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valid as of software version:
V 1.02.XX (amplifier)
V 1.01.XX (communication)

PROline promass 80 (PROFIBUS-PA)
Coriolis Mass Flow Measuring System

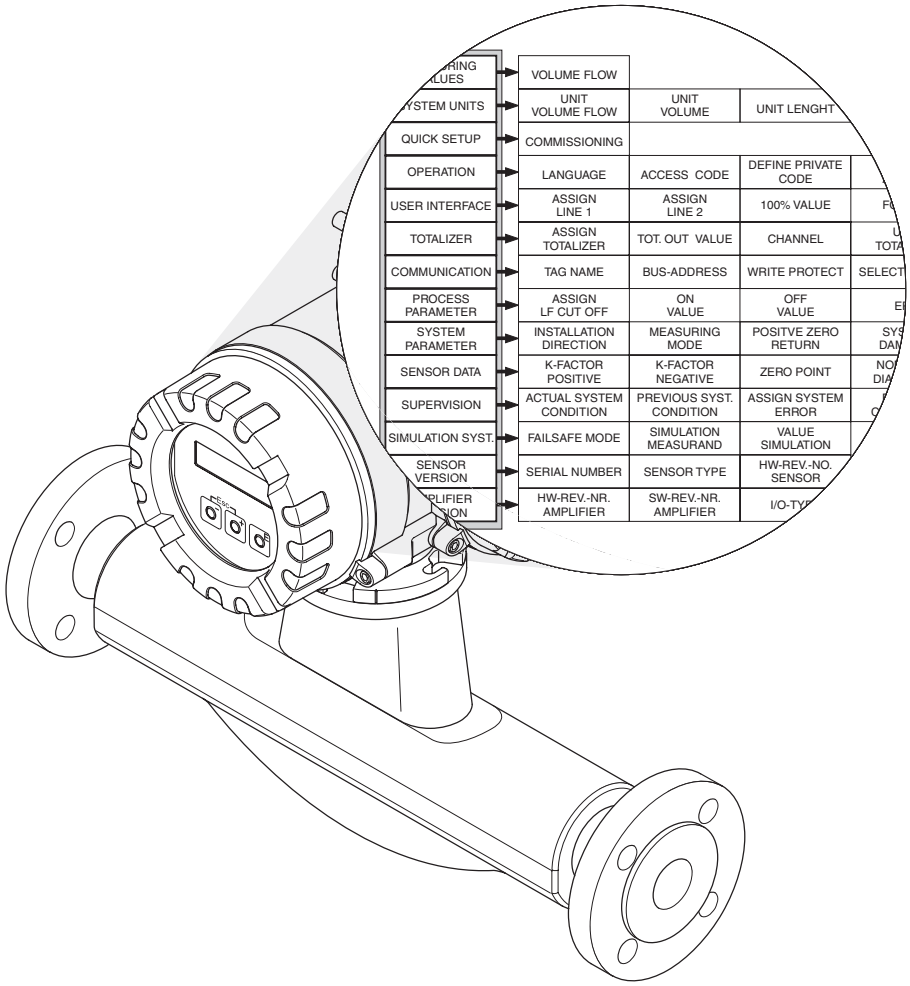








Description of Device Functions



Endress+Hauser
The Power of Know How

Operation Promass 80 PROFIBUS-PA

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Table of contents for local operation

1 Function matrix

1.1 The function matrix: layout and use

The function matrix is a two-level construct: the groups form one level groups the other. The groups are the highest-level grouping of the control options for the measuring device.
A number of functions is assigned to each group.
You select a group in order to access the individual functions for controlling and parameterizing the measuring device.

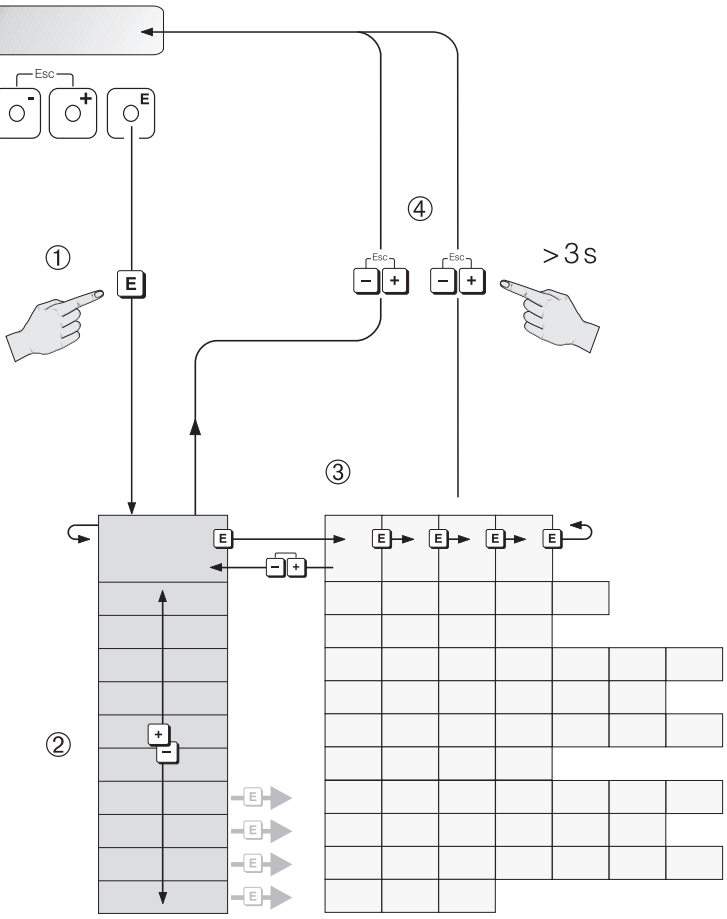
You will find an overview of all the groups in the table of contents on page 3 and in the graphical representation of the function matrix on Page 8.
You will also find an overview of all the functions on Page 8, complete with page references to the detailed function descriptions.
The descriptions of the individual functions start on Page 9.

Example of how to parameterize a function (in this case changing the language for the user interface):
① Entry into the function matrix (E-key).

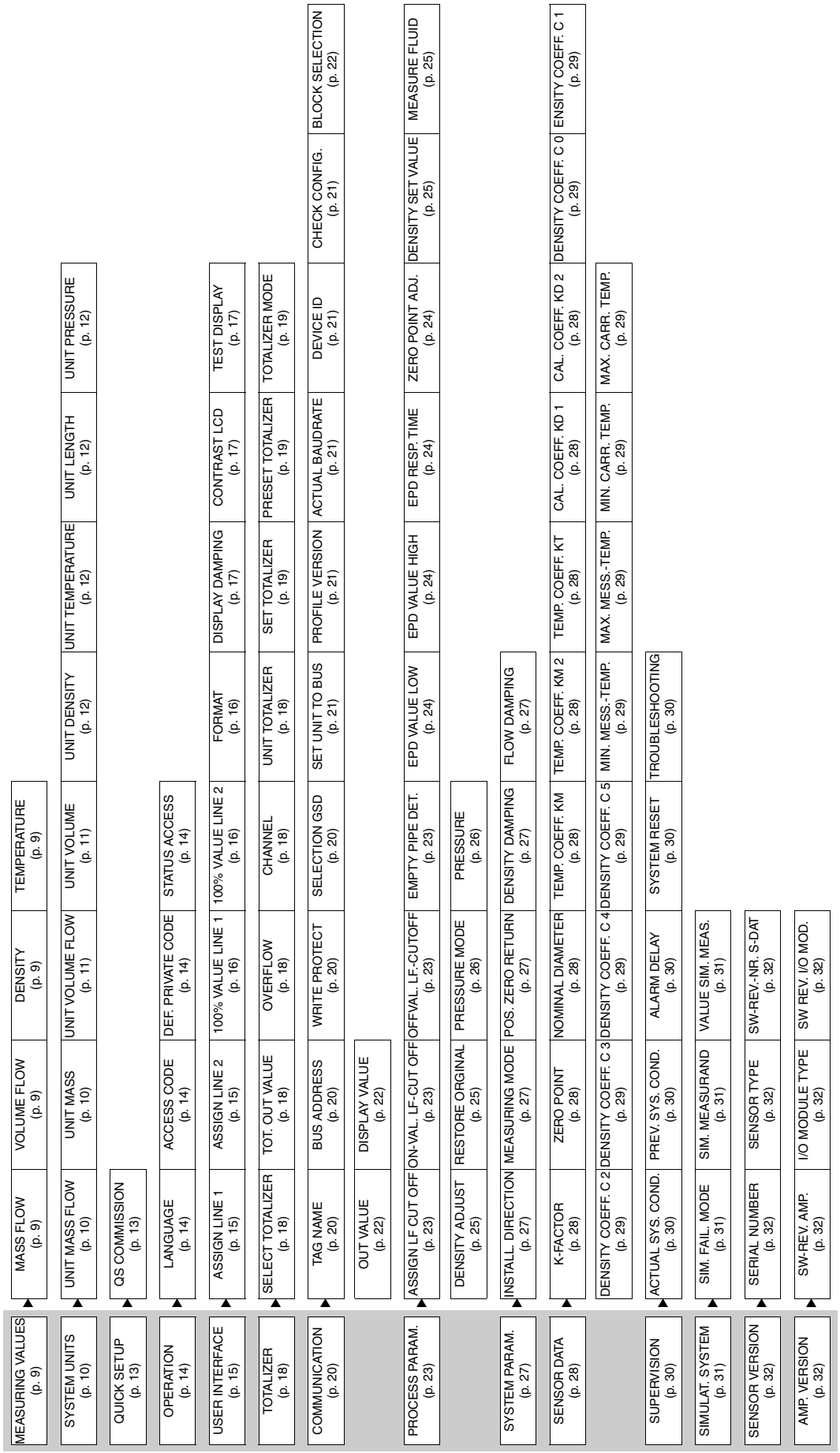
② Select the OPERATION group.

③ Select the LANGUAGE function and then change the option from ENGLISH to DEUTSCH ± and save E (all text on the user interface appear in German).

④ Exit the function matrix (ESC > 3 seconds).



1.2 Overview of the function matrix



2 Group MEASURING VALUES

Function description MEASURING VALUES	
✎ Note! • The engineering unit of the measured variable displayed 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.	
MASS FLOW	The mass flow currently measured appears on the display. **User interface:** 5-digit floating-point number, including unit and sign (e.g. 462.87 kg/h; - 731.63 lb/min; etc.)
VOLUME FLOW	The volume flow currently measured appears on the display. **User interface:** 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	The fluid density or the specific gravity currently measured appear on the display. **User interface:** 5-digit fixed-point number, incl. unit (e.g. 1.2345 kg/dm^3; 993.5 kg/m^3; 1.0015 SG_20 °C; etc.)
TEMPERATURE	The fluid temperature currently measured appears on the display. **User interface:** 5-digit fixed-point number, including unit and sign (e.g. -23.4 °C; 160.0 °F; 295.4 K; etc.)

3 Group SYSTEM UNITS

Function description SYSTEM UNITS	
Use this function group to select the unit for the measured variable. ✎ Note! • The units you select are not transmitted to the process-control system until the SET UNIT TO BUS function (Page 21) is executed. • The factory settings of the local display as described here might not be the same as the factory settings of the PROFIBUS-PA output as sent to the process-control system (Operating Instructions *PROline promass 80* PROFIBUS-PA, BA 072D/06/en).	
UNIT MASS FLOW	Use this function to select the unit for displaying the mass flow (mass/time). The unit you select here is also valid for: • Low flow cut off **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:** kg/h
UNIT MASS	Use this function to select the unit for displaying the mass. **Options:** Metric → g; kg; t US → oz; lb; ton **Factory setting:** kg ✎ 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 SYSTEM UNITS	
UNIT VOLUME FLOW	Use this function to select the unit for displaying the volume flow. The unit you select here is also valid for: • Low flow cut off **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: 34.97 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day **Factory setting:** m^3/h
UNIT VOLUME	Use this function to select the unit for displaying the volume. **Options:** 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 ✎ 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.

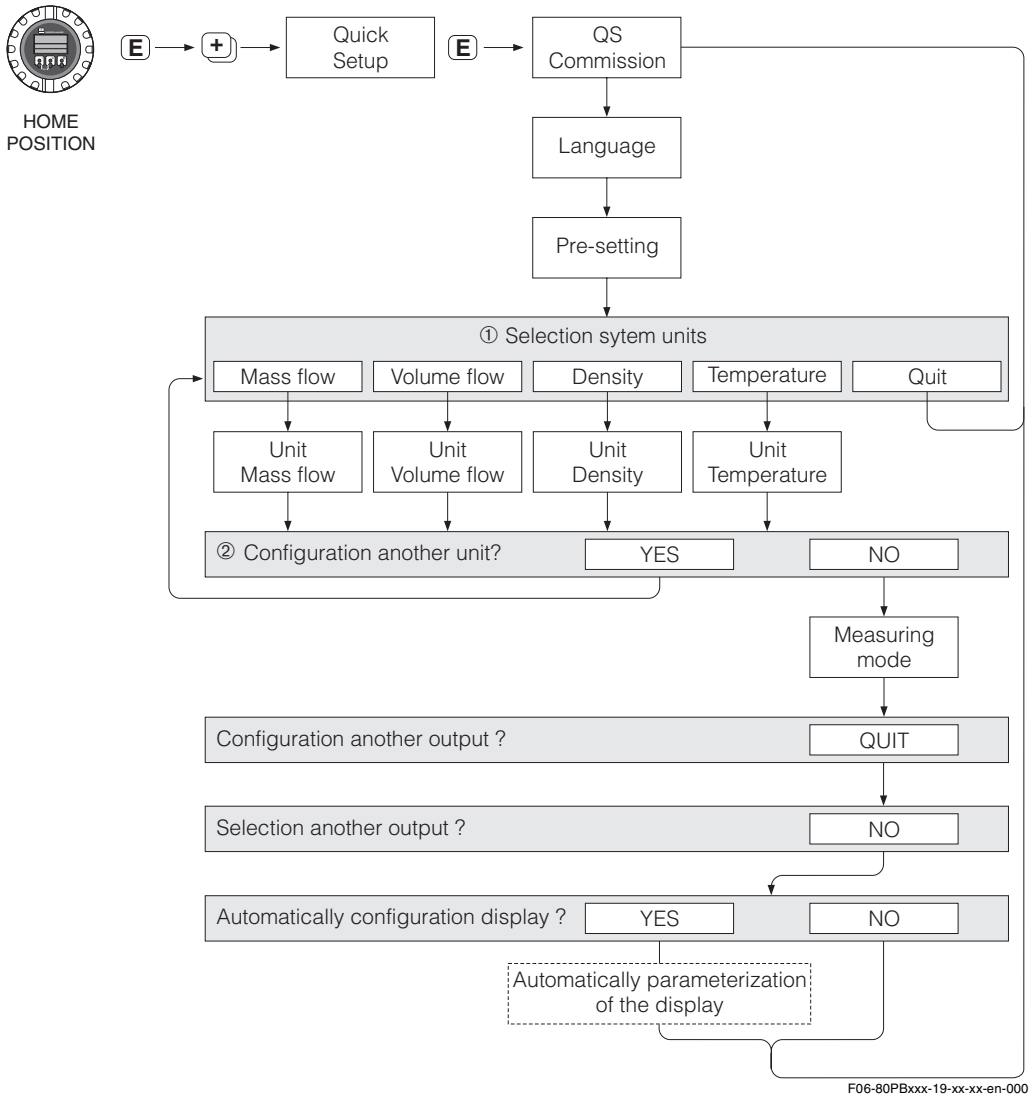
Function description SYSTEM UNITS	
UNIT DENSITY	Use this function to select the unit for displaying the fluid density. The unit you select here is also valid for: • Density adjustment value • Response value for empty pipe detection **Options:** Metric → g/cm^3; g/cc; kg/dm^3; kg/l; kg/m^3; SD 4 °C, SD 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 water density (at water temperature = 4, 15, 20 °C).
UNIT TEMPERATURE	Use this function to select the unit for displaying the temperature. **Options:** °C (Celsius) K (Kelvin) °F (Fahrenheit) R (Rankine) **Factory setting:** °C
UNIT LENGTH	Use this function to select the unit for displaying the length of the nominal diameter. The unit you select here is also valid for: • Nominal diameter of sensor, (see NOMINAL DIAMETER function on Page 28) **Options:** MILLIMETER INCH **Factory setting:** MILLIMETER
UNIT PRESSURE	Use this function to select the unit for pressure. The unit you select here is valid for: • Specified pressure **Options:** bar a bar g psi a psi g **Factory setting:** bar g

4 Group QUICK SETUP

Function description QUICK SETUP	
QUICK SETUP COMMISSIONING	Use this function to start the Quick Setup menu for commissioning. **Options:** NO YES **Factory setting:** NO

Note!

- The display returns to the QUICK SETUP COMMISSIONING cell if you press the ESC key combination during parameter interrogation.
- ① Only the units not yet configured in the current Quick Setup are offered for selection in each cycle. The unit for mass and volume is derived from the corresponding flow unit.
- 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 Group OPERATION

Function descriptionOPERATION	
LANGUAGE	Use this function to select the language for all texts, parameters and messages shown on the local display. **Options:** ENGLISH DEUTSCH FRANCAIS ESPANOL ITALIANO JAPANESE (syllabic) **Factory setting:** Country-dependent, (see factory settings from Page 33) onwards). ✎ Note! If you press the ⊡ keys simultaneously at startup, the language defaults to "ENGLISH".
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 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 the private code, (**default = 80**, see function DEFINE PRIVATE CODE). **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 private code). • The Endress+Hauser service organisation can be of assistance if you mislay your personal code.
DEFINE PRIVATE CODE	Use this function to define a personal code number for enabling programming. **User input:** max. 4-digit number: 0...9999 **Factory setting:** 80 ✎ Note! • Programming is always enabled if the code defined = 0. • Programming has to be enabled before this code can be changed. When programming is disabled this function cannot be edited; this precaution prevents others from accessing your personal code.
STATUS ACCESS	The access status of the function matrix appears on the display. **User interface:** ACCESS CUSTOMER (parameterisation enabled) LOCKED (parameterisation disabled)

6 Group USER INTERFACE

Function description USER INTERFACE	
ASSIGN LINE 1	Use this function to define which reading is assigned to the main line (top line of the local display) for display during normal measuring operation. **Options:** OFF MASS FLOW MASS FLOW IN % VOLUME FLOW VOLUME FLOW IN % DENSITY TEMPERATURE AI1 - OUT VALUE AI2 - OUT VALUE AI3 - OUT VALUE AI4 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE **Factory setting:** MASS FLOW ✎ Note! If the option PROFILE-GSD was selected in the SELECTION GSD (see Page 20) function or via Commuwin II (Parameter Selection GSD, V6H1), the following options are **not** available: AI4 - OUT VALUE, AO - DISP. VALUE
ASSIGN LINE 2	Use this function to define which reading is assigned to the additional line (bottom line of the local display) for display during normal measuring operation. **Options:** OFF MASS FLOW MASS FLOW IN % VOLUME FLOW VOLUME FLOW IN % DENSITY TEMPERATURE TAG NAME OPERATING/SYSTEM CONDITION FLOW DIRECTION MASS FLOW BARGRAPH IN % VOLUME FLOW BARGRAPH IN % AI1 - OUT VALUE AI2 - OUT VALUE AI3 - OUT VALUE AI4 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE **Factory setting:** TOT1 - OUT VALUE (Totalizer) ✎ Note! If the option PROFILE-GSD was selected in the SELECTION GSD (see Page 20) function or via Commuwin II (Parameter Selection GSD, V6H1), the following options are **not** available: AI4 - OUT VALUE, AO - DISP. VALUE

Function description USER INTERFACE	
100% VALUE LINE 1	✎ Note! This function is not available unless one of the following options was selected in the ASSIGN LINE 1 function: MASS FLOW IN % VOLUME FLOW IN % Use this function to define the flow value to be displayed as the 100% value in line 1. **User input:** 5-digit floating-point number **Factory setting:** • 10 kg/s (for the option MASS FLOW IN %) • 10 l/s (for the option VOLUME FLOW IN %)
100% VALUE LINE 2	✎ Note! This function is not available unless one of the following options was selected in the ASSIGN LINE 2 function: MASS FLOW IN % VOLUME FLOW IN % MASS FLOW BARGRAPH IN % VOLUME FLOW BARGRAPH IN % Use this function to define the flow value to be displayed as the 100% value in line 2. **User input:** 5-digit floating-point number **Factory setting:** • 10 kg/s (for the option MASS FLOW IN % or MASS FLOW BARGRAPH IN %) • 10 l/s (for the option VOLUME FLOW IN % or VOLUME FLOW BARGRAPH IN %)
FORMAT	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.

Function description USER INTERFACE	
DISPLAY DAMPING	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 s **Factory setting:** 1 s ✎ Note! The damping is switched off if the setting is 0 s.
CONTRAST LCD	Use this function to optimise the display contrast to suit local operating conditions. **User input:** 10...100% **Factory setting:** 50%
TEST DISPLAY	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 and additional line are darkened for minimum 0.75 seconds. 3. The main line and additional line show an “8” in each field for minimum 0.75 seconds. 4. The main line and additional line show a “0” in each field for minimum 0.75 seconds. 5. The main line and additional line show nothing (blank display) for minimum 0.75 seconds. 6. When the test is completed, the local display returns to its initial state and the displays the option OFF.

7 Group TOTALIZER

Function description TOTALIZER	
SELECT TOTALIZER	Use this function to select a totalizer. ✎ Note! Only one totalizer is available to the PROline Promass 80 PROFIBUS-PA. **Options:** TOTALIZER 1 **Factory setting:** TOTALIZER 1
TOTALIZER OUT VALUE	Use this function to view the TOTAL value (output measured value)and the corresponding unit of the totalizer.
OVERFLOW	Use this function to view the overflow for the totalizer aggregated since measuring commenced. Total flow quantity is represented by a floating-point number consisting of max. 7 digits. You can use this function to view higher numerical values (>9,999.999) as overflows. The effective quantity is thus the total of ÜBER-LAUF plus the value returned by the SUMME function. Example: Reading for 2 overflows: 2 10^7 kg (= 20,000,000 kg) The value displayed in the function SUMME = 196,845.7 kg Effective total quantity = 20,196,845.7 kg **User interface:** integer with exponent, including sign and unit, e.g. 2 10^7 kg
CHANNEL	Use this function to assign a measured variable to the totalizer. **Options:** OFF MASS FLOW VOLUME FLOW **Factory setting:** MASS FLOW
UNIT TOTALIZER	Use this function to define the unit for the totalizer measured variable. **Options:** Metric → cm^3; dm^3; m^3; ml; l; hl; Ml US → cc; af; ft^3 (cft); oz f (flo); gal; Mgal; bbl (normal fluids); bbl (beer); bbl (petrochemicals); bbl (filling tanks) Imperial → gal; Mgal; bbl (beer); bbl (petrochemicals) **Factory setting:** m^3

Function description TOTALIZER	
SET TOTALIZER	Use this function to assign a status to the totalizer. **Options:** TOTALIZE Total the measured variable selected in the CHANNEL function. RESET Reset the totalizer to zero. PRESET Set the totalizer to the value defined in the PRESET TOTALIZER function. ✎ Note! Note that selecting RESET or PRESET resets the totalizer to 0 or sets it to the preset value respectively, 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. **Factory setting:** TOTALIZE
PRESET TOTALIZER	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. **User input:** -99999...99999 **Factory setting:** 0
TOTALIZER MODE	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 Positive flow components only REVERSE / NEGATIVE Negative flow components only HOLD The totalizer stops at the last value. No further flow components are totaled. **Factory setting:** BALANCE

8 Group COMMUNICATION

Function description COMMUNICATION	
TAG NAME	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 characters: A-Z, 0-9, +,-, punctuation marks **Factory setting:** "_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _" (no text)
BUS ADDRESS	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	This function shows the position of the jumper used to set general write protection. **User interface:** 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! Write protection is activated and deactivated by means of a jumper on the I/O module, (see Operating Instructions *PROline promass 80* PROFIBUS-PA, BA 072D/06/en).
SELECTION GSD	✎ 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

Function description COMMUNICATION	
SET UNIT TO BUS	Use this function to enable transmission of the preset system units to the process-control system. Press the E key to transmit 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 set system unit and the OUT unit (output unit) is displayed in the OUT_UNIT parameter. The preset system units are listed in the Operating Instructions *PROline promass 80* PROFIBUS-PA, BA 072D/06/en. ☝ Attention! Activating this function can cause the OUT value to change suddenly; this, in turn, can affect subsequent control routines.
PROFILE VERSION	Use this function to view the profile version. **User interface:** 3.0
ACTUAL BAUDRATE	Use this function to view the data transfer rate at which the device communicates, as set in the process-control system.
DEVICE ID	Use this function to view the manufacturer-specific device ID. **User interface:** 0x1528 (= 1528 Hex) ✎ Note! If the option PROFILE-GSD was selected in the function SELECTION GSD, (see Page 20) or via Commuwin II (in the Selection GSD parameter, Transducer Block, V6H1), the PROFILE ID = 0x9742 (= 9742 Hex) is displayed in this function.
CHECK CONFIGURATION	Use this function to check whether the configuration for cyclic data exchange of a class 1 master has been accepted in the Promass 80. **User interface:** ACCEPTED (configuration accepted) NOT ACCEPTED (configuration not accepted)

Function description COMMUNICATION	
BLOCK SELECTION	Use this function to select 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. If you select Analog Output (display value), the current measured value is displayed in the DISPLAY VALUE function. **Options:** ANALOG INPUT 1 (mass flow) → displayed in OUT VALUE ANALOG INPUT 2 (volume flow) → displayed in OUT VALUE ANALOG INPUT 3 (density) → displayed in OUT VALUE ANALOG INPUT 4 (temperature) → displayed in OUT VALUE ANALOG OUTPUT 1 (display value) → displayed in DISPLAY VALUE **Factory setting:** ANALOG INPUT 1 (mass flow) ✎ Note! If the option PROFILE-GSD was selected in the SELECTION GSD function, (see Page 20), or via Commuwin II (in the Selection GSD parameter, Transducer block, V6H1), the only options that appear in this function are: ANALOG INPUT 1 ANALOG INPUT 2 ANALOG INPUT 3
OUT VALUE	✎ Note! This function is not available unless one of the following was selected in the BLOCK SELECTION function: • ANALOG INPUT 1 • ANALOG INPUT 2 • ANALOG INPUT 3 • ANALOG INPUT 4 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.
DISPLAY VALUE	✎ Note! This function is not available unless ANALOG OUTPUT 1 was selected in the BLOCK SELECTION function. Use this function to view the display value (output measured value) including the unit.

9 Group PROCESS PARAMETER

Function description PROCESS PARAMETER	
ASSIGN LOW FLOW CUT OFF	Use this function to assign the switch point for the low flow cut off. **Options:** OFF MASS FLOW VOLUME FLOW **Factory setting:** MASS FLOW
ON-VALUE LOW FLOW CUT OFF	Use this function to enter the on-value for low flow cut off. Low flow cut off 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 cut off is active. **User input:** 5-digit floating-point number **Factory setting:** depends on nominal diameter ✎ Note! The appropriate unit is taken from the SYSTEM UNITS function group, (see Page 10).
OFF-VALUE LOW FLOW CUT OFF	Use this function to enter the off-value for low flow cut off. Enter the off-value as a positive hysteresis from the on-value. **User input:** 0...100% **Factory setting:** 50%
EMPTY PIPE DETECTION (EPD)	Use this function to activate empty pipe detection (EPD). If a measuring tube is empty, the measured fluid density drops below the value specified in the EPD VALUE LOW function. **Options:** OFF ON **Factory setting:** OFF ☝ Attention! • Select a correspondingly low EPD VALUE LOW, so that there is a large enough difference to the effective fluid density. This ensures that only totally empty measuring tubes and not partially filled ones are detected. • Empty pipe detection should be switched off during gas measurement due to the low gas densities.

Function description PROCESS PARAMETER	
EPD VALUE LOW	✎ Note! This function is not available unless ON was selected in the EPD function. Use this function to specify a lower threshold value (limit value) for the measured density value as problems in the process may occur if the fluid density is too low. **User input:** 5-digit floating-point number **Factory setting:** 0.2000 g/cc
EPD VALUE HIGH	✎ Note! This function is not available unless ON was selected in the EPD function. Use this function to set an upper threshold (limit value) for the measured density value. **User input:** 5-digit floating-point number **Factory setting:** 6.0000 g/cc
EPD RESPONSE TIME	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
ZERO POINT ADJUST	Use this function to start the zero point adjustment automatically. The new zero point value determined by the measuring system is adopted by the function ZERO POINT, (see Page 28). **User input:** CANCEL START **Factory setting:** CANCEL ☝ Attention! Before carrying this out, please refer to the Operating Instructions *PROline promass 80* PROFIBUS-PA, BA 072D/06/en, for a detailed description of the procedure for zero point adjustment. ✎ Note! • Programming is disabled during zero point adjustment. The message “ZERO ADJUST RUNNING” appears on the display. • If zero point adjustment is not possible (e.g. if v > 0.1 m/s) or has been cancelled, the alarm message “ZERO ADJUST NOT POSSIBLE” appears on the display. • When zero point adjustment is complete, press the E key to display the new zero point. If you press the E key again, the display returns to the ZERO POINT ADJUST function.

Function description PROCESS PARAMETER	
DENSITY SET VALUE	Use this function to enter the density setpoint value of the fluid for which you want to carry out field density adjustment. **User input:** 5-digit floating-point number, including unit, (corresponds to 0.1...5.9999 kg/l) ✎ Note! • The setpoint density value entered here should not exceed or fall below the current fluid density by more than ±10%. • The appropriate unit is taken from the SYSTEM UNITS function group, (see Page 10).
MEASURE FLUID	Use this function to measure the current density of the fluid for density adjustment. **Options:** CANCEL START
DENSITY ADJUST	Use this function to carry out density adjustment on site. The density adjustment values will thus be recalculated and stored in the measuring system. This ensures that the values dependent on density calculations (e.g. volume flow) are as accurate as possible. ☝ Attention! Before carrying this out, please refer to the Operating Instructions *PROline promass 80* PROFIBUS-PA, BA 072D/06/en for a detailed description of the procedure for density adjustment. ✎ Note! Density adjustment can be carried out if: • The sensor does not exactly measure the density value which the operator expects based on laboratory trials. • The characteristics of the fluid are outside the measuring points used at the factory or reference conditions under which the device has been calibrated. • The plant is used solely for measuring a fluid whose density is to be determined very accurately under constant conditions. **Options:** CANCEL DENSITY ADJUSTMENT **Factory setting:** CANCEL
RESTORE ORIGINAL	Use this function to load the original density coefficients determined at the factory. **Options:** NO YES **Factory setting:** NO

Function description PROCESS PARAMETER	
PRESSURE MODE	Use this function to configure an automatic pressure correction. In this way, the effect of a pressure deviation between the calibration and process pressures on the measured error for mass flow is compensated for, (see also Operating Instructions Operating Instructions *PROline promass 80* PROFIBUS-PA, BA 072D/06/en, Accuracy Chapter). **Options:** OFF FIX A fixed process pressure for pressure correction is specified, (see function PRESSURE). **Factory setting:** OFF
PRESSURE	✎ Note! This function is not available unless the option FIX was selected in the PRESSURE MODE function. Use this function to enter the value for the process pressure which should be used during pressure correction. **User input:** 7-digit floating-point number **Factory setting:** 0 bar g ✎ Note! The appropriate unit is taken from the UNIT PRESSURE function, (see Page 12).

10 Group SYSTEM PARAMETER

Function description SYSTEM PARAMETER	
INSTALLATION DIRECTION SENSOR	Use this function to reverse the sign of the flow variable, if necessary. **Options:** NORMAL (flow as indicated by the 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).
MEASURING MODE	✎ Note! This function is merely displayed on the local display; it is not processed by the measuring system.
POSITIVE ZERO RETURN	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 the “ZERO FLOW” value, temperature and density are still output) **Factory setting:** OFF
DENSITY DAMPING	The density filter allows the sensitivity of the density measuring signal to be lowered with respect to variations in the density of the fluid, e.g. with inhomogeneous liquids. **User input:** max. 5-digit number, including unit: 0.00...100.00 s **Factory setting:** 0.00 s ✎ Note! The damping acts on all functions and outputs of the measuring device.
FLOW DAMPING	Setting for the filter depth of the digital filter is set. The sensitivity of the flow measurement signal can be reduced with respect to interference peaks; e.g. in the event of high solid-content, gas bubbles, etc. The system reaction time increases with the filter setting. **User input:** 0...100 s **Factory setting:** 0 s ✎ Note! The damping acts on all functions and outputs of the measuring device.

11 Group SENSOR DATA

Function description SENSOR DATA	
All sensor data (calibration factor, zero point, nominal diameter, etc.) are set at the factory and saved on the S-DAT sensor memory chip. ☝ Attention! 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.	
K-FACTOR	The current calibration factor for the sensor appears on the display. The calibration factor is determined and set at the factory. **User interface:** 5-digit fixed-point number: 0.5000 ...2.0000 **Factory setting:** depends on nominal diameter and calibration ✎ Note! This value is also provided on the sensor nameplate.
ZERO POINT	This function shows the current zero-point correction value for the sensor. Zero-point correction is calculated and set at the factory. **User interface:** max. 4-digit number: -1000 ...+1000 **Factory setting:** depends on nominal diameter and calibration ✎ Note! This value is also provided on the sensor nameplate.
NOMINAL DIAMETER	This nominal diameter for the sensor appears on the display. The nominal diameter depends on the size of the sensor and is set at the factory. **User interface:** 2 ...2000 mm or 1/12 ...78" **Factory setting:** depends on the size of the sensor ✎ Note! This value is also provided on the sensor nameplate.
TEMPERATURE COEFFIZIENT KM	The KM temperature coefficient appears on the display .
TEMPERATURE COEFFIZIENT KM 2	The KM 2 temperature coefficient appears on the display.
TEMPERATURE COEFFIZIENT KT	The KT temperature coefficient appears on the display.
CALIBRATION COEFFIZIENT KD 1	The KD 1 calibration coefficient appears on the display.
CALIBRATION COEFFIZIENT KD 2	The KD 2 calibration coefficient appears on the display.

Function description SENSOR DATA	
DENSITY COEFFICIENT C0	The current C 0 density coefficient appears on the display. ☝ Attention! A field density adjustment can alter the value of the density coefficient.
DENSITY COEFFICIENT C1	The current C 1 density coefficient appears on the display. ☝ Attention! A field density adjustment can alter the value of the density coefficient.
DENSITY COEFFICIENT C2	The current C 2 density coefficient appears on the display. ☝ Attention! A field density adjustment can alter the value of the density coefficient.
DENSITY COEFFICIENT C3	The current C 3 density coefficient appears on the display. ☝ Attention! A field density adjustment can alter the value of the density coefficient.
DENSITY COEFFICIENT C4	The current C 4 density coefficient appears on the display. ☝ Attention! A field density adjustment can alter the value of the density coefficient.
DENSITY COEFFICIENT C5	The current C 5 density coefficient appears on the display. ☝ Attention! A field density adjustment can alter the value of the density coefficient.
MINIMUM FLUID TEMPERATURE	The lowest fluid temperature yet measured appears on the display.
MAXIMUM FLUID TEMPERATURE	The highest fluid temperature yet measured appears on the display.
MINIMUM CARRIER TUBE TEMPERATURE	The lowest carrier tube temperature yet measured appears on the display.
MAXIMUM CARRIER TUBE TEMPERATURE	The highest carrier tube temperature yet measured appears on the display.

12 Group SUPERVISION

Function description SUPERVISION	
ACTUAL SYSTEM CONDITION	The current system condition appears on the display. **User interface:** "SYSTEM OK" or the fault / notice message with the highest priority.
PREVIOUS SYSTEM CONDITION	Use this function to view the fifteen most recent error and notice messages since measuring last started. **User interface:** the 15 most recent error or information messages.
ALARM DELAY	Use this function to define a time span for which the criteria for an error have to be satisfied without interruption before a fault or notice message is generated. Depending on the setting and the type of error, this suppression acts on: • User interface • PROFIBUS-PA **User input:** 0...100 s (in steps of one second) **Factory setting:** 0 s ☝ Attention! If this function is activated, fault and notice messages are delayed by the time corresponding to the setting before being transmitted to the higher-order controller, (process controller, etc.). It is therefore imperative to check in advance 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.
SYSTEM RESET	Use this function to reset the measuring system. **Options:** NO RESTART SYSTEM (restart without interrupting mains supply) **Factory setting:** NO
TROUBLESHOOTING	Use this function to rectify faults in the EEPROM. The EEPROM is divided into a number of blocks. Only blocks where an error has occurred are shown. To rectify the fault, select the block in question and press the ↵ key to acknowledge the fault. ☝ Attention! Note!When you clear an error in a block, the parameters of the block you select are reset to their factory settings. **Options:** CANCEL "Faulty Block"

13 Group SIMULATION SYSTEM

Function description SIMULATION SYSTEM	
SIMULATION FAILSAFE MODE	Use this function to set all inputs, outputs and the totalizer to their defined fail-safe modes, in order to check whether they respond correctly. During this time, the words “SIMULATION FAILSAFE MODE” appear on the display. **Options:** OFF ON **Factory setting:** OFF
SIMULATION MEASURAND	Use this function to set all inputs, outputs and the totalizer to their defined flow-response modes, in order to check whether they respond correctly. During this time, the message “SIMULATION MEASURAND” appears on the display. **Options:** OFF MASS FLOW VOLUME FLOW DENSITY TEMPERATURE **Factory setting:** OFF ☞ Attention! • The measuring device cannot be used for measuring while this simulation is in progress. • The setting is not saved if the power supply fails.
VALUE SIMULATION MEASURAND	✎ Note! This function is not available unless the SIMULATION MEASURAND function is active. Use this function to specify a selectable value (e.g. 12 kg/s). This value is used to test downstream devices and the measuring device itself. **User input:** 5-digit floating-point number **Factory setting:** 0 ☞ Attention! The setting is not saved if the power supply fails.

14 Group SENSOR VERSION

Function description SENSOR VERSION	
SERIAL NUMBER	The serial number of the sensor appears on the display.
SENSOR TYPE	The sensor type (e.g. Promass F) appears on the display.
SOFTWARE REVISION NUMBER S-DAT	The software revision number of the software used to create the content of the S-DAT appears on the display.

15 Group AMPLIFIER VERSION

Function description AMPLIFIER VERSION	
SOFTWARE REVISION NUMBER AMPLIFIER	The software revision number of the amplifier appears on the display.
I/O MODULE TYPE	The I/O module type appears on the display.
SOFTWARE REVISION NUMBER I/O MODULE	The software revision number of the I/O module appears on the display.

16 Factory settings

16.1 SI units (not for USA and Canada)

16.1.1 Low flow cut off, full scale value

Nominal diameter [mm]	Low flow cut off (approx. v = 0.04 m/s)		Full scale value (approx. v = 2.5 m/s)	
1	0.08	kg/h	4	kg/h
2	0.40	kg/h	20	kg/h
4	1.80	kg/h	90	kg/h
8	8.00	kg/h	400	kg/h
15	26.00	kg/h	1300	kg/h
15 FB	72.00	kg/h	3600	kg/h
25	72.00	kg/h	3600	kg/h
25 FB	180.00	kg/h	9000	kg/h
40	180.00	kg/h	9000	kg/h
40 FB	300.00	kg/h	15000	kg/h
50	300.00	kg/h	15000	kg/h
80	720.00	kg/h	36000	kg/h
100	1200.00	kg/h	60000	kg/h
*DN 15. 25, 40 “FB” = Full bore versions Promass I				

16.1.2 Language

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

16.1.3 Density, length, temperature

	Unit
Density	kg/l
Length	mm
Temperature	°C

16.2 US units (only for USA and Canada)

16.2.1 Low flow cut off, full scale value

Nominal diameter [mm]	Low flow cut off (approx. v = 0.04 m/s)		Full scale value (approx. v = 2.5 m/s)	
1	0.003	lb/min	0.15	lb/min
2	0.015	lb/min	0.75	lb/min
4	0.066	lb/min	3.30	lb/min
8	0.300	lb/min	15.00	lb/min
15	1.000	lb/min	50.00	lb/min
15 FB	2.600	lb/min	130.00	lb/min
25	2.600	lb/min	130.00	lb/min
25 FB	6.600	lb/min	330.00	lb/min
40	6.600	lb/min	330.00	lb/min
40 FB	11.000	lb/min	550.00	lb/min
50	11.000	lb/min	550.00	lb/min
80	26.000	lb/min	1300.00	lb/min
100	44.000	lb/min	2200.00	lb/min
*DN 15. 25, 40 “FB” = Full bore versions Promass I				

16.2.2 Language, density, length, temperature

	Unit
Language	English
Density	g/cc
Length	Inch
Temperature	°F

17 Index key words for local operation

Table of contents for PROFIBUS-PA

1 Remote operation via PROFIBUS-PA

1.1 Block model

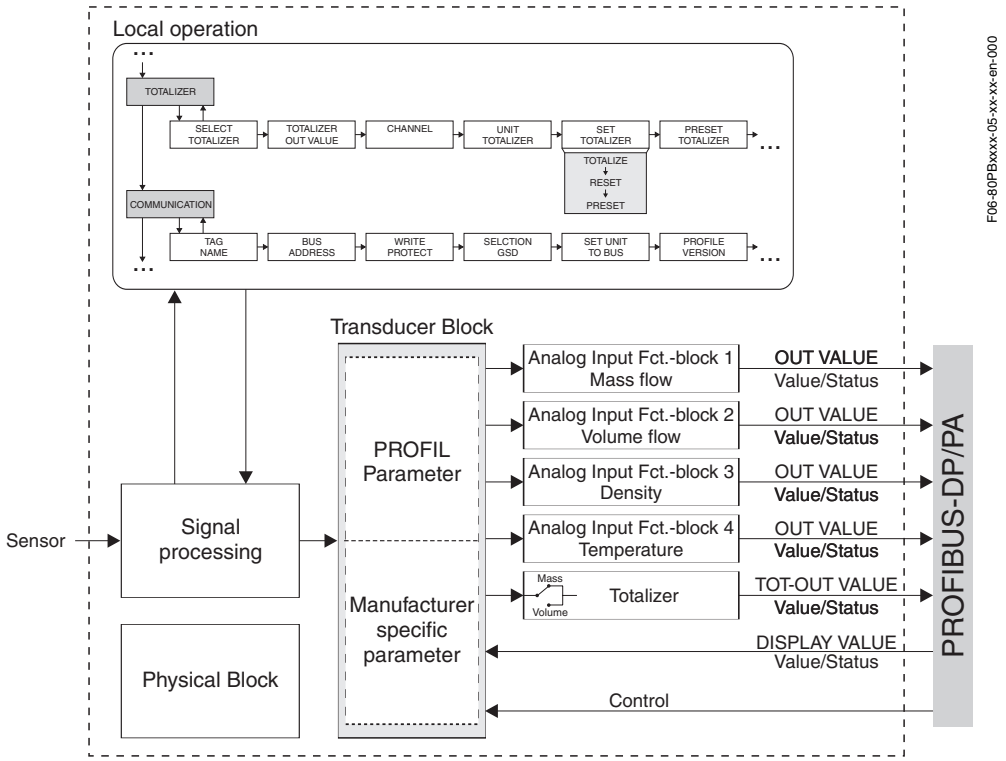
In the PROFIBUS-PA configuration, all the device parameters are categorised according to their functional properties and task and are generally assigned to three different blocks. A block may be regarded as a container in which parameters and the associated functionalities are contained.

A PROFIBUS-PA device has the following block types:
- A Physical block (device block)
  The Physical block contains all the device-specific characteristics of the unit.

- One or several Transducer blocks (transmission block)
  The Transducer block contains all device-specific and measurement-related parameters for the unit. The measurement principles (e.g. flow, temperature) are depicted in the Transducer blocks in accordance with the PROFIBUS-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 other blocks, e.g. several Analog Input function blocks if more than one process variable is available from the field device.



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

2 Physical block (device block)

A Physical block contains all the data that clearly identify and characterise 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 block is the management of general 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-PA I/O board, (see Operating Instructions *PROline promass 80*, PROFIBUS-PA, BA072D/06/en).

The HW_WRITE_PROTECTION parameter, (see page 41), shows the status of the 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 an entry in the WRITE_LOCKING parameter, (see page 41)
The following entries are permitted:
2457 → Device data can be overwritten (factory default)
0 → Device data cannot 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 = “Must” (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 parameter to view the manufacturer-specific device ID. **Display:** PROMASS 80 PBUS	X		M
SERIAL_NUMBER (V0H1)	**DEVICE_SER_ NUM**	Use this parameter 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 parameter to view the software version number of the measuring device.	X		M
HARDWARE_ VERSION (V0H3)	**HARDWARE_ VERSION**	Use this parameter to view the hardware version number of the measuring device.	X		M
MANUFACTURER_ ID (V0H4)	**DEVICE_MAN_ID**	Use this parameter to view the manufacturer's ID number. **Display:** 17 (decimal)	X		M
DESCRIPTION (V1...)					
DESCRIPTOR (V1H0)	**DESCRIPTOR**	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**	Use this parameter to enter the installation date of the measuring device. **Factory setting:** No date	X	X	O
MESSAGE (V1H2)	**DEVICE_ MESSAGE**	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 on the certification of the measuring device. **Factory setting:** No information	X		O
SOFTWARE_RESET (V2...)					
SOFTWARE_ RESET (V2H0)	**FACTORY_RESET**	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 displays 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 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 enabled, parameters cannot be overwritten at the local display or by means of the PROFIBUS protocol (class 2 master). **Factory setting:** 0 ✎ Note! Write protection is activated and deactivated by means of a jumper on the I/O module, (see Operating Instructions *PROline promass 80*, PROFIBUS-PA, BA072D/06/en).	X		O
LOCAL_ OPERATION (V3H2)	**LOCAL_OP_ENA**	✎ Note! This parameter is not supported by the Promas 80 PROFIBUS-PA. 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. **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. **User interface:** 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. **User interface:** 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. **User interface:** 0 → Diagnosis message is not supported X → Diagnosis message is supported	X		M
DIAG_MASK_ EXTENS. (V5H3)	**DIAGNOSIS_MASK** **EXTENSION**	Bit mask which outputs manufacturer-specific diagnosis messages is displayed, (see also system and process error messages in the Operating Instructions *PROline promass 80*, PROFIBUS-PA, BA072D/06/en).	X		O

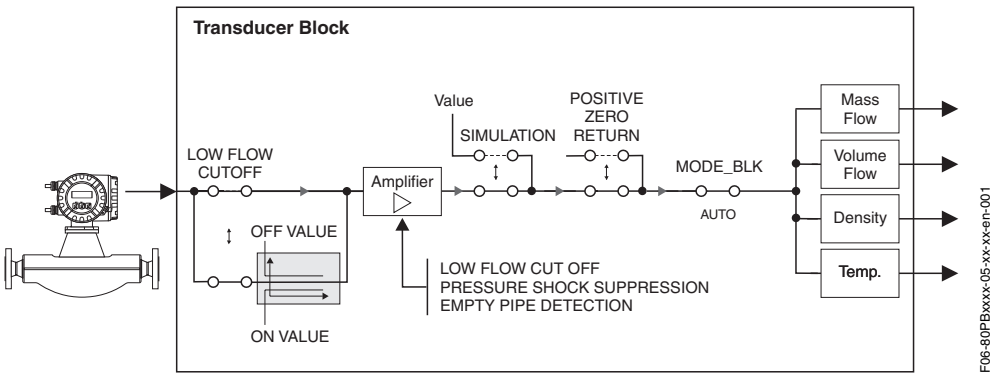
Physical block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
DIAGNOSIS (V6...)					
DIAGNOSIS (V6H0)	**DIAGNOSIS** (Byte 1)	Diagnosis information of the measuring device (first byte) with bit encoding. Several messages are possible. If manufacturer-specific information is available, it is shown in the DIAGNOSIS_ EXT parameter.	X		M
DIAGNOSIS_1 (V6H1)	**DIAGNOSIS** (Byte 2)	Diagnosis information of the measuring device (second byte) with bit encoding. Several messages are possible. If manufacturer-specific information is available, it is shown in the DIAGNOSIS_ EXT parameter. **Display:** 0 → Diagnosis message is not supported X → Diagnosis message is supported	X		M
DIAGNOSIS_2 (V6H2)	**DIAGNOSIS** (Byte 4)	Diagnosis information of the measuring device (fourth byte) with bit encoding. Several messages are possible. If manufacturer-specific information is available, it 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. **User interface:** AUTO	X		M
NORMAL (V8H2)	**MODE_BLOCK (Normal)**	Displays the operating mode for normal operation. **User interface:** AUTO	X		M
PERMITTED (V8H3)	**MODE_BLOCK (Permitted)**	Displays the permissible operating modes. **User interface:** 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 parameters (Static attribute) for 10 seconds and indicates that an early-warning limit or an alarm limit has been violated in a function block.				
CURRENT (V9H0)	**ALARM_SUM (CURRENT)**	Use this parameter to view the current alarms of the measuring device.	X		M
DISABLE (V9H1)	**ALARM_SUM (DISABLE)**	Use this parameter to view 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 whose values 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 clear identification and assignment of the block. **Factory setting:** "_ _ _ _ _ _ _ _" no 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. **User interface:** 30 (3.0)	X		O

3 Transducer block (transmission block)

The Transducer block of the Promas 80 PROFIBUS-PA contains all the measurement-related 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 variables 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 schematically illustrates the internal structure of the Transducer block of the Promas 80 PROFIBUS-PA:



3.1 Signal processing

The Transducer block receives several signal variables from the sensor (mass, density, temperature) as the input variables. Other process variables, such as volume etc., are derived from these signal variables. The input signals are prepared for measuring via the amplifier.

The VALUE SIMULATION MEASURAND parameter, (see page 71), 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 a limit value by means of the ON-VALUE LOW FLOW CUT OFF parameter, (see page 51). If the measured flow value drops below this limit value, the output value of 0 is output.

You also have the option of setting the measured value to “Zero Flow” by means of the POSITIVE ZERO RETURN parameter, (see page 58). This is necessary when the piping system is being cleaned, for example.

The process variables of the Transducer block are output via the following parameters: Mass flow, volume flow, corrected volume flow, density, reference density and temperature.

The most important functions and parameters of the Transducer block are listed below. An overview of all the parameters available is provided from page 47 onwards.

3.2 Block - Output variables

The Transducer block has four fixed process variables:
- Mass flow
- Volume flow
- Density
- Temperature

The relationship dictating which process variable is read into the next Analog Input function block is predefined and cannot be changed:
- The mass flow process variable is assigned to Analog Input function block 1.
- The volume flow process variable is assigned to Analog Input function block 2.
- The density process variable is assigned to Analog Input function block 3.
- The temperature process variable is assigned to Analog Input function block 4.

3.3 Alarm detection and processing

The Transducer block does not generate any process alarms. The status of the process variable of the Transducer block is evaluated in the subsequent Analog Input function block. If the Analog Input function block does not receive an input value that can be evaluated from the Transducer block, then a process alarm is generated. This process alarm is displayed via the OUT_STATUS, OUT_SUB_STATUS and OUT_LIMIT parameters of the Analog Input function block, (see page 85).
Detailed information on the current device status is shown in the manufacturer-specific ACTUAL SYSTEM CONDITION parameter, (see page 69).
This parameter also displays a device error that produced an input value that could not be evaluated and thus triggered the process alarm in the Analog Input function block. More information on rectifying errors can be found in the Operating Instructions *PROline promass 80*, PROFIBUS-PA, BA072D/06/en.

3.4 Access to manufacturer-specific parameters

To access the manufacturer-specific parameters, the following requirements must be met:

1. Hardware write protection must be disabled, (see page 39).

2. The correct code must be entered in the DEFINE PRIVATE CODE parameter, (see page 50) .

3.5 Transducer block parameter

The following table shows all the parameters available for 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. Apart from the parameters in the " Using the profile parameters" parameter group, (page 74 onwards), no parameter of the Transducer block can be changed unless the private code has first been entered.

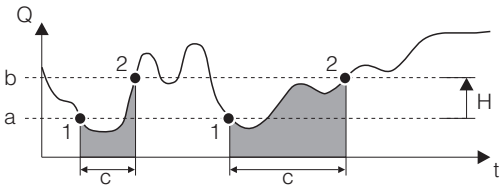
- R = Read
- W = Write
- P = Parameter, with a distinction between:
  - M = “Must” (obligatory) parameter
  - O = Optional parameter

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MEASURED VARIABLES (V0...)					
MASS FLOW (V0H0)	**—**	Displays the current measured value of the first process variable (mass flow) made available to the Analog Input block 1 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; etc.)	X		M
VOLUME FLOW (V0H1)	**VOLUME_FLOW**	Displays the second process variable (volume flow) made available to the Analog Input block 2 as an input value. The volume flow is calculated from the mass flow and the measured density. **Display:** 5-digit floating-point number, including unit and sign (e.g. 5.5445 dm^3/min; 1.4359 m^3/h; etc.)	X		M
DENSITY (V0H3)	**—**	Displays the current measured value of the third process variable (density) made available to the Analog Input block 3 as an input value. **Display:** 5-digit floating-point number, including unit (corresponds to 0.1...6.0 kg/dm^3) e.g. 1.2345 kg/dm^3; 993.5 kg/m^3; etc.	X		O
TEMPERATURE (V0H5)	**—**	Displays the current measured value of the fourth process variable (temperature) made available to the Analog Input block 4 as an input value. **Display:** max. 4-digit fixed-point number, incl. unit and sign, (e.g. -23.4 °C; 160.0 °F; 295.4 K; etc.)	X		O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SYSTEM UNITS (V1...)					
UNIT MASS FLOW (V1H0)	**—**	Use this parameter to select the unit for displaying the mass flow. **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:** kg/h	X	X	M
UNIT VOLUME FLOW (V1H1)	**VOLUME_FLOW_ UNITS**	Use this parameter to select the unit for displaying 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: 34.97 gal/bbl) → bbl/s; bbl/min; bbl/h; bbl/day **Factory setting:** m^3	X	X	M

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
UNIT DENSITY (V1H3)	—	Use this parameter to select the unit for displaying 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 water density (at water temperature = 4, 15, 20 °C).	x	x	o
UNIT TEMPERATURE (V1H5)	—	Use this parameter to select the unit for displaying the temperature. **Options:** °C (Celsius) K (Kelvin) °F (Fahrenheit) R (Rankine) **Factory setting:** °C	x	x	o

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
USER INTERFACE (V2...)					
ACCESS CODE (V2H0)	**LOCK_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 (factory setting = **80**, 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)	**LOCK_PRIVATE_ CODE**	Use this parameter to enter a personal code number for enabling programming. **User input:** 0...9999 (max. 4-digit number) **Factory setting:** 80 ✎ 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 this parameter is not available; this precaution prevents others from accessing your personal code.	x	x	o
ACCESS STATUS (V2H2)	**LOCK_ACCESS_ STATUS**	Use this parameter to check the access status for the manufacturer-specific parameters. **Display:** CUSTOMER (parameterisation enabled) LOCKED (parameterisation disabled)	x		o

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
LF/EPD_PARAMETER (V3...)					
ASSIGN LOW FLOW CUT OFF (V3H0)	**LOW_FLOW_ CUTOFF_ASSIGN**	Use this parameter to assign the switching point (as a technical unit) for low flow cut off. **Options:** OFF MASS FLOW VOLUME FLOW **Factory setting:** MASS FLOW	x	x	o
ON-VALUE LOW FLOW CUT OFF (V3H1)	**—**	Use this parameter to assign a value to the on-value for low flow cut off. Low flow cut off is active if the setting is a value not equal to 0. **User input:** 5-digit floating-point number **Factory setting:** depends on nominal diameter	x	x	o
OFF-VALUE LOW FLOW CUT OFF (V3H2)	**LOW_FLOW_ CUTOFF_OFF_ VALUE**	Use this parameter to assign a value to the off-value for low flow cut off. Enter the off-value as a positive hysteresis (H) from the on-value (a). **User input:** 0...100% **Factory setting:** 50% Example:  Q = Flow [volume/time] t = Time H = Hysteresis a = On-value = 200 kg/h b = Off-value = 10% c = Low flow cut off active 1 = Low flow cut off is switched on at 200 kg/h 2 = Low flow cut off is switched off at 220 kg/h	x	x	o

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
EMPTY PIPE DETECTION (V3H4)	**EPD_ASSIGN**	Use this parameter to activate empty pipe detection (EPD). If a measuring tube is empty, the measured fluid density drops below the value specified in the EPD LOW VALUE parameter. **Options:** OFF ON **Factory setting:** OFF Attention! • Select a correspondingly low EPD response value in the EPD LOW VALUE parameter so that there is a large enough difference to the effective fluid density. This ensures that only totally empty measuring tubes and not partially filled ones are detected. • Empty pipe detection should be switched off during gas measurement due to the low gas densities.	x	x	o
EPD LOW VALUE (V3H5)	**EPD_LOW_VALUE**	Note! This function is not available unless the ON option was selected in the EMPTY PIPE DETECTION parameter. Use this parameter to set a lower threshold (limit value) for the measured density, as problems in the process can occur if the fluid density is too low. **User input:** 5-digit floating-point number **Factory setting:** 0.2000 g/cc	x	x	o
EPD HIGH VALUE (V3H6)	**EPD_HIGH_VALUE**	Note! This function is not available unless the ON option was selected in the EMPTY_PIPE_ DETECTION parameter. Use this parameter to set an upper threshold (limit value) for the measured density. **User input:** 5-digit floating-point number **Factory setting:** 6.0000 g/cc	x	x	o
EPD RESPONSE TIME (V3H7)	**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...100 s **Factory setting:** 1.0 s	x	x	o

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
ADJUST (V5...)					
ZERO POINT ADJUST (V5H0)	**—**	Use this parameter to start zero point adjustment automatically. The new zero point determined by the measuring system is adopted by the ZERO POINT parameter. **Options:** CANCEL START **Factory setting:** CANCEL Attention! Before carrying this out, please refer to the Operating Instructions *PROline promass 80*, PROFIBUS-PA, BA072D/06/en for a detailed description of the procedure for zero point adjustment. Note! • Programming is locked during zero point adjustment. The message “ZERO ADJUST RUNNING” appears on the local display. • If the zero point adjustment is not possible (e.g. if v > 0.1 m/s) or has been cancelled, the alarm message “ZERO ADJUST NOT POSSIBLE” appears on the local display.	X	X	O
DENSITY SETPOINT (V5H1)	**DENSITY_ADJ_ VALUE**	Use this parameter to enter the density setpoint value for the fluid for which you want to carry out field density adjustment. **User input:** 5-digit floating-point number, including units Note! The density setpoint entered here should not exceed or drop below the current fluid density value by more than ±10%.	X	X	O
MEASURE FLUID (V5H2)	**DENSITY_ADJ_ MEAS_FLUID**	Use this parameter to measure the current fluid density for density adjustment. **Options:** CANCEL START	X	X	O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
DENSITY ADJUSTMENT (V5H3)	**DENSITY_ADJ_ ASSIGN**	Density adjustment can be carried out on site with this parameter. The density adjustment values are thus recalculated and stored in the measuring system. This ensures that the values dependent on density calculations (e.g. volume flow) are as accurate as possible. ✎ Note! Before carrying this out, please refer to the Operating Instructions *PROline promass 80*, PROFIBUS-PA, BA072D/06/en for a detailed description of the procedure for density adjustment. **1-point density adjustment (with one fluid)** This type of density adjustment is necessary under the following conditions: • The sensor does not exactly measure the density value which the operator expects based on laboratory trials. • The characteristics of the fluid are outside the measuring points set at the factory or reference conditions under which the device has been calibrated. • The plant is used solely for measuring a fluid whose density is to be determined very accurately under constant conditions. **Options:** CANCEL START **Factory setting:** CANCEL	X	X	O
RESTORE ORIGINAL (V5H4)	**DENSITY_ADJ_ REST_ ORIG**	Use this parameter to load the original density coefficients determined at the factory. **Options:** NO YES **Factory setting:** NO	X	X	O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
PROFIBUS-DP/-PA (V6...)					
WRITE PROTECTION (V6H0)	**—**	Shows whether the 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! Hardware write protection is activated and deactivated by means of a jumper on the I/O module, (see Operating Instructions *PROline promass 80*, PROFIBUS-PA, BA072D/06/en).	X		O
SELECTION GSD (V6H1)	**—**	✎ 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 set system unit and the OUT unit (output unit) is displayed in the OUT_UNIT parameter. The preset system units are listed in the Operating Instructions for *PROline Promass 80 (PROFIBUS-PA)*, BA 072D/06/en/. **Options** CANCEL YES (SET UNITS) **Factory setting:** CANCEL ☝ Attention! Activating this function can cause the OUT value to change suddenly; this, in turn, can affect subsequent control routines.	X	X	O

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
BLOCK SELECTION (V6H3)	**PROFIBUS_ BLOCK_ SELECTION**	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 ANALOG INPUT 3 ANALOG INPUT 4 **Factory setting:** ANALOG INPUT 1	x	x	o
OUT_VALUE (V6H4)	**PROFIBUS_ OUT_VALUE**	Use this parameter to display the OUT (output) value of the Analog Input function block selected in the BLOCK SELECTION parameter; the value is displayed complete with unit.	x		o
OUT_STATUS (V6H5)	**—**	Use this parameter to display the OUT (output) status in hexadecimal notation. The individual status values are explained in the Operating Instructions for *PROline Promass 80 (PROFIBUS-PA)*, BA 072D/06/en/ . ✎ Note! This parameter cannot be viewed on the local display.	x		o
DISPLAY VALUE (V6H6)	**—**	Use this parameter to transmit a value and status calculated by a process-control system directly to the Promas 80 PROFIBUS-PA. 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
DISPLAY VALUE STATUS (V6H7)	**—**	Use this parameter to display the Status display value in hexadecimal notation. The individual status values are explained in the Operating Instructions for *PROline Promass 80 (PROFIBUS-PA)*, BA 072D/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 (and Commuwin II) and local display.	x	x	o
PROFILE VERSION (V7H1)	**—**	Use this parameter to view the profile version.	x		o
ACTUAL_ BAUDRATE (V7H2)	**PROFIBUS_ 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)	**PROFIBUS_ DEVICE_ID**	Use this parameter to view the manufacturer-specific device ID. **Display:** 1528 Hex ✎ Note! If the option PROFILE-GSD was selected in the Selection GSD (V6H1) parameter or in the SELECTION GSD function , the PROFILE ID = 9742 Hex is displayed in this parameter.	x		o
CHECK CONFIGURATION (V7H4)	**PROFIBUS_ CHECK_CONFIG**	Use this parameter to check whether the configuration of a class 1 master has been accepted for cyclic data exchange in Promas 80 PROFIBUS-PA. **Display:** ACCEPTED (configuration accepted) NOT ACCEPTED (configuration not accepted)	x		o

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SYSTEM PARAMETER (V8...)					
INSTALLATION DIRECTION SENSOR (V8H0)	**—**	Use this parameter to reverse the sign of the flow variable, 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
DENSITY DAMPING (V8H1)	**SYSTEM_ DENSITY_ DAMPING**	The density filter allows the sensitivity of the density measuring signal to be lowered with respect to variations in the density of the fluid, e.g. with inhomogeneous liquids. The damping acts on all functions and outputs of the measuring device. **User input:** max. 5-digit number, including unit: 0.00...100.00 s **Factory setting:** 0.00 s	x	x	o
FLOW DAMPING (V8H2)	**SYSTEM_FLOW_ DAMPING**	Setting the filter depth of the digital filter. The sensitivity of the flow measurement signal can be reduced with respect to interference peaks; e.g. with fluid containing solids or gas bubbles, etc. The system reaction time increases with the filter setting. The damping acts on all functions and outputs of the measuring device. **User input:** 0...100 s **Factory setting:** 0 s	x	x	o
POSITIVE ZERO RETURN (V8H3)	**SYSTEM_ 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 ON (Signal output is set to the “ZERO FLOW” value, temperature and density are still output) **Factory setting:** OFF	x	x	o

Transducer block (device matrix)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MEASURING POINT (VA...)					
TAG NAME (VAH0)	—	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 marks **Factory setting:** "_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _" (no 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

Transducer block (sensor data)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
USER INTERFACE (V2...)					
ACCESS CODE (V2H0)	**LOCK_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 (factory setting = **80**, 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)	**LOCK_PRIVATE_ CODE**	Use this parameter to enter a personal code number for enabling programming. **User input:** 0...9999 (max. 4-digit number) **Factory setting:** 80 ✎ 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 this parameter is not available; this precaution prevents others from accessing your personal code.	x	x	o
STATUS ACCESS (V2H2)	**LOCK_ACCESS_ STATUS**	Use this parameter to check the access status for the manufacturer-specific parameters. **Display:** CUSTOMER (parameterisation enabled) LOCKED (parameterisation disabled)	x		o

Transducer block (sensor data)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SENSOR DATA (V3...)					
K-FACTOR (V3H0)	**—**	The calibration factor is determined and set at the factory. **Factory setting:** Depends on nominal diameter and calibration	X		O
ZERO POINT (V3H1)	**—**	This function shows the current zero-point correction value for the sensor. **User interface:** max. 5-digit number: -99999...+99999 **Factory setting:** Depends on calibration	X		O
NOMINAL DIAMETER (V3H2)	**—**	This function shows the nominal diameter for the sensor. **Factory setting:** depends on the size of the sensor	X		O
UNIT LENGTH (V3H4)	**—**	Use this parameter to select the unit for displaying the unit of length for nominal diameter. **Options:** MILLIMETER INCH **Factory setting:** MILLIMETER	X		O
FLOW COEFFICIENT (V4...)					
TEMPERATURE COEFFICIENT KM (V4H0)	**S_DATA_FLOW_ COEFF_KM**	This parameter shows the temperature coefficient KM.	X		M
TEMPERATURE COEFFICIENT KM2 (V4H1)	**S_DATA_FLOW_ COEFF_KM2**	This parameter shows the temperature coefficient KM 2.	X		M
TEMPERATURE COEFFICIENT KT (V4H2)	**S_DATA_FLOW_ COEFF_KT**	This parameter shows the temperature coefficient KT.	X		M
CALIBRATION-COEFFICIENT KD 1 (V4H3)	**S_DATA_FLOW_ COEFF_KD1**	This parameter shows the calibration coefficient KD 1.	X		M
CALIBRATION COEFFICIENT KD 2 (V4H4)	**S_DATA_FLOW_ COEFF_KD2**	This parameter shows the calibration coefficient KD 2.	X		M

Transducer block (sensor data)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
DENSITY COEFFICIENT (V5...)					
DENSITY-COEFFICIENT C 0 (V5H0)	**S_DATA_DENSITY_COEFF_C 0**	This parameter shows the actual density coefficient C 0. Attention! A density adjustment can alter the calibration value of this coefficient.	X		M
DENSITY-COEFFICIENT C 1 (V5H1)	**S_DATA_DENSITY_COEFF_C 1**	This parameter shows the actual density coefficient C 1. Attention! A density adjustment can alter the calibration value of this coefficient.	X		M
DENSITY-COEFFICIENT C 2 (V5H2)	**S_DATA_DENSITY_COEFF_C 2**	This parameter shows the actual density coefficient C 2. Attention! A density adjustment can alter the calibration value of this coefficient.	X		M
DENSITY-COEFFICIENT C 3 (V5H3)	**S_DATA_DENSITY_COEFF_C 3**	This parameter shows the actual density coefficient C 3. Attention! A density adjustment can alter the calibration value of this coefficient.	X		M
DENSITY-COEFFICIENT C 4 (V5H4)	**S_DATA_DENSITY_COEFF_C 4**	This parameter shows the actual density coefficient C 4. Attention! A density adjustment can alter the calibration value of this coefficient.	X		M
DENSITY-COEFFICIENT C 5 (V5H5)	**S_DATA_DENSITY_COEFF_C 5**	This parameter shows the actual density coefficient C 5. Attention! A density adjustment can alter the calibration value of this coefficient.	X		M
ADDITIONAL COEFFICIENTS (V6...)					
MINIMUM MEASURING TUBE TEMPERATURE (V6H0)	**S_DATA_MIN_TEMP_MEAS**	This parameter shows the lowest fluid temperature yet measured.	X		M
MAXIMUM MEASURING TUBE-TEMPERATURE (V6H1)	**S_DATA_MAX_TEMP_MEAS**	This parameter shows the highest fluid temperature yet measured.	X		M
MINIMUM CARRIER TUBE TEMPERATURE (V6H2)	**S_DATA_MIN_TEMP_CARR**	This parameter shows the lowest carrier tube temperature yet measured.	X		M
MAXIMUM CARRIER TUBE TEMPERATURE (V6H3)	**S_DATA_MAX_TEMP_CARR**	This parameter shows the highest carrier tube temperature yet measured.	X		M

Transducer block (sensor data)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MEASURING POINT (VA...)					
TAG NAME (VAH0)	—	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 marks **Factory setting:** "_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _" (no 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

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
USER INTERFACE (V2...)					
ACCESS CODE (V2H0)	**LOCK_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 (factory setting = **80**, 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)	**LOCK_PRIVATE_ CODE**	Use this parameter to enter a personal code number for enabling programming. **User input:** 0...9999 (max. 4-digit number) **Factory setting:** 80 ✎ 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 this parameter is not available; this precaution prevents others from accessing your personal code.	x	x	o
STATUS ACCESS (V2H2)	**LOCK_ACCESS_ STATUS**	Use this parameter to check the access status for the manufacturer-specific parameters. **Display:** CUSTOMER (parameterisation enabled) LOCKED (parameterisation disabled)	x		o

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
USER INTERFACE FUNCTIONS (V3...)					
LANGUAGE (V3H0)	**LANGUAGE**	Use this parameter to select the language for all texts and parameters shown on the display. **Options:** ENGLISH DEUTSCH FRANCAIS ESPANOL ITALIANO JAPANESE (syllabic) **Factory setting:** depends on country	x	x	o
DISPLAY DAMPING (V3H1)	**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
LCD CONTRAST (V3H2)	**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 (V4H0)	**HMI_MAIN_L_ ASSIGN**	Use this parameter to define the reading assigned to the main line (the top line of the local display) which should be displayed during normal operation. **Options:** OFF MASS FLOW MASS FLOW IN % VOLUME FLOW VOLUME FLOW IN % DENSITY TEMPERATURE AI1 - OUT VALUE AI2 - OUT VALUE AI3 - OUT VALUE AI4 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE **Factory setting:** MASS FLOW ✎ Note! If the option PROFILE-GSD was selected in the SELECTION GSD function or via Commuwin II (in the Selection GSD parameter, Transducer block, V6H1), the following options are **not** available: AI4 - OUT VALUE, AO - DISP. VALUE	x	x	o
100% VALUE (V4H1)	**HMI_MAIN_L_100_ VALUE**	✎ Note! This function is not available unless • one of the following options was selected in the ZUORDNUNG ZEILE 1 function: MASS FLOW IN % VOLUME FLOW IN % or • one of the following options was selected in the ZUORDNUNG ZEILE 2 function: MASS FLOW IN % VOLUME FLOW IN % MASS FLOW BARGRAPH IN % VOLUME FLOW BARGRAPH 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 (V4H2)	**HMI_MAIN_L_ FORMAT**	Use this parameter to define the maximum number of places after the decimal point for the value displayed. **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 systems 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
ADDITIONAL LINE (V6...)					
ASSIGN (V6H0)	**HMI_ADD_L_ ASSIGN**	Use this parameter to define the reading assigned to the additional line (the bottom line of the local display) which should be displayed during normal measuring operation. **Options:** OFF MASS FLOW MASS FLOW IN % VOLUME FLOW VOLUME FLOW IN % DENSITY TEMPERATURE MEASURING POINT DESIGNATION OPERATING/SYSTEM CONDITION FLOW DIRECTION MASS FLOW BARGRAPH IN % VOLUME FLOW BARGRAPH IN % AI1 - OUT VALUE AI2 - OUT VALUE AI3 - OUT VALUE AI4 - OUT VALUE AO - DISP. VALUE TOT1 - OUT VALUE **Factory setting:** TOT1 - OUT VALUE (Totalizer) ✎ Note! If the option PROFILE-GSD was selected in the SELECTION GSD function or via Commuwin II (in the Selection GSD parameter, Transducer block, V6H1), the following options are **not** available: AI4 - OUT VALUE, AO - DISP. VALUE	x	x	o

Transducer block (display functions)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MEASURING POINT (VA...)					
TAG NAME (VAH0)	—	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 marks **Factory setting:** "_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _" (no 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 SYSTEM CONDITION (V0H0)	**ACTUAL_ERROR_ CODE**	Use this parameter to check the current system condition. **Display:** "SYSTEM OK" or the fault / notice message with the highest priority. ✎ Note! The explanations, causes and troubleshooting routines are provided in the Operating Instructions *PROline promass 80*, PROFIBUS-PA, BA072D/06/en, .	X		O
SYSTEM RESET (V0H2)	**SYSTEM_RESET**	Use this parameter to reset the measuring system. **Options:** NO RESTART SYSTEM (restart without interrupting mains supply) **Factory setting:** NO	X	X	O
ALARM DELAY (V0H3)	**DIAG_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-PA communication output **User input:** 0...100 s (in steps of one second) **Factory setting:** 0 s ☝ Attention! 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 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)	**LOCK_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 (factory setting = **80**, 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)	**LOCK_PRIVATE_ CODE**	Use this parameter to enter a personal code number for enabling programming. **User input:** 0...9999 (max. 4-digit number) **Factory setting:** 80 ✎ 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 this parameter is not available; this precaution prevents others from accessing your personal code.	x	x	o
STATUS ACCESS (V2H2)	**LOCK_ACCESS_ STATUS**	Use this parameter to check the access status for the manufacturer-specific parameters. **Display:** CUSTOMER (parameterisation enabled) LOCKED (parameterisation disabled)	x		o

Transducer block (Service&Analysis)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SIMULATION (V4...)					
SIMULATION MEASURAND (V4H0)	**SIM_MEASURAND**	Use this parameter to simulate the output of the Transducer block as a way of testing response. During this time, the words “SIMULATION MEASURAND” appear on the local display. Simulation affects all AI (Analog Input) blocks and TOT 1-3 (totalizer 1-3) blocks. **Options:** OFF MASS FLOW VOLUME FLOW CORRECTED VOLUME FLOW DENSITY REFERENCE DENSITY TEMPERATURE **Factory setting:** OFF ✎ Note! If you also want to display the unit of the simulated measured value, you can use the SET_UNIT_TO _BUS parameter (siehe S. 55) to transmit 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 via the UNIT_TOT parameter (siehe S. 100). In the AI (Analog Input) blocks you can use the OUT_UNIT parameter (siehe S. 87) to select a unit which, however, has no effect on measured-value scaling. ☝ Attention! • 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 SIMULATION MEASURAND (V4H1)	**SIM_VALUE**	✎ Note! This parameter is not displayed 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 ☝ Attention! 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**
SIMULATION 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 AI (Analog Input) or TOT (totalizer), (see the function description of the function block in question).	X	X	O
SENSOR INFO (V6...)					
SERIAL NUMBER (V6H0)	**—**	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
AMPLIFIER INFO (V7...)					
SW REVISION NUMBER AMPLIFIER (V7H2)	**SW_REV_AMP**	Use this function to view the software revision number of the amplifier.	X		O
SW REVISION-NUMBER 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
INFO I/O MODULE (V8...)					
I/O MODULE 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
I/O MODULE SW REVISION-NUMBER (V8H3)	**SW-REV_I/O**	Use this function to display 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)	—	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 marks **Factory setting:** "_ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _" (no 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

Transducer block (Using the profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
MASS FLOW (V1...)					
MASS FLOW (V1H0)	**MASS_FLOW**	Use this parameter to display the current measured value of the first process variable (mass flow) made available to the Analog Input block 1 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; etc.)	X		M
STATUS (V1H1)	**—**	Use this parameter to display the current status of the first process variable (mass flow) made available to the Analog Input block 1 as an input value.	X		M
UNIT (V1H2)	**MASS_FLOW_ UNITS**	Use this parameter to select the displayed unit for the mass flow. **Options:** kg/s lb/s **Factory setting:** kg/s ✎ Note! Only the units defined in the 3.0 profiles are available.	X	X	M
LIMIT LOW (V1H3)	**MASS_FLOW_LO_L IMIT**	Use this parameter to enter the measuring device's lower range value for mass flow.	X	X	M
LIMIT HIGH (V1H4)	**MASS_FLOW_HI_ LIMIT**	Use this parameter to enter the measuring device's upper range value for mass flow.	X	X	M

Transducer block (Using the profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
DENSITY (V2...)					
DENSITY (V2H0)	**DENSITY**	Use this parameter to display the current measured value of the third process variable (density) made available to the Analog Input block 3 as an input value. **Display:** 5-digit floating-point number, incl. unit, (corresponds to 0.1...6.0 kg/dm^3) e.g. 1.2345 kg/dm^3; 993.5 kg/m^3; etc.	X		M
STATUS (V2H1)	**—**	Use this parameter to display the current status of the third process variable (density) made available to the Analog Input block 3 as an input value.	X		M
UNIT (V2H2)	**DENSITY_UNITS**	Use this parameter to select the displayed unit for the density. **Options:** kg/l lb/ft^3 **Factory setting:** kg/l ✎ Note! Only the units defined in the 3.0 profiles are available.	X	X	M
LIMIT LOW (V2H3)	**DENSITY_LO_LIMIT**	Use this parameter to enter the measuring device's lower range value for density.	X	X	M
LIMIT HIGH (V2H4)	**DENSITY_HI_LIMIT**	Use this parameter to enter the measuring device's upper range value for density.	X	X	M

Transducer block (Using the profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
TEMPERATURE (V3...)					
TEMPERATURE (V3H0)	**TEMPERATURE**	Use this parameter to display the current measured value of the fourth process variable (temperature) made available to the Analog Input block 4 as an input value. **Display:** max. 4-digit fixed-point number, incl. unit and sign, (e.g. -23.4 °C; 160.0 °F; 295.4 K; etc.)	X		M
STATUS (V3H1)	**—**	Use this parameter to display the current status of the fourth process variable (temperature) made available to the Analog Input block 4 as an input value.	X		M
UNIT (V3H2)	**TEMPERATURE_ UNITS**	Use this parameter to select the displayed unit for the temperature. **Options:** °C (Celsius) K (Kelvin) °F (Fahrenheit) **Factory setting:** K ✎ Note! Only the units defined in the 3.0 profiles are available.	X	X	M
LIMIT LOW (V3H3)	**TEMPERATURE_ LO_LIMIT**	Use this parameter to enter the measuring device's lower range value for temperature.	X	X	M
LIMIT HIGH (V3H4)	**TEMPERATURE_ HI_LIMIT**	Use this parameter to enter the measuring device's upper range value for temperature.	X	X	M

Transducer block (Using the profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
SYSTEM PARAMETER (V7...)					
MEASUREMENT MODE (V7H0)	**MEASUREMENT_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 CUT OFF (V7H2)	**LOW_FLOW_CUTOFF**	Use this parameter to assign a value to the on-value for low flow cut off. If you enter a value not equal to 0 low flow cut off 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 ADJUSTMENT (V7H4)	**ZERO_POINT_ADJUST**	Use this parameter to activate zero point adjustment. **Options:** CANCEL EXECUTE **Factory setting:** CANCEL	X	X	M

Transducer block (Using the profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
ZERO POINT UNIT (V7H5)	**ZERO_POINT_UNIT**	Use this parameter to enter the unit for zero point adjustment. **Options:** mm/s **Factory setting:** mm/s	X	X	M
CALIBRATION 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 ☝ Attention! Do not change this value, because a change will affect the accuracy of the measuring device.	X	X	M
NOMINAL SIZE (V7H7)	**NOMINAL_SIZE**	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
NOMINAL SIZE UNIT (V7H8)	**NOMINAL_SIZE_ UNIT**	Use this parameter to select the unit of the nominal diameter. **Options:** MM INCH **Factory setting:** MM	X	X	M

Transducer block (Using the profile parameters)					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
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 operating mode is selected. Only the automatic mode can be selected for the Transducer block. **Options:** AUTO **Factory setting:** AUTO	X	X	M
ACTUAL (V8H1)	—	Displays the current operating mode. **User interface:** AUTO	X		M
NORMAL (V8H2)	—	Displays the operating mode for normal operation. **User interface:** AUTO	X		M
PERMITTED (V8H3)	—	Displays the permissible operating modes. **User interface:** AUTO	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

Transducer block (Using the profile parameters)					
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 parameters (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_SUM (CURRENT)**	Use this parameter to view the current alarms of the measuring device.	X		M
DISABLE (V9H1)	**ALARM_SUM (DISABLE)**	Use this parameter to view the acknowledged alarms of the measuring device.	X		M
UNACKNOWL-EDGED (V9H2)	**ALARM_SUM (UNACKNOWL-EDGED)**	✎ Note! This parameter is not available in this profile version.			
UNREPORTED (V9H3)	**ALARM_SUM (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 whose values 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:** "_ _ _ _ _ _ _ _" no 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

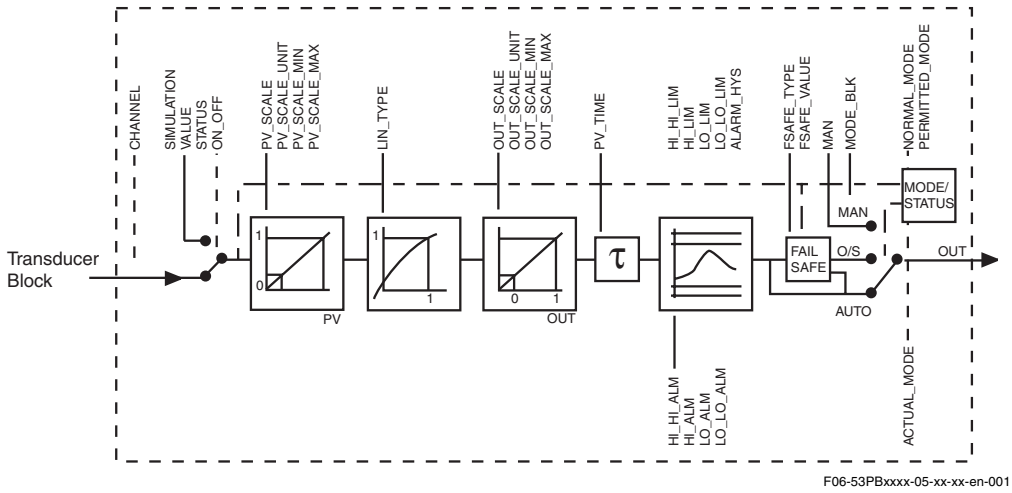
The function blocks contain the basic automation functions of the measuring device. We distinguish between different function blocks, e.g. Analog Input function block, Analog Output function block, totalizer block, etc.
Each of these function blocks is used to execute different application functions. 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 parameters which are internally available. 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 (mass volume, volume flow, density, and temperature) are prepared by the Transducer block for the subsequent automation functions, (e.g. scaling and limit value processing). Four Analog Input function blocks are available to the Promas 80 PROFIBUS-PA.

5.1 Signal processing

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



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.
- Mass flow → Analog Input function block 1 (AI 1)
- Volume flow → Analog Input function block 2 (AI 2)
- Density → Analog Input function block 3 (AI 3)
- Temperature → Analog Input function block 4 (AI 4)

The parameter group SIMULATE, (see page 91), 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 88) a filter time can be specified for damping the converted primary value (PV). If a time of 0 seconds is specified, the input value is not damped.
The BLOCK_MODE parameter group, (see page 92), 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 85), 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 most important functions and parameters of the Analog Input function block are listed below; you will find an overview of all the parameters available from page 85 onwards.

5.2 Selecting the operating mode

The operating mode is set by means of the BLOCK_MODE parameter group, (see page 92). 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 unit for volume 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 effect on the subsequent control routine.
If you want the change of unit to affect the measured value, you can activate the SET_UNIT_TO_BUS function (manufacturer-specific, see page 55) by means of the local display or by Commuwin II.
Another way of changing the unit is to use the PV SCALE and OUT SCALE parameters, (see page 83 “Scaling 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 on status code and system/process error messages in the Operating Instructions *PROline Promass 80 (PROFIBUS-PA)*, BA 072D/06/en/).

5.5 Simulation of the input and output

Various 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 91), 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 92), to MAN and specify the desired output value directly in the OUT parameter, (see page 85).

5.6 Error response (FAILSAFE_TYPE)

If an input or simulation value has the status BAD, the Analog Input function block uses the response defined in the FAILSAFE_TYPE parameter. The FAILSAFE_TYPE parameter, (see page 86), offers the following options:

- FSAFE VALUE
  The value defined in the FAILSAFE_VALUE parameter (see page 86) is used for further processing.

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

- WRONG VALUE
  The current value is used for further 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 kg/h
- The measurement range of the device is 0...30 kg/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.

- PV_SCALE parameter group, (see page 86)

  PV_SCALE_MIN (V1H0) = 0

  PV_SCALE_MAX (V1H1) = 30

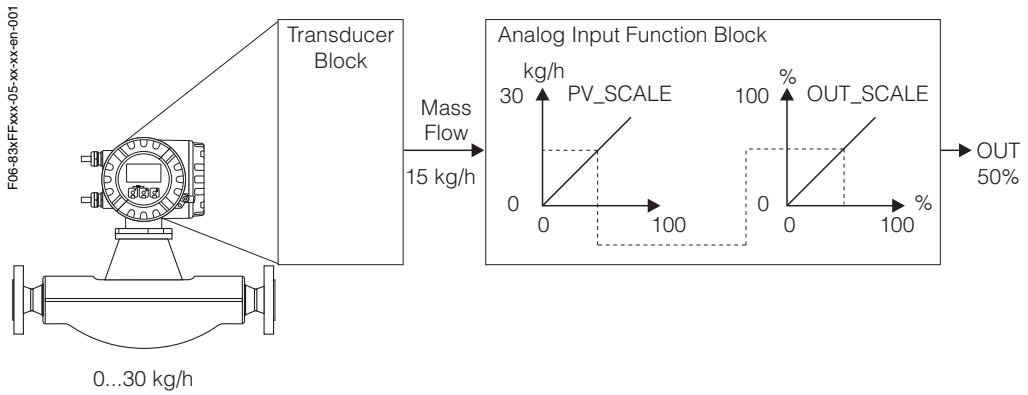
- OUT_SCALE parameter group, (see page 87)

  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 kg/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 early-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 89).

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 90)	– HI_LIM	(see page 90)
– LO_LO_LIM	(see page 91)	– LO_LIM	(see page 90)

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 90)	– HI_ALM	(see page 90)
– LO_LO_ALM	(see page 91)	– LO_ALM	(see page 90)

5.10 Analog Input function block parameters

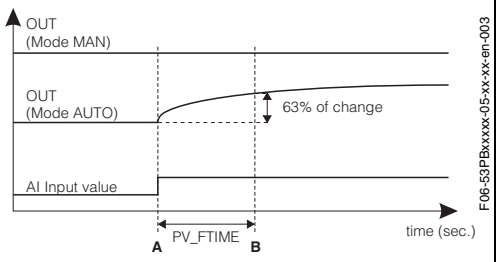
The following table shows all the parameters available for the Analog Input function block.

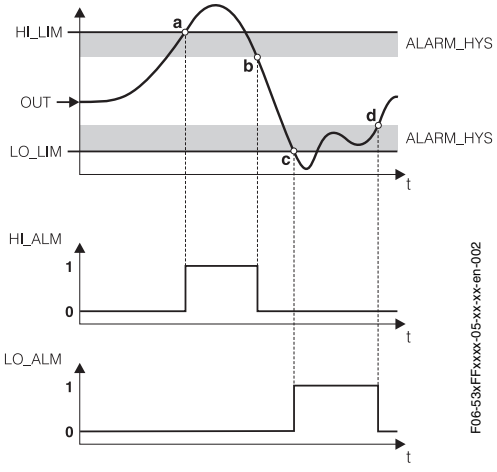
Abbreviations used in the table:
- R = Read
- W = Write
- P = Parameter, with a distinction between:
  – M = "Must" (obligatory) parameter
  – O = Optional parameter

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 outputstatus. ✎ 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. **User interface:** GOOD UNCERTAIN BAD	X		M
OUT_SUB_ STATUS (V0H3)	**OUT (STATUS BIT 2-5)**	Displays the sub-status in plain text.	X		M
OUT_LIMIT (V0H4)	**OUT (LIMITS BIT 6-7)**	Displays the limit overshoot in plain text. **User interface:** 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 MODE (automaticmode). **Options:** • FSAFE VALUE If you select this option the value entered 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. The status is set to UNCERTAIN – LAST USABLE VALUE. If no previous valid value is available, the initial value is returned with the status UNCERTAIN – INITIAL VALUE (for values that were not saved when the device was reset). The initial value of the Promas 80 PROFIBUS-PA 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**	Use this parameter to enter a default value 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 scaling the input value on page 83.				
PV_SCALE_MIN (V1H0)	**EU OF 0**	Use this parameter to enter the lower value for input scaling. **Factory setting:** 0	X	X	M
PV_SCALE_MAX (V1H1)	**EU OF 100**	Use this parameter to enter 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! Linearisation cannot be set with Promas 80 PROFIBUS-PA .	X	X	M

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
OUT_SCALE	Use the OUT_SCALE parameter group to 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 nonetheless.				
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 enter the output unit. **Factory setting:** Analog Input function block 1 = kg/h Analog Input function block 2 = m^3/h Analog Input function block 3 = kg/l Analog Input function block 4 = °C ✎ 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:** (_ _ _ _) no 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 Promas 80 PROFIBUS-PA.	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**	Entry of the hysteresis value for the upper and lower early 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 OUT_SCALE parameter group in the Analog Input function block, (see page 87). • 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 exceeds 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

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
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
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 drops 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

Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
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. **User interface:** AUTO	X		M
NORMAL (V8H2)	**MODE_BLK (NORMAL)**	Displays the operating mode for normal operation. **User interface:** AUTO	X		M
PERMITTED (V8H3)	**MODE_BLK (PERMITTED)**	Displays the permissible operating modes. **User interface:** AUTO	X		M
CHANNEL (V8H5)	**CHANNEL**	Use this parameter for assignment between the logical hardware channel of the Transducer block and the input of the Analog Input function block. The Transducer block of the Promas 80 PROFIBUS-PA makes a process variable available to the input channel of the Analog Input function blocks. They are: **AI 1** (Analog Input 1) → **Mass flow** **AI 2** (Analog Input 2) → **Volume flow** **AI 3** (Analog Input 3) → **Density** **AI 4** (Analog Input 4) → **Temperature** ✎ Note! In the Promas 80 PROFIBUS-PA, the channel is permanently assigned and cannot be changed via 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

Analog Input function 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 parameters (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 the current alarms of the measuring device.	X		M
DISABLE (V9H1)	**ALARM_ SUMMARY (DISABLE)**	Use this parameter to view 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 whose values 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:** "_ _ _ _ _ _ _ _" no 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

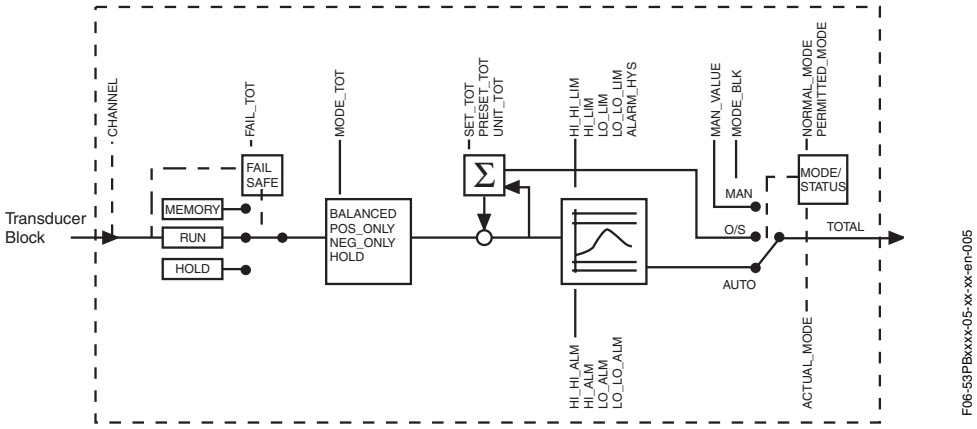
Analog Input function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
PROFILE_ VERSION (VAH3)	**—**	Displays the profile version implemented in the device. **User interface:** 30	X		O
BATCH (VAH4-7)	Batch is a structured parameter consisting of four elements. This parameter is used in batch applications compliant with EC 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 input channels that are used. In addition, the errors that have occurred in the current batch process can be displayed.				
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)**	Use this parameter to enter the code for a formula 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 formula phase.	X	X	M
BATCH_ OPERATION (VAH7)	**BATCH (OPERATION)**	Use this parameter to write or display the existing formula.	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 Promas 80 PROFIBUS-PA, the variables are mass flow and volume flow.
Like the Analog Input function block, the totalizer receives its input value from a Transducer block.

6.1 Signal processing

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



The totalizer function block receives its input value (mass flow measured variable) from the Transducer block.
The CHANNEL parameter, (see page 104), is used to select whether the input value should be processed by the Totalizer function block. The following settings can be made with Commuwin II and the local display:

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

The MODE_BLK parameter group (page 103) 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 most important functions and parameters of the Totalizer function block are listed below; you will find an overview of all the parameters available from page 98 onwards.

6.2 Selecting the operating mode

The operating mode is set by means of the BLOCK_MODE parameter group, (see page 103). 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. The manufacturer-specific SET UNIT TO BUS function is also 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 on status code and system/process error messages in the Operating Instructions *PROline promass 80*, PROFIBUS-PA, BA072D/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 99), 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 100), 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 examples dealing with system integration and configuration in the Operating Instructions for *PROline Promass 80 (PROFIBUS-PA)*, BA 072D/06/en/.

6.7 Setting for the totalizer SET TOT

Use the SET_TOT parameter, (see page 100), 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 sets it to the preset value, respectively, 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 active in the default for the SET_TOT parameter.

You will find information on integration into a process-control system in the examples dealing with system integration and configuration in the Operating Instructions for *PROline Promass 80 (PROFIBUS-PA)*, BA 072D/06/en/.

6.8 Limit values

You can set two early-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 101).

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 102) – HI_LIM (see page 102)
– LO_LO_LIM (see page 103) – LO_LIM (see page 102)

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 102) – HI_ALM (see page 102)
  – LO_LO_ALM (see page 103) – LO_ALM (see page 102)

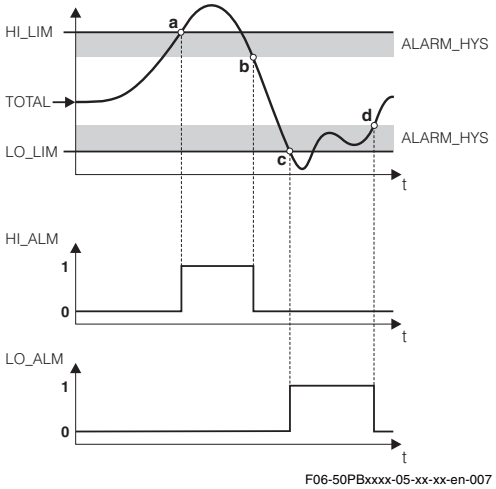
6.10 Totalizer function block parameters

The following table shows all the parameters available for 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 outputstatus. ✎ 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. **User interface:** 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. **User interface:** 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 MODE (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:** Metric → cm^3; dm^3; m^3; ml; l; hl; Ml US → cc; af; (cft) ft^3; (flo) 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	X	X	M
SET_TOTALIZER (V1H1)	**SET_TOT**	Use this parameter to assign a status 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 for the totalizer. The totalizer does not accept this value unless the "PRESET" option was selected beforehand in 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 entering 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.  F06-50PBxxxx-05-xx-xx-en-007	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

Totalizer function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
ALARM_STATE (V5H2)	**LO_ALM (ALARM_STATE)**	Use this parameter to view the current status of the LO_ALARM.	X		O
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. **User interface:** AUTO	X		M
NORMAL (V8H2)	**MODE_BLK (NORMAL)**	Displays the operating mode for normal operation. **User interface:** AUTO	X		M
PERMITTED (V8H3)	**MODE_BLK (PERMITTED)**	Displays the permissible operating modes. **User interface:** AUTO	X		M

Totalizer function block					
Matrix text (Commuwin II)	**Parameter (SLOT/INDEX)**	**Description**	**R**	**W**	**P**
CHANNEL (V8H5)	**CHANNEL**	Use this parameter for assignment between the logical hardware channel of the Transducer block and the input of the Totalizer block. The Transducer block of the Promas 80 PROFIBUS-PA provides a process variable to the input channel of the Totalizer function block. **Options:** OFF MASS FLOW VOLUME 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 (m3).	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 parameters (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 the current alarms of the measuring device.	X		M
DISABLE (V9H1)	**ALARM_SUMMARY (DISABLE)**	Use this parameter to view the acknowledged alarms of the measuring device.	X		M
UNACKNOWL-EDGED (V9H2)	**ALARM_SUMMARY (UNACKNOWL-EDGED)**	✎ Note! Parameter is not available in this profile version.			
UNREPORTED (V9H3)	**ALARM_SUMMARY (UNREPORTED)**	✎ Note! 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 whose values 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 clear identification and assignment of the block. **Factory setting:** "_ _ _ _ _ _ _ _" no 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. **User interface:** 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 input channels that are used. In addition, the errors that have occurred in the current batch process can be displayed.				
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)**	Use this parameter to enter the code for a formula 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 formula phase.	X	X	M
BATCH_ OPERATION (VAH7)	**BATCH (OPERATION)**	Use this parameter to write or show the current formula.	X	X	M

7 Slot / Index lists

7.1 General explanatory remarks

Abbreviations used in the Slot / Index lists:
- E+H Matrix → the number of the page on which you will find the explanation of the parameter.
  Parameter fields in a gray ■ background indicate manufacturer-specific parameters.

- 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	C
ST_REV	p. 44	17	X	–	Simple	M	Unsigned16	2	N
TAG_DESC	p. 44	18	X	X	Simple	M	Octet String	32	W
STRATEGY	p. 44	19	X	X	Simple	M	Unsigned16	2	W
ALERT_KEY	p. 44	20	X	X	Simple	M	Unsigned8	1	W
TARGET_MODE	p. 43	21	X	X	Simple	M	Unsigned8	1	W
MODE_BLK	p. 43	22	X	–	Record	M	DS-37	3	D
ALARM_SUM	p. 44	23	X	–	Record	M	DS-42	8	D
SOFTWARE_REVISION	p. 40	24	X	–	Simple	M	Octet String	16	Cst
HARDWARE_REVISION	p. 40	25	X	–	Simple	M	Octet String	16	Cst
DEVICE_MAN_ID	p. 40	26	X	–	Simple	M	Unsigned16	2	Cst
DEVICE_ID	p. 39	27	X	–	Simple	M	Octet String	16	Cst
DEVICE_SER_NUM	p. 39	28	X	–	Simple	M	Octet String	16	Cst
DIAGNOSIS	p. 43	29	X	–	Simple	M	Octet String	4	D
DIAGNOSIS_EXT	p. 43	30	X	–	Simple	O	Octet String	6	D
DIAGNOSIS_MASK	p. 42	31	X	–	Simple	M	Octet String	4	Cst

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Physical block slot 0 (Contd)									
DIAGNOSIS_MASK_EXTENS	p. 42	32	X	–	Simple	O	Octet String	6	Cst
DEVICE_CERTIFICATION	p. 40	33	X	–	Simple	O	Octet String	32	Cst
WRITE_LOCKING	p. 41	34	X	X	Simple	O	Unsigned16	2	N
FACTORY_RESET	p. 40	35	X	X	Simple	O	Unsigned16	2	W
DESCRIPTOR	p. 40	36	X	X	Simple	O	Octet String	32	W
DEVICE_MESSAGE	p. 40	37	X	X	Simple	O	Octet String	32	W
DEVICE_INSTAL_DATE	p. 40	38	X	X	Simple	O	Octet String	16	W
not used	–	39	–	–	–	–	–	–	–
IDENT_NUMBER_SELECTOR	p. 42	40	X	X	Simple	O	Unsigned8	1	W
HW_WRITE_PROTECTION	p. 41	41	X	–	Simple	O	Unsigned8	1	D
not used	–	42 - 48	–	–	–	–	–	–	–
ACTUAL_ERROR_CODE	p. 69	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	UpDowData	20	D
DEV_BUS_ADDR	p. 57	54	X	–	Simple	O	Unsigned8	1	D
not used	–	55	–	–	–	–	–	–	–
SET_UNIT_TO_BUS	p. 55	56	X	X	Simple	O	Unsigned8	1	N
LOCAL_DISPLAY_INPUT	–	57	X	–	Record	O	DS-33	5	D
not used	–	58	–	–	–	–	–	–	–
MEASID	–	59	X	–	Simple	O	Unsigned8	1	D
SERIAL_NUM	p. 39	60	X	X	Simple	O	OctetString	16	W
SENSOR_TYPE	p. 72	61	X	X	Simple	O	OctetString	16	W
HW_REV_SENSOR	–	62	X	X	Simple	O	OctetString	16	W
HW_IDENT_SENSOR	–	63	X	X	Simple	O	OctetString	16	W
PROD_NUM_SENSOR	–	64	X	X	Simple	O	OctetString	16	W
SW_REV_S_DAT	–	65	X	X	Simple	O	OctetString	16	W
HW_REV_AMP	p. 72	66	X	X	Simple	O	OctetString	16	W
HW_IDENT_AMP	–	67	X	X	Simple	O	OctetString	16	W
SW_REV_AMP	–	68	X	X	Simple	O	OctetString	16	W
SW_IDENT_AMP	–	69	X	X	Simple	O	OctetString	16	W
PROD_NUM_AMP	–	70	X	X	Simple	O	OctetString	16	W
IO_TYPE	p. 72	71	X	–	Simple	O	Unsigned8	1	N
HW_REV_IO	–	72	X	X	Simple	O	OctetString	16	W
HW_IDENT_IO	–	73	X	X	Simple	O	OctetString	16	W
SW_REV_IO	p. 72	74	X	X	Simple	O	OctetString	16	W
SW_IDENT_IO	–	75	X	X	Simple	O	OctetString	16	W
PROD_NUM_IO	–	76	X	X	Simple	O	OctetString	16	W
SW_REV_T_DAT	p. 72	77	X	X	Simple	O	OctetString	16	W
HMI_LANGUAGE	p. 65	78	X	X	Simple	O	Unsigned8	1	W
HMI_DAMPING	p. 65	79	X	X	Simple	O	Float	4	W
HMI_LCD_CONTRAST	p. 65	80	X	X	Simple	O	Float	4	W
VIEW_PHYSICAL BLOCK	–	81	X	X	Simple	M	Unsigned16, DS-37, DS-42, Octet-String[4]	17	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 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	C
ST_REV	p. 80	71	X	–	Simple	M	Unsigned16	2	N
TAG_DESC	p. 80	72	X	X	Simple	M	OctetString	32	W
STRATEGY	p. 80	73	X	X	Simple	M	Unsigned16	2	W
ALERT_KEY	p. 80	74	X	X	Simple	M	Unsigned8	1	W
TARGET_MODE	p. 79	75	X	X	Simple	M	Unsigned8	1	W
MODE_BLK	p. 79	76	X	–	Record	M	DS-37	3	D
ALARM_SUM	p. 80	77	X	–	Record	M	DS-42	8	D
CALIBR_FACTOR	p. 78	78	X	X	Simple	M	float	4	W
LOW_FLOW_CUTOFF	p. 77	79	X	X	Simple	M	float	4	W
MEASUREMENT_MODE	p. 77	80	X	X	Simple	M	Unsigned8	1	W
FLOW_DIRECTION	p. 77	81	X	X	Simple	M	Unsigned8	1	W
ZERO_POINT	p. 77	82	X	X	Simple	M	float	4	W
ZERO_POINT_ADJUST	p. 77	83	X	X	Simple	M	Unsigned8	1	N
ZERO_POINT_UNIT	p. 78	84	X	X	Simple	M	Unsigned16	2	W
NOMINAL_SIZE	p. 78	85	X	X	Simple	M	float	4	W
NOMINAL_SIZE_UNITS	p. 78	86	X	X	Simple	M	Unsigned16	2	W
not used	–	87-90	–	–	–	–	–	–	–
MASS_FLOW	p. 74	91	X	–	Record	M	DS-33	5	D
MASS_FLOW_UNITS	p. 74	92	X	X	Simple	M	Unsigned16	2	W
MASS_FLOW_LO_LIMIT	p. 74	93	X	X	Simple	M	float	4	W
MASS_FLOW_HI_LIMIT	p. 74	94	X	X	Simple	M	float	4	W
DENSITY	p. 75	95	X	–	Record	M	DS-33	5	D
DENSITY_UNITS	p. 75	96	X	X	Simple	M	Unsigned16	2	W
DENSITY_LO_LIMIT	p. 75	97	X	X	Simple	M	float	4	W
DENSITY_HI_LIMIT	p. 75	98	X	X	Simple	M	float	4	W
TEMPERATURE	p. 76	99	X	–	Record	M	DS-33	5	D
TEMPERATURE_UNITS	p. 76	100	X	X	Simple	M	Unsigned16	2	W
TEMPERATURE_LO_LIMIT	p. 76	101	X	X	Simple	M	float	4	W
TEMPERATURE_HI_LIMIT	p. 76	102	X	X	Simple	M	float	4	W
not used	–	103-122	–	–	–	–	–	–	–
VOLUME_FLOW	p. 47	123	X	–	Record	M	DS-33	5	D

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Transducer Block Slot 1 (Contd)									
VOLUME_FLOW_UNITS	p. 48	124	X	X	Simple	M	Unsigned16	2	W
not used	–	125 - 126	X	–	Simple	O	Unsigned8	1	D
LOCK_ACCES_CODE	p. 50	127	X	X	Simple	O	Signed16	2	N
LOCK_PRIVATE_CODE	p. 50	128	X	X	Simple	O	Signed16	2	W
LOCK_ACCES_STATUS	p. 50	129	X	–	Simple	O	Unsigned8	1	D
DIAG_ALARM_DELAY	p. 69	130	X	X	Simple	O	Float	4	W
SYSTEM_RESET	p. 69	131	X	X	Simple	O	Unsigned8	1	N
SYSTEM_PRESSURE_SHOCK_ SURPRES	–	132	X	X	Simple	O	Float	4	W
SYSTEM_DENSITY_DAMPING	p. 58	133	X	X	Simple	O	Float	4	W
SYSTEM_FLOW_DAMPING	p. 58	134	X	X	Simple	O	Float	4	W
SYSTEM_POSITIVE_ZERO_- RETURN	p. 58	135	X	X	Simple	O	Unsigned8	1	N
PROFIBUS_BLOCK_ SELECTION	p. 56	136	X	X	Simple	O	Unsigned8	1	W
PROFIBUS_OUT_VALUE	p. 56	137	X	–	Record	O	DS-33	5	N
PROFIBUS_ACTUAL_ BAUDRATE	p. 57	138	X	–	Simple	O	Unsigned8	1	N
PROFIBUS_CHECK_CONFIG	p. 57	139	X	–	Simple	O	Signed16	2	N
PROFIBUS_DEVICE_ID	p. 57	140	X	–	Simple	O	Unsigned8	1	N
LOW_FLOW_CUTOFF_ASSIGN	p. 51	141	X	X	Simple	O	Unsigned8	1	W
LOW_FLOW_CUTOFF_OFF_ VALUE	p. 51	142	X	X	Simple	O	Float	4	W
EPD_ASSIGN	p. 52	143	X	X	Simple	O	Unsigned8	1	W
EPD_LOW_VALUE	p. 52	144	X	X	Simple	O	Float	4	W
EPD_HIGH_VALUE	p. 52	145	X	X	Simple	O	Float	4	W
EPD_RESPONSE_TIME	p. 52	146	X	X	Simple	O	Float	4	W
DENSITY_ADJ_VALUE	p. 53	147	X	X	Simple	O	Float	4	W
DENSITY_ADJ_MEAS_FLUID	p. 53	148	X	X	Simple	O	Unsigned8	1	W
DENSITY_ADJ_ASSIGN	p. 54	149	X	X	Simple	O	Unsigned8	1	W
DENSITY_ADJ_REST_ORIG	p. 54	150	X	X	Simple	O	Unsigned8	1	W
SIM_MEASURAND	p. 71	151	X	X	Simple	O	Unsigned8	1	N
SIM_VALUE	p. 71	152	X	X	Simple	O	Float	4	N
SIM_FSAFE_MODE	p. 72	153	X	X	Simple	O	Unsigned8	1	N
NOMINAL_DIAMETER	–	154	X	X	Simple	O	Unsigned8	1	W
HMI_MAIN_L_ASSIGN	p. 66	155	X	X	Simple	O	Unsigned8	1	W
HMI_MAIN_L_100_VALUE	p. 66	156	X	X	Simple	O	Float	4	W
HMI_MAIN_L_FORMAT	p. 67	157	X	X	Simple	O	Unsigned8	1	W
HMI_ASSIGN_LINE_2	–	158	X	X	Simple	O	Unsigned8	1	W
not used	–	159	X	X	Simple	O	OctetString	16	W
S_DATA_MIN_TEMP_MEAS	p. 62	160	X	X	Simple	O	Float	4	W
S_DATA_MAX_TEMP_MEAS	p. 62	161	X	X	Simple	O	Float	4	W
S_DATA_MIN_TEMP_CARR	p. 62	162	X	X	Simple	O	Float	4	W
S_DATA_MAX_TEMP_CARR	p. 62	163	X	X	Simple	O	Float	4	W
S_DATA_FLOW_COEFF_KM	p. 61	164	X	X	Simple	O	Float	4	W
S_DATA_FLOW_COEFF_KM2	p. 61	165	X	X	Simple	O	Float	4	W
S_DATA_FLOW_COEFF_KT	p. 61	166	X	X	Simple	O	Float	4	W
S_DATA_FLOW_COEFF_KD1	p. 61	167	X	X	Simple	O	Float	4	W

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
Transducer Block Slot 1 (Contd)									
S_DATA_FLOW_COEFF_KD2	p. 61	168	X	X	Simple	O	Float	4	W
S_DATA_DENSITY_COEFF_C0	p. 62	169	X	X	Simple	O	Float	4	W
S_DATA_DENSITY_COEFF_C1	p. 62	170	X	X	Simple	O	Float	4	W
S_DATA_DENSITY_COEFF_C2	p. 62	171	X	X	Simple	O	Float	4	W
S_DATA_DENSITY_COEFF_C3	p. 62	172	X	X	Simple	O	Float	4	W
S_DATA_DENSITY_COEFF_C4	p. 62	173	X	X	Simple	O	Float	4	W
S_DATA_DENSITY_COEFF_C5	p. 62	174	X	X	Simple	O	Float	4	W
SERVICE_ASS_TESTPOINT	–	175	X	–	Simple	O	Float	4	N
SERVICE_TESTPOINT_VALUE	–	176	X	–	Simple	O	Float	4	N
SERVICE_MONIT_MODE	–	177	X	X	Simple	O	Unsigned8	1	W
SERVICE_MONIT_OSC_AMPL	–	178	X	X	Simple	O	Float	4	W
SERVICE_MONIT_GAIN_AMP	–	179	X	X	Simple	O	Float	4	W
SERVICE_GAS_MODE	–	180	X	X	Simple	O	Unsigned8	1	W
SERVICE_GAS_TYPE	–	181	X	X	Simple	O	Unsigned8	1	W
SERVICE_SONIC_VELOCITY	–	182	X	X	Simple	O	Float	4	W
SERVICE_T_COEF_SONIC_ VELOCITY	–	183	X	X	Simple	O	Float	4	W
COR_SERVICE_CARR_TUBE_ TEMP	–	184	X	–	Simple	O	Float	4	N
COR_S_DATA_DENSITY_ COEFF_C0_ORIG	–	185	X	–	Simple	O	Float	4	N
COR_S_DATA_DENSITY_ COEFF_C1_ORIG	–	186	X	–	Simple	O	Float	4	N
COR_S_DATA_DENSITY_ COEFF_C2_ORIG	–	187	X	–	Simple	O	Float	4	N
COR_S_DATA_DENSITY_ COEFF_C3_ORIG	–	188	X	–	Simple	O	Float	4	N
COR_S_DATA_DENSITY_ COEFF_C4_ORIG	–	189	X	–	Simple	O	Float	4	N
COR_S_DATA_DENSITY_ COEFF_C5_ORIG	–	190	X	–	Simple	O	Float	4	N
not used	–	191 - 202	–	–	–	–	–	–	–
VIEW	–	203	X	X	Simple	M	Unsigned16, DS-37, DS-42, DS-33, DS-33, DS-33	28	D

7.5 AI 1 Mass flow block slot 1

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
AI1 - Mass flow - slot 1									
not used	–	0 - 15	–	–	–	–	–	–	–
BLOCK_OBJECT	–	16	X	–	Record	M	DS-32	20	C
ST_REV	p. 93	17	X	–	Simple	M	Unsigned16	2	N
TAG_DESC	p. 93	18	X	X	Simple	M	Octet String	32	W
STRATEGY	p. 93	19	X	X	Simple	M	Unsigned16	2	W
ALERT_KEY	p. 93	20	X	X	Simple	M	Unsigned8	1	W
TARGET_MODE	p. 92	21	X	X	Simple	M	Unsigned8	1	W
MODE_BLK	p. 92	22	X	–	Record	M	DS-37	3	D
ALARM_SUM	p. 93	23	X	–	Record	M	DS-42	8	D
BATCH	p. 94	24	X	X	Record	M	DS -67	10	W
not used	–	25	–	–	–	–	–	–	–
OUT	p. 85	26	X	–	Record	M	DS-33	5	D
PV_SCALE	p. 86	27	X	X	Array	M	Float	8	W
OUT_SCALE	p. 87	28	X	X	Record	M	DS-36	11	W
LIN_TYPE	p. 86	29	X	X	Simple	M	Unsigned8	1	W
CHANNEL	p. 92	30	X	X	Simple	M	Unsigned16	2	W
not used	–	31	–	–	–	–	–	–	–
PV_FTIME	p. 88	32	X	X	Simple	M	Float	4	W
FSAFE_TYPE	p. 86	33	X	X	Simple	O	Unsigned8	1	W
FSAFE_VALUE	p. 86	34	X	X	Simple	O	Float	4	W
ALARM_HYS	p. 89	35	X	X	Simple	M	Float	4	W
not used	–	36	–	–	–	–	–	–	–
HI_HI_LIM	p. 90	37	X	X	Simple	M	Float	4	W
not used	–	38	–	–	–	–	–	–	–
HI_LIM	p. 90	39	X	X	Simple	M	Float	4	W
not used	–	40	–	–	–	–	–	–	–
LO_LIM	p. 90	41	X	X	Simple	M	Float	4	W
not used	–	42	–	–	–	–	–	–	–
LO_LO_LIM	p. 91	43	X	X	Simple	M	Float	4	W
not used	–	44 - 45	–	–	–	–	–	–	–
HI_HI_ALM	p. 90	46	X	–	Record	O	DS-39	16	D
HI_ALM	p. 90	47	X	–	Record	O	DS-39	16	D
LO_ALM	p. 90	48	X	–	Record	O	DS-39	16	D
LO_LO_ALM	p. 91	49	X	–	Record	O	DS-39	16	D
SIMULATE	p. 91	50	X	X	Record	O	DS-50	6	W
OUT_UNIT_TEXT	p. 87	51	X	X	Simple	O	Octet String	16	W
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

7.6 AI 2 Volume flow block slot 1

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
AI2 - Volume flow - slot 1									
not used	–	0 - 15	–	–	–	–	–	–	–
BLOCK_OBJECT	–	16	X	–	Record	M	DS-32	20	C
ST_REV	p. 93	17	X	–	Simple	M	Unsigned16	2	N
TAG_DESC	p. 93	18	X	X	Simple	M	Octet String	32	W
STRATEGY	p. 93	19	X	X	Simple	M	Unsigned16	2	W
ALERT_KEY	p. 93	20	X	X	Simple	M	Unsigned8	1	W
TARGET_MODE	p. 92	21	X	X	Simple	M	Unsigned8	1	W
MODE_BLK	p. 92	22	X	–	Record	M	DS-37	3	D
ALARM_SUM	p. 93	23	X	–	Record	M	DS-42	8	D
BATCH	p. 94	24	X	X	Record	M	DS -67	10	W
not used	–	25	–	–	–	–	–	–	–
OUT	p. 85	26	X	–	Record	M	DS-33	5	D
PV_SCALE	p. 86	27	X	X	Array	M	Float	8	W
OUT_SCALE	p. 87	28	X	X	Record	M	DS-36	11	W
LIN_TYPE	p. 86	29	X	X	Simple	M	Unsigned8	1	W
CHANNEL	p. 92	30	X	X	Simple	M	Unsigned16	2	W
not used	–	31	–	–	–	–	–	–	–
PV_FTIME	p. 88	32	X	X	Simple	M	Float	4	W
FSAFE_TYPE	p. 86	33	X	X	Simple	O	Unsigned8	1	W
FSAFE_VALUE	p. 86	34	X	X	Simple	O	Float	4	W
ALARM_HYS	p. 89	35	X	X	Simple	M	Float	4	W
not used	–	36	–	–	–	–	–	–	–
HI_HI_LIM	p. 90	37	X	X	Simple	M	Float	4	W
not used	–	38	–	–	–	–	–	–	–
HI_LIM	p. 90	39	X	X	Simple	M	Float	4	W
not used	–	40	–	–	–	–	–	–	–
LO_LIM	p. 90	41	X	X	Simple	M	Float	4	W
not used	–	42	–	–	–	–	–	–	–
LO_LO_LIM	p. 91	43	X	X	Simple	M	Float	4	W
not used	–	44 - 45	–	–	–	–	–	–	–
HI_HI_ALM	p. 90	46	X	–	Record	O	DS-39	16	D
HI_ALM	p. 90	47	X	–	Record	O	DS-39	16	D
LO_ALM	p. 90	48	X	–	Record	O	DS-39	16	D
LO_LO_ALM	p. 91	49	X	–	Record	O	DS-39	16	D
SIMULATE	p. 91	50	X	X	Record	O	DS-50	6	W
OUT_UNIT_TEXT	p. 87	51	X	X	Simple	O	Octet String	16	W
not used	–	52 - 60	–	–	–	–	–	–	–
AI1_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

7.7 AI 3 Density flow block slot 1

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
AI3 - Density flow - slot 1									
not used	–	0 - 15	–	–	–	–	–	–	–
BLOCK_OBJECT	–	16	X	–	Record	M	DS-32	20	C
ST_REV	p. 93	17	X	–	Simple	M	Unsigned16	2	N
TAG_DESC	p. 93	18	X	X	Simple	M	Octet String	32	W
STRATEGY	p. 93	19	X	X	Simple	M	Unsigned16	2	W
ALERT_KEY	p. 93	20	X	X	Simple	M	Unsigned8	1	W
TARGET_MODE	p. 92	21	X	X	Simple	M	Unsigned8	1	W
MODE_BLK	p. 92	22	X	–	Record	M	DS-37	3	D
ALARM_SUM	p. 93	23	X	–	Record	M	DS-42	8	D
BATCH	p. 94	24	X	X	Record	M	DS -67	10	W
not used	–	25	–	–	–	–	–	–	–
OUT	p. 85	26	X	–	Record	M	DS-33	5	D
PV_SCALE	p. 86	27	X	X	Array	M	Float	8	W
OUT_SCALE	p. 87	28	X	X	Record	M	DS-36	11	W
LIN_TYPE	p. 86	29	X	X	Simple	M	Unsigned8	1	W
CHANNEL	p. 92	30	X	X	Simple	M	Unsigned16	2	W
not used	–	31	–	–	–	–	–	–	–
PV_FTIME	p. 88	32	X	X	Simple	M	Float	4	W
FSAFE_TYPE	p. 86	33	X	X	Simple	O	Unsigned8	1	W
FSAFE_VALUE	p. 86	34	X	X	Simple	O	Float	4	W
ALARM_HYS	p. 89	35	X	X	Simple	M	Float	4	W
not used	–	36	–	–	–	–	–	–	–
HI_HI_LIM	p. 90	37	X	X	Simple	M	Float	4	W
not used	–	38	–	–	–	–	–	–	–
HI_LIM	p. 90	39	X	X	Simple	M	Float	4	W
not used	–	40	–	–	–	–	–	–	–
LO_LIM	p. 90	41	X	X	Simple	M	Float	4	W
not used	–	42	–	–	–	–	–	–	–
LO_LO_LIM	p. 91	43	X	X	Simple	M	Float	4	W
not used	–	44 - 45	–	–	–	–	–	–	–
HI_HI_ALM	p. 90	46	X	–	Record	O	DS-39	16	D
HI_ALM	p. 90	47	X	–	Record	O	DS-39	16	D
LO_ALM	p. 90	48	X	–	Record	O	DS-39	16	D
LO_LO_ALM	p. 91	49	X	–	Record	O	DS-39	16	D
SIMULATE	p. 91	50	X	X	Record	O	DS-50	6	W
OUT_UNIT_TEXT	p. 87	51	X	X	Simple	O	Octet String	16	W
not used	–	52 - 60	–	–	–	–	–	–	–
AI1_TYPE	–	61	X	X	Simple	O	Unsigned16	2	Cst
VIEW_AI3	–	62	X	X	Simple	M	Unsigned16, DS-37, DS-42, DS-33,	18	D

7.8 AI 4 Temperature flow block slot 1

Name	E+H Matrix	Index	Read	Write	Object Type	Parameter	Data Type	Byte Size	Storage Class
AI4 - Temperature flow - slot 1									
not used	–	0 - 15	–	–	–	–	–	–	–
BLOCK_OBJECT	–	16	X	–	Record	M	DS-32	20	C
ST_REV	p. 93	17	X	–	Simple	M	Unsigned16	2	N
TAG_DESC	p. 93	18	X	X	Simple	M	Octet String	32	W
STRATEGY	p. 93	19	X	X	Simple	M	Unsigned16	2	W
ALERT_KEY	p. 93	20	X	X	Simple	M	Unsigned8	1	W
TARGET_MODE	p. 92	21	X	X	Simple	M	Unsigned8	1	W
MODE_BLK	p. 92	22	X	–	Record	M	DS-37	3	D
ALARM_SUM	p. 93	23	X	–	Record	M	DS-42	8	D
BATCH	p. 94	24	X	X	Record	M	DS -67	10	W
not used	–	25	–	–	–	–	–	–	–
OUT	p. 85	26	X	–	Record	M	DS-33	5	D
PV_SCALE	p. 86	27	X	X	Array	M	Float	8	W
OUT_SCALE	p. 87	28	X	X	Record	M	DS-36	11	W
LIN_TYPE	p. 86	29	X	X	Simple	M	Unsigned8	1	W
CHANNEL	p. 92	30	X	X	Simple	M	Unsigned16	2	W
not used	–	31	–	–	–	–	–	–	–
PV_FTIME	p. 88	32	X	X	Simple	M	Float	4	W
FSAFE_TYPE	p. 86	33	X	X	Simple	O	Unsigned8	1	W
FSAFE_VALUE	p. 86	34	X	X	Simple	O	Float	4	W
ALARM_HYS	p. 89	35	X	X	Simple	M	Float	4	W
not used	–	36	–	–	–	–	–	–	–
HI_HI_LIM	p. 90	37	X	X	Simple	M	Float	4	W
not used	–	38	–	–	–	–	–	–	–
HI_LIM	p. 90	39	X	X	Simple	M	Float	4	W
not used	–	40	–	–	–	–	–	–	–
LO_LIM	p. 90	41	X	X	Simple	M	Float	4	W
not used	–	42	–	–	–	–	–	–	–
LO_LO_LIM	p. 91	43	X	X	Simple	M	Float	4	W
not used	–	44 - 45	–	–	–	–	–	–	–
HI_HI_ALM	p. 90	46	X	–	Record	O	DS-39	16	D
HI_ALM	p. 90	47	X	–	Record	O	DS-39	16	D
LO_ALM	p. 90	48	X	–	Record	O	DS-39	16	D
LO_LO_ALM	p. 91	49	X	–	Record	O	DS-39	16	D
SIMULATE	p. 91	50	X	X	Record	O	DS-50	6	W
OUT_UNIT_TEXT	p. 87	51	X	X	Simple	O	Octet String	16	W
not used	–	52 - 60	–	–	–	–	–	–	–
AI1_TYPE	–	61	X	X	Simple	O	Unsigned16	2	Cst
VIEW_AI4	–	62	X	X	Simple	M	Unsigned16, DS-37, DS-42, DS-33,	18	D

7.9 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	C
ST_REV	p. 104	17	X	–	Simple	M	Unsigned16	2	N
TAG_DESC	p. 105	18	X	X	Simple	M	Octet String	32	W
STRATEGY	p. 105	19	X	X	Simple	M	Unsigned16	2	W
ALERT_KEY	p. 105	20	X	X	Simple	M	Unsigned8	1	W
TARGET_MODE	p. 103	21	X	X	Simple	M	Unsigned8	1	W
MODE_BLK	p. 103	22	X	–	Record	M	DS-37	3	D
ALARM_SUM	p. 104	23	X	–	Record	M	DS-42	8	D
BATCH	p. 105	24	X	X	Record	M	DS -67	10	W
not used	–	25	–	–	–	–	–	–	–
TOTAL	p. 98	26	X	–	Record	M	DS-33	5	N
UNIT_TOT	p. 100	27	X	X	Simple	M	Unsigned16	2	W
CHANNEL	p. 104	28	X	X	Simple	M	Unsigned16	2	W
SET_TOT	p. 100	29	X	X	Simple	M	Unsigned8	1	N
MODE_TOT	p. 100	30	X	X	Simple	M	Unsigned8	1	N
FAIL_TOT	p. 99	31	X	X	Simple	M	Unsigned8	1	W
PRESET_TOT	p. 100	32	X	X	Simple	M	Float	4	W
ALARM_HYS	p. 101	33	X	X	Simple	M	Float	4	W
HI_HI_LIM	p. 102	34	X	X	Simple	M	Float	4	W
HI_LIM	p. 102	35	X	X	Simple	M	Float	4	W
LO_LIM	p. 102	36	X	X	Simple	M	Float	4	W
LO_LO_LIM	p. 103	37	X	X	Simple	M	Float	4	W
HI_HI_ALM	p. 102	38	X	–	Record	O	DS-39	16	D
HI_ALM	p. 102	39	X	–	Record	O	DS-39	16	D
LO_ALM	p. 102	40	X	–	Record	O	DS-39	16	D
LO_LO_ALM	p. 103	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

8 Index key words PROFIBUS-DP /-PA

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