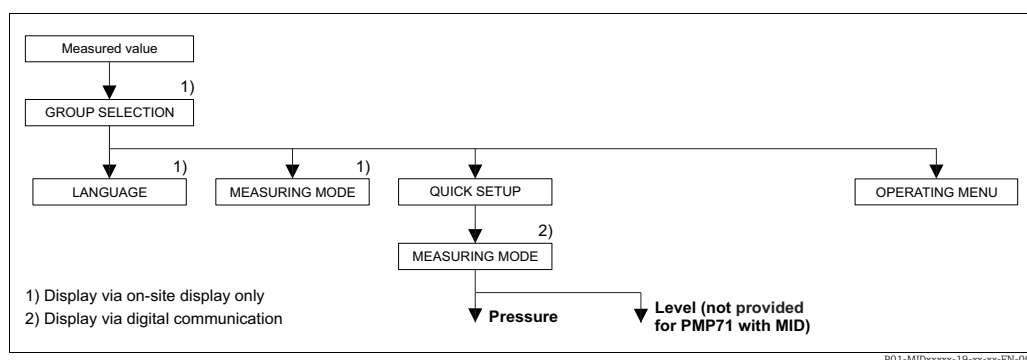

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Fig. 3: 1st selection level in menu, LANGUAGE (→ see Page 11, Table 1)

| Table 1: GROUP SELECTION → LANGUAGE – Onsite display	
Parameter name	**Description**
LANGUAGE (079) Options	Select the menu language for the onsite display. • In the operating program and in the HART handheld terminal, the LANGUAGE parameter is arranged in the DISPLAY function group. • Select the menu language for the operating program via the "Options" menu → "Settings" → "Language" tab → "Tool Language" field. **Options**: • Deutsch • English • Français • Italiano • Español • Nederlands • Chinese (CHS) • Japanese (JPN) **Factory setting**: English

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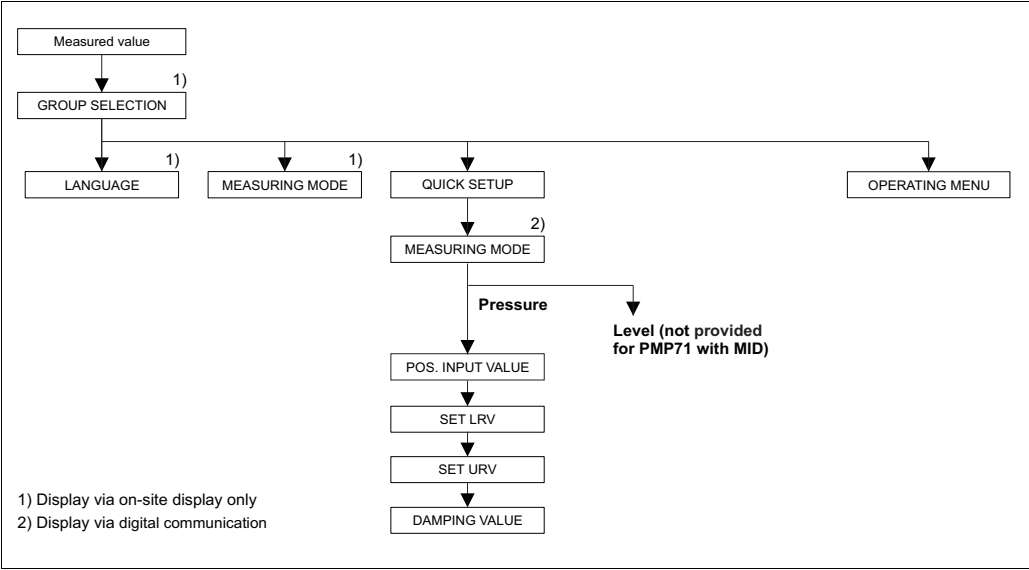
Fig. 4:   *Quick Setup menu for the "Pressure" measuring mode*

Table 2: (GROUP SELECTION →) 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 15 ff, Table 6: BASIC SETUP – Page 18, Table 13: EXTENDED SETUP – Page 30 ff, Table 23: PROCESS VALUES – Page 8 ff, Section 4 "Pressure measurement".	
MEASURING MODE Options	Select the measuring mode. The operating menu is structured according to the selected measuring mode. **⚠ 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! **Prerequisite:** ▪ Digital communication **Options:** ▪ Pressure **Factory setting:** ▪ Pressure

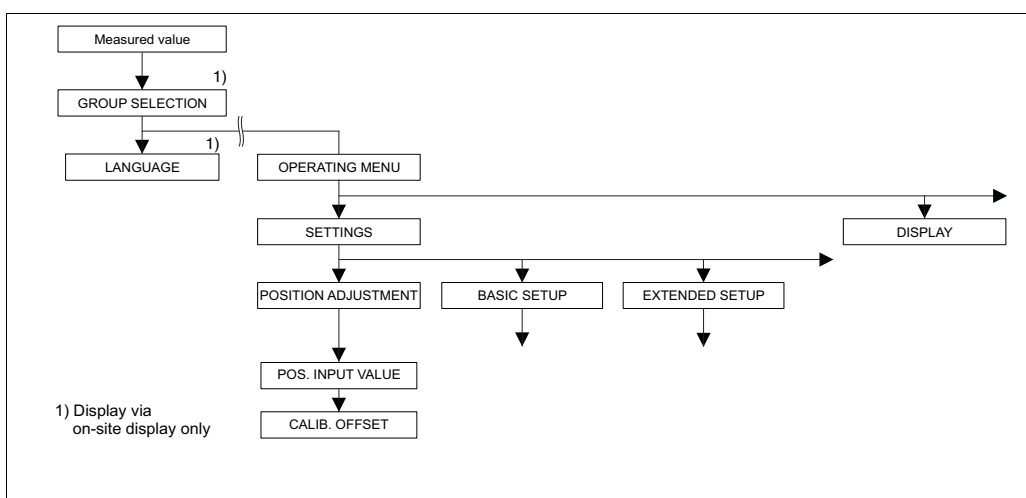| Table 2: (GROUP SELECTION →) QUICK SETUP "Pressure"	
Parameter name	**Description**

POS. INPUT VALUE (563)
Entry
	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 measured 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 partially 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 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.
	  The following applies: 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)
	– The current value is also corrected.
	
	Factory setting:
	0.0

SET LRV (245) Entry	Set lower range value – without reference pressure. Enter pressure value for the lower current value (4 mA). **Factory setting:** 0.0 or as per order specifications
SET URV (246) Entry	Set upper range value – without reference pressure. Enter pressure value for the upper current value (20 mA). **Factory setting:** High sensor limit (→ see PRESS. SENS HILIM, Page 29) or as per order specifications
DAMPING VALUE (247) Entry	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and current output 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

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Fig. 5:   *Function group POSITION ADJUSTMENT*

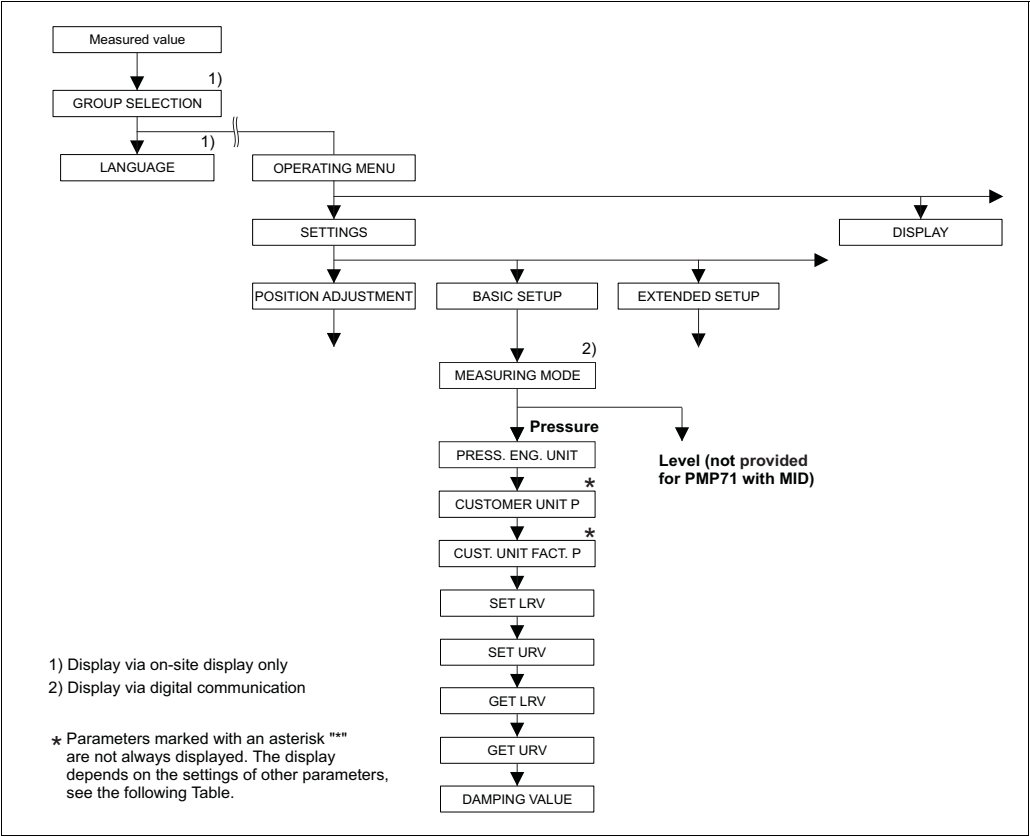| Table 3: (GROUP SELECTION →) OPERATING MENU → SETTINGS → POSITION ADJUSTMENT	
Parameter name	**Description**

Due to the orientation of the device, there may be a shift in the measured value, i.e. when the container is empty or partially filled, the measured value does not display zero. Cerabar S provides two different options for carrying out position adjustment.
 	
Recommendation:
• The pressure difference between zero (set point) and the measured pressure need not be known.
  – POS. INPUT VALUE
• The pressure difference between zero (set point) and the measured pressure is known.
  – CALIB. OFFSET	

POS. INPUT VALUE (563)
Entry
	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 measured 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.
	  The following applies: 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)
	– The current value is also corrected.
	
	Factory setting:
	0.0

CALIB. OFFSET (319) Entry	Position adjustment – the pressure difference between zero (set point) and the measured pressure is known. **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 – The current value is also corrected. **Factory setting:** 0.0

P01-MIDxxxxx-19-xx-xx-EN-005

Fig. 6:   BASIC SETUP function group for the "Pressure" measuring mode

Table 4: (GROUP SELECTION →) OPERATING MENU → SETTINGS → BASIC SETUP "Pressure"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Pressure **Note:** See also − Page 12, Table 3: QUICK SETUP − Page 18, Table 13: EXTENDED SETUP − Page 30 ff, Table 23: PROCESS VALUES − Page 8 ff, Section 4 "Pressure measurement".	
MEASURING MODE Options	Select the measuring mode. The operating menu is structured according to the selected measuring mode. **⚠ 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! **Prerequisite:** ▪ Digital communication **Options**: ▪ Pressure **Factory setting** ▪ Pressure

Table 4: (GROUP SELECTION →) OPERATING MENU → SETTINGS → BASIC SETUP "Pressure"	
Parameter name	**Description**
PRESS. ENG. UNIT (060) Options	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. **Factory setting:** Depends on the sensor nominal measuring range mbar or bar or as per order specifications
CUSTOMER UNIT P (075) Entry	Enter text (unit) for customer-specific 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. In FieldCare, all eight characters are displayed. In the HART handheld terminal, the customer-specific unit is only displayed in the CUSTOMER UNIT P parameter. The measured value is displayed with the additional text "User Unit". **Factory setting:** – – – – – – – –
CUST.UNIT FACT.P (317) Entry	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 =10,000 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
SET LRV (245) Entry	Set lower range value – without reference pressure. Enter pressure value for the lower current value (4 mA). **Factory setting:** 0.0 or as per order specifications
SET URV (246) Entry	Set upper range value – without reference pressure. Enter pressure value for the upper current value (20 mA). **Factory setting:** High sensor limit (→ see PRESS. SENS HILIM, Page 29)

Table 4: (GROUP SELECTION →) OPERATING MENU → SETTINGS → BASIC SETUP "Pressure"	
Parameter name	**Description**
GET LRV (309) Entry	Set lower range value – reference pressure is present at device. The pressure for the lower current value (4 mA) is present at device. With the "Confirm" option, you assign the lower current value to the pressure value present. Onsite display: the pressure value present is displayed in the bottom line. **Options:** • Abort • Confirm
GET URV (310) Entry	Set upper range value – reference pressure is present at device. The pressure for the upper current value (20 mA) is present at device. With the "Confirm" option, you assign the upper current value to the pressure value present. Onsite display: the pressure value present is displayed in the bottom line. **Options:** • Abort • Confirm
DAMPING VALUE (247) Entry	Enter damping time (time constant τ). The damping affects the speed at which all subsequent elements, such as the onsite display, measured value and current output 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

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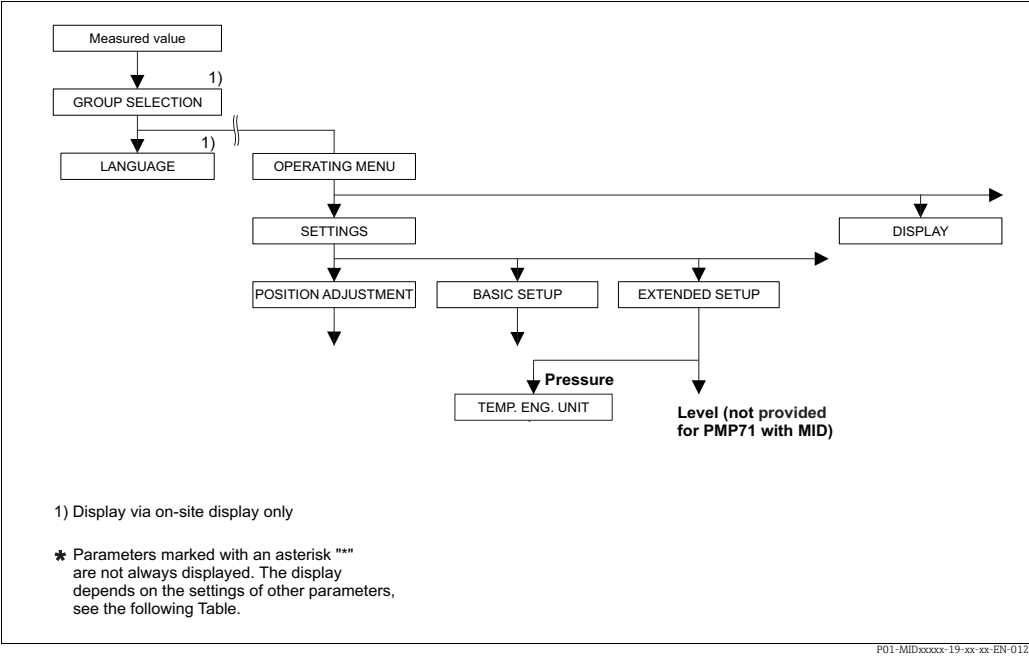
Fig. 7:   *EXTENDED SETUP function group*
              → *for measuring mode "Pressure", see Page 18, Table 5*

Table 5: (GROUP SELECTION →) OPERATING MENU → SETTINGS → EXTENDED SETUP "Pressure"	
Parameter name	**Description**
Prerequisite: ▪ MEASURING MODE = Pressure **Note:** ▶ See also Page 8 ff, Section 4 "Pressure measurement".	
TEMP. ENG. UNIT (318) Options	Select the unit for the temperature measured values. → See also PCB TEMPERATURE (Page 26) and SENSOR TEMP. (Page 31). **Options:** ▪ ℃ ▪ ℉ ▪ K ▪ R **Factory setting:** ℃

P01-xxxxxxxx-19-xx-xx-xx-093

Fig. 8:   DISPLAY group

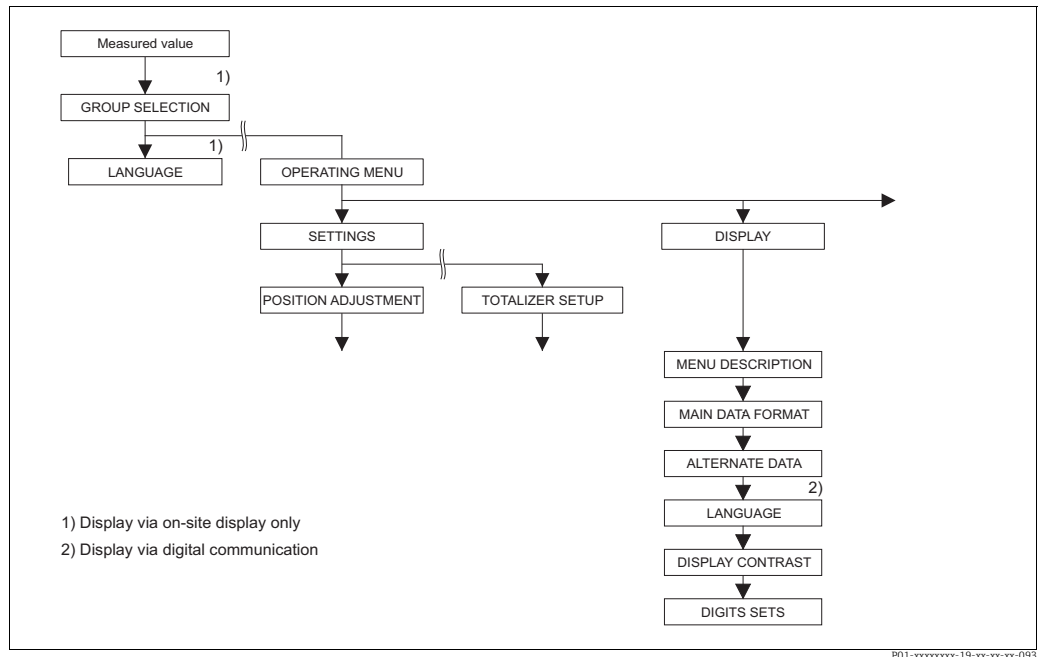| Table 6: (GROUP SELECTION →) OPERATING MENU → DISPLAY	
Parameter name	**Description**
MENU DESCRIPTOR (419) Options	Specify contents for the main line of the onsite display in the measuring mode. → See also Operating Instructions BA00412P, Section "Onsite display". **Options:** • Main measured value (PV) • Main measured value (%) • Pressure • Level • Tank content • Current • Temperature • Error number The selection depends on the measuring mode chosen. **Factory setting:** Main measured value (PV)
MAIN DATA FORMAT (688) Options	Specifies the number of places after the decimal point for the value displayed in the main line. → See also Operating Instructions BA00412P, Section "Onsite display". **Options:** • Auto • x.x • x.xx • x.xxx • x.xxxx • x.xxxxx **Factory setting:** Auto
ALTERNATE DATA (423) Options	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: primary value (PV), pressure, temperature and current **Options:** • Off • On **Factory setting:** Off

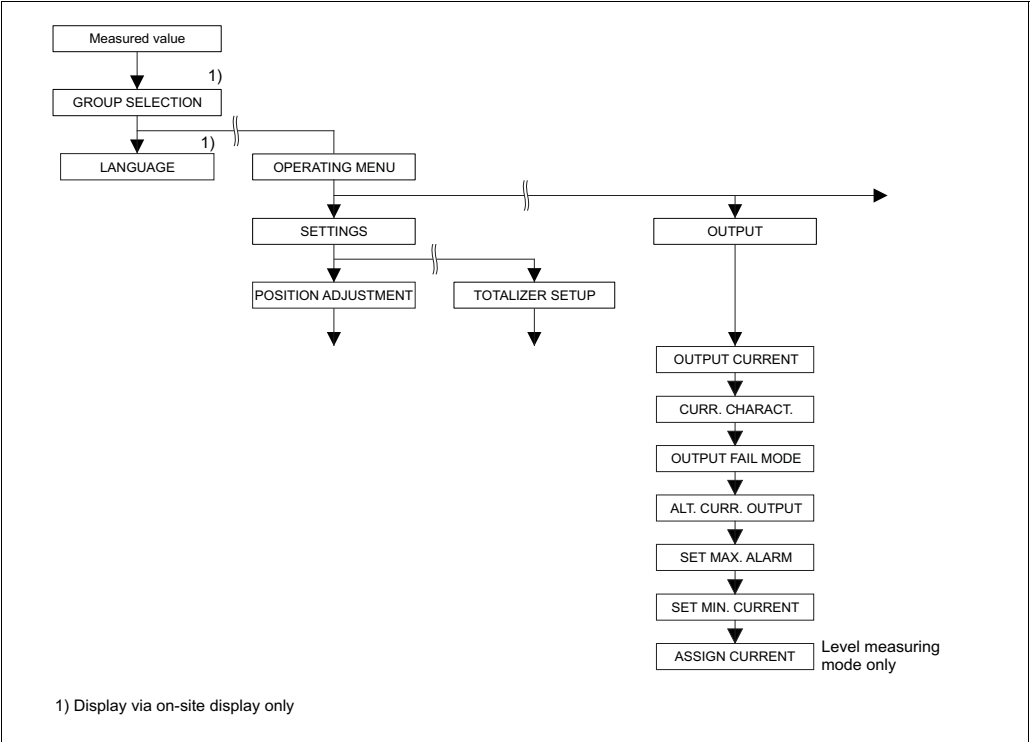| Table 6: (GROUP SELECTION →) OPERATING MENU → DISPLAY	
Parameter name	**Description**
LANGUAGE Selection	Select the menu language for the onsite display. • In the case of local operation, the LANGUAGE parameter is arranged directly under the GROUP SELECTION (menu path: GROUP SELECTION → LANGUAGE, see also Page 11). • Select the menu language for the operating program via the "Options" menu → "Settings" → "Language" tab → "Tool Language" field. **Options**: • Deutsch • English • Français • Italiano • Español • Nederlands • Chinese (CHS) • Japanese (JPN) **Factory setting**: English
DISPLAY CONTRAST (339) Entry	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 BA00412P, the section on operating keys function. **Input range:** 4...13, 4: contrast weaker (brighter), 13: contrast stronger (darker). **Factory setting:** 8
DIGITS SET (840) Display	This parameter is used to verify correct display of characters and digits on the user interface. If the characters and digits are correctly displayed, this parameter shows the string "0123456789.-".

Fig. 9:   Group OUTPUT

Table 7: (GROUP SELECTION →) OPERATING MENU → OUTPUT

Parameter name	Description
OUTPUT CURRENT (254) Display	Displays the current current value.

Table 7: (GROUP SELECTION →) OPERATING MENU → OUTPUT	
Parameter name	**Description**
CURR. CHARACT. (694), (695), (696), (764) Options	Select curve of current output. **Options:** *Fig. 10: Illustration of current output curves* *1 Linear: lower range value = 4 mA, upper range value = 20 mA* *2 Bi-linear: lower range value = 4 mA, center or zero = 20 mA,* * upper range value = 4 mA* *3 Linear inverse: lower range value = 20 mA, upper range value = 4 mA* *4 Bi-linear inverse: lower range value = 20 mA, center or zero = 4 mA,* * upper range value = 20 mA* *LRV Lower Range Value* *URV Upper Range Value* *I Current* *p Measured value (pressure)* The 3-digit ID number on the onsite display depends on the MEASURING MODE selected: – (694): MEASURING MODE "Pressure" **Factory setting:** Linear
OUTPUT FAIL MODE (388) Entry	Select the current value in the event of an alarm. In the event of an alarm, the current assumes the current value specified with this parameter. **Options:** • Max. alarm (110%): can be set between 21...23 mA • Hold meas. value: last measured value is kept. • Min. alarm (−10%): 3.6 mA → See also this table SET MAX. ALARM and Operating Instructions BA00412P, Section "Configuring current output for an alarm". **Factory setting:** Max. alarm 110% (22 mA)

ALT.CURR.OUTPUT (597) Options	Set current output if sensor limits undershot or overshot.
	
	Options:
	• Normal: the current output assumes the value set via the OUTPUT FAIL MODE and SET MAX. ALARM parameters.
	• NAMUR:
	  – Lower sensor limit undershot (E120):
	    Current output = 3.6 mA
	  – Upper sensor limit overshot (E115): current output assumes the value set via the SET MAX. ALARM parameter
	
	Factory setting:
	Normal

Table 7: (GROUP SELECTION →) OPERATING MENU → OUTPUT	
Parameter name	Description
SET MAX. ALARM (342) Entry	Enter current value for maximum alarm current. → See also OUTPUT FAIL MODE. **Input range:** 21...23 mA **Factory setting:** 22 mA
SET MIN. CURRENT (343) Entry	Enter lower current limit. Some switching units do not accept current values lower than 4.0 mA. **Options:** ▪ 3.8 mA ▪ 4.0 mA **Factory setting:** 3.8 mA
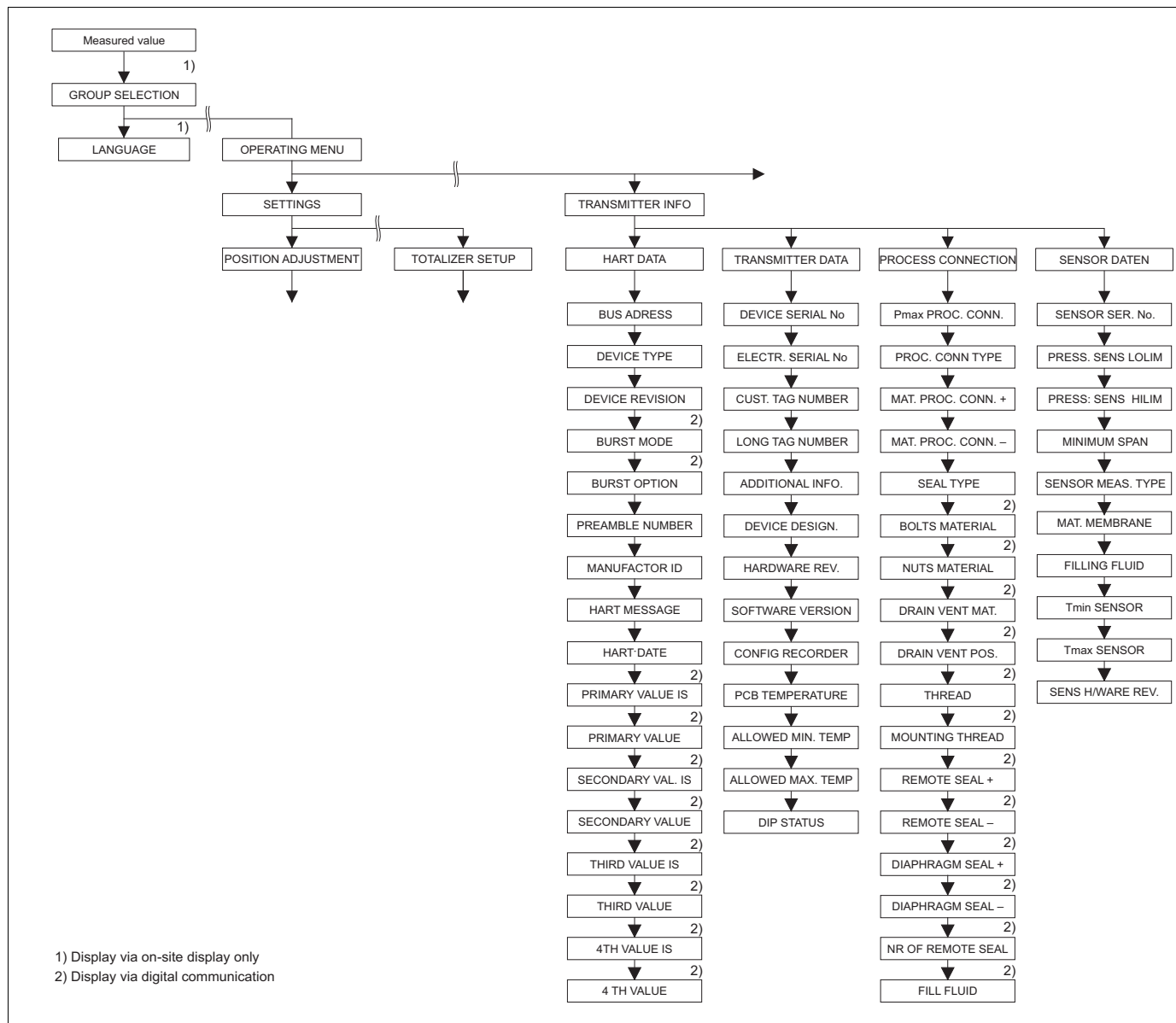
Fig. 11:   *TRANSMITTER INFO group*
→ *For the HART DATA function group, see Page 24, Table 8*
→ *For the TRANSMITTER DATA function group, see Page 26, Table 9*
→ *For the PROCESS CONNECTION function group, see Page 27, Table 10*
→ *For the SENSOR DATA function group, see Page 29, Table 11*

Table 8: (GROUP SELECTION →) OPERATING MENU → TRANSMITTER INFO → HART DATA	
Parameter name	Description
BUS ADDRESS (345) Entry	Enter the address for the exchange of data with the HART protocol. (HART 5.0: range 0...15, HART 6.0: range 0...63) **Factory setting:** 0
DEVICE TYPE (802) Display	Displays the device identification number in decimal numerical format, here Cerabar S: 24 **Prerequisite:** • Cerabar S pressure transmitter
DEVICE REVISION (699) Display	Displays the device revision

Table 8: (GROUP SELECTION →) OPERATING MENU → TRANSMITTER INFO → HART DATA	
Parameter name	**Description**
BURST MODE Options	Switch the burst mode on and off. **Options:** • On • Off **Prerequisite:** • Digital communication
BURST OPTION Entry	Use this parameter to specify what command is sent to the master. **Prerequisite:** • Digital communication **Factory setting:** 3 (HART command 3)
PREAMBLE NUMBER (036) Entry	Enter the number of preambles in the HART protocol. (Synchronization of the modem modules along a transmission path, each modem module could "swallow" a byte - at least 2 bytes must arrive.) **Input range:** 2...20 **Factory setting:** 5
MANUFACTOR ID (432) Display	Displays the manufacturer number in a decimal numerical format. Here: 17 Endress+Hauser
HART MESSAGE (271) Entry	Enter a message (max. 32 alphanumeric characters). On command from the master, this message is sent via the HART protocol. **Factory setting:** _ or as per order specifications
HART DATE (481) Entry	Enter the date of the last configuration change. **Factory setting:** DD.MM.YY (date of final test)
PRIMARY VALUE IS Display	This parameter displays the following measured value depending on the measuring mode selected: – Measuring mode "Pressure": PRESSURE → See also PRIMARY VALUE. **Prerequisite:** • Digital communication
PRIMARY VALUE Display	Display of primary value. → See also PRIMARY VALUE IS. **Prerequisite:** • Digital communication
SECONDARY VAL. IS	Select second process value. You can choose between the following process values depending on the measuring mode selected: – PRESSURE – CORRECTED PRESS. – SENSOR PRESSURE – SENSOR TEMP. – PCB TEMPERATURE – LEVEL BEFORE LIN – TANK CONTENT **Prerequisite:** • Digital communication
SECONDARY VALUE	Display second process value. → See also SECONDARY VAL. IS. **Prerequisite:** • Digital communication

Table 8: (GROUP SELECTION →) OPERATING MENU → TRANSMITTER INFO → HART DATA	
Parameter name	Description
THIRD VALUE IS	Select third process value. → See also . SECONDARY VAL. IS. **Prerequisite:** • Digital communication
THIRD VALUE	Display third process value. →See also SECONDARY VAL. IS. **Prerequisite:** • Digital communication
4TH VALUE IS	Select fourth process value. →See also . SECONDARY VAL. IS. **Prerequisite:** • Digital communication
4TH VALUE	Display fourth process value. →See also SECONDARY VAL. IS. **Prerequisite:** • Digital communication

Table 9: (GROUP SELECTION →) OPERATING MENU → TRANSMITTER INFO → TRANSMITTER DATA	
Parameter name	Description
DEVICE SERIAL No (354) Display	Displays the serial number of the device (11 alphanumeric characters).
ELECTR. SERIAL No (386) Display	Displays the serial number of the main electronics (11 alphanumeric characters).
CUST. TAG NUMBER (055) Entry	Enter device tag e.g. TAG number (max. 8 alphanumeric characters). **Factory setting:** _ _ _ _ _ _ _ _ or as per order specifications
LONG TAG NUMBER (305) Entry	Enter device tag e.g. TAG number (max. 32 alphanumeric characters). **Factory setting:** _ or as per order specifications
ADDITIONAL INFO. (272) Entry	Enter the tag description (max. 16 alphanumeric characters). **Factory setting:** _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ or as per order specifications
DEVICE DESIGN. (350) Display	Displays the device designation and order code.
HARDWARE REV. (266) Display	Displays the revision number of the main electronics e.g.: V02.00
SOFTWARE VERSION (264) Display	Displays the software version V02.10.54
CONFIG RECORDER (352) Display	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	Displays the measured temperature of the main electronics.
ALLOWED MIN. TEMP (358) Display	Displays the lower temperature limit of the main electronics.
ALLOWED MAX. TEMP (359) Display	Displays the upper temperature limit of the main electronics.

Table 9: (GROUP SELECTION →) OPERATING MENU → TRANSMITTER INFO → TRANSMITTER DATA	
Parameter name	Description
DIP STATUS (363) Display	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 33.) → See also Operating Instructions BA00412P, "Locking/unlocking operation". **Display:** • On (locking switched on) • Off (locking switched off) **Factory setting:** Off (locking switched off)

Table 10: (GROUP SELECTION →) OPERATING MENU → TRANSMITTER INFO → PROCESS CONNECTION	
Parameter name	Description
Pmax PROC. CONN. (570) Entry	For entering and displaying the maximum permitted pressure of the process connection. **Factory setting:** as per nameplate data (→ see also Operating Instructions BA00412P, Section "Nameplate")
PROC. CONN. TYPE (482) Options	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) Options	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

Table 10: (GROUP SELECTION →) OPERATING MENU → TRANSMITTER INFO → PROCESS CONNECTION	
Parameter name	**Description**
SEAL TYPE (362) Options	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
BOLTS MATERIAL	For selecting and displaying the material of the bolts. **Prerequisite:** • Digital communication
NUTS MATERIAL	For selecting and displaying the material of the nuts. **Prerequisite:** • Digital communication
DRAIN VENT MAT.	For selecting and displaying the material of the vent valves. **Prerequisite:** • Digital communication
DRAIN VENT POS.	For selecting and displaying the position of the vent valves. **Prerequisite:** • Digital communication
THREAD PROCESS	For selecting and displaying the process connection thread. **Prerequisite:** • Digital communication
MOUNTING THREAD	For selecting and displaying the ways of securing the device. **Prerequisite:** • Digital communication
REMOTE SEAL +	For selecting and displaying the diaphragm seal type on the positive side. **Prerequisite:** • Digital communication
REMOTE SEAL -	For selecting and displaying the diaphragm seal type on the negative side. **Prerequisite:** • Digital communication
DIAPHRAG. MAT. +	For selecting and displaying the diaphragm material on the positive side **Prerequisite:** • Digital communication
DIAPHRAG. MAT. -	For selecting and displaying the diaphragm material on the negative side. **Prerequisite:** • Digital communication
NR OF REMOTE SE	For selecting and displaying the number of diaphragm seals. **Prerequisite:** • Digital communication

Table 10: (GROUP SELECTION →) OPERATING MENU → TRANSMITTER INFO → PROCESS CONNECTION	
Parameter name	Description
FILL FLUID	For selecting and displaying the diaphragm seal fill fluid. **Prerequisite:** • Digital communication

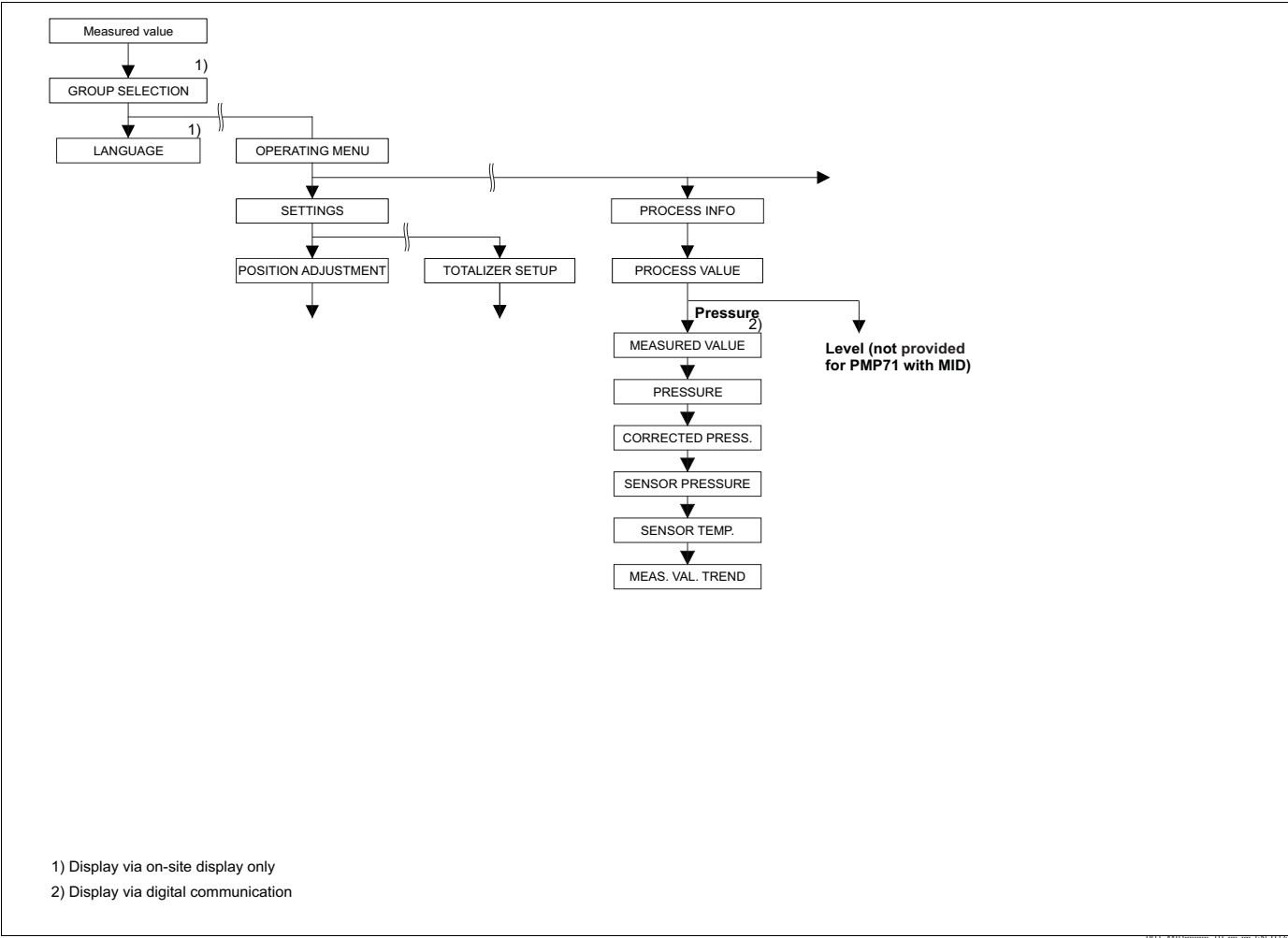| Table 11: (GROUP SELECTION →) OPERATING MENU → TRANSMITTER INFO → SENSOR DATA (all measuring modes)	
Parameter name	Description
SENSOR SER. No. (250) Display	Displays the serial number of the sensor (11 alphanumeric characters).
PRESS. SENS LOLIM (484) Display	Displays the lower measuring limit of the sensor.
PRESS. SENS HILIM (485) Display	Displays the upper measuring limit of the sensor.
MINIMUM SPAN (591) Display	Displays the smallest possible span.
SENSOR MEAS.TYPE (581) Display	Displays the sensor type. • Cerabar S with absolute pressure sensor = Absolute
MAT. MEMBRANE (365) Display	Displays the material of the process isolating diaphragm. **Factory setting:** as per version in order code → See Technical Information for Cerabar S TI00383P, Section "Ordering information".
FILLING FLUID (366) Display	Displays the filling fluid.
Tmin SENSOR (368) Display	Displays the lower nominal temperature limit of the sensor.
Tmax SENSOR (369) Display	Displays the upper nominal temperature limit of the sensor.
SENS H/WARE REV (487) Display	Displays the revision number of the sensor hardware. e.g.: 1

P01-MIDxxxxx-19-xx-xx-EN-014
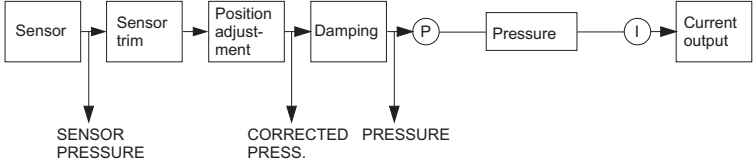
Fig. 12:   *PROCESSINFO group*
          → *For function group PROCESS VALUES, measuring mode "Pressure", see Page 30, Table 12*

Table 12: (GROUP SELECTION →) OPERATING MENU → PROCESSINFO → PROCESS VALUES "Pressure"	
Parameter name	**Description**
Prerequisite: • MEASURING MODE = Pressure	
MEASURED VALUE (679)	Displays the measured value In the "Pressure" measuring mode, this value corresponds to the PRESSURE parameter. **Prerequisite:** • Digital communication **Onsite operation:** • In the case of local operation, the MEASURED VALUE parameter is displayed on the top level.

Table 12: (GROUP SELECTION →) OPERATING MENU → PROCESSINFO → PROCESS VALUES "Pressure"	
Parameter name	**Description**
PRESSURE (301) Display	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-MIDxxxxx-05-xx-xx-EN-001
CORRECTED PRESS. (434) Display	Displays the measured pressure after sensor trim and position adjustment and before damping. → See also PRESSURE diagram.
SENSOR PRESSURE (584) Display	Displays the measured pressure before sensor trim, position adjustment and damping. → See also PRESSURE diagram.
SENSOR TEMP. (367) Display	Displays the temperature currently measured in the sensor. This can deviate from the process temperature.
MEAS. VAL. TREND (378) Display	Displays the trend of the pressure measured value. Possibilities: increasing, decreasing, constant
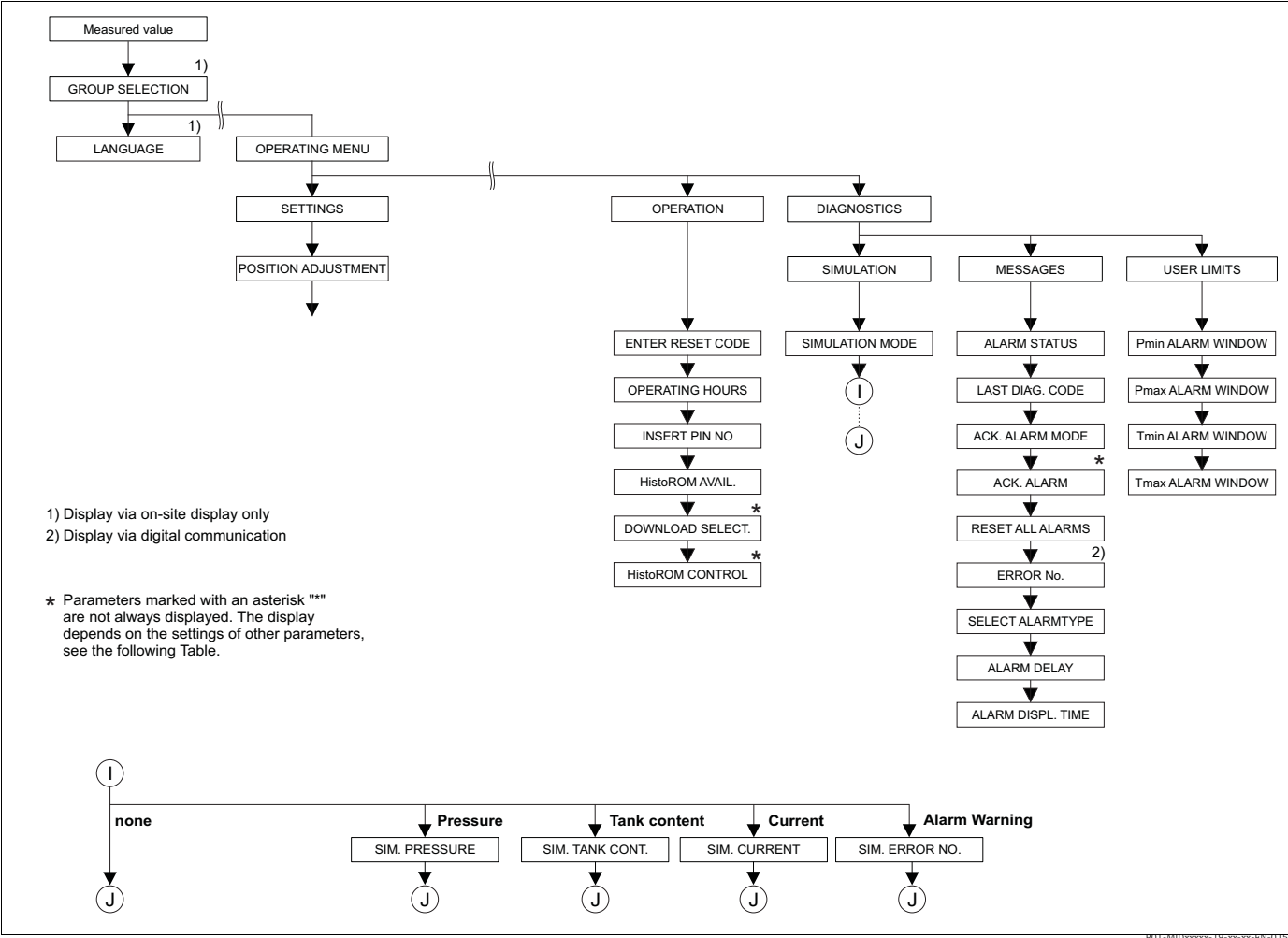
Fig. 13:   *OPERATING and DIAGNOSTICS group*
                  → *For the OPERATING group, see Page 32, Table 13*
                  → *For the SIMULATION MODE function group, see Page 34, Table 14*
                  → *For the MESSAGES function group, see Page 35, Table 15*
                  → *For the USER LIMITS function group, see Page 36, Table 16*

Table 13: (GROUP SELECTION →) OPERATING MENU → OPERATING	
Parameter name	**Description**
ENTER RESET CODE (047) Entry	Reset parameters completely or partially to factory values or delivery status. → See also Operating Instructions BA00412P, Section "Factory setting (reset)". **Factory setting:** 0
OPERATING HOURS (409) Display	Displays the hours of operation. This parameter cannot be reset.

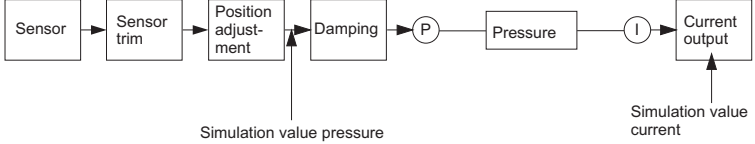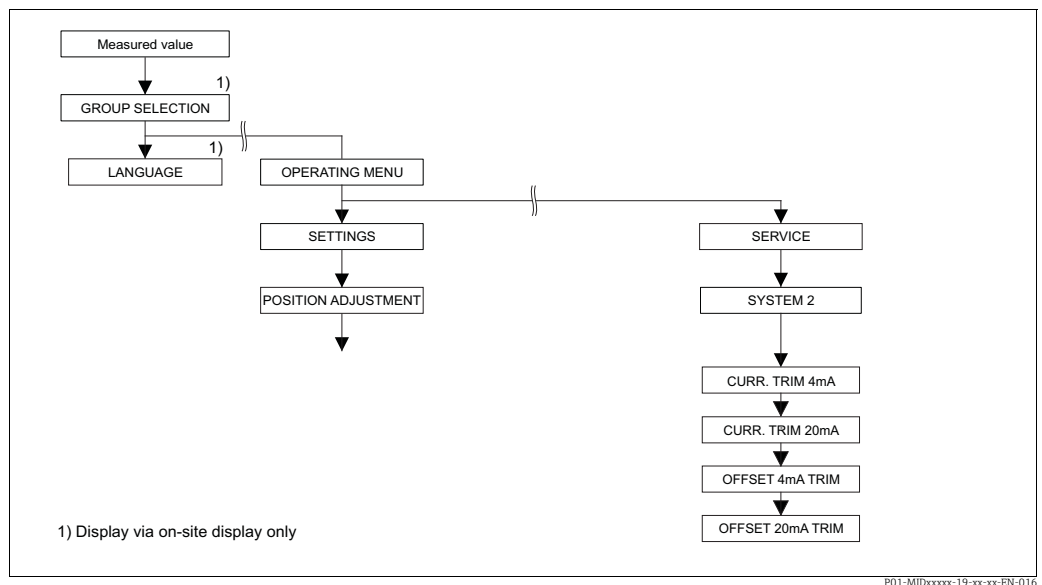| Table 13: (GROUP SELECTION →) OPERATING MENU → OPERATING	
Parameter name	**Description**
INSERT PIN NO (048) Entry	For entering a code to lock or unlock operation. • The ⌁ symbol on the onsite display indicates that operation is locked. Parameters which refer to how the display appears, e.g. LANGUAGE 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 either by means of the onsite display or remote operation. → See also Operating Instructions BA00412P, "Locking/unlocking operation". **Options:** • Lock: enter a number between 0 and 9999 that is ≠100. • Unlock: enter the number 100. **Factory setting:** 100
HistoROM AVAIL. (831) Display	Indicates whether the optional HistoROM®/M-DAT memory module is connected to the electronic insert. → See also Operating Instructions BA00412P, Section "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 SELECT (014) Options	Select download function from HistoROM to device. The option selected 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: With this option, all parameters apart from the TRANSMITTER SERIAL No, DEVICE DESIGN., CUST. TAG NUMBER, LONG TAG NUMBER, ADDITIONAL INFO., BUS ADDRESS and the parameters of the POSITION ADJUSTMENT and PROCESS CONNECTION group are overwritten. • Device replacement: With this option, all parameters except for TRANSMITTER SERIAL No, DEVICE DESIGNATION 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:** Configuration copy (if HistoROM®/M-DAT is attached to the electronic insert)
HistoROM CONTROL (832) Options	For selecting the direction for copying the data. → See also Operating Instructions BA00412P, Section "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 attached to the electronic insert)

Table 14: (GROUP SELECTION →) OPERATING MENU → DIAGNOSTICS → SIMULATION MODE	
Parameter name	**Description**
SIMULATION MODE (413) Options	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. • Tank content, → see also this table, parameter description for SIM. TANK CONT. • Current, → see also this table, parameter description for SIM. CURRENT • Alarm/warning, , → see also this table, parameter description for SIM. ERROR NO. P01-MIDxxxxx-05-xx-xx-EN-003 **Factory setting:** None
SIM. PRESSURE (414) Entry	Enter simulation value. → See also SIMULATION MODE. **Prerequisite:** • SIMULATION MODE = Pressure **Factory setting:** Current pressure measured value
SIM. CURRENT (270) Entry	Enter simulation value. → See also SIMULATION MODE. **Prerequisite:** • SIMULATION MODE = Current value **Factory setting:** Current current value
SIM. ERROR NO. (476) Entry	Enter message number. → See also SIMULATION MODE. → See also these Operating Instructions, Section 6.1 "Messages", "Code" table column. **Prerequisite:** • SIMULATION MODE = Alarm/warning **Factory setting:** 613 (simulation active)

Table 15: (GROUP SELECTION →) OPERATING MENU → DIAGNOSTICS → MESSAGES	
Parameter name	**Description**
ALARM STATUS (046) Display	Displays the current messages present. → See also these Operating Instructions, Section 6.1 "Messages" and Section "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. **Operating program** • The "Status" field and the ALARM STATUS parameter show the message with the highest priority.
LAST DIAG. CODE (564) Display	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. • Digital communication: the last message is displayed. • Use the RESET ALL ALARMS parameter to delete the messages listed in the LAST DIAG. CODE parameter.
ACK. ALARM MODE (401) Options	Switch on acknowledge alarm mode. → See also ACK. ALARM. **Options:** • On • Off **Factory setting:** Off
ACK. ALARM (500) Options	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 36) has to have elapsed before the device starts measuring again following an alarm. → See also these Operating Instructions, Section 6.3 "Confirming messages". **Factory setting:** Abort
RESET ALL ALARMS (603) Options	Use this parameter to reset all the messages of the LAST DIAG. CODE parameter. **Options:** • Abort • Confirm **Factory setting:** Abort
ERROR No. Entry	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 6.1 "Messages" and Section 6.2 "Response of outputs to errors". **Prerequisite:** • Digital communication

Table 15: (GROUP SELECTION →) OPERATING MENU → DIAGNOSTICS → MESSAGES	
Parameter name	Description
SELECT ALARMTYPE (595) – Entry (600) – Selection	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 6.2 "Response of outputs to errors". **Options**: ▪ Alarm (A): output current assumes a defined value. ▪ Warning (W): device continues measuring **Onsite operation:** 1. Enter the corresponding message number for ERROR No. field. 2. Select "Alarm" or "Warning" option. **Digital communication** 1. Enter the corresponding message number via the ERROR No. parameter. 2. Use the SELECT ALARMTYPE parameter to select the "Alarm" or "Warning" option.
ALARM DELAY (336) Entry	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	Enter the alarm delay time for all "Error"-type messages. 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 6.3 "Confirming messages". **Input range:** 0 to 999.9 s **Factory setting:** 0.0 s

Table 16: (GROUP SELECTION →) OPERATING MODE → DIAGNOSTICS → USER LIMITS	
Parameter name	Description
Pmin ALARM WINDOW (332) Entry	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 6.1 "Messages", Table, code E730 and Section 6.2 "Response of outputs to errors". **Factory setting:** Low sensor limit ▪1.1 (→ For the low sensor limit, see PRESS. SENS LOLIM.)
Pmax ALARM WINDOW (333) Entry	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 6.1 "Messages", Table, code E731 and Section 6.2 "Response of outputs to errors". **Factory setting:** High sensor limit ▪ 1.1 (→ For the high sensor limit, see PRESS. SENS HILIM.)

Table 16: (GROUP SELECTION →) OPERATING MODE → DIAGNOSTICS → USER LIMITS	
Parameter name	**Description**
Tmin ALARM WINDOW (334) Entry	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 6.1 "Messages" Table, code E732 and Section 6.2 "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	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 6.1 "Messages" Table, code E733 and Section 6.2 "Response of outputs to errors".
	Factory setting: Upper sensor temperature application limit +10 K (→ For the upper temperature application limit, see Tmax SENSOR)

Fig. 14:   SYSTEM 2 group

Table 17: (GROUP SELECTION →) OPERATING MENU → SERVICE → SYSTEM 2	
Parameter name	Description

CURR. TRIM 4mA (045)
Entry
	Enter the current value for the lower point (4 mA) of the current linear regression line.
	You can adapt the current output to the transmission conditions with this parameter and "CURR. TRIM 20mA".
	
	Perform the current trim for the lower point as follows:
	1. Select the SIMULATION MODE group.
	    (Menu path: (GROUP SELECTION) → OPERATING MENU → DIAGNOSTICS → SIMULATION MODE)
	2. Select the "Current" option via the SIMULATION MODE parameter.
	3. Enter "4 mA" for the SIM. CURRENT parameter.
	4. Select the SYSTEM 2 group.
	    (Menu path: (GROUP SELECTION) → OPERATING MENU → SERVICE)
	5. Enter the current value measured with the switching unit in the "CURR. TRIM 4mA" parameter.
	
	Input range:
	Measured current ±0.2 mA
	
	Factory setting:
	4 mA

CURR. TRIM 20mA (042)
Entry
	Enter the current value for the upper point (20 mA) of the current linear regression line.
	You can adapt the current output to the transmission conditions with this parameter and "CURR. TRIM 4mA".
	
	Perform the current trim for the upper point as follows:
	1. Select the SIMULATION MODE group.
	    (Menu path: (GROUP SELECTION) → OPERATING MENU → DIAGNOSTICS → SIMULATION MODE)
	2. Select the "Current" option via the SIMULATION MODE parameter.
	3. Enter "20 mA" for the SIM. CURRENT parameter.
	4. Select the SYSTEM 2 group.
	    (Menu path: (GROUP SELECTION) → OPERATING MENU → SERVICE)
	5. Enter the current value measured with the switching unit in the "CURR. TRIM 20mA" parameter.
	
	Input range:
	Measured current ±0.2 mA
	
	Factory setting:
	20 mA

OFFSET 4mA TRIM (043) Display	Displays the difference between 4 mA and the value entered for the "CURR. TRIM 4mA" parameter. **Factory setting:** 0
OFFSET 20mA TRIM (044) Display	Displays the difference between 20 mA and the value entered for the "CURR TRIM 20mA" parameter. **Factory setting:** 0

6   Troubleshooting

6.1   Messages

The following table lists all the possible messages that can occur.
The device makes a distinction between the error types "Alarm", "Warning" and "Error". You may specify whether the device should react as if for an "Alarm" or "Warning" for "Error" messages.
→ See "Error type/NA 64" column and parameter description for ERROR No. and SELECT ALARMTYPE (→ Page 36).

In addition, the "Error 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 "T" (in service)

Error message display on the onsite display:
• The measured value display shows the message with the highest priority. → See the "Priority" column.
• The ALARM STATUS parameter (→ Page 35) shows all the messages in descending order of priority. You can scroll through all the messages present with the S key or O key.

Message display via digital communication:
• The ALARM STATUS parameter (→ Page 35) shows the message with the highest priority.
  → See the "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 45, Section 6.1.1 "Onsite display error messages".
• For support and further information, please contact Endress+Hauser Service.

Code	Error type/ NA 64	Message/description	Cause	Measure	Priority
101 (A101)	Alarm B	B>Sensor electronic EEPROM error	– Electromagnetic effects are greater than specifications in the technical data. → See Technical Information TI00383P. This message normally only appears briefly. – Sensor defective.	– Wait a few minutes. – Restart the device. Perform reset (Code 62). – Block off electromagnetic effects or eliminate source of disturbance. – Replace sensor.	17
106 (W106)	Warning C	C>Downloading - please wait	– Downloading.	– Wait for download to complete.	52
110 (A110)	Alarm B	B>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 TI00383P. – Main electronics defective.	– Reestablish supply voltage. Perform reset (Code 7864) if necessary. Carry out calibration again. – Block off electromagnetic effects or eliminate sources of disturbance. – Replace main electronics.	6
113 (A113)	Alarm B	B>ROM failure in transmitter electronic	– Main electronics defective.	– Replace main electronics.	1

Code	Error type/ NA 64	Message/description	Cause	Measure	Priority
115 (E115)	Error B Factory setting: Warning	B>Sensor overpressure	– Overpressure present. – Sensor defective.	– Reduce pressure until message disappears. – Replace sensor.	29
116 (W116)	Warning C	C>Download error, repeat download	– The file is defective. – 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 7864) and carry out calibration again. – Repeat download.	36
120 (E120)	Error B Factory setting: Warning	B>Sensor low pressure	– Pressure too low. – Sensor defective.	– Increase pressure until message disappears. – Replace sensor.	30
121 (A121)	Alarm B	B>Checksum error in factory segment of EEPROM	– Main electronics defective.	– Replace main electronics.	5
122 (A122)	Alarm B	B>Sensor not connected	– Cable connection sensor –main electronics disconnected. – Electromagnetic effects are greater than specifications in the technical data. → See Technical Information TI00383P. – Main electronics defective. – Sensor defective.	– 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	B>EEPROM is defective.	– Main electronics defective.	– Replace main electronics.	10
131 (A131)	Alarm B	B>Checksum error in EEPROM: min/max segment	– Main electronics defective.	– Replace main electronics.	9
132 (A132)	Alarm B	B>Checksum error in totalizer EEPROM	– Main electronics defective.	– Replace main electronics.	7
133 (A133)	Alarm B	B>Checksum error in History EEPROM	– An error occurred when writing. – Main electronics defective.	– Perform reset (Code 7864) and carry out calibration again. – Replace main electronics.	8
602 (W602)	Warning C	C>Linearization curve not monotone	– The linearization table is not monotonic increasing or decreasing.	– Add to or correct linearization table. Then accept linearization table again.	57

Code	Error type/ NA 64	Message/description	Cause	Measure	Priority
604 (W604)	Warning C	C>Linearization table not valid. Less than 2 points or points too close	– The linearization table consists of less than 2 points. – At least 2 points in the linearization table are too close together. A minimum gap of 0.5 % of the span must be maintained between two points. 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.	– Add to linearization table. If necessary, confirm linearization table again. – Correct linearization table and accept again.	58
613 (W613)	Warning I	I>Simulation is active	– Simulation is switched on, i.e. the device is not measuring at present.	– Switch off simulation.	60
620 (E620)	Error C Factory setting: Warning	C>Current output out of range	The current is outside the permitted range 3.8 to 20.5 mA. – The pressure applied is outside the set measuring range (but within the sensor range). – Loose connection at sensor cable	– Check pressure applied, reconfigure measuring range if necessary. → See also these Operating Instructions Section 4. – Perform reset (Code 7864) and carry out calibration again. – Wait a short period of time and tighten the connection, or avoid loose connection.	49
700 (W700)	Warning C	C>Last configuration not stored	– An error occurred when writing or reading configuration data or the power supply was disconnected. – Main electronics defective.	– Perform reset (Code 7864) and carry out calibration again. – Replace main electronics.	54
701 (W701)	Warning C	C>Measuring chain config. exceeds sensor range	– The calibration carried out would result in the sensor nominal operating range being undershot or overshot.	– Carry out calibration again.	51
702 (W702)	Warning C	C>HistoROM data not consistent.	– Data were not written correctly to the HistoROM, e.g. if the HistoROM was detached during the writing process. – HistoROM does not have any data.	– Repeat upload. – Perform reset (Code 7864) and carry out calibration again. – Copy suitable data to the HistoROM. (→ See also Operating Instructions BA00412P, Section "Copying configuration data".)	55
703 (A703)	Alarm B	B>Measurement error	– Fault in the main electronics. – Main electronics defective.	– Briefly disconnect device from the power supply. – Replace main electronics.	22
704 (A704)	Alarm B	B>Measurement error	– Fault in the main electronics. – Main electronics defective.	– Briefly disconnect device from the power supply. – Replace main electronics.	12
705 (A705)	Alarm B	B>Measurement error	– Fault in the main electronics. – Main electronics defective.	– Briefly disconnect device from the power supply. – Replace main electronics.	21

Code	Error type/ NA 64	Message/description	Cause	Measure	Priority
706 (W706)	Warning C	C>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. – Copy data from the HistoROM to the device. 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 7864 do not have any effect on the HistoROM. That means that if you perform a reset, the configurations in the HistoROM and in the device may not be the same. → See also Operating Instructions BA00412P, Section "Copying configuration data".	59
707 (A707)	Alarm B	B>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. (→ See also these Operating Instructions, Section 5.)	38
710 (W710)	Warning 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 also Page 29, parameter description for MINIMUM SPAN.) – Adjust calibration to suit sensor. – Replace sensor with a suitable sensor. – Check configuration and perform download again.	51
711 (A711)	Alarm B	B>LRV or URV out of edit limits	– Lower range value and/or upper range value undershoot or overshoot the sensor range limits. – The sensor was replaced and the customer-specific configuration does not suit the sensor. – Unsuitable download carried out.	– Reconfigure lower range value and/or upper range value to suit the sensor. Pay attention to position factor. – Reconfigure lower range value and/or upper range value to suit the sensor. Pay attention to position factor. – Replace sensor with a suitable sensor. – Check configuration and perform download again.	37
713 (A713)	Alarm B	B>100% POINT level out of edit limits	– The sensor was replaced.	– Carry out calibration again.	39
715 (E715)	Error C Factory setting: Warning	C>Sensor over temperature	– The temperature measured in the sensor is greater than the upper nominal temperature of the sensor. (→ See also these Operating Instructions, 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	B>Process isolating diaphragm broken	– Sensor defective.	– Replace sensor.	24

Code	Error type/ NA 64	Message/description	Cause	Measure	Priority
717 (E717)	Error C Factory setting: Warning	C>Transmitter over temperature	– The temperature measured in the electronics is greater than the upper nominal temperature of the electronics (+88 ℃). – Unsuitable download carried out.	– Reduce ambient temperature. – Check configuration and perform download again.	34
718 (E718)	Error C Factory setting: Warning	C>Transmitter under temperature	– The temperature measured in the electronics is smaller than the lower nominal temperature of the electronics (−43 ℃). – Unsuitable download carried out.	– Increase ambient temperature. Insulate device if necessary. – Check configuration and perform download again.	35
720 (E720)	Error C Factory setting: Warning	C>Sensor under temperature	– The temperature measured in the sensor is smaller than the lower nominal temperature of the sensor. ($\rightarrow$ See also Page 29, 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	B>ZERO POSITION level out of edit limits	– LEVEL MIN or LEVEL MAX has been changed.	– Perform reset (Code 2710) and carry out calibration again.	41
722 (A722)	Alarm B	B>EMPTY CALIB. or FULL CALIB. out of edit limits	– LEVEL MIN or LEVEL MAX has been changed.	– Perform reset (Code 2710) and carry out calibration again.	42
725 (A725)	Alarm B	B>Sensor connection error, cycle disturbance	– Electromagnetic effects are greater than specifications in the technical data. $\rightarrow$ See Technical Information TI00383P. – Sensor or main electronics defective.	– Block off electromagnetic effects or eliminate source of disturbance. – Replace sensor or main electronics.	25
726 (E726)	Error C Factory setting: Warning	C>Sensor temperature error - overrange	– Electromagnetic effects are greater than specifications in the technical data. $\rightarrow$See Technical Information TI00383P. – Process temperature is outside permitted range. – Sensor defective.	– 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
727 (E727)	Error B Factory setting: Warning	B>Sensor pressure error - overrange	– Electromagnetic effects are greater than specifications in the technical data. $\rightarrow$ See Technical Information TI00383P. – Pressure is outside permitted range. – Sensor defective.	– 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

Code	Error type/ NA 64	Message/description	Cause	Measure	Priority
728 (A728)	Alarm B	B>RAM error	– Fault in the main electronics. – Main electronics defective.	– Briefly disconnect device from the power supply. – Replace main electronics.	2
729 (A729)	Alarm B	B>RAM error	– Fault in the main electronics. – Main electronics defective.	– Briefly disconnect device from the power supply. – Replace main electronics.	3
730 (E730)	Error C Factory setting: Warning	C>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 also Page 36, 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	C>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 also Page 36, parameter description for PmaxALARM WINDOW).	45
732 (E732)	Error C Factory setting: Warning	C>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 also Page 37, parameter description for Tmin PROCESS.) – Wait a short period of time and tighten the connection, or avoid loose connection.	48
733 (E733)	Error C Factory setting: Warning	C>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 also Page 37, parameter description for Tmax PROCESS.)	47
736 (A736)	Alarm B	B>RAM error	– Fault in the main electronics. – Main electronics defective.	– Briefly disconnect device from the power supply. – Replace main electronics.	4
737 (A737)	Alarm B	B>Measurement error	– Fault in the main electronics. – Main electronics defective.	– Briefly disconnect device from the power supply. – Replace main electronics.	20
738 (A738)	Alarm B	B>Measurement error	– Fault in the main electronics. – Main electronics defective.	– Briefly disconnect device from the power supply. – Replace main electronics.	19
739 (A739)	Alarm B	B>Measurement error	– Fault in the main electronics. – Main electronics defective.	– Briefly disconnect device from the power supply. – Replace main electronics.	23
741 (A741)	Alarm B	B>TANK HEIGHT out of edit limits	– LEVEL MIN or LEVEL MAX has been changed.	– Perform reset (Code 2710) and carry out calibration again.	44

Code	Error type/ NA 64	Message/description	Cause	Measure	Priority
742 (A742)	Alarm B	B>Sensor connection error (upload)	– Electromagnetic effects are greater than specifications in the technical data. →See Technical Information TI00383P. This message normally only appears briefly.	– Wait a few minutes. – Perform reset (Code 7864) and carry out calibration again.	18
			– Cable connection sensor –main electronics disconnected.	– Check cable connection and repair if necessary.	
			– Sensor defective.	– Replace sensor.	
743 (E743)	Alarm B	B>Electronic PCB error during initialization	– Electromagnetic effects are greater than specifications in the technical data. →See Technical Information TI00383P. This message normally only appears briefly.	– Wait a few minutes. – Restart the device. Perform reset (Code 62).	14
			– Main electronics defective.	– Replace main electronics.	
744 (A744)	Alarm B	B>Main electronic PCB error	– Electromagnetic effects are greater than specifications in the technical data. → See Technical Information TI00383P.	– Restart the device. Perform reset (Code 62). – Block off electromagnetic effects or eliminate source of disturbance.	11
			– Main electronics defective.	– Replace main electronics.	
745 (W745)	Warning C	C>Sensor data unknown	– Sensor does not suit the device (electronic sensor nameplate). Device continues measuring.	– Replace sensor with a suitable sensor.	56
746 (W746)	Warning C	C>Sensor connection error - initializing	– Electromagnetic effects are greater than specifications in the technical data. This message normally only appears briefly. →See Technical Information TI00383P.	– Wait a few minutes. – Restart the device. Perform reset (Code 62). – Block off electromagnetic effects or eliminate source of disturbance.	26
			– Overpressure or low pressure present.	– Reduce or increase pressure.	
747 (A747)	Alarm B	B>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	B>Memory failure in signal processor	– Electromagnetic effects are greater than specifications in the technical data. →See Technical Information TI00383P.	– Block off electromagnetic effects or eliminate source of disturbance.	15
			– Main electronics defective.	– Replace main electronics.	

6.1.1 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	

6.2   Response of outputs to errors

The device makes a distinction between the error types Alarm, Warning and Error.
→ See also Section 6.1 "Messages" and Page 21 ff, Table 7: OUTPUT and Page 35 ff, Table 15: MESSAGES.

Output	A (Alarm)	W (Warning)	E (Error: Alarm/Warning)
Current output	– Device does not continue measuring. – The current output assumes the value specified via the OUTPUT FAIL MODE[1], ALT. CURR. OUTPUT[1] and SET MAX. ALARM.[1] → See also Operating Instructions BA00412P, Section "Configuring current output for an alarm".	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. (→ See also these Operating Instructions, parameter description for SELECT ALARMTYPE.)
Bar graph (onsite display)	The bar graph adopts the value defined by the OUTPUT FAIL MODE [1] parameter.	The bar graph adopts the value which corresponds to the current value.	See this table, "Alarm" or "Warning" column, depending on the option selected.
Onsite display	– The measured value and message are displayed alternately – Measured value display: ⌐ -symbol is permanently displayed. Message display – 3-digit number such as A122 and description	– The measured value and message are displayed alternately – Measured value display: ⌐ -symbol flashes. Message display: – 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: – 3-digit number such as E731 and description
Remote operation (digital communication)	In the case of an alarm, the ALARM STATUS[2] parameter displays a 3-digit number such as 122 for "Sensor not connected".	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 "URV user limits exceeded".

1)   Menu path: (GROUP SELECTION →) OPERATING MENU → OUTPUT

2)   Menu path: (GROUP SELECTION →) OPERATING MENU → MESSAGES

6.3   Confirming messages

Depending on the settings for the ALARM DISPL. TIME ($\rightarrow$ Page 36) and ACK. ALARM MODE ($\rightarrow$ Page 35), the following measures should be taken to clear a message:

Settings[1]	Measures
– ALARM DISPL. TIME = 0 s – ACK. ALARM MODE = Off	– Rectify the cause of the message (see also Section 6.1).
– ALARM DISPL. TIME > 0 s – ACK. ALARM MODE = Off	– Rectify the cause of the message (see also Section 6.1). – Wait for the alarm display time to elapse.
– ALARM DISPL. TIME = 0 s – ACK. ALARM MODE = On	– Rectify the cause of the message (see also Section 6.1). – Confirm message using ACK. ALARM parameter.
– ALARM DISPL. TIME > 0 s – ACK. ALARM MODE = On	– Rectify the cause of the message (see also Section 6.1). – 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)   Menu path for ALARM DISPL. TIME and ACK. ALARM MODE: (GROUP SELECTION $\rightarrow$) OPERATING MENU $\rightarrow$ DIAGNOSTICS $\rightarrow$ MESSAGES

If the onsite display displays a message, you can suppress it with the F key.
If there are several messages, the onsite display shows the message which has the highest priority (Section 6.1). Once you have suppressed this message using the F key, the message with the next highest priority is displayed. You can use the F key to suppress each message, one after the other.
The ALARM STATUS parameter continues to display all the messages present.

7   Appendix

7.1   Operating menu for onsite display and digital communication

- The entire menu is depicted on the following pages.
- 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.
- In addition, there are also parameters that are only displayed if other parameters are appropriately configured. For example the CUSTOMER UNIT P parameter is only displayed if the "User unit" option was selected for the PRESS. ENG. UNIT parameter. These parameters are indicated with a "*".
- For a description of the parameters, see Section 5 "Description of parameters". The exact dependency of individual parameters on one another is explained here.

```
┌──────────────────┐
│  Measured value  │
└──────────────────┘
         │           1)
┌──────────────────┐
│ GROUP SELECTION  │
└──────────────────┘
         │
   ┌─────┴──────────────┬──────────────────────┬──────────────────────────────┬──────────────────────────────────────────→
   │  1)                 │  1)                  │                              │
┌──────────────┐  ┌──────────────────┐  ┌──────────────┐            ┌──────────────────┐
│  LANGUAGE    │  │ LEVEL SELECTION  │  │ QUICK SETUP  │            │ OPERATING MENU   │
└──────────────┘  └──────────────────┘  └──────────────┘            └──────────────────┘
                         │  1)                 │                              │                                    →
                  ┌──────────────────┐         │                     ┌──────────────────┐
                  │ MEASURING MODE   │         │                     │    SETTINGS      │
                  └──────────────────┘         │                     └──────────────────┘
                                               │                              │
                                               │                     ┌──────────────────────┐
                                               │                     │ POSITION ADJUSTMENT  │
                                               │                     └──────────────────────┘
                                               │                              │
                                               │  2)                 ┌──────────────────┐
                                        ┌──────────────────┐         │   BASIC SETUP    │
                                        │ MEASURING MODE   │         └──────────────────┘
                                        └──────────────────┘                  │  2)
                                               │                     ┌──────────────────┐
                                               │                     │ MEASURING MODE   │
                                               │                     └──────────────────┘
                                               │                              │
                                          Pressure                        Pressure
                                               │                              │
                                        ┌──────────────────┐         ┌──────────────────┐
                                        │ POS. INPUT VALUE │         │ PRESS. ENG. UNIT │
                                        └──────────────────┘         └──────────────────┘
                                        │            Level (not          │        *
                                        │            provided        ┌──────────────────┐
                                   ┌──────────────┐ for PMP71 with MID)│ CUSTOMER UNIT P  │
                                   │   SET LRV    │                 └──────────────────┘
                                   └──────────────┘                        │        *
                                   ┌──────────────┐                 ┌──────────────────┐
                                   │   SET URV    │                 │ CUST. UNIT FACT. P│
                                   └──────────────┘                 └──────────────────┘
                                   ┌──────────────┐                 ┌──────────────┐
                                   │ DAMPING VALUE│                 │   SET LRV    │
                                   └──────────────┘                 └──────────────┘
                                                                    ┌──────────────┐
                         ┌──────────────────┐                       │   SET URV    │
                         │ POS. INPUT VALUE │                       └──────────────┘
                         └──────────────────┘                       ┌──────────────┐
                         ┌──────────────────┐                       │   GET LRV    │
                         │  CALIB. OFFSET   │                       └──────────────┘
                         └──────────────────┘                       ┌──────────────┐
                                                                    │   GET URV    │
                                                                    └──────────────┘
                                                                    ┌──────────────┐
                                                                    │ DAMPING VALUE│
                                                                    └──────────────┘

                                            Level (not provided
                                            for PMP71 with MID)
```

1) Display via on-site display only

2) Display via FieldCare and
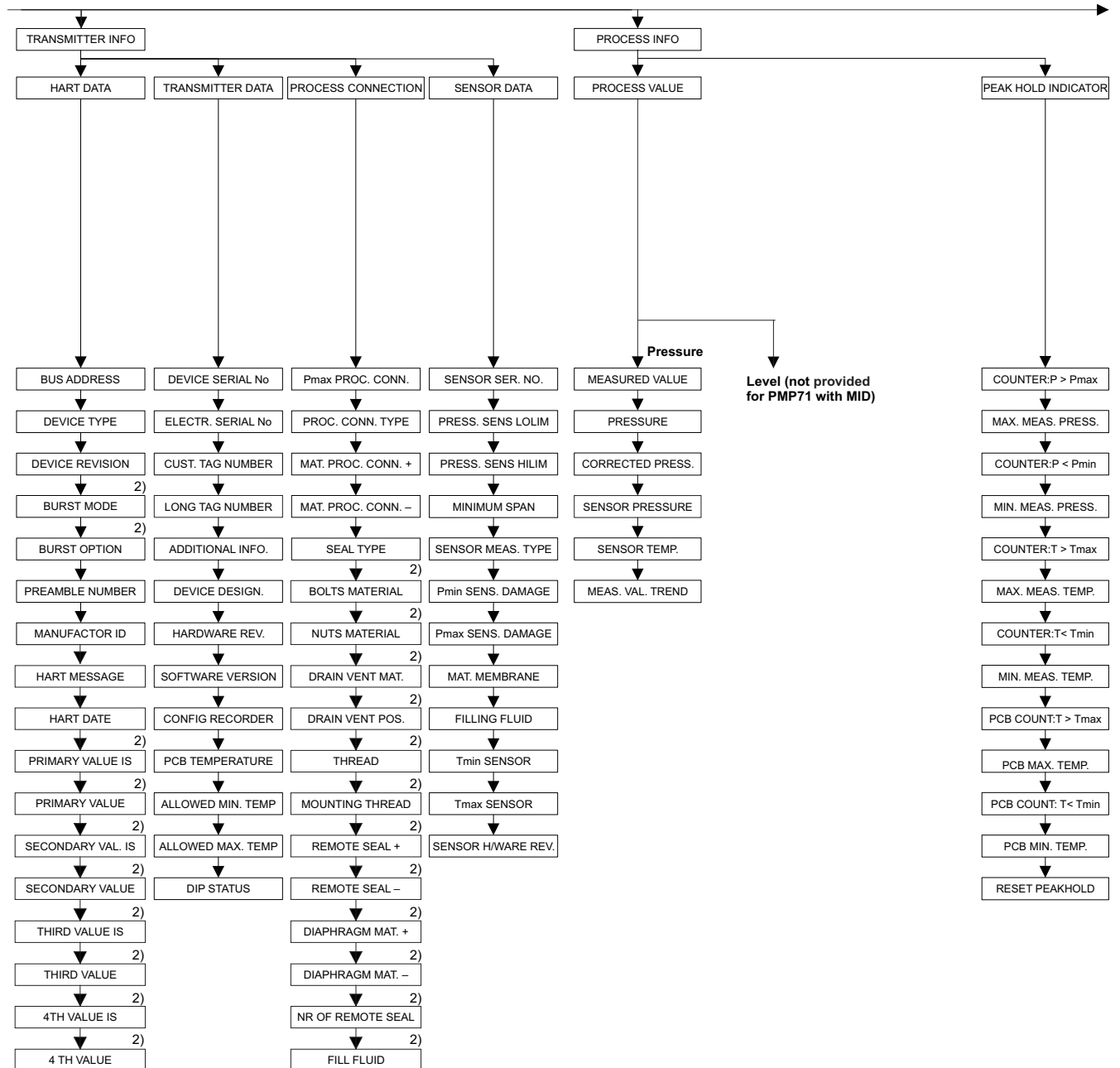   HART Handheld terminal only

* There are parameters that are only displayed if other parameters are
  appropriately configured.
  For example the CUSTOMER UNIT P parameter is only displayed
  if the "User unit" option was selected for the PRESS. ENG. UNIT parameter.
  These parameters are indicated with a "*".

EXTENDED SETUP

SAFETY CONFIRM. **

DISPLAY

OUTPUT

Pressure

TEMP. ENG UNIT

Level (not provided for PMP71 with MID)

SAFETY LOCK

SAFETY PASSWORD

DIGIT SETS

CURRENT OUTPUT

ACK. ALARM MODE

CALIB. OFFSET

MEASURING MODE

Pressure

SET LRV

Level (not provided for PMP71 with MID)

SET URV

DAMPING VALUE

CONF. PASSWORD

MENU DESCRIPTOR

MAIN DATA FORMAT

ALTERNATE DATA

LANGUAGE 2)

DISPLAY CONTRAST

DIGIT SETS

OUTPUT CURRENT

CURR. CHARACT.

OUTPUT FAIL MODE

ALT. CURR. OUTPUT

SET MAX. ALARM

SET MIN. CURRENT

ASSIGN CURRENT 3)
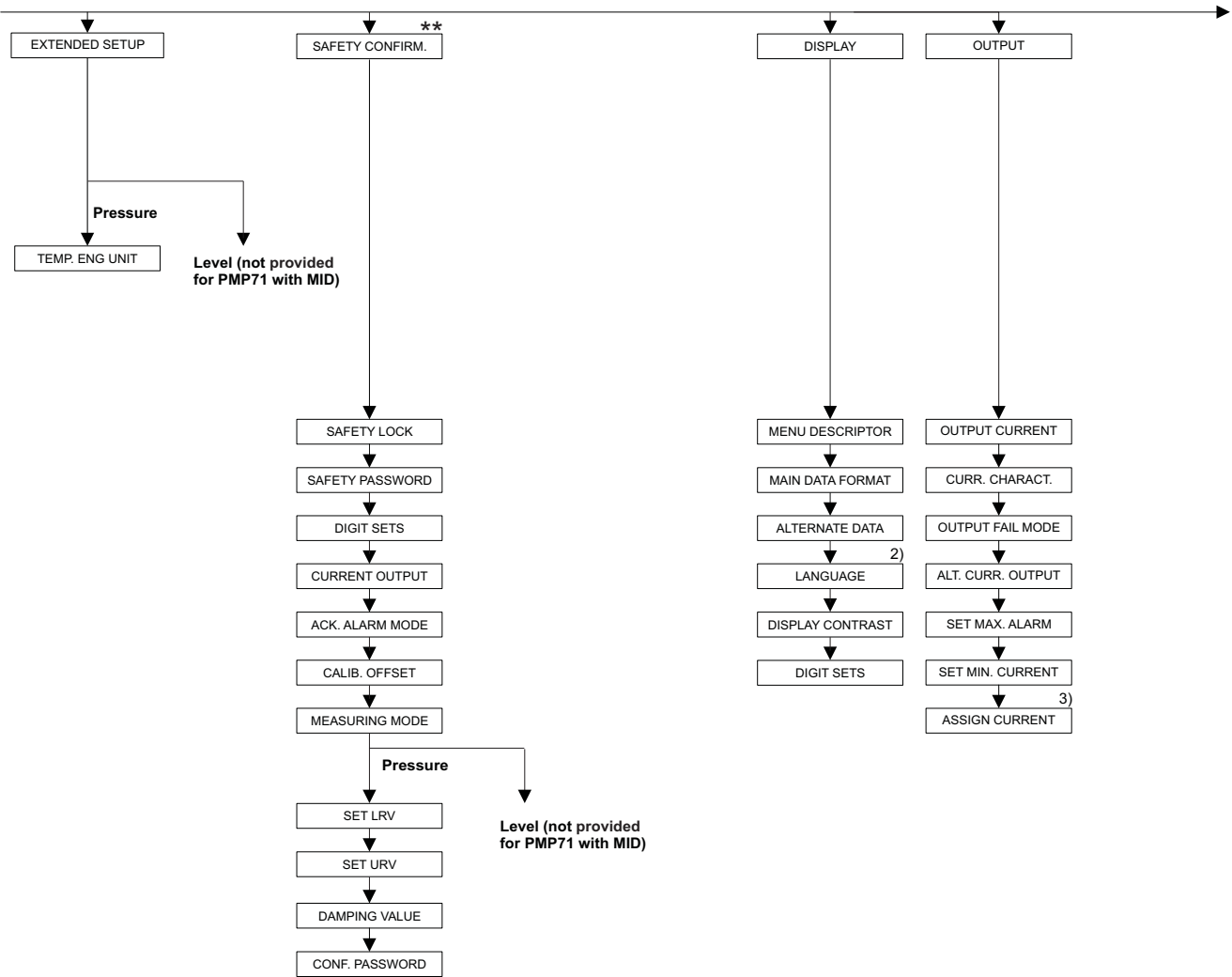
2) Display via
   HART handheld terminal only

✱ There are parameters that are only displayed if other parameters are
   appropriately configured.
   These parameters are indicated with a "*".

✱✱ See Safety Manual SD00190P.

P01-MIDxxxxx-19-xx-xx-en-032

TRANSMITTER INFO				PROCESS INFO		
HART DATA	TRANSMITTER DATA	PROCESS CONNECTION	SENSOR DATA	PROCESS VALUE		PEAK HOLD INDICATOR

Pressure
Level (not provided for PMP71 with MID)

BUS ADDRESS	DEVICE SERIAL No	Pmax PROC. CONN.	SENSOR SER. NO.	MEASURED VALUE		COUNTER:P > Pmax
DEVICE TYPE	ELECTR. SERIAL No	PROC. CONN. TYPE	PRESS. SENS LOLIM	PRESSURE		MAX. MEAS. PRESS.
DEVICE REVISION	CUST. TAG NUMBER	MAT. PROC. CONN. +	PRESS. SENS HILIM	CORRECTED PRESS.		COUNTER:P < Pmin
BURST MODE 2)	LONG TAG NUMBER	MAT. PROC. CONN. –	MINIMUM SPAN	SENSOR PRESSURE		MIN. MEAS. PRESS.
BURST OPTION 2)	ADDITIONAL INFO.	SEAL TYPE	SENSOR MEAS. TYPE	SENSOR TEMP.		COUNTER:T > Tmax
PREAMBLE NUMBER	DEVICE DESIGN.	BOLTS MATERIAL 2)	Pmin SENS. DAMAGE	MEAS. VAL. TREND		MAX. MEAS. TEMP.
MANUFACTOR ID	HARDWARE REV.	NUTS MATERIAL 2)	Pmax SENS. DAMAGE			COUNTER:T< Tmin
HART MESSAGE	SOFTWARE VERSION	DRAIN VENT MAT. 2)	MAT. MEMBRANE			MIN. MEAS. TEMP.
HART DATE	CONFIG RECORDER	DRAIN VENT POS. 2)	FILLING FLUID			PCB COUNT:T > Tmax
PRIMARY VALUE IS 2)	PCB TEMPERATURE	THREAD 2)	Tmin SENSOR			PCB MAX. TEMP.
PRIMARY VALUE 2)	ALLOWED MIN. TEMP	MOUNTING THREAD 2)	Tmax SENSOR			PCB COUNT: T< Tmin
SECONDARY VAL. IS 2)	ALLOWED MAX. TEMP	REMOTE SEAL + 2)	SENSOR H/WARE REV.			PCB MIN. TEMP.
SECONDARY VALUE 2)	DIP STATUS	REMOTE SEAL – 2)				RESET PEAKHOLD
THIRD VALUE IS 2)		DIAPHRAGM MAT. + 2)				
THIRD VALUE 2)		DIAPHRAGM MAT. – 2)				
4TH VALUE IS 2)		NR OF REMOTE SEAL 2)				
4 TH VALUE 2)		FILL FLUID				

2) Display via FieldCare and
   HART handheld terminal only

* There are parameters that are only displayed if other parameters are
   appropriately configured.
   These parameters are indicated with a "*".

P01-MIDxxxxx-19-xx-xx-en-033

OPERATION	DIAGNOSTICS			SERVICE
	SIMULATION	MESSAGES	USER LIMITS	SYSTEM 2

ENTER RESET CODE	SIMULATION MODE	ALARM STATUS	Pmin ALARM WINDOW	CURR. TRIM 4mA
OPERATING HOURS	(I)	LAST DIAG. CODE	Pmax ALARM WINDOW	CURR. TRIM 20mA
INSERT PIN NO		ACK. ALARM MODE	Tmin ALARM WINDOW	OFFSET 4mA TRIM
HistoROM AVAIL.		ACK. ALARM *	Tmax ALARM WINDOW	OFFSET 20mA TRIM
DOWNLOAD SELECT. *		RESET ALL ALARMS		
HistoROM CONTROL *		ERROR NO.		
		SELECT ALARMTYPE		
		ALARM DELAY		
		ALARM DISPL. TIME		

Display via HART handheld terminal only

(I)

none	**Pressure**	**Level**	**Tank content**	**Current**	**Alarm Warning**
	SIM. PRESSURE	SIM. LEVEL	SIM. TANK CONT.	SIM. CURRENT	SIM. ERROR NO.

* There are parameters that are only displayed if other parameters are appropriately configured.
These parameters are indicated with a "*".

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