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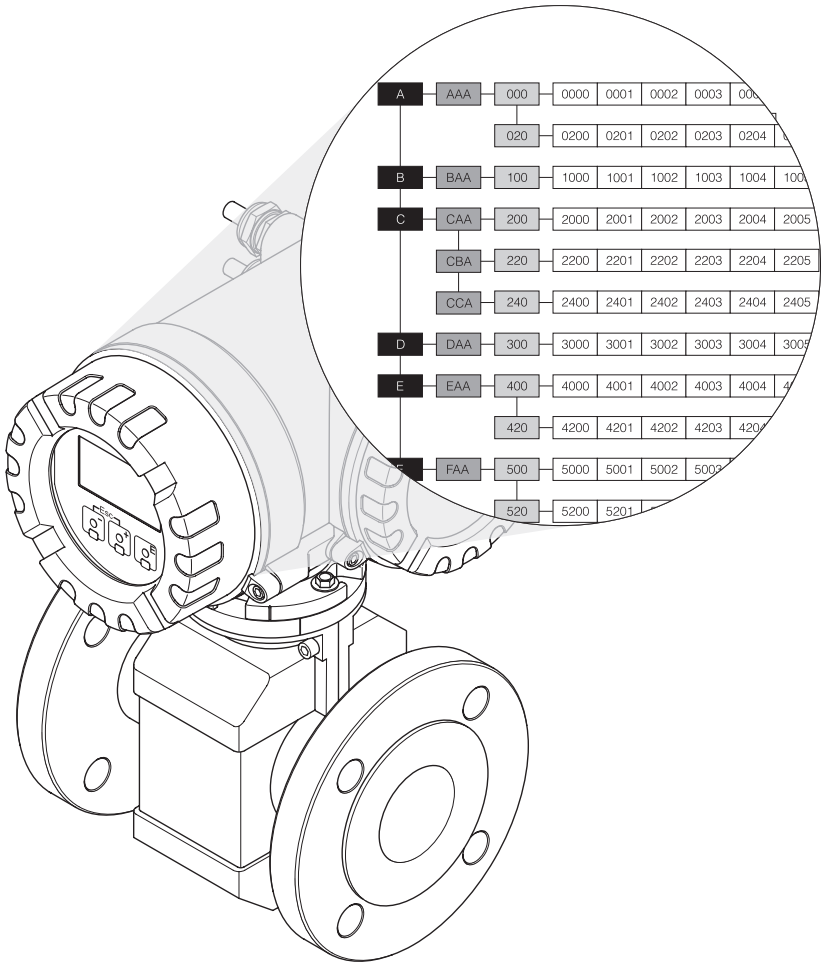
V 1.00.XX (amplifier)
V 1.00.XX (communication)

promag 53 (PROFIBUS-DP/-PA) Electromagnetic Flow Measuring System

Description of Device Functions



PROline
Evolution in flow

Endress+Hauser
The Power of Know How

Operation Promag 53 PROFIBUS-DP /-PA

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Table of contents for local operation

1 Notes on using this manual

There are various ways of locating the description of a function of your choice in the manual:

1.1 Using the table of contents to locate a function description

The designations of all the cells in the function matrix are listed in the table of contents. You can use these unambiguous designations (such as MEASURED VARIABLES, USER INTERFACE, BASIC FUNCTIONS, etc.) to choose whichever functions are applicable to a particular set of conditions. The page references show you exactly where to find the detailed descriptions of the functions in question. The table of contents is on Page 3.

1.2 Using the graphic of the function matrix to locate a function description

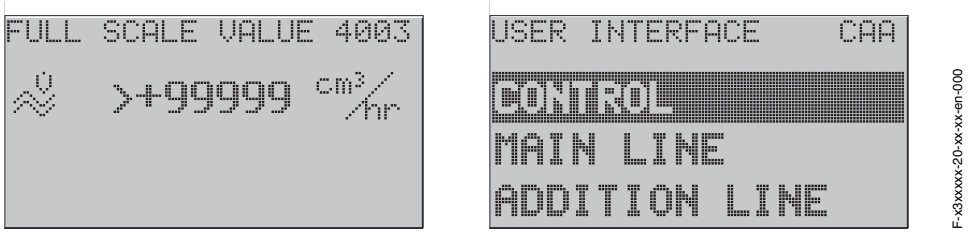
This step-by-step, top-down approach starts with the blocks, the highest level, and works down through the matrix to the description of the function you need:

1. All available blocks and their corresponding subgroups are shown on Page 10. Select the block (or the group within the block) which you need for your application and use the page reference to locate the information corresponding to the next level.
2. The page in question contains a graphic showing the block with all its subordinate groups, function groups and functions.
   Select the function which you need for your application and use the page reference to locate the detailed function description.

1.3 Using the index of the function matrix to locate a function description

Each “cell” in the function matrix (blocks, groups, function groups, functions) has a unique identifier in the form of a code consisting of one or three letters or a three- or four-digit number. The code identifying a selected “cell” appears at the top right on the local display.

Example:



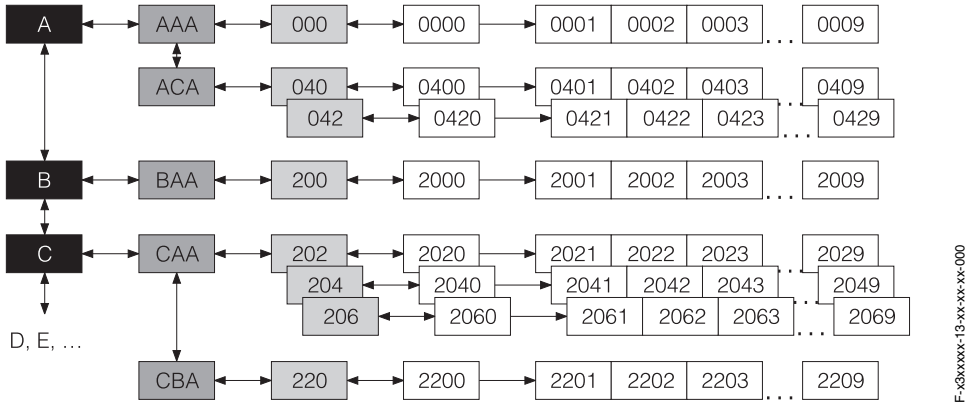
The function-matrix index lists the codes for all the available “cells” in alphabetic and consecutive order, complete with the page references for the corresponding functions. The index to the function matrix is on Page 61.

2 Function matrix

2.1 General layout of the function matrix

The function matrix consists of four levels:

Blocks -> Groups -> Function groups -> Functions



2.1.1 Blocks (A, B, C, etc.)

The blocks are the highest-level grouping of the operation options for the device. The blocks include, for example: MEASURED VARIABLES, QUICK SETUP, USER INTERFACE, BASIC FUNCTIONS, etc.

2.1.2 Groups (AAA, AEA, CAA, etc.)

A block consists of one or more groups. Each group represents a more detailed selection of the operation options in the higher-order block. The groups in the “USER INTERFACE” block, for example, include: CONTROL, MAIN LINE, ADDITION LINE, etc.

2.1.3 Function groups (000, 020, 060, etc.)

A group consists of one or more function groups. Each function group represents a more detailed selection of the operation options in the higher-order group. The function groups in the “CONTROL” group, for example, include: BASIC CONFIGURATION, UNLOCK/LOCK, OPERATION, etc.

2.1.4 Functions (0000, 0001, 0002, etc.)

Each function group consists of one or more functions. The functions are used to operate and parameterise the device. Numerical values can be entered and parameters selected and saved.
The functions in the “BASIC CONFIGURATION” function group, for example, include: LANGUAGE, MATRIX FILTER, USER INTERFACE DAMPING, LCD CONTRAST, etc.
The procedure for changing the language of the device's user interface, for example, is as follows:

1. Select the “USER INTERFACE” block
2. Select the “CONTROL” group
3. Select the “BASIC CONFIGURATION” function group
4. Select the “LANGUAGE” function
   (this is where the language can be selected).

2.1.5 Codes identifying cells

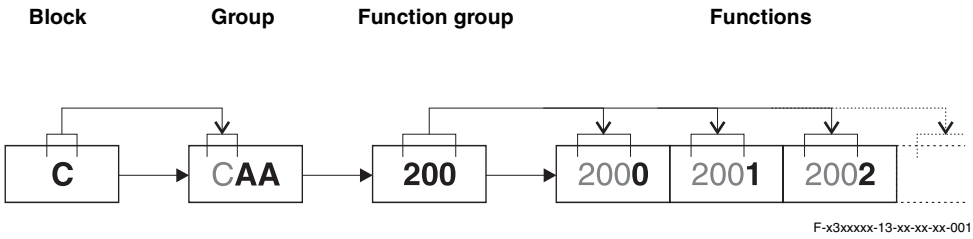
Each cell (block, group, function group and function) in the function matrix has an individual, unique code.

Blocks:
The code is a letter (A, B, C, etc.)

Groups:
The code consists of three letters (AAA, ABA, BAA, etc.).
The first letter matches the block code (i.e. each group in block A has a code starting with and “A”, in other words A _ _; the codes of the groups in block B start with a “B”, in other words B_ _ , and so on). The other two letters are for identifying the group within the respective block.

Function groups:
The code consists of three digits (000, 001, 100, etc.)

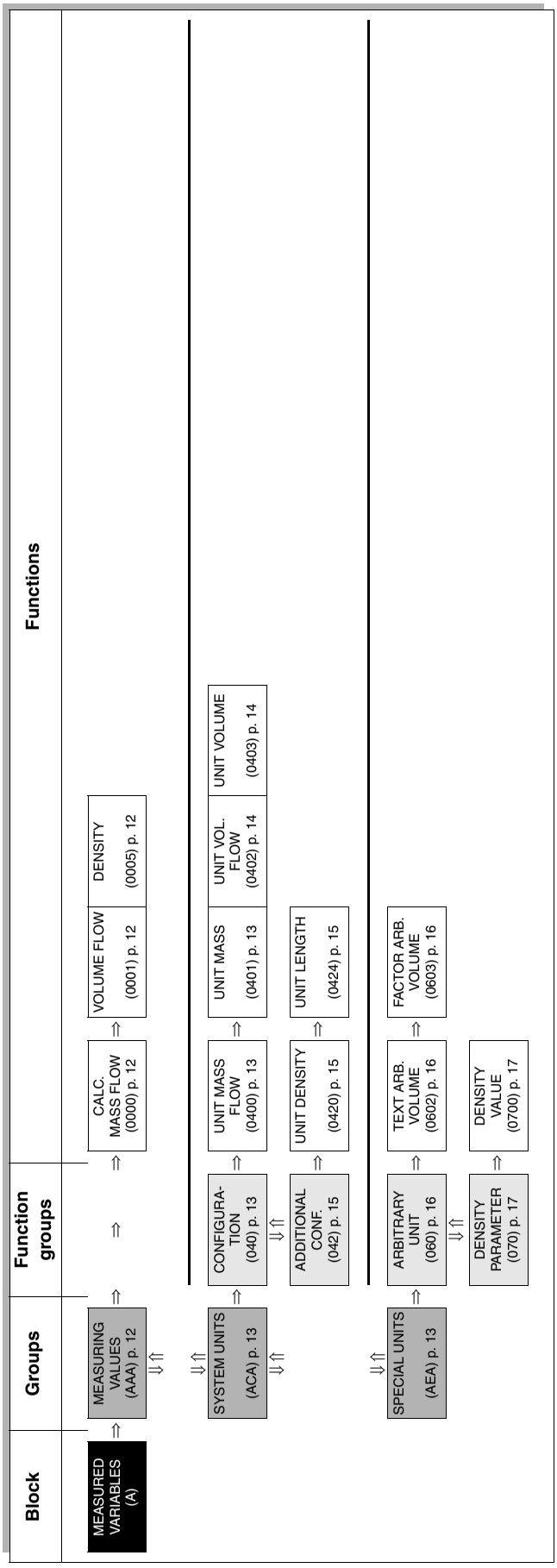
Functions:
The code consists of four digits (0000, 0001, 0201, etc.).
The first three digits are the same as the code for the function group.
The last digit in the code is a counter for the functions in the function group, incrementing from 0 to 9 (e.g. function 0005 is the sixth function in group 000).



2.2 Function matrix PROline Promag 53

BLOCKS	GROUPS		Function groups
MEASURED VARIABLES A (see Page 11)	MEASURING VALUES	AAA	see Page 12
	SYSTEM UNITS	ACA	see Page 13
	SPECIAL UNITS	AEA	see Page 16
QUICK SETUP B (see Page 18)	Commissioning and application setups		see Page 18
USER INTERFACE C (see Page 20)	CONTROL	CAA	see Page 21
	MAIN LINE	CCA	see Page 24
	ADDITION LINE	CEA	see Page 27
	INFORMATION LINE	CGA	see Page 31
BASIC FUNCTION G (see Page 35)	PROFIBUS-DP GBA or PROFIBUS-PA	GCA	see Page 36
	PROCESS PARAMETER	GIA	see Page 42
	SYSTEM PARAMETER	GLA	see Page 46
	SENSOR DATA	GNA	see Page 48
SUPERVISION J (see Page 50)	SYSTEM	JAA	see Page 51
	VERSION-INFO	JCA	see Page 55

3 Block MEASURED VARIABLES



3.1 Group MEASURING VALUES

MEASURED VARIABLES A ⇒ **MEASURING VALUES AAA** ⇒ **Measured variablesfunctions**

Function description MEASURED VARIABLES → MEASURING VALUES → Measured variables functions	
✎ Note: • The units of measure of all the measured variables shown here can be set in the "SYSTEM UNITS" group. • If the fluid in the pipe flows backwards, a negative sign prefixes the flow reading on the display.	
CALCULATED MASS FLOW (0000)	When you select this function, the current calculated mass flow appears on the display. It is calculated from the measured volume flow and the fixed density. **Display:** 5-digit floating-point number, including unit and sign (e.g. 462.87 kg/h; - 731.63 lb/min; etc.)
VOLUME FLOW (0001)	When you select this function, the current measured volume flow appears on the display. **Display:** 5-digit floating-point number, including unit and sign (e.g. 5.5445 dm^3/min; 1.4359 m^3/h; -731.63 gal/d; etc.)
DENSITY (0005)	When you select this function, the fixed density appears on the display. **Display:** 5-digit floating-point number including unit (corresponding to 0.100000...6.00000 kg/dm^3) e.g. 1.2345 kg/dm^3; 993.5 kg/m^3; 1.0015 SG_20 °C; etc.

3.2 Group SYSTEM UNITS

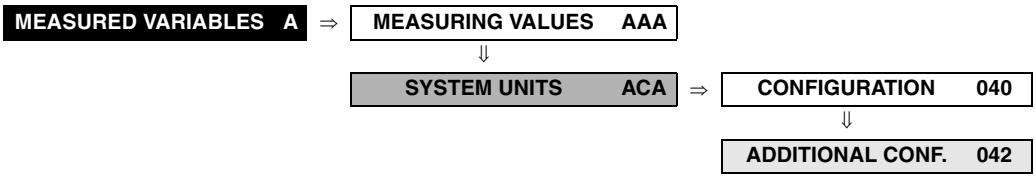
3.2.1 Function group CONFIGURATION

MEASURED VARIABLES A ⇒ **MEASURING VALUES AAA**
⇓
SYSTEM UNITS ACA ⇒ **CONFIGURATION 040**

Function description MEASURED VARIABLES ➞ SYSTEM UNITS ➞ CONFIGURATION	
You can select the units for measured variables in this function group. ✎ Note: • The units you select are not transmitted to the process-control system until the SET UNIT TO BUS function (see Page 40) is executed. • The factory settings of the local display as described here might not be the same as the factory settings of the PROFIBUS-DP /-PA output as sent to the process-control system (see the Operating Instructions *promag 53*, BA 053D/06/en/...).	
UNIT MASS FLOW (0400)	Use this function to select the unit for displaying the calculated mass flow (mass/time). The mass flow is calculated from the preset specific fluid density and the measured volume flow. The unit you select here is also valid for: • PROFIBUS-DP/-PA • Low flow cutoff **Options:** Metric: Gram → g/s; g/min; g/h; g/day Kilogram → kg/s; kg/min; kg/h; kg/day Ton → t/s; t/min; t/h; t/day US: ounce → oz/s; oz/min; oz/h; oz/day pound → lb/s; lb/min; lb/h; lb/day ton → ton/s; ton/min; ton/h; ton/day **Factory setting:** depends on nominal diameter and country (kg/min...t/h or US-lb/min...US-ton/h) See factory settings on Page 57 and Page 59, as applicable.
UNIT MASS (0401)	Use this function to select the unit for displaying the calculated mass. Mass is calculated from the preset (compensated) specific fluid density and the measured volume. **Options:** Metric → g; kg; t US → oz; lb; ton **Factory setting:** depends on nominal diameter and country (kg...t or US-lb...US-ton) See factory settings on Page 57 or Page 59, as applicable. ✎ Note: The unit for the totalizers is independent of your choice here. The unit for each totalizer is selected separately for the totalizer in question.

Function description MEASURED VARIABLES → SYSTEM UNITS → CONFIGURATION	
UNIT VOLUME FLOW (0402)	Use this function to select the unit for displaying the volume flow. The unit you select here is also valid for: • Low flow cutoff **Options:** Metric: Cubic centimeter → cm^3/s; cm^3/min; cm^3/h; cm^3/day Cubic decimeter → dm^3/s; dm^3/min; dm^3/h; dm^3/day Cubic meter → m^3/s; m^3/min; m^3/h; m^3/day Milliliter → ml/s; ml/min; ml/h; ml/day Liter → l/s; l/min; l/h; l/day Hectoliter → hl/s; hl/min; hl/h; hl/day Megaliter → Ml/s; Ml/min; Ml/h; Ml/day US: Cubic centimeter → cc/s; cc/min; cc/h; cc/day Acre foot → af/s; af/min; af/h; af/day Cubic foot → ft^3/s; ft^3/min; ft^3/h; ft^3/day Fluid ounce → oz f/s; oz f/min; oz f/h; oz f/day Gallon → gal/s; gal/min; gal/h; gal/day Million gallon → Mgal/s; Mgal/min; Mgal/h; Mgal/day Barrel (normal fluids: 31,5 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day Barrel (beer: 31,0 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day Barrel (petrochemicals: 42,0 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day Barrel (filling tanks: 55,0 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day Imperial Gallon → gal/s; gal/min; gal/h; gal/day Mega gallon → Mgal/s; Mgal/min; Mgal/h; Mgal/day Barrel (beer: 36,0 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day Barrel (petrochemicals: 42,0 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day **Factory setting:** depends on nominal diameter and country (dm^3/min...m^3/h or US-gal/min...US-Mgal/day) See factory settings on Page 57 or Page 59, as applicable. ✎ Note: If you defined a unit of volume in the ARBITRARY UNIT 060 function group (see Page 16) the unit in question is shown here.
UNIT VOLUME (0403)	✎ Note: This function is merely displayed on the local display; it is not processed by the measuring system.

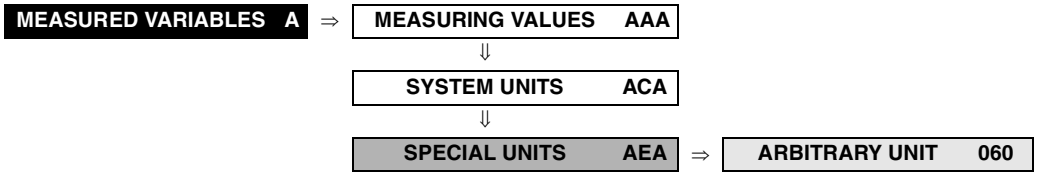
3.2.2 Function group ADDITIONAL CONFIGURATION



Function description MEASURED VARIABLES ➞ SYSTEM UNITS ➞ ADDITIONAL CONFIGURATION	
UNIT DENSITY (0420)	Use this function to select the unit for displaying the fluid density. The unit you select here is also valid for: • Entering fluid density **Options:** Metric → g/cm^3; g/cc; kg/dm^3; kg/l; kg/m^3; SD 4 °C, SD 15 °C, SD 20 °C; SG 4 °C, SG 15 °C, SG 20 °C US → lb/ft^3; lb/gal; lb/bbl (normal fluids); lb/bbl (beer); lb/bbl (petrochemicals); lb/bbl (filling tanks) Imperial → lb/gal; lb/bbl (beer); lb/bbl (petrochemicals) **Factory setting:** depends on country (kg/l or g/cc) See factory settings on Page 57 or Page 59, as applicable. SD = Specific Density, SG = Specific Gravity The specific density is the ratio of fluid density to the density of water (at water temperature = 4, 15, 20 °C)
UNIT LENGTH (0424)	Use this function to select the unit for displaying the unit of length for nominal diameter. The unit you select here is valid for: nominal diameter of the sensor (NOMINAL DIAMETER function (6804) on Page 48) **Options:** MILLIMETER INCH **Factory setting:** depends on country (MILLIMETER or INCH) See factory settings on Page 57 or Page 59, as applicable.

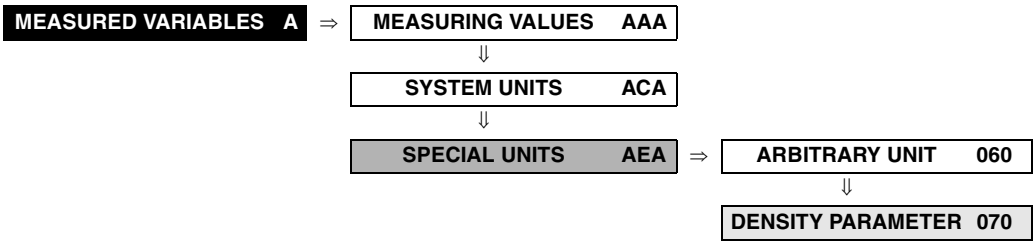
3.3 Group SPECIAL UNITS

3.3.1 Function group ARBITRARY UNIT



Function description MEASURED VARIABLES → SPECIAL UNITS → ARBITRARY UNIT	
TEXT ARBITRARY VOLUME (0602)	Caution: This function is merely displayed on the local display; do not make changes.
FACTOR ARBITRARY VOLUME (0603)	Caution: This function is merely displayed on the local display; do not make changes.

3.3.2 Function group DENSITY PARAMETER



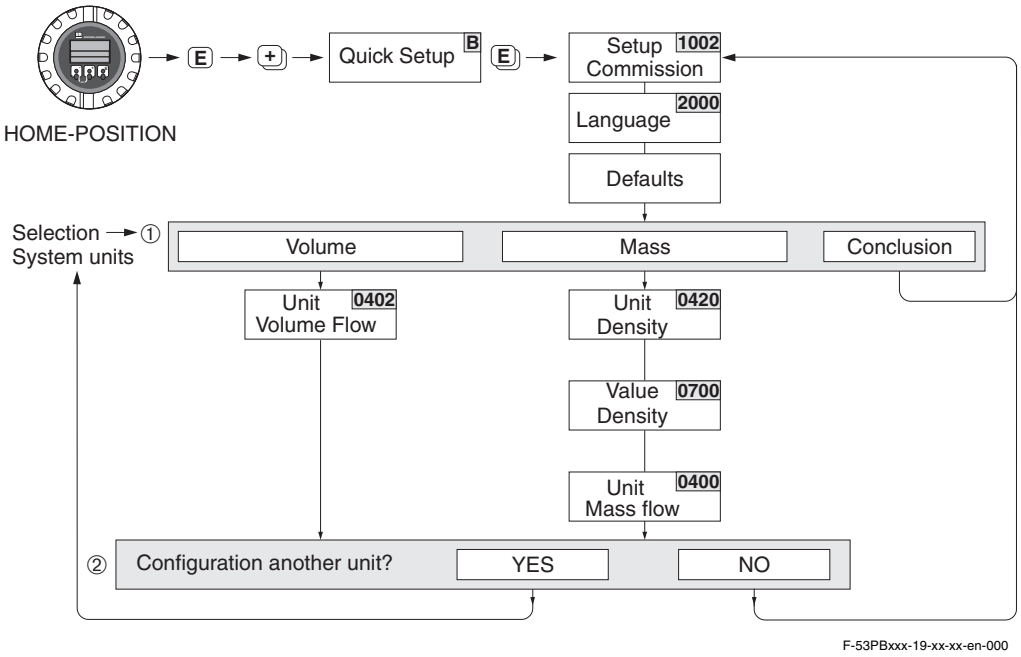
Function description MEASURED VARIABLES → SPECIAL UNITS → DENSITY PARAMETER	
DENSITY VALUE (0700)	Use this function to enter a density factor, at process temperature by preference. This density factor is used to convert the volume flow to a mass flow. **User input:** 5-digit floating-point number **Factory setting:** 1 [Unit] ✎ Note: The appropriate unit is taken from the UNIT DENSITY (0420) function.

4 Block QUICK SETUP

Block	Group	Function groups	Functions
QUICK SETUP (B)	⇒	⇒	SETUP COM-MISSION (1002) p. 18 ⇒ SETUP PULS. FLOW (1003) p. 18

Function description QUICK SETUP	
SETUP COMMISSION (1002)	Use this function to start the Quick Setup menu for commissioning. **Options:** YES NO **Factory setting:** NO ✎ Note: You will find a flowchart of the COMMISSIONING Quick Setup menu on Page 19.
SETUP PULSATING FLOW (1003)	✎ Note: The Quick Setup for pulsating flow functionality is not available at this time. You can call up the Quick Setup menu, but your entries will not be processed.

4.1 QUICK SETUP COMMISSIONING



Note:

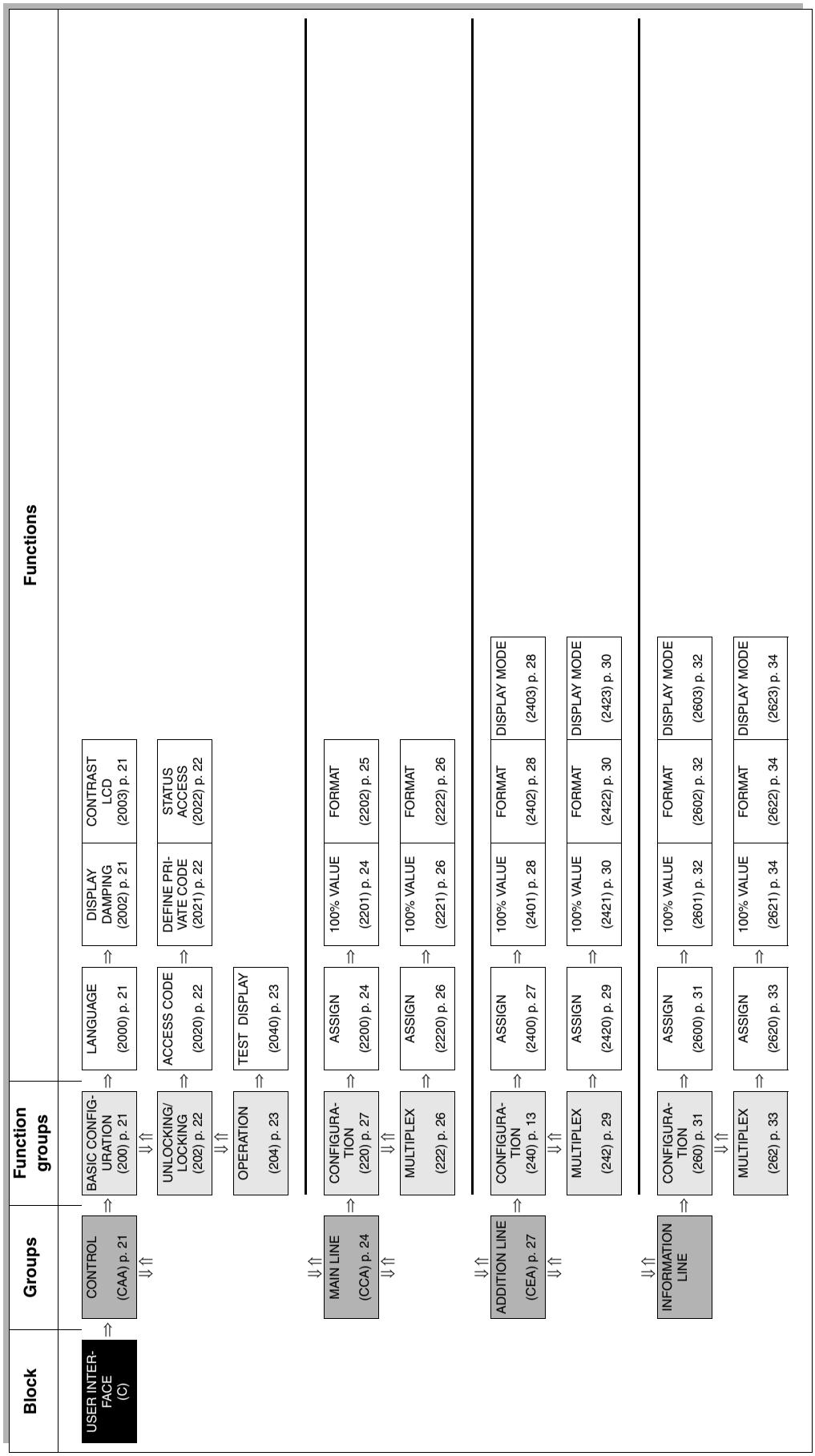
- In the COMMISSIONING Quick Setup, restrict your entries to functions shown in the illustration above.
  As you work through the Quick Setup the system will display other functions and selections as well (Totalizers, for example): ignore these options. Entries in these functions will not be processed by the measuring system.

- The display returns to the COMMISSIONING Quick Setup cell if you press the ESC key combination during parameter interrogation.

- ① Only units not yet configured in the current Quick Setup are offered for selection in each cycle. The unit for volume is derived from the unit for volume flow.

- ② The "YES" option remains visible until all the units have been parameterised. "NO" is the only option displayed when no further units are available.

5 Block USER INTERFACE



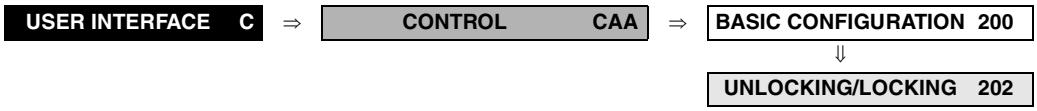
5.1 Group CONTROL

5.1.1 Function group BASIC CONFIGURATION

USER INTERFACE C ⇒ **CONTROL CAA** ⇒ **BASIC CONFIGURATION 200**

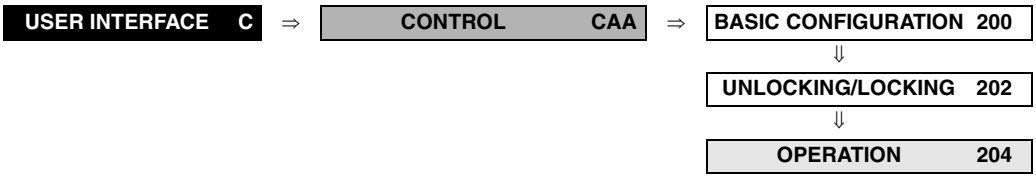
Function description USER INTERFACE → CONTROL → BASIC CONFIGURATION	
LANGUAGE (2000)	Use this function to select the language for all texts, parameters and messages shown on the local display. **Options:** ENGLISH DEUTSCH FRANCAIS ESPANOL ITALIANO NEDERLANDS DANSK NORSK SVENSKA SUOMI BAHASA INDONESIA JAPANESE (syllabic) **Factory setting:** depends on country See factory settings on Page 57 or Page 59, as applicable. ✎ Note: If you press the ⊞ keys simultaneously during startup, the language defaults to "ENGLISH".
DISPLAY DAMPING (2002)	Use this function to enter a time constant defining how the display reacts to severely fluctuating flow variables, either very quickly (enter a low time constant) or with damping (enter a high time constant). **User input:** 0...100 seconds **Factory setting:** 1 s ✎ Note: Setting the time constant to zero seconds switches off damping.
CONTRAST LCD (2003)	Use this function to optimise display contrast to suit local operating conditions. **User input:** 10...100% **Factory setting:** 50%

5.1.2 Function group UNLOCKING/LOCKING



Function description USER INTERFACE → CONTROL → UNLOCKING/LOCKING	
ACCESS CODE (2020)	All data of the measuring system are protected against inadvertent change. Programming is disabled and the settings cannot be changed until a code is entered in this function. If you press the ± key in any function the measuring system automatically goes to this function and the prompt to enter the code appears on the display (programming disabled). You can enable programing by entering your private code (default = 53, see the DEFINE PRIVATE CODE (2021) function). **User input:** max. 4-digit number: 0...9999 ✎ Note: • The programming levels are disabled if you do not press a key within 60 seconds following automatic return to the HOME position. • You can also disable programming in this function by entering any number (other than the customer's code). • The Endress+Hauser service organisation can be of assistance if you mislay your personal code. • Certain functions are not accessible unless a special service code is entered. This code is known only to the Endress+Hauser service organisation. Please contact your Endress+Hauser service center if you require clarification.
DEFINE PRIVATE CODE (2021)	Use this function to enter a personal code number for enabling programming. **User input:** 0...9999 (max. 4-digit number) **Factory setting:** 53 ✎ Note: • If the code number is "0", programming is always enabled. • Programming has to be enabled before this code can be changed. When programming is disabled the function is not available; this precaution prevents others from changing your personal code without your knowledge and consent.
STATUS ACCESS (2022)	Use this function to check the access status for the function matrix. **Display:** ACCESS CUSTOMER (parameterisation enabled) ACCESS SERVICE (parameterisation enabled) LOCKED (parameterisation disabled)

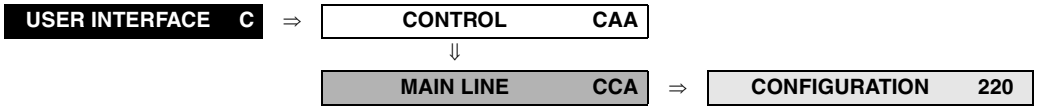
5.1.3 Function group OPERATION

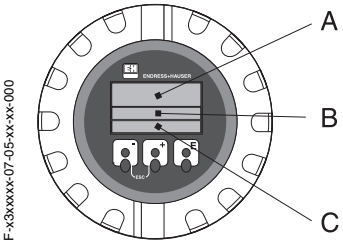


Function description USER INTERFACE → CONTROL → OPERATION	
TEST DISPLAY (2040)	Use this function to test the operability of the local display and its pixels. **Options:** OFF ON **Factory setting:** OFF Test sequence: 1. Start the test by selecting ON. 2. All pixels of the main line, additional line and information line are darkened for min. 0.75 seconds. 3. Main line, additional line and information line show an "8" in each field for min. 0.75 seconds. 4. Main line, additional line and information line show a "0" in each field for min. 0.75 seconds. 5. Main line, additional line and information line show nothing (blank display) for min. 0.75 seconds. When the test completes the local display returns to its initial state and the setting changes to OFF.

5.2 Group MAIN LINE

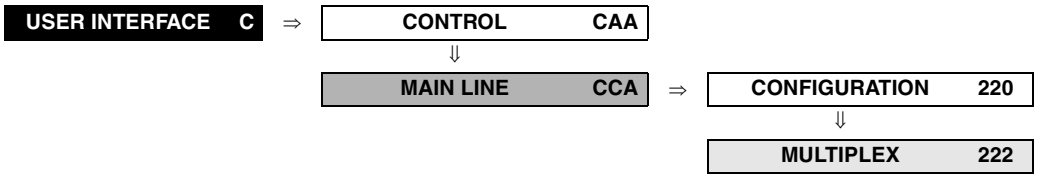
5.2.1 Function group CONFIGURATION



Function description USER INTERFACE → MAIN LINE → CONFIGURATION	
 A = main line, B = additional line, C = information line	
ASSIGN (2200)	Use this function to define the display value assigned to the main line (the top line of the local display) during normal measuring operation. **Options:** OFF VOLUME FLOW MASS FLOW VOLUME FLOW IN % MASS FLOW IN % AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE **Factory setting:** VOLUME FLOW
100% VALUE (2201)	✎ Note: This function is not available unless VOLUME FLOW IN % or MASS FLOW IN % was selected in the ASSIGN function (2200). Use this function to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** depends on nominal diameter and country, [value] / [dm^3...m^3 or US-gal...US-Mgal] Corresponds to the factory setting for the full scale value (see Page 57 or Page 59). ✎ Note: The factory setting of the local display as described here might not be the same as the factory setting of the PROFIBUS-DP /-PA output as sent to the process-control system (see the Operating Instructions *promag 53*, BA 053D/06/en/...).

Function description USER INTERFACE → MAIN LINE → CONFIGURATION	
FORMAT **(2202)**	Use this function to define the maximum number of places after the decimal point displayed for the reading in the main line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.

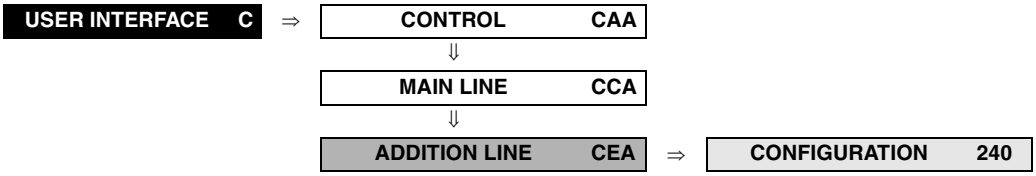
5.2.2 Function group MULTIPLEX

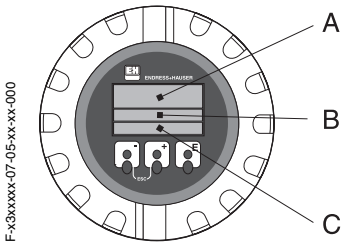


Function description USER INTERFACE → MAIN LINE → MULTIPLEX	
ASSIGN **(2220)**	Use this function to define the second reading to be displayed in the main line (every 10 seconds) with the value defined in the ASSIGN function (2200). **Options:** OFF VOLUME FLOW MASS FLOW VOLUME FLOW IN % MASS FLOW IN % AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE **Factory setting:** OFF
100% VALUE **(2221)**	✎ Note: This function is not available unless VOLUME FLOW IN % or MASS FLOW IN % was selected in the ASSIGN function (2220). Use this function to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** depends on nominal diameter and country, [value] / [dm^3...m^3 or US-gal...US-Mgal]. Corresponds to the factory setting for the full scale value (see Page 57 or Page 59). ✎ Note: The factory setting as described here might not be the same as the factory setting of the PROFIBUS-DP /-PA output.
FORMAT **(2222)**	Use this function to define the maximum number of places after the decimal point for the second value displayed in the main line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.

5.3 Group ADDITION LINE

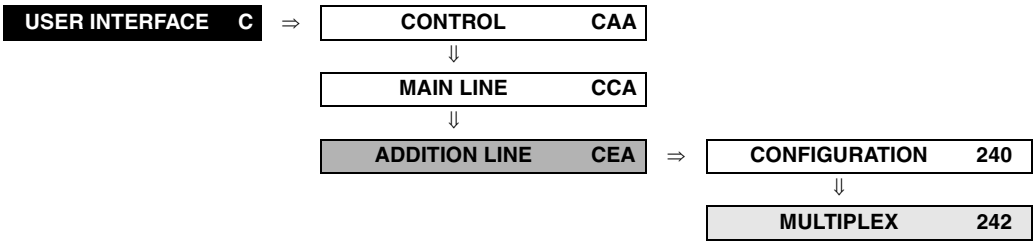
5.3.1 Function group CONFIGURATION



Function description USER INTERFACE → ADDITION LINE → CONFIGURATION	
 A = main line, B = additional line, C = information line	
ASSIGN (2400)	Use this function to define the display value assigned to the additional line (the middle line of the local display) for display during normal measuring operation. **Options:** OFF VOLUME FLOW MASS FLOW VOLUME FLOW IN % MASS FLOW IN % VOLUME FLOW BARGRAPH IN % MASS FLOW BARGRAPH IN % FLOW VELOCITY AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE TAG NAME BLANK LINE **Factory setting:** TOT1 - OUT VALUE (TOTALIZER)

Function description USER INTERFACE → ADDITION LINE → CONFIGURATION	
100% VALUE (2401)	✎ Note: This function is not available unless one of the following was selected in the ASSIGN function (2400): • VOLUME FLOW IN % • MASS FLOW IN % • VOLUME FLOW BARGRAPH IN % • MASS FLOW BARGRAPH IN % Use this function to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** depends on nominal diameter and country, [value] / [dm^3...m^3 or US-gal...US-Mgal]. Corresponds to the factory setting for the full scale value (see Page 57 or Page 59). ✎ Note: The factory setting as described here might not be the same as the factory setting of the PROFIBUS-DP /-PA output.
FORMAT (2402)	✎ Note: This function is not available unless a number was selected in the ASSIGN function (2400). Use this function to define the maximum number of places after the decimal point displayed for the reading in the additional line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.
DISPLAY MODE (2403)	✎ Note: This function is not available unless BARGRAPH % VOLUME FLOW or MASS FLOW BARGRAPH IN % was selected in the ASSIGN function (2400). Use this function to define the format of the bar graph. **Options:** STANDARD (Simple bar graph with 25 / 50 / 75 % gradations and integr. sign).  F-x3xxxxx-20-xx-xx-xx-000 SYMMETRY (Symmetrical bar graph for positive and negative directions of flow, with –50 / 0 / +50 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-001 **Factory setting:** STANDARD

5.3.2 Function group MULTIPLEX

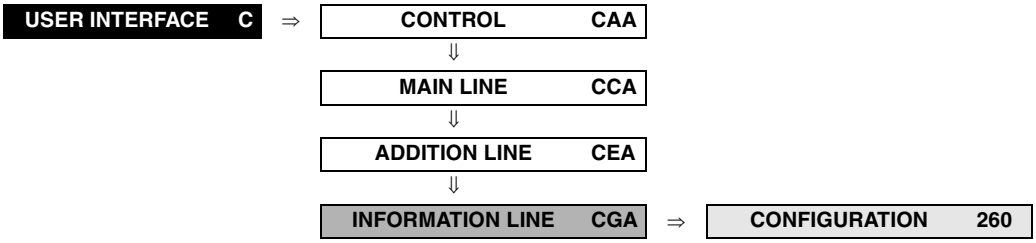


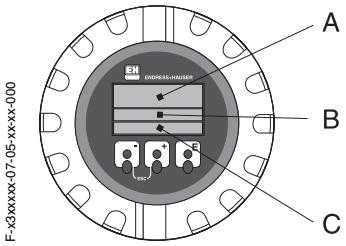
Function description USER INTERFACE ➞ ADDITION LINE ➞ MULTIPLEX	
ASSIGN (2420)	Use this function to define the second reading to be displayed in the additional line alternately (every 10 seconds) with the value defined in the ASSIGN function (2400). **Options:** OFF VOLUME FLOW MASS FLOW VOLUME FLOW IN % MASS FLOW IN % VOLUME FLOW BARGRAPH IN % MASS FLOW BARGRAPH IN % FLOW VELOCITY AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE TAG NAME BLANK LINE **Factory setting:** OFF ✎ Note: Multiplex mode is suspended as soon as a fault / notice message is generated. The message in question appears on the display. • Fault message (identified by a lightning icon): – If ON was selected in the ACKNOWLEDGMENT FAULTS function (8004), multiplex mode is resumed as soon as the fault has been acknowledged and is no longer active. – If OFF was selected in the ACKNOWLEDGMENT FAULTS function (8004), multiplex mode is resumed as soon as the fault is no longer active. • Notice message (identified by an exclamation mark): – Multiplex mode is resumed as soon as the notice message is no longer active.

Function description USER INTERFACE → ADDITION LINE → MULTIPLEX	
100% VALUE (2421)	✎ Note: This function is not available unless one of the following was selected in the ASSIGN function (2420): • VOLUME FLOW IN % • MASS FLOW IN % • VOLUME FLOW BARGRAPH IN % • MASS FLOW BARGRAPH IN % Use this function to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** depends on nominal diameter and country, [value] / [dm^3...m^3 or US-gal...US-Mgal]. Corresponds to the factory setting for the full scale value (see Page 57 or Page 59). ✎ Note: The factory setting as described here might not be the same as the factory setting of the PROFIBUS-DP /-PA output.
FORMAT (2422)	✎ Note: This function is not available unless a number was selected in the ASSIGN function (2420). Use this function to define the maximum number of places after the decimal point for the second value displayed in the additional line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.
DISPLAY MODE (2423)	✎ Note: This function is not available unless BARGRAPH % VOLUME FLOW or MASS FLOW BARGRAPH IN % was selected in the ASSIGN function (2420). Use this function to define the format of the bar graph. **Options:** STANDARD (Simple bar graph with 25 / 50 / 75 % gradations and integr. sign).  F-x3xxxxx-20-xx-xx-xx-000 SYMMETRY (Symmetrical bar graph for positive and negative directions of flow, with –50 / 0 / +50 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-001 **Factory setting:** STANDARD

5.4 Group INFORMATION LINE

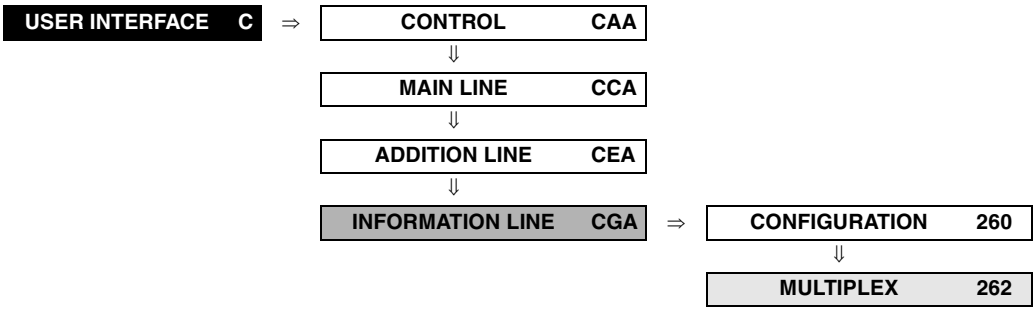
5.4.1 Function group CONFIGURATION



Function description USER INTERFACE ➞ INFORMATION LINE ➞ CONFIGURATION	
 A = main line, B = additional line, C = information line	
ASSIGN **(2600)**	Use this function to define the display value assigned to the information line (the bottom line of the local display) for display during normal measuring operation. **Options:** OFF VOLUME FLOW IN % MASS FLOW IN % VOLUME FLOW BARGRAPH IN % MASS FLOW BARGRAPH IN % FLOW VELOCITY AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE TAG NAME OPERATING/SYSTEM CONDITION FLOW DIRECTION BLANK LINE **Factory setting:** OPERATING/SYSTEM CONDITION

Function description USER INTERFACE → INFORMATION LINE → CONFIGURATION	
100% VALUE (2601)	✎ Note: This function is not available unless one of the following was selected in the ASSIGN function (2600): • VOLUME FLOW IN % • MASS FLOW IN % • VOLUME FLOW BARGRAPH IN % • MASS FLOW BARGRAPH IN % Use this function to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** depends on nominal diameter and country, [value] / [dm^3...m^3 or US-gal...US-Mgal]. Corresponds to the factory setting for the full scale value (see Page 57 or Page 59). ✎ Note: The factory setting as described here might not be the same as the factory setting of the PROFIBUS-DP /-PA output.
FORMAT (2602)	✎ Note: This function is not available unless a number was selected in the ASSIGN function (2600). Use this function to define the maximum number of places after the decimal point displayed for the reading in the information line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.
DISPLAY MODE (2603)	✎ Note: This function is not available unless BARGRAPH % VOLUME FLOW or MASS FLOW BARGRAPH IN % was selected in the ASSIGN function (2600). Use this function to define the format of the bar graph. **Options:** STANDARD (Simple bar graph with 25 / 50 / 75 % gradations and integr. sign).  F-x3xxxxx-20-xx-xx-xx-000 SYMMETRY (Symmetrical bar graph for positive and negative directions of flow, with –50 / 0 / +50 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-001 **Factory setting:** STANDARD

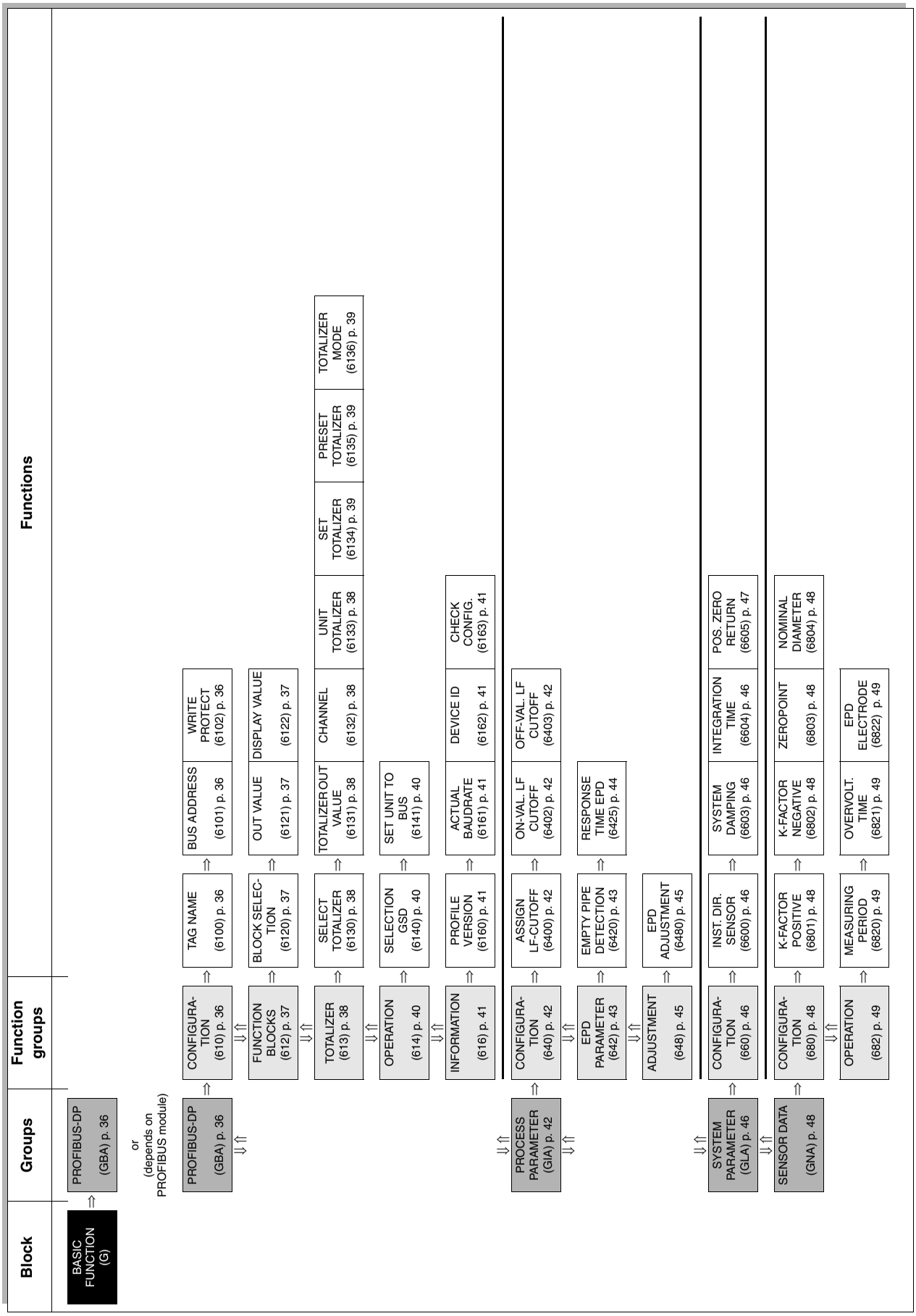
5.4.2 Function group MULTIPLEX



Function description USER INTERFACE → INFORMATION LINE → MULTIPLEX	
ASSIGN (2620)	Use this function to define the second reading to be displayed in the information line alternately (every 10 seconds) with the value defined in the ASSIGN function (2600). **Options:** OFF VOLUME FLOW IN % MASS FLOW IN % VOLUME FLOW BARGRAPH IN % MASS FLOW BARGRAPH IN % FLOW VELOCITY AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE TAG NAME OPERATING/SYSTEM CONDITION FLOW DIRECTION BLANK LINE **Factory setting:** OFF ✎ Note: Multiplex mode is suspended as soon as a fault / notice message is generated. The message in question appears on the display. • Fault message (identified by a lightning icon): – If ON was selected in the ACKNOWLEDGMENT FAULTS function (8004), multiplex mode is resumed as soon as the fault has been acknowledged and is no longer active. – If OFF was selected in the ACKNOWLEDGMENT FAULTS function (8004), multiplex mode is resumed as soon as the fault is no longer active. • Notice message (identified by an exclamation mark): – Multiplex mode is resumed as soon as the notice message is no longer active.

Function description USER INTERFACE → INFORMATION LINE → MULTIPLEX	
100% VALUE (2621)	✎ Note: This function is not available unless one of the following was selected in the ASSIGN function (2620): • VOLUME FLOW IN % • MASS FLOW IN % • VOLUME FLOW BARGRAPH IN % • MASS FLOW BARGRAPH IN % Use this function to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** depends on nominal diameter and country, [value] / [dm^3...m^3 or US-gal...US-Mgal]. Corresponds to the factory setting for the full scale value (see Page 57 or Page 59). ✎ Note: The factory setting as described here might not be the same as the factory setting of the PROFIBUS-DP /-PA output.
FORMAT (2622)	✎ Note: This function is not available unless a number was selected in the ASSIGN function (2600). Use this function to define the maximum number of places after the decimal point for the second value displayed in the information line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.
DISPLAY MODE (2623)	✎ Note: This function is not available unless BARGRAPH % VOLUME FLOW or MASS FLOW BARGRAPH IN % was selected in the ASSIGN function (2620). Use this function to define the format of the bar graph. **Options:** STANDARD (Simple bar graph with 25 / 50 / 75 % gradations and integr. sign).  F-x3xxxxx-20-xx-xx-xx-000 SYMMETRY (Symmetrical bar graph for positive and negative directions of flow, with –50 / 0 / +50 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-001 **Factory setting:** STANDARD

6 Block BASIC FUNCTION



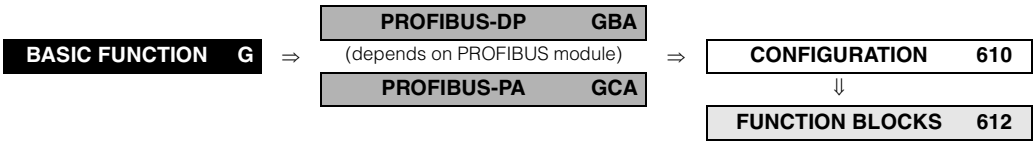
6.1 Group PROFIBUS-DP / PROFIBUS-PA

6.1.1 Function group CONFIGURATION

BASIC FUNCTION G ⇒ **PROFIBUS-DP GBA** / (depends on PROFIBUS module) / **PROFIBUS-PA GCA** ⇒ **CONFIGURATION 610**

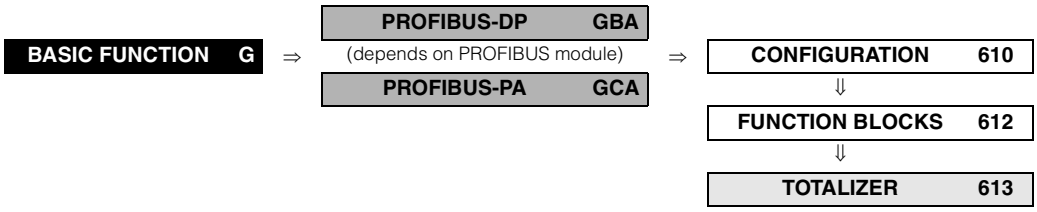
Function description BASIC FUNCTION ➞ PROFIBUS-DP / PROFIBUS-PA ➞ CONFIGURATION	
TAG NAME **(6100)**	Use this function to assign a tag name to the measuring device. You can edit and read this tag name at the local display or by means of the PROFIBUS protocol (class 2 master). **User input:** max. 16-character text, permissible: A-Z, 0-9, +,-, punctuation symbols **Factory setting:** "_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _" (without text)
BUS ADDRESS **(6101)**	Use this function to define the address for the exchange of data with the aid of the PROFIBUS-DP/-PA protocol. **User input:** 0...126 **Factory setting:** 126
WRITE PROTECT **(6102)**	This function shows the position of the jumper used to set general hardware write protection. **Display:** OFF → write protection disabled ON → write protection enabled; functions cannot be changed at the local display or by means of the PROFIBUS protocol (class 2 master). **Factory setting:** OFF ✎ Note: A jumper on the I/O board provides the means of enabling or disabling write protection (see the Operating Instructions *promag 53*, BA 053D/06/en/...).

6.1.2 Function group FUNCTION BLOCKS



Function description BASIC FUNCTION ➞ PROFIBUS-DP / PROFIBUS-PA ➞ FUNCTION BLOCKS	
BLOCK SELECTION (6120)	This function offers a choice of an Analog Input Function block or the Analog Output (display value). If you select an Analog Input function block, the current measured value is displayed in the OUT VALUE function (6121). If you select Analog Output (display value), the current measured value is displayed in the DISPLAY VALUE function (6122). **Options:** ANALOG INPUT 1 (Volume flow) → displayed in OUT VALUE (6121) ANALOG INPUT 2 (Mass flow) → displayed in OUT VALUE (6121) ANALOG OUTPUT 1 (Display value) → displayed in DISPLAY VALUE (6122) **Factory setting:** ANALOG INPUT 1 (Volume flow)
OUT VALUE (6121)	✎ Note: This function is not available unless ANALOG INPUT 1 or ANALOG INPUT 2 was selected in the BLOCK SELECTION function (6120). This function displays the OUT value (output measured value) including unit and status for the Analog Input function block selected in the BLOCK SELECTION function (6120).
DISPLAY VALUE (6122)	✎ Note: This function is not available unless ANALOG OUTPUT 1 was selected in the BLOCK SELECTION function (6120). Use this function to view the display value (output measured value) including unit and status.

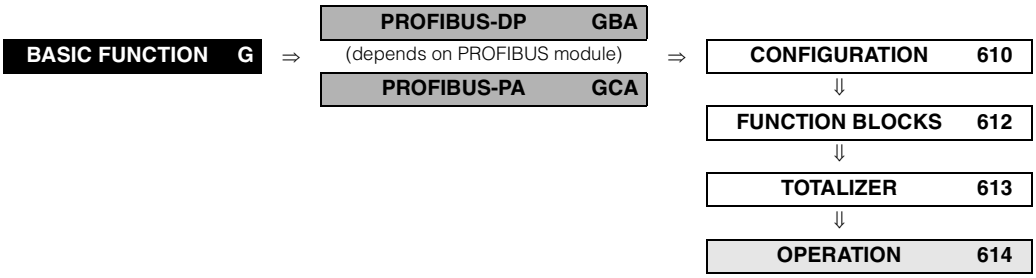
6.1.3 Function group TOTALIZER



Function description BASIC FUNCTION → PROFIBUS-DP / PROFIBUS-PA → TOTALIZER	
SELECT TOTALIZER (6130)	Use this function to select a totalizer. **Options:** TOTALIZER 1 TOTALIZER 2 TOTALIZER 3 **Factory setting:** TOTALIZER 1
TOTALIZER OUT VALUE (6131)	This function displays the OUT value (output measured value) including unit and status of the totalizer selected in the SELECT TOTALIZER function (6130).
CHANNEL (6132)	Use this function to assign a measured variable to the totalizer. **Options:** OFF VOLUME FLOW MASS FLOW **Factory setting:** VOLUME FLOW
UNIT TOTALIZER (6133)	Use this function to define the unit for the totalizer's measured variable. The options presented depend on the measured variable selected in the CHANNEL function (6132). **Options (for "VOLUME"):** Metric → cm^3; dm^3; m^3; ml; l; hl; Ml US → cc; af; ft^3; oz f; gal; Mgal; bbl (normal fluids); bbl (beer); bbl (petrochemicals); bbl (filling tanks) Imperial → gal; Mgal; bbl (beer); bbl (petrochemicals) **Factory setting:** m^3 **Options (for "MASS"):** Metric → g; kg; t US → oz; lb; ton **Factory setting:** kg

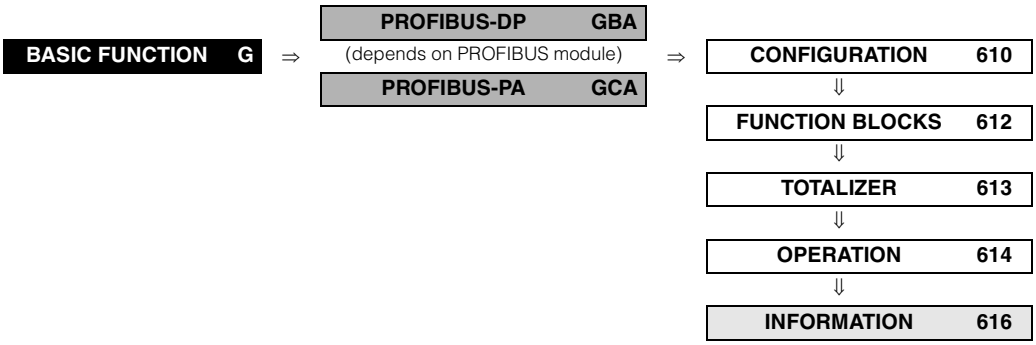
Function description BASIC FUNCTION → PROFIBUS-DP / PROFIBUS-PA → TOTALIZER	
SET TOTALIZER (6134)	Use this function to assign a status to the totalizer. **Options:** TOTALIZE (Total the measured variable selected in the CHANNEL function (6132) RESET (Reset the totalizer to zero) PRESET (Set the totalizer to the value defined in the PRESET TOTALIZER function (6135)) ✎ Note: Note that selecting RESET or PRESET resets the totalizer to 0 or, respectively, sets it to the preset value, but does not stop the totalizer. This means that it immediately recommences totaling from the new setting. If you want to stop the totalizer you must select HOLD in the TOTALIZER MODE function (6136). **Factory setting:** TOTALIZE
PRESET TOTALIZER (6135)	Use this function to define a (start-) value for the totalizer. ✎ Note: The totalizer does not accept this value unless the PRESET option was selected beforehand in the SET TOTALIZER function (6134). **User input:** -99999...99999 **Factory setting:** 0
TOTALIZER MODE (6136)	Use this function to define how the totalizer totals the flow components. **Options:** BALANCE (positive and negative flow components) The positive and negative flow components are balanced. In other words, net flow in the flow direction is registered. FORWARD Positive flow components only REVERSE Negative flow components only HOLD VALUE (HOLD) The totalizer stops. No further flow components are totaled. **Factory setting:** BALANCE

6.1.4 Function group OPERATION



Function description BASIC FUNCTION → PROFIBUS-DP / PROFIBUS-PA → OPERATION	
SELECTION GSD (6140)	✎ Note: In the configuration phase, each PROFIBUS device must check an ID number allocated by the PNO. Along with this device-specific ID number there are also PROFILE ID numbers that have to be accepted in the configuration phase as well, for the purposes of interchangeability between devices of different make. In this case the device might, under certain circumstances, reduce the functionality for cyclic data to a scope defined in the profile. Use this function to select the measuring device's configuration response. **Options:** MANUFACT.SPEC PROFILE–GSD **Factory setting:** MANUFACT.SPEC
SET UNIT TO BUS (6141)	Use this function to enable transmission of the preset system units to the process-control system. Press the E button to send the preset system units to the process-control system. **Options:** SET UNITS (pressing the E button starts transmission) ✎ Note: When transmission takes place the OUT value in the Analog Input block is automatically scaled to the selected system unit and the OUT unit (output unit) is displayed in the OUT_UNIT parameter. The default system units are listed in the Operating Instructions for the *promag 53* BA 053/06/en. ☝ Caution: Activating this function can cause the OUT value to increase dramatically; this, in turn, can affect other control routines.

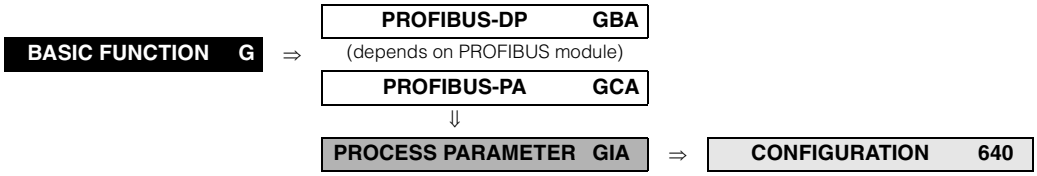
6.1.5 Function group INFORMATION



Function description BASIC FUNCTION ➞ PROFIBUS-DP / PROFIBUS-PA ➞ FUNCTION BLOCKS	
PROFILE VERSION (6160)	Use this function to view the profile version.
ACTUAL BAUDRATE (6161)	Use this function to view the data transfer rate at which the device communicates, as set in the process-control system.
DEVICE ID (6162)	Use this function to view the manufacturer-specific device ID. **Display:** • PROFIBUS-DP communication output = 1526 Hex • PROFIBUS-PA communication output = 1527 Hex
CHECK CONFIGURATION (6163)	Use this function to check whether the configuration of a class 1 master for cyclic data interchange has been accepted in the Promag 53. **Display:** ACCEPTED (configuration accepted) NOT ACCEPTED (configuration not accepted)

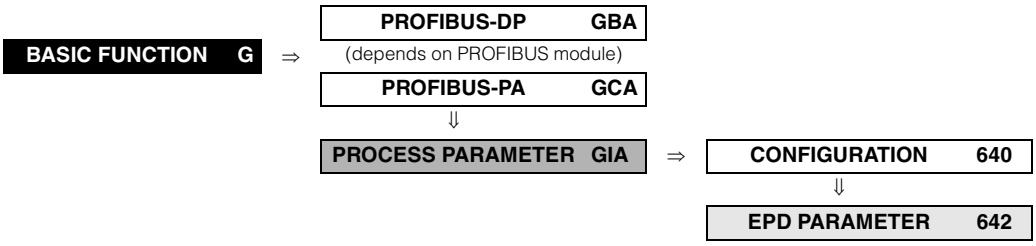
6.2 Group PROCESS PARAMETER

6.2.1 Function group CONFIGURATION



Function description BASIC FUNCTION → PROCESS PARAMETER → CONFIGURATION	
ASSIGN LOW FLOW CUT OFF (6400)	Use this function to assign the switching point for low flow cutoff rate suppression in a technical engineering unit. **Options:** OFF MASS FLOW VOLUME FLOW **Factory setting:** VOLUME FLOW
ON-VALUE LOW FLOW CUT OFF (6402)	Use this function to assign a value to the switch-on point for low flow cutoff. Low flow cutoff is active if the setting is a value not equal to 0. The sign of the flow value is highlighted on the display to indicate that low flow cutoff is active. **User input:** 5-digit floating-point number **Factory setting:** depends on nominal diameter and country, [value] / [dm^3...m^3 or US-gal...US-Mgal] Corresponds to the factory setting for the full scale value (see Page 57 or Page 59). ✎ Note: The appropriate unit is taken from the UNIT VOLUME FLOW function (0402) or the UNIT MASS FLOW function (0400) (see Page 14 or Page 13).
OFF-VALUE LOW FLOW CUT OFF (6403)	Use this function to assign a value to the switch-off point for low flow cutoff. Enter the OFF-VALUE as a positive hysteresis from the ON-VALUE. **User input:** Integer 0...100% **Factory setting:** 50%

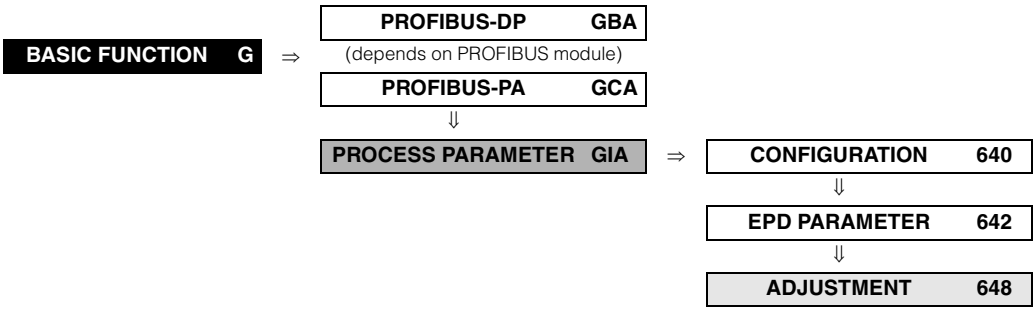
6.2.2 Function group EPD PARAMETER



Function description BASIC FUNCTION → PROCESS PARAMETER → EPD PARAMETER	
EMPTY PIPE DETECTION (6420)	Use this function to activate empty pipe detection (EPD). **Options:** OFF ON **Factory setting:** OFF ✎ Note: • This function is not available unless the sensor is fitted with an EPD electrode. • The default setting for the EPD function when the device is delivered is OFF; the function has to be activated if required. • The EPD electrode is calibrated at the factory with water (500µS/cm). If the conductivity of the fluid differs from this reference, empty pipe/full pipe calibration has to be performed again on site (see the EPD ADJUSTMENT function (6480) on Page 45). • An empty or partially filled pipe is a process error. A factory default setting defines that a notice message is issued and that this process error has no effect on the outputs. • The EPD process error can be output by means of the PROFIBUS-DP /-PA output. • The calibration coefficients must be valid before you can activate EPD. If these coefficients are not available, the EPD ADJUSTMENT function (6480), see Page 45, is displayed. **Notes on Empty Pipe Detection (EPD)** Flow cannot be measured correctly unless the measuring tube is full. This status can be monitored at all times with EPD. **Response to partially filled pipe** If EPD is on and response to a partially filled or empty measuring tube, the message “EMPTY PIPE” appears on the display. If the pipe is partially filled or empty and EPD is **not** on, response can vary in identically configured systems: – Flow reading fluctuates – Zero flow – Excessively high flow readings (Continued on next page)

Function description BASIC FUNCTION → PROCESS PARAMETER → EPD PARAMETER	
EMPTY PIPE DETECTION (Continuation)	✎ Note: Do not switch on the EPD function until empty pipe/full pipe calibration has been completed. If calibration is incorrect the following messages might appear on the display: • EPD ADJUSTMENT FULL = EMPTY: The calibration values for empty pipe and full pipe are identical. • EPD ADJUSTMENT NOT OK: EPD calibration is not possible because the fluid's conductivity is out of range. In these instances empty pipe/full pipe calibration **must** be performed **again**.
EPD RESPONSE TIME (6425)	Use this function to enter the time span for which the criteria for an empty pipe have to be satisfied without interruption before a notice message or fault message is generated. **User input:** fixed-point number: 1.0...60.0 s **Factory setting:** 1.0 s

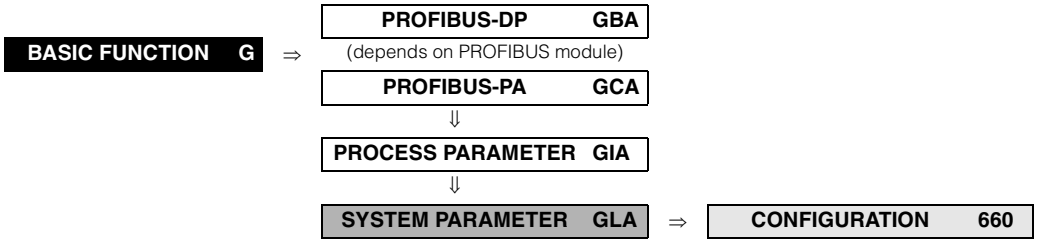
6.2.3 Function group ADJUSTMENT



Function description BASIC FUNCTION ➞ PROCESS PARAMETER ➞ ADJUSTMENT	
EPD ADJUSTMENT (6480)	Use this function to activate EPD calibration for an empty or full measuring tube. **Options:** OFF FULL PIPE ADJUST EMPTY PIPE ADJUST **Factory setting:** OFF **Procedure for empty-pipe/full-pipe calibration** 1. Empty the piping. Make sure that the wall of the measuring tube is wetted only with fluid for the calibration procedure. 2. Start empty pipe calibration: - Select “EMPTY PIPE ADJUST” and press [E] to confirm. 3. Fill the pipe with fluid. 4. Start full pipe calibration with the fluid at a standstill: - Select “FULL PIPE ADJUST” and press [E] to confirm. 5. Once calibration is completed, switch EPD on: Select “ON” (flashing) and press [E] to confirm.

6.3 Group SYSTEM PARAMETER

6.3.1 Function group CONFIGURATION

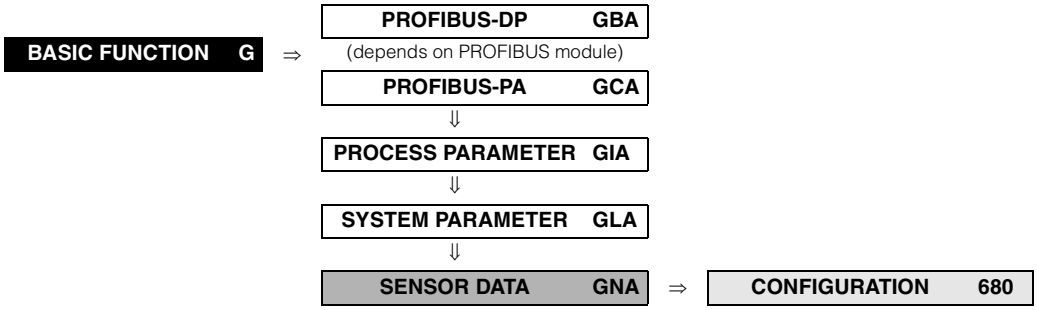


Function description BASIC FUNCTION → SYSTEM PARAMETER → CONFIGURATION	
INSTALLATION DIRECTION SENSOR (6600)	Use this function to reverse the sign of the flow quantity, if necessary. **Options:** NORMAL (flow in direction indicated by arrow) INVERSE(flow opposite to direction indicated by the arrow) **Factory setting:** NORMAL ✎ Note: Ascertain the actual direction of fluid flow with reference to the direction indicated by the arrow on the sensor (nameplate).
SYSTEM DAMPING (6603)	✎ Note: System damping acts on all function and outputs of the measuring device. Use this function to set the filter depth of the digital filter. The sensitivity of the flow measurement signal can be reduced with respect to transient flows and interference peaks; e.g. with fluid containing solids or gas bubbles, etc. The system reaction time increasing with the filter number. **User input:** 0 ...15 **Factory setting:** 7
INTEGRATION TIME (6604)	Use this function to set the time during which the measuring signal is integrated. Under normal circumstances it is not necessary to change the factory default. **User input:** 3.3 ...65 ms **Factory setting:** 20 ms for 50 Hz → line frequency (e.g. Europe) 16.7 ms for 60 Hz → line frequency (e.g. USA) ✎ Note: The integration time defines the time for internal addition of the induced voltage in the fluid (tapped by the measuring electrode), in other words the time in which the measuring device registers true flow (after which the magnetic field is reversed for the next integration cycle).

Function description BASIC FUNCTION → SYSTEM PARAMETER → CONFIGURATION	
POSITIVE ZERO RETURN (6605)	Use this function to interrupt evaluation of measured variables. This is necessary when a piping system is being cleaned, for example. The setting acts on all function and outputs of the measuring device. **Options:** OFF ON → signal output is set to "ZERO FLOW". **Factory setting:** OFF

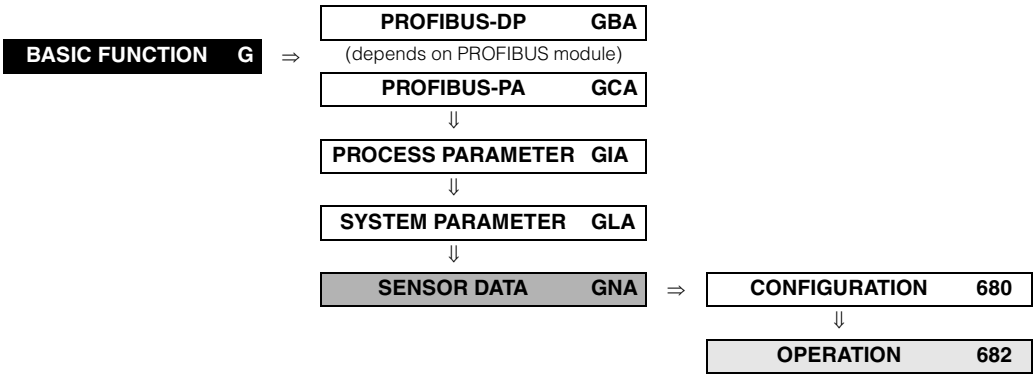
6.4 Group SENSOR DATA

6.4.1 Function group CONFIGURATION



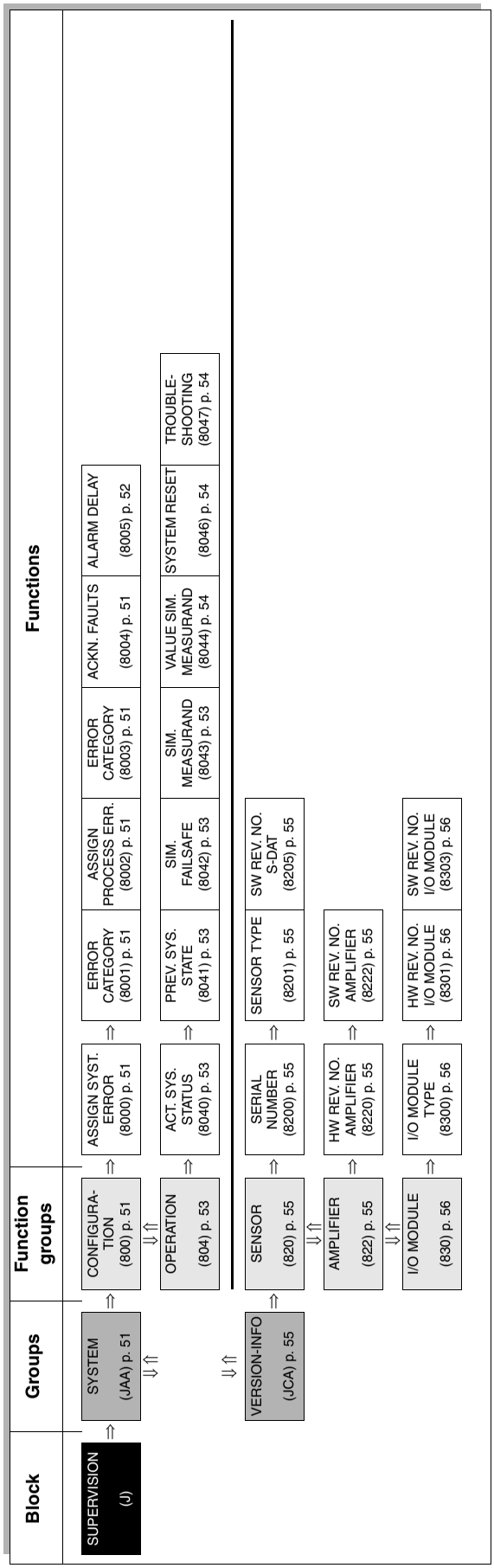
Function description BASIC FUNCTION → SENSOR DATA → CONFIGURATION	
All sensor data (calibration factors, zero point and nominal diameter) are set ex-works and stored on the sensor's S-DAT™ memory chip. Caution: Under normal circumstances you should not change these parameter settings, because changes affect numerous functions of the entire measuring system in general, and the accuracy of the measuring system in particular. Consequently, you cannot access the functions described below even if you enter your private code number. Contact the E+H service organisation if you have any questions about these functions. Note: The individual values of the functions are listed on the sensor's rating plate.	
K-FACTOR POSITIVE (6801)	This function shows the current calibration factor (positive direction of flow) for the sensor. The calibration factor is calculated and set at the factory. **Display:** 5-digit fixed-point number: 0.5000 ...2.0000 **Factory setting:** depends on nominal diameter and calibration
K-FACTOR NEGATIVE (6802)	This function shows the current calibration factor (negative direction of flow) for the sensor. The calibration factor is calculated and set at the factory. **Display:** 5-digit fixed-point number: 0.5000 ...2.0000 **Factory setting:** depends on nominal diameter and calibration
ZEROPOINT (6803)	This function shows the current zero-point correction value for the sensor. The zero-point correction factor is calculated and set at the factory. **Display:** max. 4-digit number: -1000 ...+1000 **Factory setting:** depends on nominal diameter and calibration
NOMINAL DIAMETER (6804)	This function shows the nominal diameter for the sensor. The nominal diameter depends on the size of the sensor and is set at the factory. **Display:** 2 ...2000 mm or 1/12 ...78" **Factory setting:** depends on the size of the sensor

6.4.2 Function group OPERATION



Function description BASIC FUNCTION → SENSOR DATA → OPERATION	
All sensor data (measuring period, overvoltage time, etc.) are set ex-works and stored on the sensor's S-DAT memory chip.	
MEASURING PERIOD (6820)	This is the function used to set the time for a full measuring period. If the setting is 0 ms the system automatically computes the shortest time. The duration of a measuring period is the sum of the rise time for the magnetic field, the short recovery time, the (parameterisable) integration time and the EPD time. **User input:** 0.0...1000 ms **Factory setting:** depends on nominal diameter ✎ Note: The system checks the user input and sets the actual measuring period used internally to a plausible value.
☝ Caution: Under normal circumstances you should not change these parameter settings, because changes affect numerous functions of the entire measuring system in general, and the accuracy of the measuring system in particular. Consequently, you cannot access the functions described below even if you enter your private code number. Contact the E+H service organisation if you have any questions about these functions.	
OVERVOLTAGE TIME (6821)	This is the function used to define the time in which overvoltage is applied to the coil circuit in order to build up the magnetic field as quickly as possible. The overvoltage time is adjusted automatically while measuring is in progress. The overvoltage time depends on the type of sensor and the nominal diameter and is set at the factory. **Display:** 4-digit floating-point number: 0.0...100.0 ms **Factory setting:** depends on nominal diameter
EPD ELECTRODE (6822)	This function shows whether the sensor is equipped with an EPD electrode. **Display:** YES NO **Factory setting:** YES → electrode fitted as standard

7 Block SUPERVISION



7.1 Group SYSTEM

7.1.1 Function group CONFIGURATION

SUPERVISION J ⇒ SYSTEM JAA ⇒ CONFIGURATION 800

Function description SUPERVISION → SYSTEM → CONFIGURATION	
ASSIGN SYSTEM ERROR (8000)	✎ Note: This function is not supported at this time. Use the ⊡+⊡ key combination or select CANCEL in the system error list to exit the function.
ERROR CATEGORY (8001)	✎ Note: This function is not supported at this time. This function is available only if CANCEL was not selected in the ASSIGN SYSTEM ERROR function (8000). Press the E key twice in success to exit the function and return to the ASSIGN SYSTEM ERROR function (8000).
ASSIGN PROCESS ERROR (8002)	✎ Note: This function is not supported at this time. Use the ⊡+⊡ key combination or select CANCEL in the process error list to exit the function.
ERROR CATEGORY (8003)	✎ Note: This function is not supported at this time. This function is available only if CANCEL was not selected in the ASSIGN PROCESS ERROR function (8002). Press the E key twice in success to exit the function and return to the ASSIGN PROCESS ERROR function (8002).
ACKNOWLEDGMENT FAULTS (8004)	Use this function to define the measuring device's response to fault messages. **Options:** OFF The measuring device resumes normal operation when the fault is rectified. ON The error message always has to be acknowledged by pressing the E key on the local display before the measuring device can resume normal operation. **Factory setting:** OFF

Function description SUPERVISION → SYSTEM → CONFIGURATION	
ALARM DELAY (8005)	Use this function to define a time for the suppression of error and notice messages. Depending on the setting and the type of error, this suppression acts on: • Display • PROFIBUS-DP /-PA **User input:** 0...100 s (in steps of one second) **Factory setting:** 0 s ☝ Caution: If this function is activated error and notice messages are delayed by the time corresponding to the setting before being forwarded to the process system. It is therefore imperative to check in advance in order to make sure whether a delay of this nature could affect the safety requirements of the process. If error and notice messages cannot be suppressed, a value of 0 seconds must be entered here.

7.1.2 Function group OPERATION

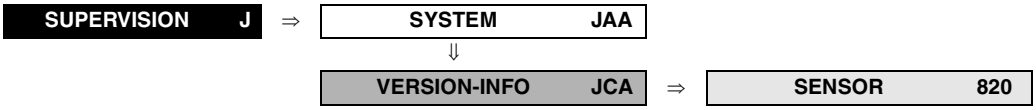
SUPERVISION J ⇒ SYSTEM JAA ⇒ CONFIGURATION 800
⇓
OPERATION 804

Function description SUPERVISION → SYSTEM → OPERATION	
ACTUAL SYSTEM CONDITION (8040)	Use this function to check the present system status. **Display:** "SYSTEM OK" or the error/information message with the highest priority.
PREVIOUS SYSTEM CONDITION (8041)	Use this function to view the fifteen most recent error and notice messages since measuring last started. **Display:** the 15 most recent error or information messages.
SIMULATION FAILSAFE MODE (8042)	Use this function to set all inputs, outputs and totalizers to their defined flow-response modes, in order to check whether they respond correctly. During this time, the words "SIMULATION ERROR RESPONSE" appear on the display. **Options:** ON OFF **Factory setting:** OFF
SIMULATION MEASURAND (8043)	Use this function to set all inputs, outputs and totalizers to their defined flow-response modes, in order to check whether they respond correctly. During this time, the words "SIMULATION MEASURAND" appear on the display. **Options:** OFF MASS FLOW VOLUME FLOW **Factory setting:** OFF ☝ Caution: • The measuring device cannot be used for measuring while this simulation is in progress. • The setting is not saved if the power supply fails.

Function description SUPERVISION → SYSTEM → OPERATION	
VALUE SIMULATION MEASURAND (8044)	✎ Note: The function is not visible unless the SIMULATION MEASURAND function (8043) is active. Use this function to define a selectable value (e.g. 12 m^3/s). This is used to test the associated functions in the flowmeter itself and downstream signal loops. **User input:** 5-digit floating-point number **Factory setting:** 0 [Unit] ✎ Note: The appropriate unit is taken from the UNIT VOLUME FLOW (0402) or UNIT MASS FLOW (0400) function (see Page 14 or Page 13). ☝ Caution: The setting is not saved if the power supply fails.
SYSTEM RESET (8046)	Use this function to perform a reset of the measuring system. **Options:** NO RESTART SYSTEM (restart without interrupting line supply) **Factory setting:** NO
TROUBLESHOOTING (8047)	Use this function to rectify errors in the EEPROM (Error message AMP SW-EEPROM, # 012). The EEPROM is divided into a number of blocks. Only blocks which an error has occurred are shown. Select the block in question and press the E key to clear the error. ✎ Note: Note!When you clear an error in a block, the parameters of the block you select are reset to their factory settings. **Options:** CANCEL MEASURING VALUES SYSTEM UNITS QUICK SETUP USER INTERFACE COMMUNICATION PROCESS PARAMETER SYSTEM PARAMETER SENSOR DATA AMP PARAMETER SUPERVISION VERSION-INFO

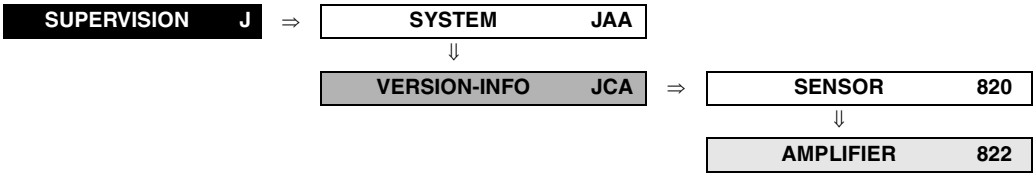
7.2 Group VERSION-INFO

7.2.1 Function group SENSOR



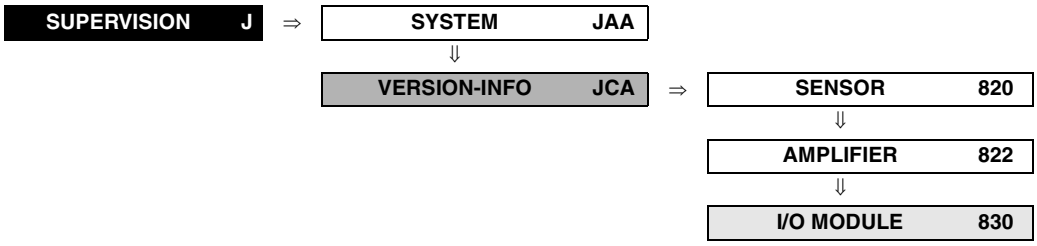
Function description SUPERVISION → VERSION-INFO → SENSOR	
SERIAL NUMBER (8200)	Use this function to view the serial number of the sensor.
SENSOR TYPE (8201)	Use this function to view the sensor type.
SOFTWARE REVISION NUMBER S-DAT (8205)	Use this function to view the software revision number of the software used to create the content of the S-DAT.

7.2.2 Function group AMPLIFIER



Function description SUPERVISION → VERSION-INFO → AMPLIFIER	
HARDWARE REVISION NUMBER AMPLIFIER (8220)	Use this function to view the hardware revision number of the amplifier.
SOFTWARE REVISION NUMBER AMPLIFIER (8222)	Use this function to view the software revision number of the amplifier.

7.2.3 Function group I/O MODULE



Function description SUPERVISION → VERSION-INFO → I/O MODULE	
I/O MODULE TYPE (8300)	Use this function to view the configuration of the I/O module complete with terminal numbers.
HARDWARE REVISION NUMBER I/O SUBMODULE (8301)	Use this function to view the hardware revision number of the I/O module.
SOFTWARE REVISION NUMBER I/O MODULE (8303)	Use this function to view the software revision number of the I/O module.

8 Factory settings

8.1 SI units (not for USA and Canada)

8.1.1 Low flow cutoff, full scale value, totalizer

Nominal diameter		Low flow cutoff (approx. v = 0.04 m/s)			Full scale value (approx. v = 2.5 m/s)			Totalizer	
[mm]	[inch]		Volume	Mass		Volume	Mass	Volume	Mass
2	1/12"	0.01	dm³/min	kg/min	0.5	dm³/min	kg/min	dm³	kg
4	5/32"	0.05	dm³/min	kg/min	2	dm³/min	kg/min	dm³	kg
8	5/16"	0.1	dm³/min	kg/min	8	dm³/min	kg/min	dm³	kg
15	1/2"	0.5	dm³/min	kg/min	25	dm³/min	kg/min	dm³	kg
25	1"	1	dm³/min	kg/min	75	dm³/min	kg/min	dm³	kg
32	1 1/4"	2	dm³/min	kg/min	125	dm³/min	kg/min	dm³	kg
40	1 1/2"	3	dm³/min	kg/min	200	dm³/min	kg/min	dm³	kg
50	2"	5	dm³/min	kg/min	300	dm³/min	kg/min	dm³	kg
65	2 1/2"	8	dm³/min	kg/min	500	dm³/min	kg/min	dm³	kg
80	3"	12	dm³/min	kg/min	750	dm³/min	kg/min	dm³	kg
100	4"	20	dm³/min	kg/min	1200	dm³/min	kg/min	dm³	kg
125	5"	30	dm³/min	kg/min	1850	dm³/min	kg/min	dm³	kg
150	6"	2.5	m³/h	t/h	150	m³/h	t/h	m³	t
200	8"	5.0	m³/h	t/h	300	m³/h	t/h	m³	t
250	10"	7.5	m³/h	t/h	500	m³/h	t/h	m³	t
300	12"	10	m³/h	t/h	750	m³/h	t/h	m³	t
350	14"	15	m³/h	t/h	1000	m³/h	t/h	m³	t
400	16"	20	m³/h	t/h	1200	m³/h	t/h	m³	t
450	18"	25	m³/h	t/h	1500	m³/h	t/h	m³	t
500	20"	30	m³/h	t/h	2000	m³/h	t/h	m³	t
600	24"	40	m³/h	t/h	2500	m³/h	t/h	m³	t
700	28"	50	m³/h	t/h	3500	m³/h	t/h	m³	t
–	30"	60	m³/h	t/h	4000	m³/h	t/h	m³	t
800	32"	75	m³/h	t/h	4500	m³/h	t/h	m³	t
900	36"	100	m³/h	t/h	6000	m³/h	t/h	m³	t
1000	40"	125	m³/h	t/h	7000	m³/h	t/h	m³	t
–	42"	125	m³/h	t/h	8000	m³/h	t/h	m³	t
1200	48"	150	m³/h	t/h	10000	m³/h	t/h	m³	t
–	54"	200	m³/h	t/h	13000	m³/h	t/h	m³	t
1400	–	225	m³/h	t/h	14000	m³/h	t/h	m³	t
–	60"	250	m³/h	t/h	16000	m³/h	t/h	m³	t
1600	–	300	m³/h	t/h	18000	m³/h	t/h	m³	t
–	66"	325	m³/h	t/h	20500	m³/h	t/h	m³	t
1800	72"	350	m³/h	t/h	23000	m³/h	t/h	m³	t
–	78"	450	m³/h	t/h	28500	m³/h	t/h	m³	t
2000	–	450	m³/h	t/h	28500	m³/h	t/h	m³	t

8.1.2 Language

Country	Language
England, Singapore, South Africa, International Instruments	English
Germany, Austria, Switzerland	Deutsch
France, Belgium	Francais
Spain	Espanol
Italy	Italiano
Holland	Nederlands
Denmark	Dansk
Norway	Norsk
Sweden	Svenska
Finland	Suomi
Thailand, Malaysia, Hong Kong	Bahasa/Indonesia
Japan	Japanese

8.1.3 Density, length, temperature

	Unit
Density	kg/l
Length	mm
Temperature	°C

8.2 US units (USA and Canada only)

8.2.1 Low flow cutoff, full scale value, totalizer

Nominal diameter		Low flow cutoff (approx. v = 0.04 m/s)			Full scale value (approx. v = 2.5 m/s)			Totalizer	
[mm]	[inch]		Volume	Mass		Volume	Mass	Volume	Mass
2	1/12"	0.002	gal/min	lb/min	0.1	gal/min	lb/min	gal	lb
4	5/32"	0.008	gal/min	lb/min	0.5	gal/min	lb/min	gal	lb
8	5/16"	0.025	gal/min	lb/min	2	gal/min	lb/min	gal	lb
15	1/2"	0.10	gal/min	lb/min	6	gal/min	lb/min	gal	lb
25	1"	0.25	gal/min	lb/min	18	gal/min	lb/min	gal	lb
32	1 1/4"	0.50	gal/min	lb/min	30	gal/min	lb/min	gal	lb
40	1 1/2"	0.75	gal/min	lb/min	50	gal/min	lb/min	gal	lb
50	2"	1.25	gal/min	lb/min	75	gal/min	lb/min	gal	lb
65	2 1/2"	2.0	gal/min	lb/min	130	gal/min	lb/min	gal	lb
80	3"	2.5	gal/min	lb/min	200	gal/min	lb/min	gal	lb
100	4"	4.0	gal/min	lb/min	300	gal/min	lb/min	gal	lb
125	5"	7.0	gal/min	lb/min	450	gal/min	lb/min	gal	lb
150	6"	12	gal/min	lb/min	600	gal/min	lb/min	gal	lb
200	8"	15	gal/min	lb/min	1200	gal/min	lb/min	gal	lb
250	10"	30	gal/min	lb/min	1500	gal/min	lb/min	gal	lb
300	12"	45	gal/min	lb/min	2400	gal/min	lb/min	gal	lb
350	14"	60	gal/min	lb/min	3600	gal/min	lb/min	gal	lb
400	16"	60	gal/min	lb/min	4800	gal/min	lb/min	gal	lb
450	18"	90	gal/min	lb/min	6000	gal/min	lb/min	gal	lb
500	20"	120	gal/min	lb/min	7500	gal/min	lb/min	gal	lb
600	24"	180	gal/min	lb/min	10500	gal/min	lb/min	gal	lb
700	28"	210	gal/min	lb/min	13500	gal/min	lb/min	gal	lb
–	30"	270	gal/min	lb/min	16500	gal/min	lb/min	gal	lb
800	32"	300	gal/min	lb/min	19500	gal/min	lb/min	gal	lb
900	36"	360	gal/min	lb/min	24000	gal/min	lb/min	gal	lb
1000	40"	480	gal/min	lb/min	30000	gal/min	lb/min	gal	lb
–	42"	600	gal/min	lb/min	33000	gal/min	lb/min	gal	lb
1200	48"	600	gal/min	lb/min	42000	gal/min	lb/min	gal	lb
–	54"	1.3	Mgal/d	ton/h	75	Mgal/d	ton/h	Mgal	ton
1400	–	1.3	Mgal/d	ton/h	85	Mgal/d	ton/h	Mgal	ton
–	60"	1.3	Mgal/d	ton/h	95	Mgal/d	ton/h	Mgal	ton
1600	–	1.7	Mgal/d	ton/h	110	Mgal/d	ton/h	Mgal	ton
–	66"	2.2	Mgal/d	ton/h	120	Mgal/d	ton/h	Mgal	ton
1800	72"	2.6	Mgal/d	ton/h	140	Mgal/d	ton/h	Mgal	ton
–	78"	3.0	Mgal/d	ton/h	175	Mgal/d	ton/h	Mgal	ton
2000	–	3.0	Mgal/d	ton/h	175	Mgal/d	ton/h	Mgal	ton

Language, density, length, temperature

	Unit
Language	English
Density	kg/l
Length	mm
Temperature	°C

9 Index key words for function matrix

6...

8...

10 Index key words for local operation

Q

S

T

U

V

Z

Values

Table of contents for PROFIBUS-DP /-PA

1 Remote operation via PROFIBUS-DP /-PA

1.1 Block model

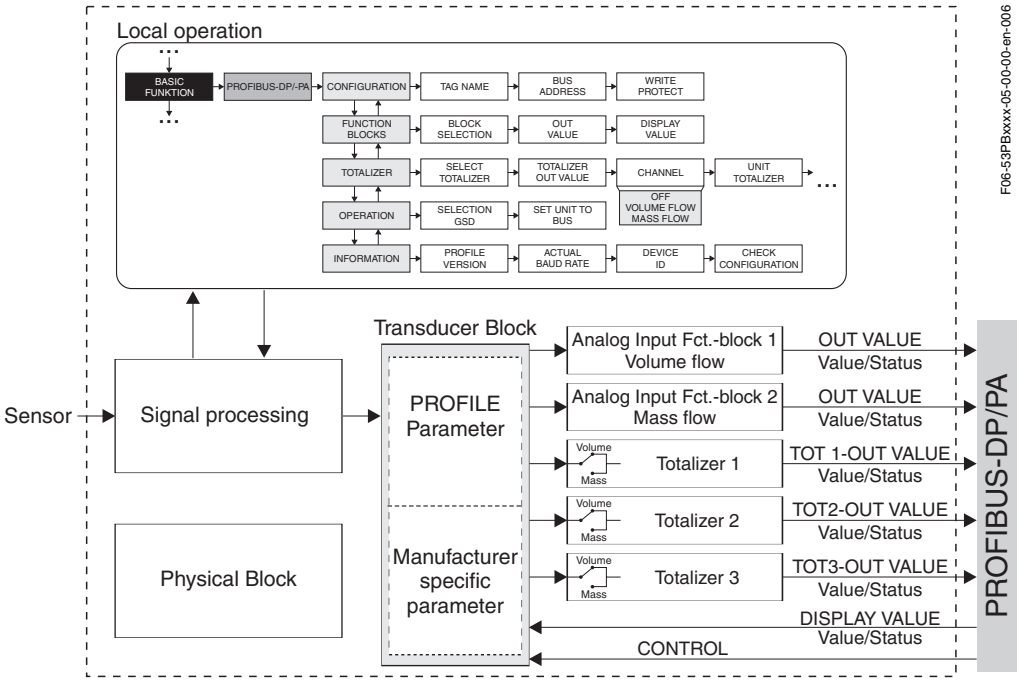
In the PROFIBUS-DP/-PA, all the device parameters are categorised according to their functional properties and task and are generally assigned to three different blocks. A block may be regarded as a container in which parameters and the associated functionalities are contained.
A PROFIBUS-DP/-PA device has the following block types:

- A Physical block
  The Physical block contains all the device-specific characteristics of the device.

- One or more Transducer blocks (transmission blocks)
  The Transducer block contains all the measuring technology and device-specific parameters of the device. The measurement principles (e.g. flow, temperature) are depicted in the Transducer blocks in accordance with the PROFIBUS-DP/-PA Profile 3.0 specification.

- One or more function blocks
  Function blocks contain the automation functions of the device. We distinguish between different function blocks, e.g. Analog Input function block, Analog Output function block, Totalizer block, etc. Each of these function blocks is used to process different application functions.

A number of automation-related tasks can be implemented with these blocks. In addition to these blocks, a field device may have any number of further blocks, e.g. several Analog Input function blocks if more than one process variable is available to from the field device.



The sensor signal is first prepared specifically for the flow in the measuring block (the Transducer block). The process variable (Volume Flow) is then passed to the Analog Input and Totalizer function blocks for technical processing (e.g. scaling, limit value processing). The process variables go through the entire function-block algorithm and are available to the process-control system as output variables.

2 Physical block

A Physical block contains all the data that uniquely identifies and characterises the field device. It is an electronic version of a nameplate on the field device. Parameters of the Physical block include device type, device name, manufacturer ID, serial number, etc.

A further task of the Physical blocks is the management of overall parameters and functions that have an influence on the execution of the remaining blocks in the field device. The Physical block is thus the central unit that also checks the device status and thereby influences or controls the operability of the other blocks and thus also of the device.

2.1 Write protection

Hardware write protection for the device parameters is activated and deactivated by means of a jumper on the PROFIBUS-DP/-PA I/O board (see the Operating Instructions *promag 53*, BA 053D/06/en/...).

The HW_WRITE_PROTECTION parameter (see Page 71) shows the status of hardware write protection.
The following statuses are possible:
1 → Hardware write protection enabled, it is not possible to write to the device
0 → Hardware write protection disabled, device data can be overwritten

It is also possible to set software write protection to prevent all parameters from being acyclically overwritten. This lock is set by means of the WRITE_LOCKING parameter (see Page 71)
The following are the permissible entries:
2457 → Device data can be overwritten (factory default)
0 → Device data can not be overwritten

2.2 Physical block parameters

The following table shows all the available parameters of the Physical block.

Abbreviations used in the table:
- R = Read
- W = Write
- P = Parameter, with a distinction between:
  – M = “Mandatory” (obligatory) parameter
  – O = Optional parameter

Physical block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
DEVICE_DATA (V0...)					
DEVICE_ID (V0H0)	**DEVICE_ID**	Use this function to view the manufacturer-specific device ID. **Display:** PROMAG PBUS.	X		M
SERIAL_NUMBER (V0H1)	**DEVICE_SER_NUM**	Use this function to view the serial number of the measuring device.	X		M

Physical block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SOFTWARE_ VERSION (V0H2)	**SOFTWARE_ VERSION**	Use this function to view the software version number of the measuring device.	X		M
HARDWARE_ VERSION (V0H3)	**HARDWARE_ VERSION**	Use this function to view the hardware version number of the measuring device.	X		M
MANUFACTURER_ ID (V0H4)	**DEVICE_MAN_ID**	Use this function to view the manufacturer's ID number. **Display:** 17 (decimal).	X		M
DESCRIPTION (V1...)					
DESCRIPTOR (V1H0)	**DESCRIPTOR**	You can use this parameter to enter a description of the application for which the measuring device is used. **Factory setting:** No description	X	X	O
INSTALLATION_ DATE (V1H1)	**DEVICE_INSTALL _DATE**	You can use this parameter to enter the installation date of the measuring device. **Factory setting:** No date	X	X	O
MESSAGE (V1H2)	**DEVICE_MESSAGE**	You can use this parameter to enter a message about the application for which the measuring device is used. **Factory setting:** No message	X	X	O
DEVICE_ CERTIFICATE (V1H3)	**DEVICE_ CERTIFICATION**	Use this parameter to view information about certification of the measuring device. **Factory setting:** No information	X		O
SOFTWARE_RESET (V2...)					
SOFTWARE_ RESET (V2H0)	**FACTORY_RESET**	You can use this parameter to reset or restart the measuring device. **User input:** 0 → No action 1 → Reset all parameters to their factory defaults, with the exception of the station address, which remains as set. The measuring device shows the next cold start for 10 seconds in the appropriate bit of the DIAGNOSIS parameter group. 2506 → Perform a warm start. The measuring device shows the next warm start for 10 seconds in the appropriate bit of the DIAGNOSIS parameter group. 2712 → Reset the station address to the usual PROFIBUS default address, 126. **Factory setting:** 1	X	X	O

Physical block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SECURITY_LOCKING (V3...)					
WRITE_LOCKING (V3H0)	**WRITE_LOCKING**	Use this parameter to activate write protection for the acyclic parameters. **User input:** 0 → Write protection enabled, parameters cannot be overwritten. 2457 → Write protection disabled, parameters can be overwritten. **Factory setting:** 2457 ✎ Note: An "Access denied" error message is displayed if an attempt is made to change a parameter settings when write protection is enabled.	x	x	o
HW_WRITE_ PROTECT (V3H1)	**HW_WRITE_ PROTECTION**	This parameter shows the position of the jumper used to set general hardware write protection. **Display:** 0 → Write protection disabled, parameters can be overwritten. 1 → Write protection, parameters cannot be overwritten at the local display or by means of the PROFIBUS protocol (class 2 master). **Factory setting:** 0 ✎ Note: A jumper on the I/O board provides the means of activating or deactivating write protection (see the Operating Instructions *promag 53*, BA 053D/06/en/...)	x		o
LOCAL_ OPERATION (V3H2)	**LOCAL_OP_ENA**	✎ Note: This parameter is not supported by the Promag 53 PB. Parameter for enabling the local display.	x	x	o

Physical block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
DEVICE_DATA (V4...)					
IDENT_NUMBER (V4H0)	**IDENT_NUMBER_ SELECTOR**	✎ Note: In the configuration phase, each PROFIBUS device must check an ID number allocated by the PNO (PROFIBUS user organisation). Along with this device-specific ID number there are also PROFILE ID numbers that have to be accepted in the configuration phase as well, for the purposes of interchangeability between devices of different make. In this case the device might, under certain circumstances, reduce the functionality for cyclic data to a scope defined in the profile. Use this parameter to select the measuring device's configuration response. **Options:** 0 → Entry for PROFILE ID number 1 → Entry for the device-specific ID number 2 → Entry for the device-specific ID number of the predecessor device (Profile 2.0) 3 → Entry for the PROFILE ID number (0x9760) for multi-variable devices ✎ Note: Options 2 and 3 are not supported by the Promag 53. **Factory setting:** 1	X	X	M
DIAGNOSIS_MASK (V5...)					
MASK (V5H0)	**DIAGNOSIS_MASK** (Byte 1)	Bit mask indicating which DIAGNOSIS bits of the first diagnosis byte are supported. **Display:** 0 → Diagnosis message is not supported X → Diagnosis message is supported	X		M
MASK_1 (V5H1)	**DIAGNOSIS_MASK** (Byte 2)	Bit mask indicating which DIAGNOSIS bits of the second diagnosis byte are supported. **Display:** 0 → Diagnosis message is not supported X → Diagnosis message is supported	X		M
MASK_2 (V5H2)	**DIAGNOSIS_MASK** (Byte 4)	Bit mask indicating which DIAGNOSIS bits of the fourth diagnosis byte are supported. **Display:** 0 → Diagnosis message is not supported X → Diagnosis message is supported	X		M
DIAG_MASK_ EXTENS. (V5H3)	**DIAGNOSIS_MASK EXTENSION**	Bit mask indicating the manufacturer-specific diagnosis messages. (See also the section on system and process error messages in the Operating Instructions for the *promag 53* (BA 053D/06/en/...)	X		O

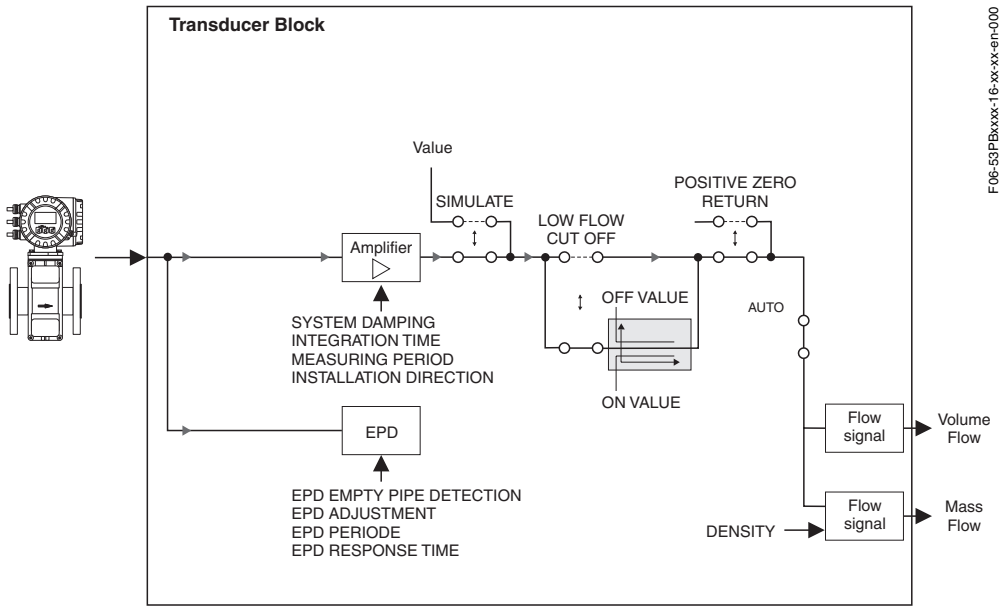
Physical block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
DIAGNOSIS (V6...)					
DIAGNOSIS (V6H0)	**DIAGNOSIS** (Byte 1)	Diagnosis information of the measuring device (first byte) with bit encoding. Several messages are possible. Manufacturer-specific information, if available is shown in the DIAGNOSIS_ EXT parameter.	X		M
DIAGNOSIS_2 (V6H1)	**DIAGNOSIS** (Byte 2)	Diagnosis information of the measuring device (second byte) with bit encoding. Several messages are possible. Manufacturer-specific information, if available is shown in the DIAGNOSIS_ EXT parameter. **Display:** 0 → Diagnosis message is not supported X → Diagnosis message is supported	X		M
DIAGNOSIS_3 (V6H2)	**DIAGNOSIS** (Byte 4)	Diagnosis information of the measuring device (fourth byte) with bit encoding. Several messages are possible. Manufacturer-specific information, if available is shown in the DIAGNOSIS_ EXT parameter. **Display:** 0 → Diagnosis message is not supported X → Diagnosis message is supported	X		M
DIAGNOSIS_EXT (V6H3)	**DIAGNOSIS_ EXTENSION**	Manufacturer-specific information with bit encoding. Several messages are possible.	X		O
BLOCK_MODE (V8...)	**General information on the MODE_BLK parameter group:** There are three elements in this parameter group: • the current operating mode of the block (Actual_Mode) • the modes supported by the block (Permitted_Mode) • the normal operating mode (Normal_Mode) A distinction is drawn between automatic operation (AUTO), manual user intervention (MAN), local override (LO) and the out-of-service mode (O/S). A function block generally offers a choice of operating modes, whereas the other block types support only the AUTO mode, for example.				
TARGET_MODE (V8H0)	**TARGET_MODE**	The selected operating mode. Only the automatic mode can be selected for the Physical block. **Options:** AUTO **Factory setting:** AUTO	X	X	M
ACTUAL (V8H1)	**MODE_BLOCK (Actual)**	Displays the current operating mode. **Display:** AUTO	X		M
NORMAL (V8H2)	**MODE_BLOCK (Normal)**	Displays the operating mode for normal operation. **Display:** AUTO	X		M
PERMITTED (V8H3)	**MODE_BLOCK (Permitted)**	Displays the permissible operating modes. **Display:** AUTO	X		M

Physical block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
ALARM_CONFIG (V9...)	**General information on the ALARM_CONFIG parameter group:** The block supported is the Active Block Alarm, which flags a change in a parameter with static values (Static attribute) for 10 seconds and indicates that an warning limit or an alarm limit has been violated in a function block.				
CURRENT (V9H0)	**ALARM_SUM (CURRENT)**	Use this parameter to view information about the current alarms of the measuring device.	X		M
DISABLE (V9H1)	**ALARM_SUM (DISABLE)**	Use this parameter to view information about the acknowledged alarms of the measuring device.	X		M
ST_REVISION (V9H5)	**ST_REV**	A block has static parameters (Static attribute) that are not changed by the process. Static parameters with values that change during optimisation or configuration increment the ST_REV parameter by 1. This supports parameter-revision management. The Static Revision Counter can show a higher value if several parameters change within a very short period of time, for example when parameters are uploaded to the measuring device from Commuwin II. This counter is never reset, nor does it return to a default setting even after a device reset. If the counter overflows (16 bits), it restarts at 0.	X		M
BLOCK_PARAMETER (VA...)					
TAG (VAH0)	**TAG_DESC**	Entry of a user-specific text of max. 32 characters for unique identification and assignment of the block. **Factory setting:** "_ _ _ _ _ _ _ _" without text	X	X	M
STRATEGY (VAH1)	**STRATEGY**	Parameter for grouping and thus faster evaluation of blocks. Grouping is carried out by entering the same numerical value in the parameter STRATEGY for each individual block. **Factory setting:** 0	X	X	M
ALERT_KEY (VAH2)	**ALERT_KEY**	Entry of the identification number of the plant unit. This information can be used by the instrumentation and control system for sorting alarms and events. **User input:** 1...255 **Factory setting:** 0	X	X	M
PROFILE_ VERSION (VAH3)	**—**	Displays the profile version implemented in the device. **Display:** 30 (3.0)	X		O

3 Transducer block (transmission block)

The Transducer block of the Promag 53 PROFIBUS contains all the measurement- and device-specific parameters of the flowmeter. All the settings directly connected with the flow measurement/application are made here. It forms the interface between the sensor-specific measured value preprocessing and the function blocks required for automation.

A Transducer block allows you to influence the input and output values of a function block. The parameters of a Transducer block include information on the sensor configuration, physical units, calibration, damping, error messages, etc. as well as the device-specific parameters.
The figure shows the internal structure of the Transducer block of the Promag 53 PROFIBUS-DP /-PA:



3.1 Signal processing

The input variable received by the Transducer block is a sensor signal that is proportional to the current flow. This input signal is prepared by the amplifier, taking into account certain externals such as system attentuation and integration time.
The SIMULATION MEASURAND parameter (see Page 104) allows you to specify a simulation value for the Transducer block in order to test assigned parameters in the device and subsequent function blocks.
A low flow cut off allows you to hide measurement inaccuracies in the low-flow sector. You can define limit values by means of the parameters for setting the activation and deactivation thresholds for low flow cut off (see Page 80). If the measured flow value is below one of these limit values, the output value of 0 is output.
You also have the option of setting the measured value to “Zero Flow” by means of the parameter for measured-value suppression (see Page 86). This is necessary when a piping system is being cleaned, for example.
The Transducer block's process variables are shown in the VOLUME FLOW and CALCULATED MASS FLOW parameters (see Page 77 and Page 77, respectively).

The major functions and parameters of the Transducer block are listed below; you will find an overview of all the available parameters starting on Page 77.

3.2 Block output variables

The Transducer block has two fixed process variables (volume flow and calculated mass flow) that are output in the VOLUME FLOW and CALCULATED MASS FLOW parameters, respectively. The relationship dictating which process variable is read into the next Analog Input function block is predefined and cannot be changed.

- Volume flow is assigned to Analog Input function block AI1.
- Calculated mass flow is assigned to Analog Input function block AI2.

3.3 Alarm detection and processing

The Transducer block does not generate any process alarms. The status of the process variables of the Transducer block is evaluated in the subsequent Analog Input function blocks. If the Analog Input function block receives no input value that can be evaluated from the Transducer block then a process alarm is generated. This process alarm is displayed in the OUT_STATUS, OUT_SUB_STATUS and OUT_LIMIT parameters of the Analog Input function block (see Page 116) .

The ACTUAL_ERROR_CODE parameter of the Transducer block (see Page 102) displays the device error that produced the input value that could not be evaluated and thus triggered the process alarm in the Analog Input function block.
More information on remedying errors can be found in the Operating Instructions *promag 53*, BA 053D/06/en/....

3.4 Access to manufacturer-specific parameters

To access the device-specific parameters the following requirements must be met:
1. Hardware write protection must be disabled (see the Operating Instructions *promag 53*, BA 053D/06/en/...).

2. The correct code must be entered in the CODE_ENTRY parameter (see Page 89).

3.5 Transducer block parameters

The following table shows all the available parameters of the Transducer block. The parameters can be changed by means of class 2 master, such as Commuwin II or PDM (Process Device Management).

A gray ■ background marks the manufacturer-specific parameters. These parameters are not accessible until the Unlocking/Locking access code has been entered.

Abbreviations used in the table:
- R = Read
- W = Write
- P = Parameter, with a distinction between:
  – M = “Mandatory” (obligatory) parameter
  – O = Optional parameter

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MEASURING VALUES (V0...)					
VOLUME FLOW (V0H0)	**VOLUME_FLOW**	Displays the current measured value of the first process variable (Volume Flow) made available to the Analog Input 1 function block as an input value. **Display:** 5-digit floating-point number, including unit and sign (e.g. 5.5445 dm^3/min; 1.4359 m^3/h; -731.63 gal/d; etc.)	X		M
CALC. MASS FLOW (V0H1)	**MASSFLOW**	Displays the current measured value of the calculated mass flow. It is calculated from the measured volume flow (first process variable) and the fixed density. This second process variable (Calculated Mass Flow) is made available to the Analog Input 2 function block as an input variable. **Display:** 5-digit floating-point number, including unit and sign (e.g. 462.87 kg/h; - 731.63 lb/min; etc.)	X		O
DENSITY (V0H2)	**DENSITY**	The fixed value for density can be defined in this parameter. **User input:** 5-digit floating-point number, including unit (corresponds to 0.100000...6.00000 kg/dm^3) e.g. 1.2345 kg/dm^3; 993.5 kg/m^3; 1.0015 SG_20 °C; etc.	X	X	O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SYSTEM UNITS (V1...)					
UNIT VOLUME FLOW (V1H0)	**VOLUME_FLOW_ UNITS**	Use this parameter to select the unit for the volume flow. **Options:** Metric: Cubic centimeter → cm^3/s; cm^3/min; cm^3/h; cm^3/day Cubic decimeter → dm^3/s; dm^3/min; dm^3/h; dm^3/day Cubic meter → m^3/s; m^3/min; m^3/h; m^3/day Milliliter → ml/s; ml/min; ml/h; ml/day Liter → l/s; l/min; l/h; l/day Hectoliter → hl/s; hl/min; hl/h; hl/day Megaliter → Ml/s; Ml/min; Ml/h; Ml/day US: Cubic centimeter → cc/s; cc/min; cc/h; cc/day Acre foot → af/s; af/min; af/h; af/day Cubic foot → ft^3/s; ft^3/min; ft^3/h; ft^3/day Fluid ounce → oz f/s; oz f/min; oz f/h; oz f/day Gallon → gal/s; gal/min; gal/h; gal/day Million gallon → Mgal/s; Mgal/min; Mgal/h; Mgal/day Barrel (normal fluids: 31,5 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day Barrel (beer: 31,0 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day Barrel (petrochemicals: 42,0 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day Barrel (filling tanks: 55,0 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day Imperial Gallon → gal/s; gal/min; gal/h; gal/day Mega gallon → Mgal/s; Mgal/min; Mgal/h; Mgal/day Barrel (beer: 36,0 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day Barrel (petrochemicals: 42,0 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day **Factory setting:** m^3/h	X	X	M
UNIT MASS FLOW (V1H1)		Use this parameter to select the unit for the calculated mass flow (mass/time). The mass flow is calculated from the preset specific fluid density and the measured volume flow. **Options:** Metric: Gram → g/s; g/min; g/h; g/day Kilogram → kg/s; kg/min; kg/h; kg/day Tonne → t/s; t/min; t/h; t/day US: ounce → oz/s; oz/min; oz/h; oz/day pound → lb/s; lb/min; lb/h; lb/day ton → ton/s; ton/min; ton/h; ton/day **Factory setting:** kg/h	X	X	O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
UNIT DENSITY (V1H2)	**UNIT_DENSITY**	Use this parameter to select the unit for the fluid density. **Options:** Metric → g/cm^3; g/cc; kg/dm^3; kg/l; kg/m^3; SD 4 °C, SD 15 °C, SD 20 °C; SG 4 °C, SG 15 °C, SG 20 °C US → lb/ft^3; lb/gal; lb/bbl (normal fluids); lb/bbl (beer); lb/bbl (petrochemicals); lb/bbl (filling tanks) Imperial → lb/gal; lb/bbl (beer); lb/bbl (petrochemicals) **Factory setting:** kg/l SD = Specific Density, SG = Specific Gravity The specific density is the ratio of fluid density to the density of water (at water temperature = 4, 15, 20°C)	X	X	O
UNIT LENGTH (V1H4)	**NORMAL_SIZE_ UNIT**	Use this parameter to select the unit for displaying the unit of length for nominal diameter. **Options:** MILLIMETER INCH **Factory setting:** MILLIMETER	X	X	M
USER INTERFACE (V2...)					
ACCESS CODE (V2H0)	**ACCESS_CODE**	All data of the measuring system are protected against inadvertent change. Programming is disabled and the settings cannot be changed until a code is entered in this parameter. You can enable programing by entering your private code (default = 53, see the DEFINE_PRIVATE_CODE parameter). **User input:** max. 4-digit number: 0...9999 ✎ Note: • If write protection is enabled, access to the manufacturer-specific parameters is blocked even if the right code is entered. • You can also disable programming in this parameter by entering any number (other than the customer's code). • The Endress+Hauser service organisation can be of assistance if you mislay your personal code.		X	O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
DEFINE PRIVATE CODE (V2H1)	**DEFINE_PRIVATE_ CODE**	Use this parameter to enter a personal code number for enabling programming. **User input:** 0...9999 (max. 4-digit number) **Factory setting:** 53 ✎ Note: • If the code number is "0", programming is always enabled. • Programming has to be enabled before this code can be changed. When programming is disabled the parameter is not available; this precaution prevents others from changing your personal code without your knowledge and consent.	x	x	o
STATUS ACCESS (V2H2)	**STATUS_ACCESS**	Use this parameter to check the access status for the manufacturer-specific parameters. **Display:** CUSTOMER (parameterisation enabled) SERVICE (parameterisation enabled) LOCKED (parameterisation disabled)	x		o
LF-CUTOFF PARAM. (V3...)					
ASSIGN LF-CUTOFF (V3H0)	**ASSIGN_LOW_ FLOW_CUTOFF**	Use this parameter to assign the switching point for Low flow cut off rate suppression. **Options:** OFF MASS FLOW VOLUME FLOW **Factory setting:** VOLUME FLOW	x	x	o
ON VAL_ LF CUTOFF (V3H2)	**ON_VALUE_LOW_ FLOW_CUTOFF**	Use this parameter to assign a value to the switch-on point for low flow cut off. Low flow cutoff is active if the setting is a value not equal to 0. **User input:** 5-digit floating-point number **Factory setting:** 0.0000	x	x	o
OFF VAL_ LF CUTOFF (V3H2)	**OFF_VALUE_LOW_ FLOW_CUTOFF**	Use this parameter to assign a value to the switch-off point for Low flow cut off. Enter the OFF-VALUE as a positive hysteresis from the ON-VALUE. **User input:** Integer 0...100% **Factory setting:** 50%	x	x	o

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
EPD PARAMETER (V4...)					
EPD (V4H0)	**EMPTY_PIPE_ DETECTION**	Use this parameter to activate empty pipe detection (EPD). **Options:** OFF ON **Factory setting:** OFF ✎ Note: • This parameter is not available unless the sensor is fitted with an EPD electrode. • The default setting for EPD when the device is delivered is OFF; the function has to be activated if required. • The EPD electrode is calibrated at the factory with water (500µS/cm). If the conductivity of the fluid differs from this reference, empty pipe/full pipe calibration has to be performed again on site (see the EPD_ADJUSTMENT parameter, p. 82). • An empty or partly filled pipe is a process fault and is reported to the higher-order process-control system in cyclic status as UNCERTAIN (Hex 40). • The calibration coefficients must be valid before you can activate EPD. If these coefficients are not available, the EPD_ADJUSTMENT parameter is displayed. **Notes on Empty Pipe Detection (EPD)** Flow cannot be measured correctly unless the measuring tube is full. This status can be monitored at all times with EPD. **Response to partially filled pipe** If EPD is enabled and trips in response to a partially filled or empty measuring tube, the message "EMPTY PIPE" appears on the local display. If the measuring tube is partially filled or empty and EPD is **not** enabled, response can vary in identically configured systems: – Flow reading fluctuates – Zero flow – Excessively high flow readings ✎ Note: Do not switch on EPD until empty pipe/full pipe calibration has been completed. If calibration is incorrect the following messages might appear on the display: • EPD ADJUSTMENT FULL = EMPTY: The calibration values for empty pipe and full pipe are identical. • EPD ADJUSTMENT NOT OK: EPD calibration is not possible because the fluid's conductivity is out of range. In these instances empty pipe/full pipe calibration **must** be performed **again**.	X	X	O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
EPD_- ADJUSTMENT (V4H3)	**EPD_ ADJUSTMENT**	Use this parameter to activate EPD calibration for an empty or full measuring tube. **Options:** OFF FULL PIPE ADJUST EMPTY PIPE ADJUST **Factory setting:** OFF **Procedure for empty-pipe/full-pipe calibration** 1. Empty the piping. Make sure that the wall of the measuring tube is wetted only with fluid for the calibration procedure. 2. Start empty-pipe calibration: select “EMPTY PIPE ADJUST” and confirm your choice. 3. Fill the pipe with fluid. 4. Start full-pipe calibration with fluid at a standstill: select “FULL PIPE ADJUST” and confirm your choice. 5. Once calibration is completed, switch EPD on.	X	X	O
EPD_ RESPONSE TIME (V4H4)	**EPD_RESPONSE_ TIME**	Use this parameter to enter the time span for which the criteria for an empty measuring tube have to be satisfied without interruption before a notice message or fault message is generated. **User input:** fixed-point number: 1.0...60.0 s **Factory setting:** 1.0 s	X	X	O
EPD_ ELECTRODE (V4H6)	**EPD_ELECTRODE**	This function shows whether the sensor is equipped with an EPD electrode. **Display:** YES NO **Factory setting:** YES → for electrode fitted as standard	X	X	O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
PROFIBUS-DP/-PA (V6...)					
WRITE_PROTECT (V6H0)	**HW_WRITE_ PROTECTION**	Shows whether general hardware write protection is enabled or disabled. **Display:** OFF → Hardware write protection disabled ON → Hardware write protection enabled; parameters cannot be changed at the local display or by means of the PROFIBUS protocol (class 2 master). **Factory setting:** OFF ✎ Note: A jumper on the I/O board provides the means of enabling or disabling hardware write protection (see the Operating Instructions *promag 53*, BA 053D/06/en/...)	X		O
SELECTION_GSD (V6H1)	**IDENT_NUMBER_ SELECTOR**	✎ Note: In the configuration phase, each PROFIBUS device must check an ID number allocated by the PNO (PROFIBUS user organisation). Along with this device-specific ID number there are also PROFILE ID numbers that have to be accepted in the configuration phase as well, for the purposes of interchangeability between devices of different make. In this case the device might, under certain circumstances, reduce the functionality for cyclic data to a scope defined in the profile. Use this parameter to select the measuring device's configuration response. **Options:** MANUFACT.SPEC – PROFILE GSD **Factory setting:** MANUFACT.SPEC	X	X	M
SET_UNIT_TO_ BUS (V6H2)	**SET_UNIT_TO_ BUS**	Use this parameter to transmit the preset system unit to the process-control system. When transmission takes place the OUT value in the Analog Input block is automatically scaled to the selected system unit and the OUT unit (output unit) is displayed in the OUT_UNIT parameter. The default system units are listed in the Operating Instructions for the *promag 53* BA 053/06/en. **Options** CANCEL – YES (SET UNITS) **Factory setting:** CANCEL ☝ Caution: Activating this function can cause the OUT value to increase dramatically; this, in turn, can affect other control routines.	X	X	O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
BLOCK_ SELECTION (V6H3)	**BLOCK_ SELECTION**	You can use this parameter to select an Analog Input function block whose OUT (output) value will be displayed, complete with unit and status. **Options:** ANALOG INPUT 1 ANALOG INPUT 2 **Factory setting:** ANALOG INPUT 1	x	x	o
OUT_VALUE (V6H4)	**OUT_VALUE**	This parameter display the OUT (output) value of the Analog Input function block selected in the BLOCK SELECTION parameter; the value is displayed complete with unit and status.	x		o
OUT_STATUS (V6H5)	**OUT_VALUE**	Use this parameter to display the OUT (output) status in hexadecimal notation. The meanings of the individual status values are described in Operating Instructions *promag 53*, BA 053D/06/en/.... ✎ Note: This parameter cannot be viewed on the local display.	x		o
DISPLAY_VALUE (V6H6)	**LOCAL_DISPLAY_ INPUT**	Use this parameter to transfer a value and status calculated by a process-control system directly to the Promag 53. This is a display-only value: it cannot be processed by the system. ✎ Note: BAD is displayed as the status if no status information is sent to the device.	x		o
DISP.VAL.STATUS (V6H7)	**LOCAL_DISPLAY_ INPUT**	Use this parameter to display the Status display value in hexadecimal notation. The meanings of the individual status values are described in Operating Instructions *promag 53*, BA 053D/06/en/.... ✎ Note: BAD is displayed as the status if no status information is sent to the device.	x		o

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
PROFIBUS_INFO (V7...)					
BUS ADDRESS (V7H0)	**DEV_BUS_ADDR**	Use this parameter to view the measuring device's bus address. **User input:** 0...126 **Factory setting:** 126 ✎ Note: This parameter is only for viewing the bus address. The device address can be edited with the DDE server (from Commuwin II) and using the local display.	X	X	O
PROFILE_ VERSION (V7H1)	**—**	Use this parameter to view the profile version.	X		O
ACTUAL BAUDRATE (V7H2)	**ACTUAL_ BAUDRATE**	Use this parameter to view the data transfer rate at which the device communicates, as set in the process-control system.	X		O
DEVICE_ID (V7H3)	**DEVICE_ID**	Use this parameter to view the manufacturer-specific device ID. **Display:** • PROFIBUS-DP = 1526 Hex • PROFIBUS-PA = 1527 Hex	X		O
CHECK_CONFIG. (V7H4)	**CHECK_CONFIG**	Use this parameter to check whether the configuration of a class 1 master has been accepted for cyclic data interchange in the Promag 53. **Display:** ACCEPTED (configuration accepted) NOT ACCEPTED (configuration not accepted)	X		O
SYSTEM PARAMETERS (V8...)					
INSTL. DIR. SENSOR (V8H0)	**INSTALL_ DIRECTION_ SENSOR**	Use this parameter to reverse the sign of the flow quantity, if necessary. **Options:** FORWARD (flow in direction indicated by arrow) REVERSE (flow opposite to direction indicated by arrow) **Factory setting:** FORWARD ✎ Note: Ascertain the actual direction of fluid flow with reference to the direction indicated by the arrow on the sensor (nameplate).	X	X	O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SYSTEM DAMPING (V8H1)	**SYSTEM_DAMPING**	✎ Note: System damping acts on all parameters and the PROFIBUS output of the measuring device. Use this parameter to set the filter depth of the digital filter. The sensitivity of the flow measurement signal can be reduced with respect to transient flows and interference peaks; e.g. with fluid containing solids or gas bubbles, etc. The system reaction time increasing with the filter number. **User input:** 0 ...15 **Factory setting:** 7	x	x	o
INTEGRATION TIME (V8H2)	**INTEGRATION_ TIME**	Use this parameter to set the time during which the measuring signal is integrated. Under normal circumstances it is not necessary to change the factory default. **User input:** 3.3 ...65 ms **Factory setting:** 20 ms for 50 Hz → line frequency (e.g. Europe) 16.7 ms for 60 Hz → line frequency (e.g. USA) ✎ Note: The integration time defines the time for internal addition of the induced voltage in the fluid (tapped by the measuring electrode), in other words the time in which the measuring device registers true flow (after which the magnetic field is reversed for the next integration cycle).	x	x	o
POSITIVE ZERO RETURN (V8H3)	**POSITIVE_ZERO_ RETURN**	Use this parameter to interrupt evaluation of measured variables. This is necessary when a piping system is being cleaned, for example. The setting acts on all function and outputs of the measuring device. **Options:** OFF → normal signal output ON → signal output is set to "ZERO FLOW". **Factory setting:** OFF	x	x	o
SYSTEM_RESET (V8H5)	**SYSTEM_RESET**	Use this parameter to perform a reset of the measuring system. **Options:** NO RESTART SYSTEM (restart without interrupting line supply) **Factory setting:** NO	x	x	o

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SENSOR DATA (V9...)					
K-FACTOR_ POSITIVE (V9H0)	**K_FACTOR_ POSITIVE**	This function shows the current calibration factor (positive direction of flow) for the sensor. The calibration factor is calculated and set at the factory. **Display:** 5-digit fixed-point number: 0.5000 ...2.0000 **Factory setting:** depends on nominal diameter and calibration	x		o
K-FACTOR_ NEGATIVE (V9H1)	**K_FACTOR_ NEGATIVE**	This function shows the current calibration factor (negative direction of flow) for the sensor. The calibration factor is calculated and set at the factory. **Display:** 5-digit fixed-point number: 0.5000 ...2.0000 **Factory setting:** depends on nominal diameter and calibration	x		o
ZERO POINT (V9H2)	**ZERO_POINT**	This function shows the current zero-point correction value for the sensor. The zero-point correction factor is calculated and set at the factory. **Display:** max. 4-digit number: -1000 ...+1000 **Factory setting:** depends on nominal diameter and calibration	x		o
NOMINAL DIAME-TER (V9H3)	**NOMINAL_ DIAMETER**	This function shows the nominal diameter for the sensor. The nominal diameter depends on the size of the sensor and is set at the factory. **Display:** 2 ...2000 mm or 1/12 ...78" **Factory setting:** depends on the size of the sensor	x		o
MEASURING PERIOD (V9H5)	**MEASURING_ PERIOD**	This is the parameter used to set the time for a full measuring period. If the setting is 0 ms the system automatically computes the shortest time. The duration of a measuring period is the sum of the rise time for the magnetic field, the short recovery time, the (parameterisable) integration time and the EPD time. **User input:** 0.0...1000 ms **Factory setting:** depends on nominal diameter ✎ Note: The system checks the user input and sets the actual measuring period used internally to a plausible value.	x		o

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
OVERVOLT. TIME (V9H6)	**SHOT_TIME**	This is the parameter used to define the time in which overvoltage is applied to the coil circuit in order to build up the magnetic field as quickly as possible. The overvoltage time is adjusted automatically while measuring is in progress. The overvoltage time depends on the type of sensor and the nominal diameter and is set at the factory. **Display:** 4-digit floating-point number: 0.0...100.0 ms **Factory setting:** depends on nominal diameter	x		o
MEASURING POINT (VA...)					
TAG NAME (VAH0)	**TAG_DESC**	Use this parameter to assign a tag name to the measuring device. You can edit and read this tag name at the local display or by means of a class 2 master. **User input:** max. 32-character text, permissible: A-Z, 0-9, +,-, punctuation symbols **Factory setting:** "_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _" (without text)	x	x	o
MATRIX_ SELECTION (VAH5)	**—**	Use this parameter to switch from one matrix page to another. ✎ Note: This parameter is of relevance in conjunction with Commuwin II only.	x	x	o
DEVICE_NAME (VAH6)	**—**	This parameter shows the device name. ✎ Note: This parameter is of relevance in conjunction with Commuwin II only.	x		o

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
USER INTERFACE (V2...)					
ACCESS CODE (V2H0)	**ACCESS_CODE**	All data of the measuring system are protected against inadvertent change. Programming is disabled and the settings cannot be changed until a code is entered in this parameter. You can enable programing by entering your private code (default = 53, see the DEFINE_PRIVATE_CODE parameter). **User input:** max. 4-digit number: 0...9999 ✎ Note: • If write protection is enabled, access to the manufacturer-specific parameters is blocked even if the right code is entered. • You can also disable programming in this parameter by entering any number (other than the customer's code). • The Endress+Hauser service organisation can be of assistance if you mislay your personal code.		x	o
DEFINE PRIVATE CODE (V2H1)	**DEFINE_PRIVATE_ CODE**	Use this parameter to enter a personal code number for enabling programming. **User input:** 0...9999 (max. 4-digit number) **Factory setting:** 53 ✎ Note: • If the code number is "0", programming is always enabled. • Programming has to be enabled before this code can be changed. When programming is disabled the parameter is not available; this precaution prevents others from changing your personal code without your knowledge and consent.	x	x	o
STATUS ACCESS (V2H2)	**STATUS_ACCESS**	Use this parameter to check the access status for the manufacturer-specific parameters. **Display:** CUSTOMER (parameterisation enabled) SERVICE (parameterisation enabled) LOCKED (parameterisation disabled)	x		o

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
DISPLAY FUNCTION (V3...)					
LANGUAGE (V3H0)	**HMI_LANGUAGE**	Use this parameter to select the language for all texts and parameters shown on the display. **Options:** ENGLISH DEUTSCH FRANCAIS ESPANOL ITALIANO NEDERLANDS DANSK NORSK SVENSKA SUOMI BAHASA INDONESIA JAPANESE (syllabic) **Factory setting:** depends on country	x	x	o
DISPLAY DAMPING (V3H1)	**HMI_DAMPING**	Use this parameter to enter a time constant defining how the display reacts to severely fluctuating flow variables, either very quickly (enter a low time constant) or with damping (enter a high time constant). **User input:** 0...100 seconds **Factory setting:** 1 s ✎ Note: Setting the time constant to zero seconds switches off damping.	x	x	o
CONTRAST LCD (V3H2)	**HMI_LCD_ CONTRAST**	Use this parameter to optimise contrast on the local display to suit local operating conditions. **User input:** 10...100% **Factory setting:** 50%	x	x	o

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MAIN LINE (V4...)					
ASSIGN_ LINE1 (V4H0)	**HMI_ASSIGN_LINE**	Use this parameter to define the display value assigned to the main line (the top line of the local display) during normal measuring operation. **Options:** OFF VOLUME FLOW MASS FLOW VOLUME FLOW IN % MASS FLOW IN % AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE **Factory setting:** VOLUME FLOW	X	X	O
100% VALUE (V4H1)	**HMI_100PC_VALUE**	✎ Note: This parameter is not available unless the ASSIGN_LINE1 parameter is set to VOLUME FLOW IN % or MASS FLOW IN %. Use this parameter to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** 10 l/s or 10 kg/s	X	X	O
FORMAT (V4H2)	**HMI_FORMAT**	Use this parameter to define the maximum number of places after the decimal point displayed for the reading in the main line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.	X	X	O

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MULTIPLEX (V5...)					
ASSIGN_LINE1 (V5H0)	**HMI_MULT_ ASSIGN_LINE**	Use this parameter to define the second reading to be displayed in the main line alternately (every 10 seconds) with the value defined in the ASSIGN_LINE1 parameter (V4H0). **Options:** OFF VOLUME FLOW MASS FLOW VOLUME FLOW IN % MASS FLOW IN % AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE **Factory setting:** OFF	x	x	o
100% VALUE (V5H1)	**HMI_MULT_100PC_ VALUE**	✎ Note: This parameter is not available unless the ASSIGN_LINE1 parameter is set to VOLUME FLOW IN % or MASS FLOW IN %. Use this parameter to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** 10 l/s or 10 kg/s	x	x	o
FORMAT (V5H2)	**HMI_FORMAT**	Use this parameter to define the maximum number of places after the decimal point displayed for the reading in the main line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.	x	x	o

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
ADDITION LINE (V6...)					
ASSIGN_LINE2 (V6H0)	**HMI_ASSIGN_ LINE_ADD**	Use this parameter to define the display value assigned to the additional line (the middle line of the local display) during normal measuring operation. **Options:** OFF VOLUME FLOW MASS FLOW VOLUME FLOW IN % MASS FLOW IN % VOLUME FLOW BARGRAPH IN % MASS FLOW BARGRAPH IN % FLOW VELOCITY AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE TAG NAME BLANK LINE **Factory setting:** TOT1 - OUT VALUE	X	X	O
100% VALUE (V6H1)	**HMI_100PC_ VALUE_ADD**	✎ Note: This parameter is not available unless the ASSIGN_LINE2 parameter is set to VOLUME FLOW IN % or MASS FLOW IN %. Use this parameter to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** 10 l/s or 10 kg/s	X	X	O

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
FORMAT (V6H2)	**HMI_FORMAT_ADD**	Use this parameter to define the maximum number of places after the decimal point displayed for the reading in the additional line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.	x	x	o
DISPLAY MODE (V6H3)	**HMI_DISPLAY_ MODE_ADD**	✎ Note: This parameter is not available unless the ASSIGN_LINE2 parameter is set to VOLUME FLOW BARGRAPH IN % or MASS FLOW BARGRAPH IN %. Use this parameter to define the format of the bar graph. **Options:** STANDARD (Simple bar graph with 25 / 50 / 75 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-000 SYMMETRY (Symmetrical bar graph for positive and negative directions of flow, with –50 / 0 / +50 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-001 **Factory setting:** STANDARD			

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MULTIPLEX (V7...)					
ASSIGN_LINE2 (V7H0)	**HMI_MULT_ASSIGN_LINE_ADD**	Use this parameter to define the second reading to be displayed in the additional line alternately (every 10 seconds) with the value defined in the ASSIGN_LINE2 parameter (V6H0). **Options:** OFF VOLUME FLOW MASS FLOW VOLUME FLOW IN % MASS FLOW IN % VOLUME FLOW BARGRAPH IN % MASS FLOW BARGRAPH IN % FLOW VELOCITY AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE TAG NAME BLANK LINE **Factory setting:** OFF	X	X	O
100% VALUE (V7H1)	**HMI_MULT_100PC_VALUE_ADD**	✎ Note: This parameter is not available unless the ASSIGN_LINE2 parameter is set to VOLUME FLOW IN % or MASS FLOW IN %. Use this parameter to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** 10 l/s or 10 kg/s	X	X	O

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
FORMAT (V7H2)	**HMI_MULT_ FORMAT_ADD**	Use this parameter to define the maximum number of places after the decimal point displayed for the reading in the additional line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.	x	x	o
DISPLAY MODE (V7H3)	**HMI_MULT_ DISPLAY_MODE_ ADD**	✎ Note: This parameter is not available unless the ASSIGN_LINE2 parameter is set to VOLUME FLOW BARGRAPH IN % or MASS FLOW BARGRAPH IN %. Use this parameter to define the format of the bar graph. **Options:** STANDARD (Simple bar graph with 25 / 50 / 75 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-000 SYMMETRY (Symmetrical bar graph for positive and negative directions of flow, with –50 / 0 / +50 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-001 **Factory setting:** STANDARD	x	x	o

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
INFORMATION LINE (V8...)					
ASSIGN_LINE3 (V8H0)	**HMI_ASSIGN_ LINE_INFO**	Use this parameter to define the display value assigned to the information line (the bottom line of the local display) during normal measuring operation. **Options:** OFF VOLUME FLOW IN % MASS FLOW IN % VOLUME FLOW BARGRAPH IN % MASS FLOW BARGRAPH IN % FLOW VELOCITY AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE TAG NAME OPERATING/SYSTEM CONDITION FLOW DIRECTION BLANK LINE **Factory setting:** OPERATING/SYSTEM CONDITION	x	x	o
100% VALUE (V8H1)	**HMI_100PC_ VALUE_INFO**	✎ Note: This parameter is not available unless the ASSIGN_LINE3 parameter is set to VOLUME FLOW IN % or MASS FLOW IN %. Use this parameter to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** 10 l/s or 10 kg/s	x	x	o

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
FORMAT (V8H2)	**HMI_FORMAT_ INFO**	Use this parameter to define the maximum number of places after the decimal point for the value displayed in the information line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.	x	x	o
DISPLAY MODE (V8H3)	**HMI_DISPLAY_ MODE_INFO**	✎ Note: This parameter is not available unless the ASSIGN_LINE3 parameter is set to VOLUME FLOW BARGRAPH IN % or MASS FLOW BARGRAPH IN %. Use this parameter to define the format of the bar graph. **Options:** STANDARD (Simple bar graph with 25 / 50 / 75 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-000 SYMMETRY (Symmetrical bar graph for positive and negative directions of flow, with –50 / 0 / +50 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-001 **Factory setting:** STANDARD	x	x	o

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MULTIPLEX (V9...)					
ASSIGN_LINE3 (V9H0)	**HMI_MULT_ ASSIGN_LINE_ INFO**	Use this parameter to define the second reading to be displayed in the information line alternately (every 10 seconds) with the value defined in the ASSIGN_LINE3 parameter (V8H0). **Options:** OFF VOLUME FLOW IN % MASS FLOW IN % VOLUME FLOW BARGRAPH IN % MASS FLOW BARGRAPH IN % FLOW VELOCITY AI1 - OUT VALUE AI2 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE TOT2 - OUT VALUE TOT3 - OUT VALUE TAG NAME OPERATING/SYSTEM CONDITION FLOW DIRECTION BLANK LINE **Factory setting:** OFF	X	X	O
100% VALUE (V9H1)	**HMI_MULT_100PC_ VALUE_INFO**	✎ Note: This parameter is not available unless the ASSIGN_LINE3 parameter is set to VOLUME FLOW IN % or MASS FLOW IN %. Use this parameter to define the flow value to be shown on the display as the 100% value. **User input:** 5-digit floating-point number **Factory setting:** 10 l/s or 10 kg/s	X	X	O

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
FORMAT (V9H2)	**HMI_MULT_ FORMAT_VALUE_ INFO**	Use this parameter to define the maximum number of places after the decimal point for the second value displayed in the information line. **Options:** XXXXX. - XXXX.X - XXX.XX - XX.XXX -X.XXXX **Factory setting:** X.XXXX ✎ Note: • Note that this setting only affects the reading as it appears on the display, it has no influence on the accuracy of the system's calculations. • The places after the decimal point as computed by the measuring device cannot always be displayed, depending on this setting and the engineering unit. In these instances an arrow appears on the display between the measured value and the engineering unit (e.g. 1.2 → kg/h), indicating that the measuring system is computing with more decimal places than can be shown on the display.	x	x	o
DISPLAY MODE (V9H3)	**HMI_MULT_ DISPLAY_MODE_ INFO**	✎ Note: This parameter is not available unless the ASSIGN_LINE3 parameter is set to VOLUME FLOW BARGRAPH IN % or MASS FLOW BARGRAPH IN %. Use this parameter to define the format of the bar graph. **Options:** STANDARD (Simple bar graph with 25 / 50 / 75 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-000 SYMMETRY (Symmetrical bar graph for positive and negative directions of flow, with –50 / 0 / +50 % gradations and integrated sign).  F-x3xxxxx-20-xx-xx-xx-001 **Factory setting:** STANDARD	x	x	o

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MEASURING POINT (VA...)					
TAG NAME (VAH0)	**TAG_DESC**	Use this parameter to assign a tag name to the measuring device. You can edit and read this tag name at the local display or by means of a class 2 master. **User input:** max. 32-character text, permissible: A-Z, 0-9, +,-, punctuation symbols **Factory setting:** "_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _" (without text)	x	x	o
MATRIX_ SELECTION (VAH5)	**—**	Use this parameter to switch from one matrix page to another. ✎ Note: This parameter is of relevance in conjunction with Commuwin II only.	x	x	o
DEVICE_NAME (VAH6)	**—**	This parameter shows the device name. ✎ Note: This parameter is of relevance in conjunction with Commuwin II only.	x		o

Transducer block (SERVICE&ANALYSIS)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
DIAGNOSIS/ALARM (V0...)					
ACTUAL_SYS._ COND. (V0H0)	**ACTUAL_ERROR_ CODE**	Use this function to check the present system status. Display: "SYSTEM OK" or the system/process error message with the highest priority. ✎ Note: Meanings, causes and troubleshooting routines are explained in the Operating Instructions *promag 53*, BA 053D/06/en/....	x		o
PREV. _SYS._ COND. (V0H1)	**—**	✎ Note: This function is not available at this time. Use this function to view the fifteen most recent system and process error messages since measuring last started. Display shows: the 15 most recent error or status messages ✎ Note: The display can be reset manually using the OLD ERR RESET parameter.	x		o
PREV. _SYS._ RESET (V0H2)	**—**	✎ Note: This function is not available at this time. Use this function to delete the list of system and error messages in the OLD ERR CODE parameter. **Options:** YES NO	x	x	o
ALARM_DELAY (V0H3)	**ALARM_DELAY**	Use this parameter to define a time for the suppression of system and process error messages. Depending on the setting and the type of error, this suppression acts on: • Display • PROFIBUS-DP /-PA communication output **User input:** 0...100 s (in steps of one second) **Factory setting:** 0 s ☝ Caution: If this parameter is activated, system and process error messages are delayed by the time corresponding to the setting before being forwarded to the higher-order controller (process controller, etc.). It is therefore imperative to check in advance in order to make sure whether a delay of this nature could affect the safety requirements of the process. If system and process error messages cannot be suppressed, a value of 0 seconds must be entered here.	x	x	o

Transducer block (SERVICE&ANALYSIS)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
USER INTERFACE (V2...)					
ACCESS CODE (V2H0)	**ACCESS_CODE**	All data of the measuring system are protected against inadvertent change. Programming is disabled and the settings cannot be changed until a code is entered in this parameter. You can enable programing by entering your private code (default = 53, see the DEFINE_PRIVATE_CODE parameter). **User input:** max. 4-digit number: 0...9999 ✎ Note: • If write protection is enabled, access to the manufacturer-specific parameters is blocked even if the right code is entered. • You can also disable programming in this parameter by entering any number (other than the customer's code). • The Endress+Hauser service organisation can be of assistance if you mislay your personal code.		x	o
DEFINE PRIVATE CODE (V2H1)	**DEFINE_PRIVATE_ CODE**	Use this parameter to enter a personal code number for enabling programming. **User input:** 0...9999 (max. 4-digit number) **Factory setting:** 53 ✎ Note: • If the code number is "0", programming is always enabled. • Programming has to be enabled before this code can be changed. When programming is disabled the parameter is not available; this precaution prevents others from changing your personal code without your knowledge and consent.	x	x	o
STATUS_ ACCESS (V2H2)	**STATUS_ACCESS**	Use this parameter to check the access status for the manufacturer-specific parameters. **Display:** CUSTOMER (parameterisation enabled) SERVICE (parameterisation enabled) LOCKED (parameterisation disabled)	x		o

Transducer block (SERVICE&ANALYSIS)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SIMULATION (V4...)					
SIM. MEASURAND (V4H0)	**SIMULATION_ MEASURAND**	Use this parameter to simulate the output of the Transducer block as a way of testing response. During this time, the words “SIMULATION MEASURED VARIABLE” appear on the local display. Simulation affects all AI (Analog Input) blocks and TOT 1-3 (totalizer 1-3) blocks. **Options:** OFF VOLUME FLOW MASS FLOW **Factory setting:** OFF ✎ Note: If you want to display the unit of the simulated measured value, you can use the SET_UNIT_TO _BUS parameter (see Page 83) to send the selected system unit, which the has a direct relationship to measured-value scaling, to the process control system. This is also possible in the TOT 1-3 (totalizer 1-3) blocks, in which case the parameter to use is UNIT_TOT (see Page 130). In the AI (Analog Input) blocks you can use the OUT_UNIT parameter (see Page 118) to select a unit which, however, has no effect on measured-value scaling. ☝ Caution: • The measuring device cannot be used for measuring while this simulation is in progress. • The setting is not saved if the power supply fails.	x	x	o
VALUE_SIM. MEASURAND (V4H1)	**VALUE_ SIMULATION_ MEASURAND**	✎ Note: The parameter is not visible unless the SIMULATION MEASURAND parameter is active. Use this parameter to define a selectable value (e.g. 12 m^3/s). This is used to test the associated parameters in the flowmeter itself and downstream signal loops. **User input:** 5-digit floating-point number **Factory setting:** 0 ☝ Caution: The setting is not saved if the power supply fails.	x	x	o

Transducer block (SERVICE&ANALYSIS)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SIM. FAILSAFE MODE (V4H2)	**SIM_FSAFE_MODE**	Use this parameter to simulate the error response of the Transducer block. **Options:** OFF NO **Factory setting:** OFF ✎ Note: The error response of the function blocks must be defined in the appropriate AIs (Analog Input) or TOTs (totalizer) (see the function description of the function block in question).	X	X	O
SENSOR_INFO (V6...)					
SERIAL NUMBER (V6H0)	**SERIAL_NUM**	Use this function to view the serial number of the sensor.	X		O
SENSOR_TYPE (V6H1)	**SENSOR_TYPE**	Use this function to view the sensor type.	X		O
HW REV. SENSOR (V6H2)	**HW_REV_SENSOR**	Use this function to view the hardware revision number of the sensor.	X		O
SW-REV.T-DAT (V6H5)	**SW_REV_S_DAT**	Use this function to view the software revision number of the software used to create the content of the S-DAT.	X		O
AMPLIFIER_INFO (V7...)					
HW REV.AMP. (V7H0)	**HW_REV_AMP**	Use this function to view the hardware revision number of the amplifier.	X		O
SW.REV.AMP. (V7H2)	**SW_REV_AMP**	Use this function to view the software revision number of the amplifier.	X		O
SW REV.T-DAT (V7H5)	**SW_REV_T_DAT**	Use this parameter to view the software revision number of the software used to create the content of the T-DAT.	X		O
I/O_MODULE_INFO (V8...)					
I/O_TYPE (V8H0)	**IO_TYPE**	Use this function to view the configuration of the I/O module complete with terminal numbers. ✎ Note: This function is not available at this time.	X		O
HW REV.I/O (V8H1)	**HW_REV_IO**	Use this function to view the hardware revision number of the I/O module.	X		O
SW REV.I/O (V8H3)	**SW_REV_IO**	Use this function to view the software revision number of the I/O module.	X		O

Transducer block (SERVICE&ANALYSIS)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MEASURING POINT (VA...)					
TAG NAME (VAH0)	**TAG_DESC**	Use this parameter to assign a tag name to the measuring device. You can edit and read this tag name at the local display or by means of a class 2 master. **User input:** max. 32-character text, permissible: A-Z, 0-9, +,-, punctuation symbols **Factory setting:** "_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _" (without text)	x	x	o
MATRIX_ SELECTION (VAH5)	—	Use this parameter to switch from one matrix page to another. ✎ Note: This parameter is of relevance in conjunction with Commuwin II only.	x	x	o
DEVICE_NAME (VAH6)	—	This parameter shows the device name. ✎ Note: This parameter is of relevance in conjunction with Commuwin II only.	x		o

Transducer block (use of the Profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
VOLUME_FLOW (V0...)					
VOLUME_FLOW (V0H0)	**VOLUME_FLOW**	Displays the current measured value of the first process variable (Volume Flow) made available to the Analog Input 1 function block as an input value. **Display:** 5-digit floating-point number, including unit and sign (e.g. 5.5445 dm3/min; 1.4359 m3/h; -731.63 gal/d; etc.)	X		M
STATUS (V0H1)	**VOLUME_FLOW**	Displays the current status of the first process variable (Volume Flow) made available to the Analog Input 1 function block as an input value.	X		M
UNIT (V0H2)	**VOLUME_FLOW_ UNITS**	Use this parameter to select the unit for displaying the volume flow. **Options:** l/s m^3/h gal/min ft^3/min **Factory setting:** m^3/h ✎ Note: Only the units defined in the 3.0 profiles are available.	X	X	M
LOWER_RANGE_ VALUE (V0H3)	**VOLUME_FLOW_ LO_LIM**	Use this parameter to enter the measuring device's lower range value for volume flow.	X	X	M
UPPER_RANGE_ VALUE (V0H4)	**VOLUME_FLOW_ HI_LIM**	Use this parameter to enter the measuring device's upper range value for volume flow.	X	X	M
SAMPLING_FREQ. (V6...)					
VOLUME_FLOW (V6H0)	**SAMPLING_FREQ**	Use this function to view the sampling frequency of the measuring device.	X		M
STATUS (V6H1)	**SAMPLING_FREQ**	Use this function to view the status of the sampling frequency.	X		M
UNIT (V6H2)	**SAMPL_FREQ_ UNIT**	Use this parameter to select the unit for the sampling frequency. **Options:** Hz **Factory setting:** Hz	X	X	M

Transducer block (use of the Profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SYSTEM_PARAMETERS (V7...)					
MEASURING_ MODE (V7H0)	**MEASURE_MODE**	Use this parameter to set the flow mode as bidirectional or unidirectional. **Options:** UNIDIRECTIONAL BIDIRECTIONAL **Factory setting:** BIDIRECTIONAL	X	X	M
FLOW_ DIRECTION (V7H1)	**FLOW_DIRECTION**	Use this parameter to set the direction of flow. **Options:** POSITIVE NEGATIVE **Factory setting:** POSITIVE	X	X	M
LOW_FLOW_ CUTOFF (V7H2)	**LOW_FLOW_ CUTOFF**	Use this parameter to assign a value to the switch-on point for low flow cut off. If you enter a value not equal to 0 low flow cutoff is enabled and the sign of the flow value is highlighted on the local display. **User input:** 5-digit floating-point number **Factory setting:** 0.0000	X	X	M
ZERO_POINT (V7H3)	**ZERO_POINT**	This function shows the current zero-point correction value for the sensor. The zero-point correction factor is calculated and set at the factory. **Display:** max. 4-digit number: -1000 ...+1000 **Factory setting:** depends on nominal diameter and calibration	X	X	M
ZERO_POINT_ ADJUST (V7H4)	**ZERO_POINT_ ADJUST**	Use this parameter to activate zero point adjustment. **Options:** CANCEL EXECUTE **Factory setting:** CANCEL	X	X	M
UNIT (V7H5)	**ZERO_POINT_UNIT**	Use this parameter to select the unit for zero point adjustment. **Options:** mm/s **Factory setting:** mm/s	X	X	M

Transducer block (use of the Profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
CALIB_FACTOR (V7H6)	**CALIBR_FACTOR**	Use this parameter to enter the calibration factor. **User input:** 5-digit fixed-point number: 0.5000 ...2.0000 **Factory setting:** depends on nominal diameter and calibration ☝ Caution: Do not change this value, because a change will inevitably affect the accuracy of the measuring device.	X	X	M
NOMINAL_SIZE (V7H7)	**NOMINAL_SIZE**	You can use this parameter to enter the nominal diameter of the measuring device. **User input:** 2 ...2000 mm or 1/12 ...78" **Factory setting:** depends on the size of the sensor	X	X	M
UNIT (V7H8)	**NOMINAL_SIZE_ UNIT**	You can use this parameter to select the unit of the nominal diameter. **Options:** MM – INCH **Factory setting:** MM	X	X	M
BLOCK_MODE (V8...)	**General information on the MODE_BLK parameter group:** There are three elements in this parameter group: • the current operating mode of the block (Actual_Mode) • the modes supported by the block (Permitted_Mode) • the normal operating mode (Normal_Mode) A distinction is drawn between automatic operation (AUTO), manual user intervention (MAN), local override (LO) and the out-of-service mode (O/S). A function block generally offers a choice of operating modes, whereas the other block types support only the AUTO mode, for example.				
TARGET_MODE (V8H0)	**TARGET_MODE**	The selected operating mode. Only the automatic mode can be selected for the Transducer block. **Options:** AUTO **Factory setting:** AUTO	X	X	M
ACTUAL (V8H1)	**MODE_BLK (ACTUAL)**	Displays the current operating mode. **Display:** AUTO	X		M
NORMAL (V8H2)	**MODE_BLK (NORMAL)**	Displays the operating mode for normal operation. **Display:** AUTO	X		M
PERMITTED (V8H3)	**MODE_BLK (PERMITTED)**	Displays the permissible operating modes. **Display:** AUTO	X		M

Transducer block (use of the Profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
UNIT_MODE (V8H7)	**—**	Use this parameter to select the form in which you want the units displayed. In the **list** mode the units are displayed with the conventional abbreviations, for example: L/s. In the **number** mode the units are displayed in the numerical code defined in the 3.0 profiles, for example: 1351 (l/s).	X	X	O
ALARM_CONFIG (V9...)	**General information on the ALARM_CONFIG parameter group:** The block supported is the Active Block Alarm, which flags a change in a parameter with static values (Static attribute) for 10 seconds and indicates that an warning limit or an alarm limit has been violated in an Analog Input function block.				
CURRENT (V9H0)	**ALARM_SUMMARY (CURRENT)**	Use this parameter to view information about the current alarms of the measuring device.	X		M
DISABLE (V9H1)	**ALARM_SUMMARY (DISABLE)**	Use this parameter to view information about the acknowledged alarms of the measuring device.	X		M
UNACKNOWL-EDGED (V9H2)	**ALARM_SUMMARY (UNACKNOWL-EDGED)**	✎ Note: This parameter is not available in this profile version.			
UNREPORTED (V9H3)	**ALARM_SUMMARY (UNREPORTED)**	✎ Note: This parameter is not available in this profile version.			
ST_REVISION (V9H5)	**ST_REV**	A block has static parameters (Static attribute) that are not changed by the process. Static parameters with values that change during optimisation or configuration increment the ST_REV parameter by 1. This supports parameter-revision management. The Static Revision Counter can show a higher value if several parameters change within a very short period of time, for example when parameters are uploaded to the measuring device from Commuwin II. This counter is never reset, nor does it return to a default setting even after a device reset. If the counter overflows (16 bits), it restarts at 0.	X		M

Transducer block (use of the Profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
BLOCK_PARAMETERS (VA...)					
TAG (VAH0)	**TAG_DESC**	Entry of a user-specific text of max. 32 characters for unique identification and assignment of the block. **Factory setting:** "_ _ _ _ _ _ _ _" without text	X	X	M
STRATEGY (VAH1)	**STRATEGY**	Parameter for grouping and thus faster evaluation of blocks. Grouping is carried out by entering the same numerical value in the parameter STRATEGY for each individual block. **Factory setting:** 0	X	X	M
ALERT_KEY (VAH2)	**ALERT_KEY**	Entry of the identification number of the plant unit. This information can be used by the instrumentation and control system for sorting alarms and events. **User input:** 1...255 **Factory setting:** 0	X	X	M
PROFILE_-VERSION (VAH3)	**—**	Displays the profile version implemented in the device. **Display:** 30	X		M

4 Function blocks, general

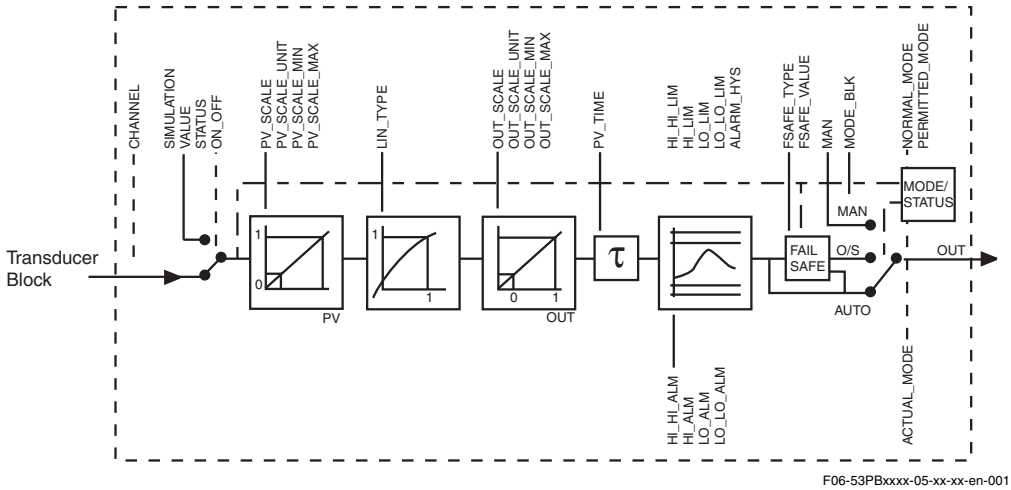
The function blocks contain the basic automation functions of the measuring device. We distinguish between different function blocks, e.g. Analog Input function block, Analog Output function block, Totalizer block, etc.
Each of these function blocks is used to execute different application functions. This means that device errors such as amplifier errors are reported to the process control system automatically.
The function blocks process the input values in accordance with their specific algorithm and their internally available parameters. They generate output values that are then made available to the process-control system for further processing.

5 Analog Input function block

In the Analog Input function block, the process variables (volume flow and mass flow) are prepared by the Transducer block for the subsequent automation functions (e.g. scaling, limit value processing). The Promag 53 PROFIBUS-DP /-PA has two Analog Input function blocks.

5.1 Signal processing

The figure shows the internal structure of an Analog Input function block:



F06-53PBxxxx-05-xx-xx-en-001

The Analog Input function block receives its input value from the Transducer block. The input values are permanently assigned to the Analog Input function block.
- Volume flow → Analog Input function block 1
- Mass flow → Analog Input function block 2

The parameter group SIMULATE (see Page 122) allows you to replace the input value with a simulation value and to activate simulation. By specifying the status and the simulation value the reaction of the process-control system can be tested.

In the PV_FTIME parameter (see Page 119) a filter time can be specified for damping the converted primary value (PV). When a time of 0 seconds is specified, the input value is not damped.

The BLOCK_MODE parameter group (see Page 122) is used to select the operating mode of the Analog Input function block. If the MAN (manual) operating mode is selected, the output value OUT and the OUT status (see Page 116) can be specified directly.

The output value OUT is compared with warning and alarm limits (e.g. HI_LIM, LO_LO_LIM, etc.) that can be entered via various parameters. If one of these limit values is violated then a limit value process alarm (e.g. HI_ALM, LO_LO_ALM, etc.) is triggered.

The major functions and parameters of the Analog Input function block are listed below; you will find an overview of all the available parameters starting on Page 116.

5.2 Selecting the operating mode

The operating mode is set by means of the BLOCK_MODE parameter group (see Page 122). The Analog Input function block supports the following operating modes:
- AUTO (automatic mode)
- MAN (manual mode)
- O/S (out of service)

5.3 Selecting the units

The system units for volume flow and mass flow can be changed by means of the local display or by Commuwin II in the Transducer block profile and the manufacturer-specific device block.
Changing the unit does not initially have any effect on the measured value transmitted to the process-control system. This ensures that there are no sudden changes in the measured values that could have an adverse effect on the subsequent control routine. If you want a change of unit to affect the measured value, you an activate the SET_UNIT_TO_BUS function (manufacturer-specific) by means of the local display or by Commuwin II (see Page 83).
Another way of changing the unit is to use the PV SCALE and OUT SCALE parameters (see Page 114 “Rescaling the input value”).

5.4 Status of the OUT value

The status of the parameter group OUT communicates to the subsequent function blocks the status of the Analog Input function block and the validity of the output value OUT. The following status values can be displayed:

- GOOD_NON_CASCADE
  The output value OUT is valid and can be used for further processing.

- Uncertain
  The output value OUT can only be used for further processing to a limited extent.

- BAD
  The output value OUT is invalid. Occurs when the Analog Input function block is switched to O/S (Out of Service) or in the event of
  serious errors (see the sections dealing with status code and system/process error messages in the Operating Instructions *promag 53*, BA 053D/06/en/...).

5.5 Simulation of the input and output

Parameters of the Analog Input function block allow simulation of the input and output of the function block:

1. Simulation of the input of the Analog Input function block:
   The SIMULATION parameter group (see Page 122) can be used to specify the input value (measured value and status). Since the simulation value runs through the entire function block, all the parameter settings of the block can be checked.
2. Simulation of the output of the Analog Input function block:
   Set the operating mode in the parameter group MODE_BLK (see Page 122) to MAN and specify the desired output value directly in the parameter OUT (see Page 116).

5.6 Error response (FAILSAFE_TYPE)

If an input or simulation value is statused BAD, the Analog Input function block uses the response defined in the FAILSAFE_TYPE parameter. The FAILSAFE_TYPE parameter (see Page 117) offers the following options:

- FSAFE VALUE
  The value defined in the FAILSAFE_VALUE parameter (see Page 117) is used for processing.

- LAST GOOD VALUE
  The last good value is used for processing.

- WRONG VALUE
  The current value is used for processing, despite the BAD status.

The default is the setting (FSAFE VALUE) with value "0".

Note:
Error response is also activated if the Analog Input function block is switched to OUT OF SERVICE.

5.7 Scaling the input value

In the Analog Input function block the input value or input range can be scaled in accordance with the automation requirements.

Example:
- The system unit in the Transducer block is m^3/h
- The measurement range of the device is 0...30 m^3/h.
- The output range to the process control system should be 0...100%.
- The measured value from the Transducer block (input value) is rescaled linearly with the PV_SCALE input scaling to the desired output range OUT_SCALE.

- Parameter group PV_SCALE (see Page 117)**)**

  PV_SCALE_MIN (V1H0) = 0

  PV_SCALE_MAX (V1H1 = 30

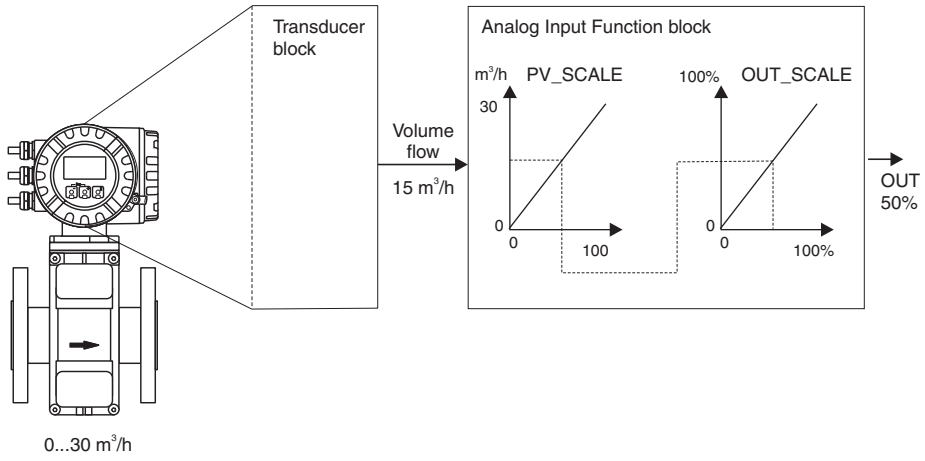
- Parameter group OUT_SCALE (see Page 118)

  OUT_SCALE_MIN (V1H3) = 0

  OUT_SCALE_MAX (V1H4) = 100

  OUT_UNIT (V1H5) = %

The result is that with an input value of, for example, 15 m^3/h a value of 50% is output by the OUT parameter.



Note:
The "OUT_UNIT" has no effect on scaling. It should be set nevertheless, for the purposes of viewing on the local display, for example.

5.8 Limit values

You can set two warning limits and two alarm limits for monitoring your process.
The status of the measured value and the parameters of the limit-value alarms are indicative of the measured value's relative position. You also have the option of defining an alarm hysteresis in order to avoid frequent changes of the limit-value flags and frequent enabling/disabling of alarms (see Page 120).

The limit values are based on the output value OUT. If the output value OUT exceeds or does not reach the defined limit values, an alarm is sent to the process-control system via the limit value process alarms.

The following limit values can be defined:

- HI_HI_LIM (see Page 121)
- HI_LIM (see Page 121)
- LO_LO_LIM (see Page 122)
- LO_LIM (see Page 121)

5.9 Alarm detection and processing

The following process alarms are generated by the Analog Input function block:

- **Limit value process alarms**
  The status of the limit value process alarms is communicated to the process-control system by means of the following parameters:
  - HI_HI_ALM (see Page 121)
  - HI_ALM (see Page 121)
  - LO_LO_ALM (see Page 122)
  - LO_ALM (see Page 121)

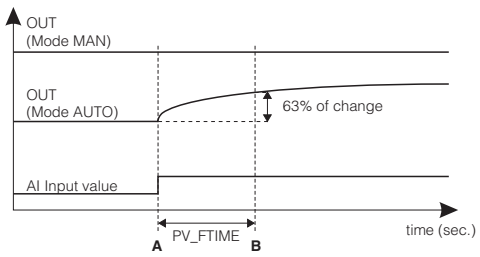
5.10 Parameters of the Analog Input function block

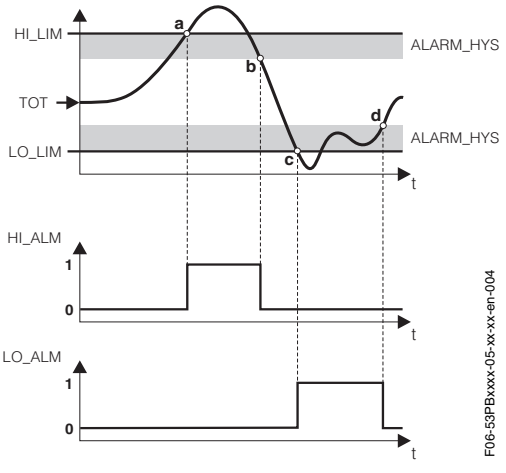
The following table shows all the available parameters of the Analog Input function block.
Abbreviations used in the table:
- R = Read
- W = Write
- P = Parameter, with a distinction between:
  – M = “Mandatory” (obligatory) parameter
  – O = Optional parameter

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
OUT (V0...)					
OUT_VALUE (V0H0)	**OUT (VALUE)**	Displays the output value with alarm weighting. ✎ Note: If MAN (manual) is selected for the operating mode in the MODE_BLK parameter group, the output value OUT can be specified manually here.	X	X	M
OUT_STATUS (V0H1)	**OUT (STATUS)**	Displays the current output status. ✎ Note: If MAN (manual) is selected for the operating mode in the MODE_BLK parameter group, the status of the OUT output value can be specified manually here.	X	X	M
OUT_STATUS (V0H2)	**OUT (STATUS BIT 0-1)**	Displays the quality of the output status. **Display:** GOOD UNCERTAIN BAD	X		M
OUT_SUB_ STATUS (V0H3)	**OUT (STATUS BIT 2-5)**	Displays the substatus in plain text.	X		M
OUT_LIMIT (V0H4)	**OUT (LIMITS BIT 6-7)**	Displays the limit overshoot in plain text. **Display:** O.K. → no limit overshoot HIGH LIMIT → HI LIMIT or/and HI HI LIMIT overshot LO LIMIT → LO LIMIT or/and LO LO LIMIT undershot	X		M

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
FAILSAFE_ ACTION (V0H6)	**FAILSAFE_TYPE**	Use this parameter to define error response in the event of a device error or bad measured value. The ACTUAL MODE (the block's current operating mode) remains in AUTO (automatic). **Options:** • FSAFE VALUE If you select this option the value entered beforehand in the FSAFE_VALUE parameter is displayed in OUT (output value). Status changes to UNCERTAIN - SUBSTITUTE VALUE. • LAST GOOD VALUE The last good value prior to the failure is used. Status is set to UNCERTAIN – LAST USABLE VALUE. If no prior usable value is available, the initial value is returned and statused UNCERTAIN – INITIAL VALUE (for values that were not saved on the occasion of a device reset). The initial value of the Promag 53 is "0". • WRONG VALUE The current value is used for processing, despite the bad status. **Factory setting:** FSAFE VALUE	X	X	O
FAILSAFE_VALUE (V0H7)	**FAILSAFE_VALUE**	You can use this parameter to define a default that will be displayed in OUT (output value) in the event of an error (see FAILSAFE_TYPE). **Factory setting:** 0	X	X	O
SCALING (V1...)	In this PV_SCALE parameter group, the process variable is normalised to a value with the unit of the Transducer block, with the aid of the EU OF 0 and EU OF 100 parameters. The change of unit in the Transducer block also causes an automatic change in the scaling for the EU OF 0 and EU OF 100 parameters. This prevents OUT jumping. You will find an example of rescaling the input value on Page 114.				
PV_SCALE_MIN (V1H0)	**EU OF 0**	Use this parameter to select the lower value for input scaling. **Factory setting:** 0	X	X	M
PV_SCALE_MAX (V1H1)	**EU OF 100**	Use this parameter to select the upper value for input scaling. **Factory setting:** 100	X	X	M
TYPE OF LIN (V1H2)	**LIN_TYPE**	Use this parameter to select a characteristic line to be used in characteristic-line transformation. ✎ Note: You cannot select linearisation with the Promag 53.	X	X	M

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
OUT_SCALE	The OUT_SCALE parameter group is where you define the measuring range (lower and upper limits), and the physical unit for the output value (OUT). ✎ Note: Defining the measurement range in this parameter group does not restrict the output value OUT. If the output value OUT is outside the measurement range, this value is transferred anyway .				
OUT_SCALE_MIN (V1H3)	**EU OF 0%**	Use this parameter to select the lower value for output scaling. **Factory setting:** 0	X	X	M
OUT_SCALE_MAX (V1H4)	**EU OF 100%**	Use this parameter to select the upper value for output scaling. **Factory setting:** 100	X	X	M
OUT_UNIT (V1H5)	**OUT_SCALE**	Use this parameter to select the output unit. **Factory setting:** Analog Input function block 1 = m^3/h Analog Input function block 2 = kg/h ✎ Note: OUT_UNIT (output unit) has no effect on measured-value scaling.	X	X	M
USER_UNIT (V1H6)	**OUT_UNIT_TEXT**	You can use this parameter to enter an ASCII text if the unit you want is not available in the OUT_UNIT (output unit) parameter. **Factory setting:** (_ _ _ _) without text ✎ Note: Note that you cannot enter text here unless USER_UNIT is selected in the OUT_UNIT parameter.	X	X	M
DEC_POINT_OUT (V1H7)	**OUT_SCALE**	Use this parameter to define the decimal places of the OUT value. ✎ Note: This parameter is not supported by the Promag 53.	X	X	M

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
RISING_TIME (V1H8)	**PV_FTIME**	Entry of the filter time constant (in seconds) of the digital filter of the 1st order. This time is required in order for 63% of a change in the analog input (input value) to have an effect on OUT (output value). The diagram shows the signal curves of the Analog Input function block over time:  **A** → The analog input changes. **B** → The OUT (output value) has reacted 63% to the change in the analog input. **Factory setting:** 0 s	X	X	M

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
ALARM_LIMITS (V2...)					
ALARM_ HYSTERESIS (V2H0)	**ALARM_HYS**	For entry of the hysteresis value for the upper and lower warning or alarm limit values. The alarm conditions remain active so long as the measured value is within the hysteresis. The hysteresis value affects the following warning and alarm limit values of the Analog Input function block: HI_HI_ALM → upper limit-value alarm HI_ALM → upper limit value warning LO_LO_ALM → lower limit-value alarm LO_ALM → lower limit value warning **User input:** 0...50% **Factory setting:** 0.5% ✎ Note: • The hysteresis value relates to a percentage of the range of the parameter group OUT_SCALE in the Analog Input function block (see Page 118). • If you enter the limit values in Commuwin II, it is important to make sure that absolute values can be entered and displayed. Example: The top diagram shows the limit values defined for the warnings LO_LIM and HI_LIM with their respective hystereses (gray background) and the signal curve of the output value OUT. The bottom two diagrams show the behaviour of the associated alarms HI_ALM and LO_ALM in relation to the changing signal curve (0 = no alarm, 1 = alarm output). **a** → OUT output value exceeds the HI_LIM limit value, HI_ALM is activated. **b** → OUT output value is below the hysteresis value of HI_LIM, HI_ALM is deactivated. **d** → OUT output value is below the LO_LIM limit value, LO_ALM is activated. **e** → OUT output value is above the hysteresis value of LO_LIM, LO_ALM is deactivated. 	X	X	M

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
HI_HI_ALARM (V3...)					
HI_HI_LIM (V3H0)	**HI_HI_LIM**	Entry of the alarm limit value for the upper alarm (HI_HI_ALM). If the output value OUT exceeds this limit value then the alarm status parameter HI_HI_ALM is output. **User input:** Range and unit of OUT_SCALE **Factory setting:** 3402823466 x 10^{38}	X	X	M
VALUE (V3H1)	**HI_HI_ALM (VALUE)**	Alarm-status parameter for the upper alarm limit. Content includes the value that violated the limit.	X		O
ALARM_STATE (V3H2)	**HI_HI_ALM (ALARM_STATE)**	Use this parameter to view the current status of the HI_HI_ALARM.	X		O
SWITCH-ON_POINT (V3H3)	**HI_HI_ALM (SWITCH-ON POINT)**	Use this parameter to view the switch-on point as a function of hysteresis.	X		O
SWITCH-OFF_POINT (V3H4)	**HI_HI_ALM (SWITCH-OFF POINT)**	Use this parameter to view the switch-off point as a function of hysteresis.	X		O
HI_ALARM (V4...)					
HI_LIM (V4H0)	**HI_LIM**	Entry of the alarm limit value for the upper warning (HI_ALM). If the output value OUT exceeds this limit value then the alarm status parameter HI_ALM is output. **User input:** Range and unit of OUT_SCALE **Factory setting:** 3402823466 x 10^{38}	X	X	M
VALUE (V4H1)	**HI_ALM (VALUE)**	Alarm-status parameter for the upper warning limit. Content includes the value that violated the limit.	X		O
ALARM_STATE (V4H2)	**HI_ALM (ALARM_STATE)**	Use this parameter to view the current status of the HI_ALARM.	X		O
SWITCH-ON_POINT (V4H3)	**HI_ALM (SWITCH-ON POINT)**	Use this parameter to view the switch-on point as a function of hysteresis.	X		O
SWITCH-OFF_POINT (V4H4)	**HI_ALM (SWITCH-OFF POINT)**	Use this parameter to view the switch-off point as a function of hysteresis.	X		O
LO_ALARM (V5...)					
LO_LIM (V5H0)	**LO_LIM**	Entry of the alarm limit value for the lower warning (LO_ALM). If the output value OUT is below this limit value then the alarm status parameter LO_ALM is output. **User input:** Range and unit of OUT_SCALE **Factory setting:** 3402823466 x 10^{38}	X	X	M
VALUE (V5H1)	**LO_ALM (VALUE)**	Alarm-status parameter for the lower warning limit. Content includes the value that violated the limit.	X		O
ALARM_STATE (V5H2)	**LO_ALM (ALARM_STATE)**	Use this parameter to view the current status of the LO_ALARM.	X		O

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SWITCH-ON_POINT (V5H3)	**LO_ALM (SWITCH-ON POINT)**	Use this parameter to view the switch-on point as a function of hysteresis.	X		O
SWITCH-OFF_POINT (V5H4)	**LO_ALM (SWITCH-OFF POINT)**	Use this parameter to view the switch-off point as a function of hysteresis.	X		O
LO_LO_ALARM (V6...)					
LO_LO_LIM (V6H0)	**LO_LO_LIM**	Entry of the alarm limit value for the lower alarm (LO_LO_ALM). If the output value OUT is below this limit value then the alarm status parameter LO_LO_ALM is output. **User input:** Range and unit of OUT_SCALE **Factory setting:** 3402823466 x 10^{38}	X	X	M
VALUE (V6H1)	**LO_LO_ALM (VALUE)**	Alarm-status parameter for the lower alarm limit. Content includes the value that violated the limit.	X		O
ALARM_STATE (V6H2)	**LO_LO_ALM (ALARM_STATE)**	Use this parameter to view the current status of the LO_LO_ALARM.	X		O
SWITCH-ON_POINT (V6H3)	**LO_LO_ALM (SWITCH-ON POINT)**	Use this parameter to view the switch-on point as a function of hysteresis.	X		O
SWITCH-OFF_POINT (V6H4)	**LO_LO_ALM (SWITCH-OFF POINT)**	Use this parameter to view the switch-off point as a function of hysteresis.	X		O
SIMULATION (V7...)					
SIMULATION_ VALUE (V7H0)	**SIMULATE**	Simulation of the input value and input status. Since this value runs through the entire algorithm, the behaviour of the Analog Input function block can be checked. **Factory setting:** Simulation Disabled	X	X	O
SIMULATION_ STATUS (V7H1)	**SIMULATE (STATUS)**	Use this parameter to simulate the status of the Analog Input (AI) block	X	X	O
SIMULATION_ MODE (V7H2)	**SIMULATE (MODE)**	Use this parameter to activate simulation of the Analog Input function block. **User input:** OFF ON **Factory setting:** OFF	X	X	O
BLOCK_MODE (V8...)	**General information on the MODE_BLK parameter group:** There are three elements in this parameter group: • the current operating mode of the block (Actual_Mode) • the modes supported by the block (Permitted_Mode) • the normal operating mode (Normal_Mode) A distinction is drawn between automatic operation (AUTO), manual user intervention (MAN), local override (LO) and the out-of-service mode (O/S). A function block generally offers a choice of operating modes, whereas the other block types support only the AUTO mode, for example.				

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
TARGET_MODE (V8H0)	**TARGET_MODE**	Select the operating mode. **Options:** AUTO MAN O/S **Factory setting:** AUTO	X	X	M
ACTUAL (V8H1)	**MODE_BLK (ACTUAL)**	Displays the current operating mode. **Display:** AUTO	X		M
NORMAL (V8H2)	**MODE_BLK (NORMAL)**	Displays the operating mode for normal operation. **Display:** AUTO	X		M
PERMITTED (V8H3)	**MODE_BLK (PERMITTED)**	Displays the permissible operating modes. **Display:** AUTO	X		M
CHANNEL (V8H5)	**CHANNEL**	Use this parameter for assignment between the logical hardware channels of the Transducer block and the input of the corresponding Analog Input function block. The Transducer block of the Promag 53 provides two process variables for the input channels of the Analog Input function blocks. They are: **AI 1** (Analog Input 1) → **Volume flow** **AI 2** (Analog Input 2) → calculated **Mass flow** ✎ Note: The Promag 53 channels are permanently assigned and these assignments cannot be modified with the Channel parameter.	X	X	M
UNIT_MODE (V8H7)	**—**	Use this parameter to select the form in which you want the units displayed. In the **list** mode the units are displayed with the conventional abbreviations, for example: l/s. In the **number** mode the units are displayed in the numerical code defined in the 3.0 profiles, for example: 1351 (l/s).	X	X	O
ALARM_CONFIG (V9...)	**General information on the ALARM_CONFIG parameter group:** The block supported is the Active Block Alarm, which flags a change in a parameter with static values (Static attribute) for 10 seconds and indicates that an early-warning limit or an alarm limit has been violated in an Analog Input function block.				
CURRENT (V9H0)	**ALARM_SUMMARY (CURRENT)**	Use this parameter to view information about the current alarms of the measuring device.	X		M
DISABLE (V9H1)	**ALARM_SUMMARY (DISABLE)**	Use this parameter to view information about the acknowledged alarms of the measuring device.	X		M
UNACKNOWL-EDGED (V9H2)	**ALARM_SUMMARY (UNACKNOWL-EDGED)**	✎ Note: This parameter is not available in this profile version.			
UNREPORTED (V9H3)	**ALARM_SUMMARY (UNREPORTED)**	✎ Note: This parameter is not available in this profile version.			

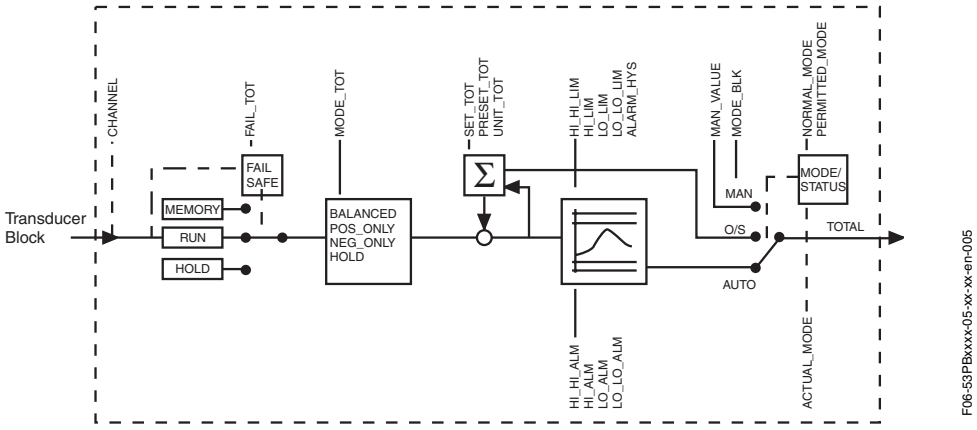
Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
ST_REVISION (V9H5)	**ST_REV**	A block has static parameters (Static attribute) that are not changed by the process. Static parameters with values that change during optimisation or configuration increment the ST_REV parameter by 1. This supports parameter-revision management. The Static Revision Counter can show a higher value if several parameters change within a very short period of time, for example when parameters are uploaded to the measuring device from Commuwin II. This counter is never reset, nor does it return to a default setting even after a device reset. If the counter overflows (16 bits), it restarts at 0.	X		M
BLOCK_PARAMETER (VA...)					
TAG (VAH0)	**TAG_DESC**	Entry of a user-specific text of max. 32 characters for unique identification and assignment of the block. **Factory setting:** "_ _ _ _ _ _ _ _" without text	X	X	M
STRATEGY (VAH1)	**STRATEGY**	Parameter for grouping and thus faster evaluation of blocks. Grouping is carried out by entering the same numerical value in the parameter STRATEGY for each individual block. **Factory setting:** 0	X	X	M
ALERT_KEY (VAH2)	**ALERT_KEY**	Entry of the identification number of the plant unit. This information can be used by the instrumentation and control system for sorting alarms and events. **User input:** 1...255 **Factory setting:** 0	X	X	M
PROFILE_ VERSION (VAH3)	**—**	Displays the profile version implemented in the device. **Display:** 30	X		O
BATCH (VAH4-7)	Batch is a structured parameter consisting of four elements. This parameter is used in batch applications compliant with IEC 61512 Part 1 (ISA S88). Only function blocks include this parameter. There is no algorithm linked to this parameter within a function block. The Batch parameter is necessary in a distributed process-control system as a means of flagging the channels that are used. It can also be used to view errors that have occurred in the current batch process.				
BATCH_ID (VAH4)	**BATCH (ID)**	ID of a batch application as a means of assigning device messages (alarms, errors).	X	X	M
BATCH_RUP (VAH5)	**BATCH (RUP)**	This parameter can contain the code for a recipe needed for the batch application, or the unit, such as reactors.	X	X	M
BATCH_PHASE (VAH6)	**BATCH (PHASE)**	Use this parameter to write or show the current recipe phase.	X	X	M
BATCH_ OPERATION (VAH7)	**BATCH (OPERATION)**	Use this parameter to write or show the current recipe.	X	X	M

6 Totalizer function block

The Totalizer function block is used whenever a physical measured variable, generally flow, has to be totaled over a period of time.
In the case of the Promag 53, the variables are volume flow and calculated mass flow. Like the Analog Input function block, the Totalizer function block receives its input value from a Transducer block.

6.1 Signal processing

The figure shows the internal structure of a Totalizer function block.



The Totalizer function block receives its input value from the Transducer function block. The CHANNEL parameter (see Page 134) is used to select the input value to be processed by the Totalizer function block. The following settings can be made with Commuwin II and the local display:

- Local display:
  – OFF
  – VOLUME FLOW
  – MASS FLOW
- Commuwin II:
  – 273 (volume flow) = default
  – 277 (mass flow)

The MODE_BLK parameter group (Page 133) is used to select the operating mode of the Totalizer function block. If the MAN (manual) operating mode is selected, the TOTAL output value and the TOTAL_STATUS can be specified directly.

Note:
The block algorithm is not run in the MAN mode (manual). This, in turn, means that limit values are not calculated or displayed.

The output value TOTAL is compared with warning and alarm limits (e.g. HI_LIM, LO_LO_LIM, etc.) that can be entered by means of various parameters. If one of these limit values is violated, a limit value process alarm (e.g. HI_ALM, LO_LO_ALM, etc.) is triggered.

The major functions and parameters of the Totalizer function block are listed below; you will find an overview of all the available parameters starting on Page 128.

6.2 Selecting the operating mode

The operating mode is set by means of the BLOCK_MODE parameter group (see Page 133). The Totalizer function block supports the following operating modes:
- AUTO (automatic mode)
- MAN (manual mode)
- O/S (out of service)

6.3 UNIT TOT, the unit of the totaled measured value

Unit change has a direct effect on the measured value. There is no scaling similar to that in the Analog Input function block. By the same token, the manufacturer-specific SET UNIT TO BUS function is not necessary.

6.4 Status of the TOTAL output value

The status of the TOTAL parameter group communicates to the subsequent function blocks the status of the Totalizer function block and the validity of the output value TOTAL. The following status values can be displayed:

- GOOD_NON_CASCADE
  The output value TOTAL is valid and can be used for further processing.

- Uncertain
  The output value OUT can only be used for further processing to a limited extent.

- BAD
  The output value TOTAL is invalid. Occurs when the Totalizer function block is switched to O/S (Out of Service) or in the event of serious errors (see the sections dealing with status code and system/process error messages in the Operating Instructions *promag 53*, BA 053D/06/en/...).

6.5 Error response (FAIL_TOT)

If an input value is statused BAD, the Totalizer function block uses the response defined in the FAIL_TOT parameter. The FAIL_TOT parameter (see Page 129) offers the following options:
- RUN
  The totalizer continues to total despite the BAD input value.

- HOLD
  The totalizer stops; BAD input values are not totaled.

- MEMORY
  The totalizer continues to total with the last valid input value (not statused BAD).

RUN is the default for the FAIL_TOT parameter.

6.6 Selecting the MODE TOT direction for totaling

Use the MODE_TOT parameter (see Page 130) to define the direction in which the totalizer totals. The options are totaling only positive values, only negative values, or all values (positive and negative), or stop the totalizer. The totaled integral is formed in the Totalizer function block. In order to compute this integral the totalizer needs a time reference that is called up equidistantly in time.

The settings that are possible for the MODE_TOT parameter are as follows:
- BALANCED → positive and negative measured values are totaled
- POS_ONLY → only positive values are totaled
- NEG_ONLY → only negative values are totaled
- HOLD → totalizer is stopped

BALANCED is the default for the MODE_TOT parameter.

You will find information on integration into a process-control system in the sections dealing with system integration and configuration examples in Operating Instructions *promag 53*, BA 053D/06/en/....

6.7 Factory setting of the totalizer: SET TOT

Use the SET_TOT parameter (see Page 130) to start totaling (TOTALIZE), reset the totalizer to 0 (RESET) or set it to a preset value (PRESET).

The settings that are possible for the SET_TOT parameter are as follows:
- TOTALIZE → start the totalizer, total the input value

- RESET → reset the totalizer to 0.

- PRESET → set the totalizer to the value defined in the PRESET_TOT parameter.

Note:
Note that selecting RESET or PRESET resets the totalizer to 0 or, respectively, sets it to the preset value, but does not stop the totalizer. This means that it immediately recommences totaling from the new setting. If you want to stop the totalizer you must select HOLD in the MODE_TOT parameter.

TOTALIZER is the default for the SET_TOT parameter.

You will find information on integration into a process-control system in the sections dealing with system integration and configuration examples in Operating Instructions *promag 53*, BA 053D/06/en/....

6.8 Limit values

You can set two warning limits and two alarm limits for monitoring your process.
The status of the measured value and the parameters of the limit-value alarms are indicative of the measured value's relative position. You also have the option of defining an alarm hysteresis in order to avoid frequent changes of the limit-value flags and frequent enabling/disabling of alarms (see Page 131).

The limit values are based on the output value TOTAL. If the output value TOTAL exceeds or does not reach the defined limit values, an alarm is sent to the process-control system via the limit value process alarms.

The following limit values can be defined:

– HI_HI_LIM (see Page 132) – HI_LIM (see Page 132)
– LO_LO_LIM (see Page 133) – LO_LIM (see Page 132)

6.9 Alarm detection and processing

The following process alarms are generated by the Totalizer function block:

- **Limit value process alarms**
  The status of the limit value process alarms is communicated to the process-control system by means of the following parameters:

  – HI_HI_ALM (see Page 132) – HI_ALM (see Page 132)
  – LO_LO_ALM (see Page 133) – LO_ALM (see Page 132)

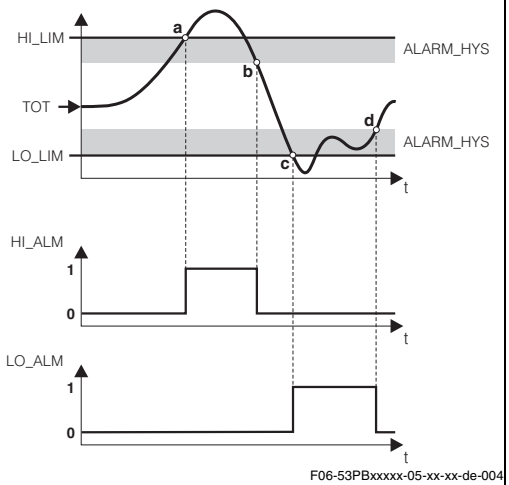
6.10 Parameters of the Totalizer function block

The following table shows all the available parameters of the Totalizer function block.

Totalizer function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
TOTAL (V0...)					
TOTAL._VALUE (V0H0)	**TOTAL (Value)**	Displays the output value with alarm weighting. ✎ Note: If MAN (manual) is selected for the operating mode in the MODE_BLK parameter group, the output value OUT can be specified manually here.	X	X	M
TOTAL._STATUS (V0H1)	**TOTAL (Status)**	Displays the current output status. ✎ Note: If MAN (manual) is selected for the operating mode in the MODE_BLK parameter group, the status of the OUT output value can be specified manually here.	X	X	M
TOTAL._STATUS (V0H2)	**TOTAL (Status bit 0-1)**	Displays the quality of the output status. **Display:** GOOD UNCERTAIN BAD	X		M
TOTAL._SUB_ STATUS (V0H3)	**TOTAL (Status bit 2-5)**	Displays the substatus in plain text.	X		M

Totalizer function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
TOTAL._LIMIT (V0H4)	**TOTAL (Limits bit 6-7)**	Displays the limit overshoot in plain text. **Display:** O.K. → no limit overshoot HIGH LIMIT → HI LIMIT or/and HI HI LIMIT overshot LO LIMIT → LO LIMIT or/and LO LO LIMIT undershot	X		M
FAILSAFE_MODE (V0H6)	**FAIL_TOT**	Use this parameter to define error response in the event of a device error or bad measured value. The ACTUAL MODE (the block's current operating mode) remains in AUTO (automatic). **Options:** RUN The totalizer continues to total despite the BAD input value. HOLD The totalizer stops; BAD input values are not totaled. MEMORY The totalizer continues to total with the last valid input value (not statused BAD). **Factory setting:** RUN			

Totalizer function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
CONFIGURATION (V1...)					
TOTAL._UNIT (V1H0)	**UNIT_TOT**	Select the unit for the measured variable. **Options (volume):** Metric → cm^3; dm^3; m^3; ml; l; hl; Ml US → cc; af; ft^3; oz f; gal; Mgal; bbl (normal fluids); bbl (beer); bbl (petrochemicals); bbl (filling tanks) Imperial → gal; Mgal; bbl (beer); bbl (petrochemicals) **Factory setting (volume):** m^3 **Options (mass):** Metric → g, kg, t US → oz, lb, ton **Factory setting (mass):** kg	X	X	M
SET_TOTALIZER (V1H1)	**SET_TOT**	Use this parameter to assign a condition to the totalizer. This function is level-triggered. **Options:** TOTALIZE → total the measured variable RESET → reset the totalizer to zero. PRESET → set the totalizer to the value defined in the PRESET_TOT parameter. **Factory setting:** TOTALIZE	X	X	M
PRESET_ TOTALIZER (V1H2)	**PRESET_TOT**	Use this parameter to define a (start-) value to the totalizer. The totalizer does not accept this value unless the "PRESET" option was selected beforehand for the SET_TOT parameter. **Factory setting:** 0	X	X	M
TOTALIZER_ MODE (V1H3)	**MODE_TOT**	Use this parameter to define how the totalizer totals the flow components. **Options:** BALANCED → positive and negative flow components. The positive and negative flow components are balanced. In other words, net flow in the flow direction is registered. POS_ONLY → positive flow components only. NEG_ONLY → negative flow components only. HOLD → the totalizer stops. No further flow components are totaled. **Factory setting:** BALANCED	X	X	M

Totalizer function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
ALARM_LIMITS (V2...)					
ALARM_ HYSTERESIS (V2H0)	**ALARM_HYS**	For entry of the hysteresis value for the upper and lower warning or alarm limit values. The alarm conditions remain active so long as the measured value is within the hysteresis. The hysteresis value affects the following warning and alarm limit values of the totalizer: • HI_HI_ALM (Upper limit value alarm) • HI_ALM (Upper limit value warning) • LO_LO_ALM (Lower limit value alarm) • LO_ALM (Lower limit value warning) **User input:** 0...50% **Factory setting:** 0.5% Example: The top diagram shows the limit values defined for the warnings LO_LIM and HI_LIM with their respective hystereses (gray background) and the signal curve of the output value TOTAL. The bottom two diagrams show the behaviour of the associated alarms HI_ALM and LO_ALM in relation to the changing signal curve (0 = no alarm, 1 = alarm output). **a** = TOTAL exceeds the limit value HI_LIM, HI_ALM (VALUE) is activated. **b** = TOTAL is below the hysteresis value of HI_LIM, HI_ALM (VALUE) is deactivated. **c** = TOTAL is below the limit value LO_LIM, LO_ALM (VALUE) is activated. **d** = TOTAL exceeds the hysteresis value of LO_LIM, LO_ALM (VALUE) is deactivated.  F06-53PBxxxxx-05-xx-xx-de-004	X	X	M

Totalizer function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
HI_HI_ALARM (V3...)					
HI_HI_LIM (V3H0)	**HI_HI_LIM**	Entry of the alarm limit value for the upper alarm (HI_HI_ALM). If the output value TOTAL exceeds this limit value, the alarm status parameter HI_HI_ALM is output. **User input:** Range and unit of TOTAL **Factory setting:** 3402823466 x 10^{38}	X	X	M
VALUE (V3H1)	**HI_HI_ALM (VALUE)**	Alarm-status parameter for the upper alarm limit. Content includes the value that violated the limit.	X		O
ALARM_STATE (V3H2)	**HI_HI_ALM (ALARM_STATE)**	Use this parameter to view the current status of the HI_HI_ALARM.	X		O
SWITCH-ON_POINT (V3H3)	**HI_HI_ALM (SWITCH-ON POINT)**	Use this parameter to view the switch-on point as a function of hysteresis.	X		O
SWITCH-OFF_POINT (V3H4)	**HI_HI_ALM (SWITCH-OFF POINT)**	Use this parameter to view the switch-off point as a function of hysteresis.	X		O
HI_ALARM (V4...)					
HI_LIM (V4H0)	**HI_LIM**	Entry of the alarm limit value for the upper warning (HI_ALM). If the output value TOTAL exceeds this limit value, the alarm status parameter HI_ALM is output. **User input:** Range and unit of TOTAL **Factory setting:** 3402823466 x 10^{38}	X	X	M
VALUE (V4H1)	**HI_ALM (VALUE)**	Alarm-status parameter for the upper warning limit. Content includes the value that violated the limit.	X		O
ALARM_STATE (V4H2)	**HI_ALM (ALARM_STATE)**	Use this parameter to view the current status of the HI_ALARM.	X		O
SWITCH-ON_POINT (V4H3)	**HI_ALM (SWITCH-ON POINT)**	Use this parameter to view the switch-on point as a function of hysteresis.	X		O
SWITCH-OFF_POINT (V4H4)	**HI_ALM (SWITCH-OFF POINT)**	Use this parameter to view the switch-off point as a function of hysteresis.	X		O
LO_ALARM (V5...)					
LO_LIM (V5H0)	**LO_LIM**	Entry of the alarm limit value for the lower warning (LO_ALM). If the output value TOTAL is below this limit value then the alarm status parameter LO_ALM is output. **User input:** Range and unit of TOTAL **Factory setting:** 3402823466 x 10^{38}	X	X	M
VALUE (V5H1)	**LO_ALM (VALUE)**	Alarm-status parameter for the lower warning limit. Content includes the value that violated the limit.	X		O
ALARM_STATE (V5H2)	**LO_ALM (ALARM_STATE)**	Use this parameter to view the current status of the LO_ALARM.	X		O

Totalizer function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SWITCH-ON_POINT (V5H3)	**LO_ALM (SWITCH-ON POINT)**	Use this parameter to view the switch-on point as a function of hysteresis.	X		O
SWITCH-OFF_POINT (V5H4)	**LO_ALM (SWITCH-OFF POINT)**	Use this parameter to view the switch-off point as a function of hysteresis.	X		O
LO_LO_ALARM (V6...)					
LO_LO_LIM (V6H0)	**LO_LO_LIM**	Entry of the alarm limit value for the lower alarm (LO_LO_ALM). If the output value TOTAL is below this limit value then the alarm status parameter LO_LO_ALM is output. **User input:** Range and unit of TOTAL **Factory setting:** 3402823466 x 10^{38}	X	X	M
VALUE (V6H1)	**LO_LO_ALM (VALUE)**	Alarm-status parameter for the lower alarm limit. Content includes the value that violated the limit.	X		O
ALARM_STATE (V6H2)	**LO_LO_ALM (ALARM_STATE)**	Use this parameter to view the current status of the LO_LO_ALARM.	X		O
SWITCH-ON_POINT (V6H3)	**LO_LO_ALM (SWITCH-ON POINT)**	Use this parameter to view the switch-on point as a function of hysteresis.	X		O
SWITCH-OFF_POINT (V6H4)	**LO_LO_ALM (SWITCH-OFF POINT)**	Use this parameter to view the switch-off point as a function of hysteresis.	X		O
BLOCK_MODE (V8...)	**General information on the MODE_BLK parameter group:** There are three elements in this parameter group: • the current operating mode of the block (Actual_Mode) • the modes supported by the block (Permitted_Mode) • the normal operating mode (Normal_Mode) A distinction is drawn between automatic operation (AUTO), manual user intervention (MAN), local override (LO) and the out-of-service mode (O/S). A function block generally offers a choice of operating modes, whereas the other block types support only the AUTO mode, for example.				
TARGET_MODE (V8H0)	**TARGET_MODE**	Select the operating mode. **Options:** AUTO MAN O/S **Factory setting:** AUTO	X	X	M
ACTUAL (V8H1)	**MODE_BLK (ACTUAL)**	Displays the current operating mode. **Display:** AUTO	X		M
NORMAL (V8H2)	**MODE_BLK (NORMAL)**	Displays the operating mode for normal operation. **Display:** AUTO	X		M
PERMITTED (V8H3)	**MODE_BLK (PERMITTED)**	Displays the permissible operating modes. **Display:** AUTO	X		M

Totalizer function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
CANNEL (V8H5)	**CANNEL**	Use this parameter for assignment between the logical hardware channels of the Transducer block and the input of the Totalizer block. The Transducer block of the Promag 53 provides two process variables for the input channels of the Totalizer function block. **Options:** VOLUME FLOW MASS FLOW	X	X	M
UNIT_MODE (V8H7)	**—**	Use this parameter to select the form in which you want the units displayed. • In the **list** mode the units are displayed with the conventional abbreviations, for example: L/s. • In the **number** mode the units are displayed in the numerical code defined in the 3.0 profiles, for example: 1034 (L/s).	X	X	O
ALARM_CONFIG (V9...)	**General information on the ALARM_CONFIG parameter group:** The block supported is the Active Block Alarm, which flags a change in a parameter with static values (Static attribute) for 10 seconds and indicates that an early-warning limit or an alarm limit has been violated in an Analog Input function block.				
CURRENT (V9H0)	**ALARM_SUMMARY (CURRENT)**	Use this parameter to view information about the current alarms of the measuring device.	X		M
DISABLE (V9H1)	**ALARM_SUMMARY (DISABLE)**	Use this parameter to view information about the acknowledged alarms of the measuring device.	X		M
UNACKNOWL-EDGED (V9H2)	**ALARM_SUMMARY (UNACKNOWL-EDGED)**	✎ Note: This parameter is not available in this profile version.			
UNREPORTED (V9H3)	**ALARM_SUMMARY (UNREPORTED)**	✎ Note: This parameter is not available in this profile version.			
ST_REVISION (V9H5)	**ST_REV**	A block has static parameters (Static attribute) that are not changed by the process. Static parameters with values that change during optimisation or configuration increment the ST_REV parameter by 1. This supports parameter-revision management. The Static Revision Counter can show a higher value if several parameters change within a very short period of time, for example when parameters are uploaded to the device from Commuwin II. This counter is never reset, nor does it return to a default setting even after a device reset. If the counter overflows (16 bits), it restarts at 0.	X		M

Totalizer function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
BLOCK_PARAMETER (VA...)					
TAG (VAH0)	**TAG_DESC**	Entry of a user-specific text of max. 32 characters for unique identification and assignment of the block. **Factory setting:** "_ _ _ _ _ _ _ _" without text	X	X	M
STRATEGY (VAH1)	**STRATEGY**	Parameter for grouping and thus faster evaluation of blocks. Grouping is carried out by entering the same numerical value in the parameter STRATEGY for each individual block. **Factory setting:** 0	X	X	M
ALERT_KEY (VAH2)	**ALERT_KEY**	Entry of the identification number of the plant unit. This information can be used by the instrumentation and control system for sorting alarms and events. **User input:** 1...255 **Factory setting:** 0	X	X	M
PROFILE_VERSION (VAH3)	**—**	Displays the profile version implemented in the device. **Display:** 30	X		O
BATCH (VAH4-7)	Batch is a structured parameter consisting of four elements. This parameter is used in batch applications compliant with IEC 61512 Part 1 (ISA S88). Only function blocks include this parameter. There is no algorithm linked to this parameter within a function block. The Batch parameter is necessary in a distributed process-control system as a means of flagging the channels that are used. It can also be used to view errors that have occurred in the current batch process.				
BATCH_ID (VAH4)	**BATCH (ID)**	ID of a batch application as a means of assigning device messages (alarms, errors).	X	X	M
BATCH_RUP (VAH5)	**BATCH (RUP)**	This parameter can contain the code for a recipe needed for the batch application, or the unit, such as reactors.	X	X	M
BATCH_PHASE (VAH6)	**BATCH (PHASE)**	Use this parameter to write or show the current recipe phase.	X	X	M
BATCH_ OPERATION (VAH7)	**BATCH (OPERATION)**	Use this parameter to write or show the current recipe.	X	X	M

7 Slot / Index lists

7.1 General explanatory remarks

Abbreviations used in the Slot / Index lists:

- E+H Matrix → number of the page on which you will find the parameter explanation.
- Object Type:
  – Record → contains data structures (DS)
  – Simple → contains only single data types (e.g. float, integer, etc.)
- Parameter:
  – M → mandatory parameter
  – O → optional parameter
- Data Types:
  – Boolean → true = 0xFF, false = 0x00
  – DS → data structure, contains data types such as Unsigned8, OctetString, etc.
  – Float → IEEE 754 format
  – Integer → 8 (range of values -128...127), 16 (-327678...327678), 32 (-2^{31}...2^{31})
  – Octet String → binary coded
  – Unsigned → 8 (range of values 0...255), 16 (0...65535), 32 (0...4294967295)
  – Visible String → ISO 646, ISO 2375
- Storage Class:
  – Cst → constant parameter
  – D → dynamic parameter
  – N → non-volatile parameter
  – S → static parameter

7.2 Physical Block Slot 0

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Physical Block Slot 0									
not used	–	0 - 15	–	–	–	–	–	–	–
BLOCK_OBJECT	–	16	X		Record	M	DS-32	20	Cst
ST_REV	p. 74	17	X		Simple	M	Unsigned16	2	N
TAG_DESC	p. 74	18	X	X	Simple	M	Octet String	32	S
STRATEGY	p. 74	19	X	X	Simple	M	Unsigned16	2	S
ALERT_KEY	p. 74	20	X	X	Simple	M	Unsigned8	1	S
TARGET_MODE	p. 73	21	X	X	Simple	M	Unsigned8	1	S
MODE_BLK	p. 73	22	X		Record	M	DS-37	3	D
ALARM_SUM	p. 74	23	X		Record	M	DS-42	8	D
SOFTWARE_REVISION	p. 70	24	X		Simple	M	Octet String	16	Cst
HARDWARE_REVISION	p. 70	25	X		Simple	M	Octet String	16	Cst
DEVICE_MAN_ID	p. 70	26	X		Simple	M	Unsigned16	2	Cst
DEVICE_ID	p. 69	27	X		Simple	M	Octet String	16	Cst
DEVICE_SER_NUM	p. 69	28	X		Simple	M	Octet String	16	Cst
DIAGNOSIS	p. 73	29	X		Simple	M	Octet String	4	D
DIAGNOSIS_EXT	p. 73	30	X		Simple	O	Octet String	6	D

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Physical Block Slot 0 (continued)									
DIAGNOSIS_MASK	p. 72	31	X		Simple	M	Octet String	4	Cst
DIAGNOSIS_MASK_EXTENS	p. 72	32	X		Simple	O	Octet String	6	Cst
DEVICE_CERTIFICATION	p. 70	33	X		Simple	O	Octet String	32	Cst
WRITE_LOCKING	p. 71	34	X	X	Simple	O	Unsigned16	2	N
FACTORY_RESET	p. 70	35	X	X	Simple	O	Unsigned16	2	S
DESCRIPTOR	p. 70	36	X	X	Simple	O	Octet String	32	S
DEVICE_MESSAGE	p. 70	37	X	X	Simple	O	Octet String	32	S
DEVICE_INSTAL_DATE	p. 70	38	X	X	Simple	O	Octet String	16	S
not used	–	39	–	–	–	–	–	–	–
IDENT_NUMBER_SELECTOR	p. 72	40	X	X	Simple	O	Unsigned8	1	S
HW_WRITE_PROTECTION	p. 71	41	X		Simple	O	Unsigned8	1	D
not used	–	42 - 48	–	–	–	–	–	–	–
ACTUAL_ERROR_CODE	–	49	X		Simple	O	Unsigned16	2	D
not used	–	50	–	–	–	–	–	–	–
UPDOWN_FEAT_SUPP	–	51	X		Simple	M	Octet String	1	Const
UPDOWN_CONT_PARA	–	52	X	X	Simple	O	Unsigned8	1	D
UPDOWN_PARA	–	53	X	X	Record	O	UpDow-Data	20	D
DEV_BUS_ADDR	–	54	X		Simple	O	Unsigned8	1	D
not used	–	55	–	–	–	–	–	–	–
SET_UNIT_TO_BUS	–	56	X	X	Simple	O	Unsigned8	1	N
LOCAL_DISPLAY_INPUT	–	57	X		Record	O	DS-33	5	D
VIEW_PHYSICAL BLOCK	–	58	X	X	Simple	M	Unsigned16, DS-37, DS-42, Octet String[4]	17	D
MEASID	–	59	X		Simple	O	Unsigned8	1	D

7.3 Device Management Slot 1

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Device Management Slot 1									
Directory_Header/ Composite_Directory_Entries	–	0	X		Record	M	Unsigned16	12	Cst
Composite_Directory_Entry/ Composite_Directory_Entries	–	1	X		Record	M	Unsigned16	40, 32	Cst
not used	–	2 -15	–	–	–	–	–	–	–

7.4 AI 1 Volume Flow Block Slot 1

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
AI1 - Volume flow Block - Slot1									
not used	–	0 - 15	–	–	–	–	–	–	–
BLOCK_OBJECT	–	16	X		Record	M	DS-32	20	Cst
ST_REV	p. 124	17	X		Simple	M	Unsigned16	2	N
TAG_DESC	p. 124	18	X	X	Simple	M	Octet String	32	S
STRATEGY	p. 124	19	X	X	Simple	M	Unsigned16	2	S
ALERT_KEY	p. 124	20	X	X	Simple	M	Unsigned8	1	S
TARGET_MODE	p. 123	21	X	X	Simple	M	Unsigned8	1	S
MODE_BLK	p. 122	22	X		Record	M	DS-37	3	D
ALARM_SUM	p. 123	23	X		Record	M	DS-42	8	D
BATCH	p. 124	24	X	X	Record	M	DS -67	10	S
not used	–	25	–	–	–	–	–	–	–
OUT	p. 116	26	X		Record	M	DS-33	5	D
PV_SCALE	p. 117	27	X	X	Array	M	Float	8	S
OUT_SCALE	p. 118	28	X	X	Record	M	DS-36	11	S
LIN_TYPE	p. 117	29	X	X	Simple	M	Unsigned8	1	S
CHANNEL	p. 123	30	X	X	Simple	M	Unsigned16	2	S
not used	–	31	–	–	–	–	–	–	–
PV_FTIME	p. 119	32	X	X	Simple	M	Float	4	S
FSAFE_TYPE	p. 117	33	X	X	Simple	O	Unsigned8	1	S
FSAFE_VALUE	p. 117	34	X	X	Simple	O	Float	4	S
ALARM_HYS	p. 120	35	X	X	Simple	M	Float	4	S
not used	–	36	–	–	–	–	–	–	–
HI_HI_LIM	p. 121	37	X	X	Simple	M	Float	4	S
not used	–	38	–	–	–	–	–	–	–
HI_LIM	p. 121	39	X	X	Simple	M	Float	4	S
not used	–	40	–	–	–	–	–	–	–
LO_LIM	p. 121	41	X	X	Simple	M	Float	4	S
not used	–	42	–	–	–	–	–	–	–
LO_LO_LIM	p. 122	43	X	X	Simple	M	Float	4	S
not used	–	44 - 45	–	–	–	–	–	–	–
HI_HI_ALM	p. 121	46	X		Record	O	DS-39	16	D
HI_ALM	p. 121	47	X		Record	O	DS-39	16	D
LO_ALM	p. 121	48	X		Record	O	DS-39	16	D
LO_LO_ALM	p. 122	49	X		Record	O	DS-39	16	D
SIMULATE	p. 122	50	X	X	Record	O	DS-50	6	S
OUT_UNIT_TEXT	p. 118	51	X	X	Simple	O	Octet String	16	S
not used	–	52 - 60	–	–	–	–	–	–	–
AI1_TYPE	–	61	X	X	Simple	O	Unsigned16	2	Cst
VIEW_AI1	–	62	X	X	Simple	M	Unsigned16, DS-37, DS-42, DS-33,	18	D

7.5 Transducer Block Slot 1

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Transducer Block Slot 1									
BLOCK_OBJECT	–	70	X		Record	M	DS-32	20	Cst
ST_REV	p. 110	71	X		Simple	M	Unsigned16	2	N
TAG_DESC	p. 111	72	X	X	Simple	M	OctetString	32	S
STRATEGY	p. 111	73	X	X	Simple	M	Unsigned16	2	S
ALERT_KEY	p. 111	74	X	X	Simple	M	Unsigned8	1	S
TARGET_MODE	p. 109	75	X	X	Simple	M	Unsigned8	1	S
MODE_BLK	p. 109	76	X		Record	M	DS-37	3	D
ALARM_SUM	p. 110	77	X		Record	M	DS-42	8	D
CALIBR_FACTOR	p. 109	78	X	X	Simple	M	float	4	S
LOW_FLOW_CUTOFF	p. 108	79	X	X	Simple	M	float	4	S
MEASUREMENT_MODE	p. 108	80	X	X	Simple	M	Unsigned8	1	S
FLOW_DIRECTION	p. 108	81	X	X	Simple	M	Unsigned8	1	S
ZERO_POINT	p. 108	82	X	X	Simple	M	float	4	S
ZERO_POINT_ADJUST	p. 108	83	X	X	Simple	M	Unsigned8	1	N
ZERO_POINT_UNIT	p. 108	84	X	X	Simple	M	Unsigned16	2	S
NOMINAL_SIZE	p. 109	85	X	X	Simple	M	float	4	S
NOMINAL_SIZE_UNITS	p. 109	86	X	X	Simple	M	Unsigned16	2	S
VOLUME_FLOW	p. 107	87	X		Record	M	DS-33	5	D
VOLUME_FLOW_UNITS	p. 107	88	X	X	Simple	M	Unsigned16	2	S
VOLUME_FLOW_LO_LIMIT	p. 107	89	X	X	Simple	M	float	4	S
VOLUME_FLOW_HI_LIMIT	p. 107	90	X	X	Simple	M	float	4	S
not used	–	91 - 110	–	–	–	–	–	–	–
SAMPLING_FREQ	p. 107	111	X		Record	M	DS-33	5	D
SAMPLING_FREQ_UNITS	p. 107	112	X	X	Simple	M	Unsigned16	2	S
not used	–	113 - 122	–	–	–	–	–	–	–
ACCESS_CODE	p. 103	123	X	X	Simple	O	Signed16	2	N
DEFINE_PRIVATE_CODE	p. 103	124	X	X	Simple	O	Signed16	2	S
STATUS_ACCES	p. 103	125	X		Simple	O	Unsigned8	1	D
SYSTEM_RESET	p. 86	126	X	X	Simple	O	Unsigned8	1	N
INSTALL_DIRECTION_SENSOR	p. 85	127	X	X	Simple	O	Unsigned8	1	S
NOMINAL_DIAMETER	p. 87	128	X	X	Simple	O	Unsigned8	1	S
POSITIVE_ZERO_RETURN	p. 86	129	X	X	Simple	O	Unsigned8	1	N
ASSIGN_LOW_FLOW_CUTOFF	p. 80	130	X	X	Simple	O	Unsigned8	1	S
ON_VALUE_LOW_FLOW_CUT OFF	p. 80	131	X	X	Simple	O	Float	4	S
OFF_VALUE_LOW_FLOW_CUT OFF	p. 80	132	X	X	Simple	O	Float	4	S
EPD_ELECTRODE	p. 82	133	X	X	Simple	O	Unsigned8	1	S
EMPTY_PIPE_DETECTION	p. 81	134	X	X	Simple	O	Unsigned8	1	S
EMPTY_PIPE_ADJUST_VALUE	–	135	X	X	Simple	O	Float	4	S
FULL_PIPE_ADJUST_VALUE	–	136	X	X	Simple	O	Float	4	S
EPD_RESPONSE_TIME	p. 82	137	X	X	Simple	O	Float	4	S

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Transducer Block Slot 1 (continued)									
EPD_PERIOD	–	138	X	X	Simple	O	Float	4	S
EPD_ADJUSTMENT	p. 82	139	X	X	Simple	O	Unsigned8	1	S
ECC	–	140	X	X	Simple	O	Unsigned8	1	S
ECC_DURATION	–	141	X	X	Simple	O	Float	4	S
ECC_RECOVERY_TIME	–	142	X	X	Simple	O	Float	4	S
ECC_CLEANING_CYCLE	–	143	X	X	Simple	O	Float	4	S
ECC_POLARITY	–	144	X	X	Simple	O	Unsigned8	1	S
SHOT_TIME	–	145	X	X	Simple	O	Float	4	S
SYSTEM_DAMPING	p. 86	146	X	X	Simple	O	Float	4	S
INTEGRATION_TIME	p. 86	147	X	X	Simple	O	Float	4	S
MEASURING_PERIOD	p. 87	148	X	X	Simple	O	Float	4	S
K_FACTOR_POSITIVE	p. 87	149	X	X	Simple	O	Float	4	S
K_FACTOR_NEGATIVE	p. 87	150	X	X	Simple	O	Float	4	S
ZERO_POINT	p. 87	151	X	X	Simple	O	Float	4	S
ALARM_DELAY	p. 102	152	X	X	Simple	O	Float	4	S
SIMULATION_MEASURAND	p. 104	153	X	X	Simple	O	Unsigned8	1	N
VALUE_SIMULATION_MEASURAND	p. 104	154	X	X	Simple	O	Float	4	N
SERIAL_NUM	p. 105	155	X	X	Simple	O	OctetString	16	S
SENSOR_TYPE	p. 105	156	X	X	Simple	O	OctetString	16	S
HW_REV_SENSOR	p. 105	157	X	X	Simple	O	OctetString	16	S
HW_IDENT_SENSOR	–	158	X	X	Simple	O	OctetString	16	S
PROD_NUM_SENSOR	–	159	X	X	Simple	O	OctetString	16	S
SW_REV_S_DAT	p. 105	160	X	X	Simple	O	OctetString	16	S
HW_REV_AMP	p. 105	161	X	X	Simple	O	OctetString	16	S
HW_IDENT_AMP	–	162	X	X	Simple	O	OctetString	16	S
SW_REV_AMP	p. 105	163	X	X	Simple	O	OctetString	16	S
SW_IDENT_AMP	–	164	X	X	Simple	O	OctetString	16	S
PROD_NUM_AMP	–	165	X	X	Simple	O	OctetString	16	S
IO_TYPE	p. 105	166	X		Simple	O	Unsigned8	1	N
HW_REV_IO	p. 105	167	X	X	Simple	O	OctetString	16	S
HW_IDENT_IO	–	168	X	X	Simple	O	OctetString	16	S
SW_REV_IO	p. 105	169	X	X	Simple	O	OctetString	16	S
SW_IDENT_IO	–	170	X	X	Simple	O	OctetString	16	S
PROD_NUM_IO	–	171	X	X	Simple	O	OctetString	16	S
SYS_UNIT_VOL	–	172	X	X	Simple	O	Unsigned8	1	S
HMI_LANGUAGE	p. 90	173	X	X	Simple	O	Unsigned8	1	S
HMI_DAMPING	p. 90	174	X	X	Simple	O	Float	4	S
HMI_LCD_CONTRAST	p. 90	175	X	X	Simple	O	Float	4	S
HMI_ASSIGN_LINE	p. 91	176	X	X	Simple	O	Unsigned8	1	S
HMI_100PC_VALUE	p. 91	177	X	X	Simple	O	Float	4	S
HMI_FORMAT	p. 91	178	X	X	Simple	O	Unsigned8	1	S
HMI_ASSIGN_LINE_2	p. 93	179	X	X	Simple	O	Unsigned8	1	S

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Transducer Block Slot 1 (continued)									
SIM_FSAFE_MODE	p. 105	180	X	X	Simple	O	Unsigned8	1	S
BLOCK_SELECTION	p. 84	181	X	X	Simple	O	Unsigned8	1	S
OUT_VALUE	p. 84	182	X		Record	O	DS-33	5	N
ACTUAL_BAURATE	p. 85	183	X		Simple	O	Unsigned8	1	N
CHECK_CONFIG	p. 85	184	X		Simple	O	Signed16	2	N
SA_MEASURING_PERIOD	–	185	X		Simple	O	Float	4	N
SA_RISETIME	–	186	X		Simple	O	Float	4	N
PREV_SYS_COND	p. 102	187	X		Simple	O	Unsigned8	1	N
DEVICE_ID	p. 85	188	X		Simple	O	Unsigned8	1	N
not used	–	189 - 206	–	–	–	–	–	–	–
VIEW_TRANSDUCER BLOCK	–	207	X	X	Simple	M	Unsigned16, DS-37, DS-42, DS-33	23	D
not used	–	208 - 210	–	–	–	–	–	–	–
SYS_UNIT_MASSFLOW	–	211	X	X	Simple	O	Unsigned8	1	S
SYS_UNIT_MASS	–	212	X	X	Simple	O	Unsigned8	1	S
SYS_UNIT_TEMPERATURE	–	213	X	X	Simple	O	Unsigned8	1	S
SYS_UNIT_DENSITY	–	214	X	X	Simple	O	Unsigned8	1	S
HMI_MULT_ASSIGN_LINE	p. 92	215	X	X	Simple	O	Unsigned8	1	S
HMI_MULT_100PC_VALUE	p. 92	216	X	X	Simple	O	Float	4	S
HMI_MULT_FORMAT	p. 92	217	X	X	Simple	O	Unsigned8	1	S
HMI_ASSIGN_LINE_ADD	p. 93	218	X	X	Simple	O	Unsigned8	1	S
HMI_100PC_VALUE_ADD	p. 93	219	X	X	Simple	O	Float	4	S
HMI_FORMAT_ADD	p. 94	220	X	X	Simple	O	Unsigned8	1	S
HMI_DISPLAY_MODE_ADD	p. 94	221	X	X	Simple	O	Unsigned8	1	S
HMI_MULT_ASSIGN_LINE_AD	p. 95	222	X	X	Simple	O	Unsigned8	1	S
HMI_MULT_100PC_VALUE_AD	p. 95	223	X	X	Simple	O	Float	4	S
HMI_MULT_FORMAT_ADD	p. 96	224	X	X	Simple	O	Unsigned8	1	S
HMI_MULT_DISPLAY_MODE_A	p. 96	225	X	X	Simple	O	Unsigned8	1	S
HMI_ASSIGN_LINE_INFO	p. 97	226	X	X	Simple	O	Unsigned8	1	S
HMI_100PC_VALUE_INFO	p. 97	227	X	X	Simple	O	Float	4	S
HMI_FORMAT_INFO	p. 98	228	X	X	Simple	O	Unsigned8	1	S
HMI_DISPLAY_MODE_INFO	p. 98	229	X	X	Simple	O	Unsigned8	1	S
HMI_MULT_ASSIGN_LINE_IN	p. 99	230	X	X	Simple	O	Unsigned8	1	S
HMI_MULT_100PC_VALUE_IN	p. 99	231	X	X	Simple	O	Float	4	S
HMI_MULT_FORMAT_INFO	p. 100	232	X	X	Simple	O	Unsigned8	1	S
HMI_MULT_DISPLAY_MODE_I	p. 100	233	X	X	Simple	O	Unsigned8	1	S
DENSITY	p. 77	234	X	X	Simple	O	Float	4	S
MASSFLOW	p. 77	235	X		Simple	O	Float	4	D
ACTUAL_DIAMETER	–	236	X	X	Simple	O	Float	4	S
SW_REV_T_DAT	p. 105	237	X	X	Simple	O	OctetString	16	S

7.6 Totalizer 1 Block Slot 2

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Totalizer 1 Block - Slot 2									
not used	–	0 - 15	–	–	–	–	–	–	–
BLOCK_OBJECT	–	16	X		Record	M	DS-32	20	Cst
ST_REV	p. 134	17	X		Simple	M	Unsigned16	2	N
TAG_DESC	p. 135	18	X	X	Simple	M	Octet String	32	S
STRATEGY	p. 135	19	X	X	Simple	M	Unsigned16	2	S
ALERT_KEY	p. 135	20	X	X	Simple	M	Unsigned8	1	S
TARGET_MODE	p. 133	21	X	X	Simple	M	Unsigned8	1	S
MODE_BLK	p. 133	22	X		Record	M	DS-37	3	D
ALARM_SUM	p. 134	23	X		Record	M	DS-42	8	D
BATCH	p. 135	24	X	X	Record	M	DS-67	10	S
not used	–	25	–	–	–	–	–	–	–
TOTAL	p. 128	26	X		Record	M	DS-33	5	N
UNIT_TOT	p. 130	27	X	X	Simple	M	Unsigned16	2	S
CHANNEL	p. 134	28	X	X	Simple	M	Unsigned16	2	S
SET_TOT	p. 130	29	X	X	Simple	M	Unsigned8	1	N
MODE_TOT	p. 130	30	X	X	Simple	M	Unsigned8	1	N
FAIL_TOT	p. 129	31	X	X	Simple	M	Unsigned8	1	S
PRESET_TOT	p. 130	32	X	X	Simple	M	Float	4	S
ALARM_HYS	p. 131	33	X	X	Simple	M	Float	4	S
HI_HI_LIM	p. 132	34	X	X	Simple	M	Float	4	S
HI_LIM	p. 132	35	X	X	Simple	M	Float	4	S
LO_LIM	p. 132	36	X	X	Simple	M	Float	4	S
LO_LO_LIM	p. 133	37	X	X	Simple	M	Float	4	S
HI_HI_ALM	p. 132	38	X		Record	O	DS-39	16	D
HI_ALM	p. 132	39	X		Record	O	DS-39	16	D
LO_ALM	p. 132	40	X		Record	O	DS-39	16	D
LO_LO_ALM	p. 133	41	X		Record	O	DS-39	16	D
not used	–	42 - 51	–	–	–	–	–	–	–
TOT1_TYPE	–	52	X		Simple	O	Unsigned16	2	Cst
OVERFLOW	–	53	X	X	Simple	O	Unsigned16	2	N
VIEW_TOT1	–	54	X		Record	M	Unsigned16, DS-37, DS-42, DS-33	18	D

7.7 Totalizer 2 Block Slot 3

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Totalizer 2 Block - Slot 3									
not used	–	0 - 15	–	–	–	–	–	–	–
BLOCK_OBJECT	–	16	X		Record	M	DS-32	20	Cst
ST_REV	p. 134	17	X		Simple	M	Unsigned16	2	N
TAG_DESC	p. 135	18	X	X	Simple	M	Octet String	32	S
STRATEGY	p. 135	19	X	X	Simple	M	Unsigned16	2	S
ALERT_KEY	p. 135	20	X	X	Simple	M	Unsigned8	1	S
TARGET_MODE	p. 133	21	X	X	Simple	M	Unsigned8	1	S
MODE_BLK	p. 133	22	X		Record	M	DS-37	3	D
ALARM_SUM	p. 134	23	X		Record	M	DS-42	8	D
BATCH	p. 135	24	X	X	Record	M	DS-67	10	S
not used	–	25	–	–	–	–	–	–	–
TOTAL	p. 128	26	X		Record	M	DS-33	5	N
UNIT_TOT	p. 130	27	X	X	Simple	M	Unsigned16	2	S
CHANNEL	p. 134	28	X	X	Simple	M	Unsigned16	2	S
SET_TOT	p. 130	29	X	X	Simple	M	Unsigned8	1	N
MODE_TOT	p. 130	30	X	X	Simple	M	Unsigned8	1	N
FAIL_TOT	p. 129	31	X	X	Simple	M	Unsigned8	1	S
PRESET_TOT	p. 130	32	X	X	Simple	M	Float	4	S
ALARM_HYS	p. 131	33	X	X	Simple	M	Float	4	S
HI_HI_LIM	p. 132	34	X	X	Simple	M	Float	4	S
HI_LIM	p. 132	35	X	X	Simple	M	Float	4	S
LO_LIM	p. 132	36	X	X	Simple	M	Float	4	S
LO_LO_LIM	p. 133	37	X	X	Simple	M	Float	4	S
HI_HI_ALM	p. 132	38	X		Record	O	DS-39	16	D
HI_ALM	p. 132	39	X		Record	O	DS-39	16	D
LO_ALM	p. 132	40	X		Record	O	DS-39	16	D
LO_LO_ALM	p. 133	41	X		Record	O	DS-39	16	D
not used	–	42 - 51	–	–	–	–	–	–	–
TOT2_TYPE	–	52	X		Simple	O	Unsigned16	2	Cst
OVERFLOW	–	53	X	X	Simple	O	Unsigned16	2	N
VIEW_TOT2	–	54	X		Record	M	Unsigned16, DS-37, DS-42, DS-33	18	D

7.8 Totalizer 3 Block Slot 4

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Totalizer 3 Block - Slot 4									
not used	–	0 - 15	–	–	–	–	–	–	–
BLOCK_OBJECT	–	16	X		Record	M	DS-32	20	Cst
ST_REV	p. 134	17	X		Simple	M	Unsigned16	2	N
TAG_DESC	p. 135	18	X	X	Simple	M	Octet String	32	S
STRATEGY	p. 135	19	X	X	Simple	M	Unsigned16	2	S
ALERT_KEY	p. 135	20	X	X	Simple	M	Unsigned8	1	S
TARGET_MODE	p. 133	21	X	X	Simple	M	Unsigned8	1	S
MODE_BLK	p. 133	22	X		Record	M	DS-37	3	D
ALARM_SUM	p. 134	23	X		Record	M	DS-42	8	D
BATCH	p. 135	24	X	X	Record	M	DS-67	10	S
not used	–	25	–	–	–	–	–	–	–
TOTAL	p. 128	26	X		Record	M	DS-33	5	N
UNIT_TOT	p. 130	27	X	X	Simple	M	Unsigned16	2	S
CHANNEL	p. 134	28	X	X	Simple	M	Unsigned16	2	S
SET_TOT	p. 130	29	X	X	Simple	M	Unsigned8	1	N
MODE_TOT	p. 130	30	X	X	Simple	M	Unsigned8	1	N
FAIL_TOT	p. 129	31	X	X	Simple	M	Unsigned8	1	S
PRESET_TOT	p. 130	32	X	X	Simple	M	Float	4	S
ALARM_HYS	p. 131	33	X	X	Simple	M	Float	4	S
HI_HI_LIM	p. 132	34	X	X	Simple	M	Float	4	S
HI_LIM	p. 132	35	X	X	Simple	M	Float	4	S
LO_LIM	p. 132	36	X	X	Simple	M	Float	4	S
LO_LO_LIM	p. 133	37	X	X	Simple	M	Float	4	S
HI_HI_ALM	p. 132	38	X		Record	O	DS-39	16	D
HI_ALM	p. 132	39	X		Record	O	DS-39	16	D
LO_ALM	p. 132	40	X		Record	O	DS-39	16	D
LO_LO_ALM	p. 133	41	X		Record	O	DS-39	16	D
not used	–	42 - 51	–	–	–	–	–	–	–
TOT3_TYPE	–	52	X		Simple	O	Unsigned16	2	Cst
OVERFLOW	–	53	X	X	Simple	O	Unsigned16	2	N
VIEW_TOT3	–	54	X		Record	M	Unsigned16, DS-37, DS-42, DS-33	18	D

7.9 AI 2 Mass Flow Block Slot 5

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
AI2 - Massflow Block - Slot 5									
not used	–	0 - 15	–	–	–	–	–	–	–
BLOCK_OBJECT	–	16	X		Record	M	DS-32	20	Cst
ST_REV	p. 124	17	X		Simple	M	Unsigned16	2	N
TAG_DESC	p. 124	18	X	X	Simple	M	Octet String	32	S
STRATEGY	p. 124	19	X	X	Simple	M	Unsigned16	2	S
ALERT_KEY	p. 124	20	X	X	Simple	M	Unsigned8	1	S
TARGET_MODE	p. 123	21	X	X	Simple	M	Unsigned8	1	S
MODE_BLK	p. 122	22	X		Record	M	DS-37	3	D
ALARM_SUM	p. 123	23	X		Record	M	DS-42	8	D
BATCH	p. 124	24	X	X	Record	M	DS -67	10	S
not used	–	25		–	–	–	–	–	–
OUT	p. 116	26	X		Record	M	DS-33	5	D
PV_SCALE	p. 117	27	X	X	Array	M	Float	8	S
OUT_SCALE	p. 118	28	X	X	Record	M	DS-36	11	S
LIN_TYPE	p. 117	29	X	X	Simple	M	Unsigned8	1	S
CHANNEL	p. 123	30	X	X	Simple	M	Unsigned16	2	S
not used	–	31	–	–	–	–	–	–	–
PV_FTIME	p. 119	32	X	X	Simple	M	Float	4	S
FSAFE_TYPE	p. 117	33	X	X	Simple	O	Unsigned8	1	S
FSAFE_VALUE	p. 117	34	X	X	Simple	O	Float	4	S
ALARM_HYS	p. 120	35	X	X	Simple	M	Float	4	S
not used	–	36	–	–	–	–	–	–	–
HI_HI_LIM	p. 121	37	X	X	Simple	M	Float	4	S
not used	–	38	–	–	–	–	–	–	–
HI_LIM	p. 121	39	X	X	Simple	M	Float	4	S
not used	–	40	–	–	–	–	–	–	–
LO_LIM	p. 121	41	X	X	Simple	M	Float	4	S
not used	–	42	–	–	–	–	–	–	–
LO_LO_LIM	p. 122	43	X	X	Simple	M	Float	4	S
not used	–	44 - 45	–	–	–	–	–	–	–
HI_HI_ALM	p. 121	46	X		Record	O	DS-39	16	D
HI_ALM	p. 121	47	X		Record	O	DS-39	16	D
LO_ALM	p. 121	48	X		Record	O	DS-39	16	D
LO_LO_ALM	p. 122	49	X		Record	O	DS-39	16	D
SIMULATE	p. 122	50	X	X	Record	O	DS-50	6	S
OUT_UNIT_TEXT	p. 118	51	X	X	Simple	O	Octet String	16	S
not used	–	52 - 62	–	–	–	–	–	–	–
AI2_TYPE	–	61	X	X	Simple	O	Unsigned16	2	Cst
VIEW_AI2	–	62	X	X	Simple	M	Unsigned16, DS-37, DS-42, DS-33	18	D

8 Index key words PROFIBUS-DP /-PA

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Austria
❑ Endress+Hauser Ges.m.b.H.
Wien
Tel. (01) 88056-0, Fax (01) 88056-35

Belarus
❑ Belorgsintez
Minsk
Tel. (0172) 508473, Fax (0172) 508583

Belgium / Luxembourg
❑ Endress+Hauser N.V.
Brussels
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INTERTECH-AUTOMATION
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Croatia
❑ Endress+Hauser GmbH+Co.
Zagreb
Tel. (01) 6637785, Fax (01) 6637823

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I+G Electrical Services Co. Ltd.
Nicosia
Tel. (02) 484788, Fax (02) 484690

Czech Republic
❑ Endress+Hauser GmbH+Co.
Praha
Tel. (026) 6784200, Fax (026) 6784179

Denmark
❑ Endress+Hauser A/S
Søborg
Tel. (70) 131132, Fax (70) 132133

Estonia
ELVI-Aqua
Tartu
Tel. (7) 441638, Fax (7) 441582

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Helsinki
Tel. (0204) 83160, Fax (0204) 83161

France
❑ Endress+Hauser S.A.
Huningue
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Germany
❑ Endress+Hauser Messtechnik GmbH+Co.
Weil am Rhein
Tel. (07621) 975-01, Fax (07621) 975-555

Great Britain
❑ Endress+Hauser Ltd.
Manchester
Tel. (0161) 2865000, Fax (0161) 9981841

Greece
I & G Building Services Automation S.A.
Athens
Tel. (01) 9241500, Fax (01) 9221714

Hungary
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Budapest
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UAB "Agava"
Kaunas
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Kiev
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Beograd
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