

# Special documentation

## **Proline Promag 400**

### Register information Modbus RS485



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# 1 Document information

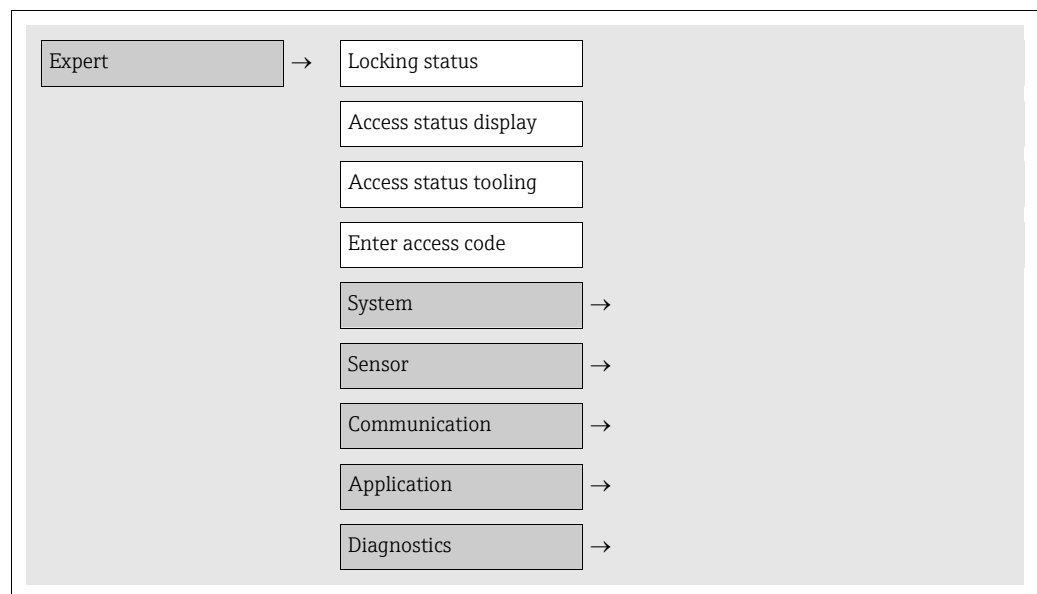
## 1.1 Document function

This document is part of the Operating Instructions for Proline Promass 100 Modbus RS485 and extends these with Modbus specific information about each parameter.

## 1.2 Using this document

### 1.2.1 Information on the document structure

The document lists the submenus and their parameters according to the structure from the Expert menu.



### 1.2.2 Structure of a parameter description

The individual parts of a parameter description are described in the following section:

Navigation: Navigation path to the parameter				
Parameter	Register	Data type	Access	Options/User entry
Complete parameter name	Information in decimal numerical format	<ul style="list-style-type: none"> <li>▪ Float Length = 4 bytes</li> <li>▪ Integer Length = 2 bytes</li> <li>▪ String Length depends on function</li> </ul>	Possible ways of accessing the function: <ul style="list-style-type: none"> <li>▪ Read Read access via function code 03, 04 or 23</li> <li>▪ Write Write access via function code 06, 16 or 23</li> </ul>	Options List of the individual options for the parameter <ul style="list-style-type: none"> <li>▪ Option 1</li> <li>▪ Option 2 (Default)</li> <li>▪ Option 3 (Default)*</li> </ul> <div style="margin-left: 20px;"> <b>Note!</b>                          - Default setting emphasized and marked with "Default"                          - * = Default setting depends on country and device properties                     </div> User entry Input range for the parameter



**Note!**

If a nonvolatile device parameter is modified via the Modbus RS485 function codes 06, 16 or 23, this change is saved in the HistoROM of the measuring device. The number of writes to the HistoROM is technically restricted to a maximum of 1 million. Attention must be paid to this limit since, if exceeded, it results in data loss and measuring device failure. For this reason, avoid constantly writing nonvolatile device parameters via the Modbus RS485!

### 1.2.3 Modbus RS485 register address model

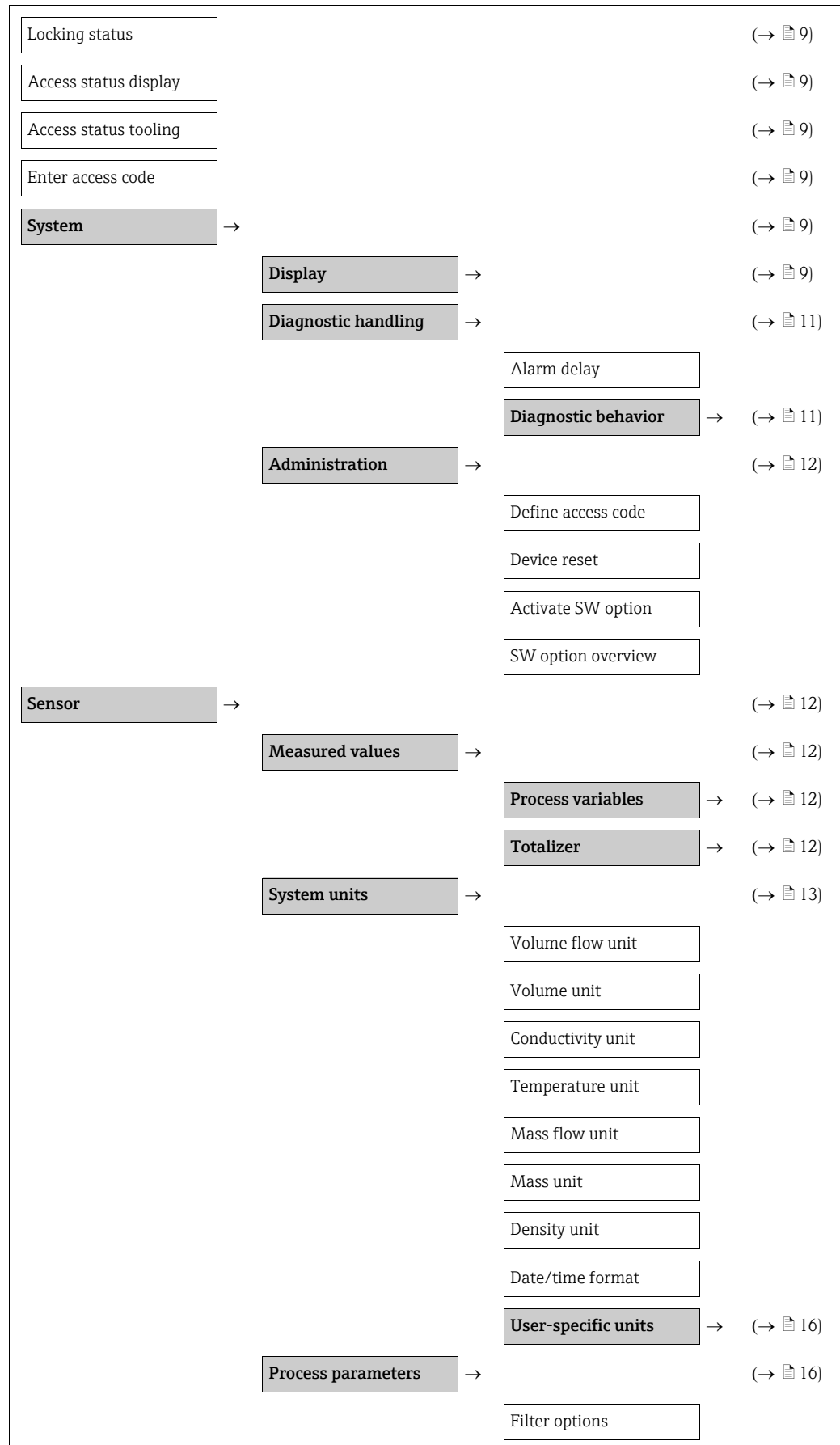
The Modbus RS485 register addresses of the measuring device are implemented in accordance with "Modbus Applications Protocol Specification V1.1".

In addition, also systems are deployed which work with the register address model "Modicon Modbus Protocol Reference Guide (PI-MBUS-300 Rev. J)". Depending on the used function code, the register address is extended with a prefix number in this specification:

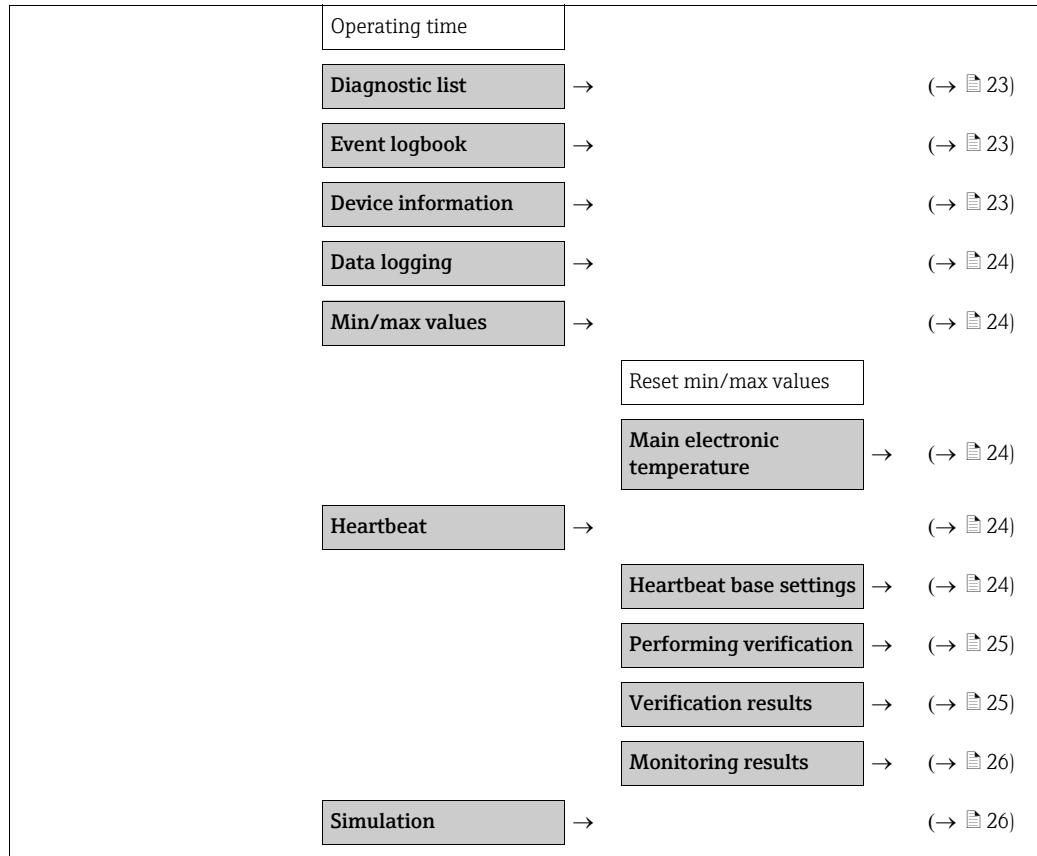
- "3" → Access type "Read"
- "4" → Access type "Write"

Function code	Access type	Register in accordance with "Modbus Applications Protocol Specification"	Register in accordance with "Modicon Modbus Protocol Reference Guide"
03 04 23	Read	XXXX → Example: mass flow = 2007	3XXXX Example: mass flow = 32007
06 16 23	Write	XXXX → Example: reset totalizer = 6401	4XXXX Example: reset totalizer = 46401

## 2 Overview of the operating menu "Expert"



		Flow damping	
		Flow override	
		Conductivity damping	
		Conductivity measurement	
		<b>Low flow cut off</b>	→ (→ 16)
		<b>Empty pipe detection</b>	→ (→ 16)
		<b>Electrode cleaning circuit</b>	→ (→ 17)
	<b>External compensation</b>	→	(→ 17)
	<b>Sensor adjustment</b>	→	(→ 17)
		Installation direction	
		Integration time	
		Measuring period	
		<b>Process variable adjustment</b>	→ (→ 17)
	<b>Calibration</b>	→	(→ 18)
<b>Communication</b>	→		(→ 18)
	<b>Modbus configuration</b>	→	(→ 18)
	<b>Modbus information</b>	→	(→ 18)
	<b>Modbus data map</b>	→	(→ 19)
	<b>Web server</b>	→	(→ 19)
<b>Application</b>	→		(→ 20)
		Reset all totalizers	
		<b>Totalizer 1</b>	→ (→ 20)
		<b>Totalizer 2</b>	→ (→ 21)
		<b>Totalizer 3</b>	→ (→ 21)
<b>Diagnostics</b>	→		(→ 22)
		Actual diagnostics	
		Timestamp	
		Previous diagnostics	
		Timestamp	
		Operating time from restart	





## 3 Modbus RS485 parameter information

Navigation: Expert				
Parameter	Register	Data type	Access	Selection/Default
Locking status	4918	Integer	Read	256 = Hardware locked 512 = Temporarily locked
Access status display	2826	Integer	Read	<b>0 = Operator (Default)</b> 1 = Maintenance 2 = Service 3 = Production 4 = Development
Access status tooling	2178	Integer	Read	0 = Operator <b>1 = Maintenance (Default)</b> 2 = Service 3 = Production 4 = Development
Enter access code	2177	Integer	Read/write	0...9999

### 3.1 Sub-menu "System"

#### 3.1.1 Sub-menu "Display"

Navigation: Expert → System → Display				
Parameter	Register	Data type	Access	Selection/Default
Display language	3673	Integer	Read/write	<b>0 = English (Default)</b> 1 = Deutsch 2 = Français 3 = Español 4 = Italiano 5 = Nederlands 8 = Svenska 10 = Bahasa Indonesia 11 = ??? (Japanese) 12 = Portuguesa 13 = Polski 14 = русский язык (Russian) 15 = čeština (Czech) 16 = ?? (Chinese) 17 = ??????? (Thai) 18 = Türkçe 19 = tiếng Việt (Vietnamese) 20 = ??? (Korean) 21 = ?????????? (Arabic)
Format display	3625	Integer	Read/write	<b>0 = 1 value, max. size (Default)</b> 1 = 1 bargraph + 1 value 2 = 2 values 3 = 1 value large + 2 values 4 = 4 values
Value 1 display	3963	Integer	Read/write	<b>1 = Volume flow (Default)</b> 2 = Mass flow 3 = Corrected volume flow 4 = Conductivity 7 = Temperature 9 = Corrected conductivity 16 = Totalizer 1 17 = Totalizer 2 18 = Totalizer 3 37 = Flow velocity 39 = Electronic temperature

Navigation: Expert → System → Display				
Parameter	Register	Data type	Access	Selection/Default
0% bargraph value 1	4136	Float	Read/write	
100% bargraph value 1	4142	Float	Read/write	
Decimal places 1	3365	Integer	Read/write	0 = x 1 = x.x <b>2 = x.xx (Default)</b> 3 = x.xxx 4 = x.xxxx
Value 2 display	3964	Integer	Read/write	1 = Volume flow 2 = Mass flow 3 = Corrected volume flow 4 = Conductivity 7 = Temperature 9 = Corrected conductivity 16 = Totalizer 1 17 = Totalizer 2 18 = Totalizer 3 37 = Flow velocity 39 = Electronic temperature <b>251 = None (Default)</b>
Decimal places 2	4049	Integer	Read/write	0 = x 1 = x.x <b>2 = x.xx (Default)</b> 3 = x.xxx 4 = x.xxxx
Value 3 display	3966	Integer	Read/write	1 = Volume flow 2 = Mass flow 3 = Corrected volume flow 4 = Conductivity 7 = Temperature 9 = Corrected conductivity 16 = Totalizer 1 17 = Totalizer 2 18 = Totalizer 3 37 = Flow velocity 39 = Electronic temperature <b>251 = None (Default)</b>
0% bargraph value 3	4138	Float	Read/write	
100% bargraph value 3	4140	Float	Read/write	
Decimal places 3	4050	Integer	Read/write	0 = x 1 = x.x <b>2 = x.xx (Default)</b> 3 = x.xxx 4 = x.xxxx
Value 4 display	3965	Integer	Read/write	1 = Volume flow 2 = Mass flow 3 = Corrected volume flow 4 = Conductivity 7 = Temperature 9 = Corrected conductivity 16 = Totalizer 1 17 = Totalizer 2 18 = Totalizer 3 37 = Flow velocity 39 = Electronic temperature <b>251 = None (Default)</b>
Decimal places 4	4051	Integer	Read/write	0 = x 1 = x.x <b>2 = x.xx (Default)</b> 3 = x.xxx 4 = x.xxxx
Display interval	3604	Float	Read/write	1...10

Navigation: Expert → System → Display				
Parameter	Register	Data type	Access	Selection/Default
Display damping	3554	Float	Read/write	0.0...999.9
Header	3624	Integer	Read/write	<b>0 = Device tag (Default)</b> 1 = Free text
Header text	3968	String	Read/write	
Separator	3671	Integer	Read/write	<b>1 = . (Default)</b> 2 = ,
Contrast display	3674	Float	Read/write	20...80
Backlight	3967	Integer	Read/write	0 = Disable <b>1 = Enable (Default)</b>
Access status display	2826	Integer	Read	<b>0 = Operator (Default)</b> 1 = Maintenance 2 = Service 3 = Production 4 = Development

### 3.1.2 Sub-menu "Diagnostic handling"

Navigation: Expert → System → Diagnostic handling				
Parameter	Register	Data type	Access	Selection/Default
Alarm delay	6808	Float	Read/write	0...60

### Sub-menu "Diagnostic behavior"

Navigation: Expert → System → Diagnostic handling → Diagnostic behavior				
Parameter	Register	Data type	Access	Selection/Default
Assign behavior of diagnostic no. 531	2397	Integer	Read/write	0 = Off 1 = Logbook entry only <b>2 = Warning (Default)</b> 3 = Alarm
Assign behavior of diagnostic no. 832	2759	Integer	Read/write	0 = Off 1 = Logbook entry only <b>2 = Warning (Default)</b> 3 = Alarm
Assign behavior of diagnostic no. 833	2762	Integer	Read/write	0 = Off 1 = Logbook entry only <b>2 = Warning (Default)</b> 3 = Alarm
Assign behavior of diagnostic no. 862	2097	Integer	Read/write	0 = Off 1 = Logbook entry only <b>2 = Warning (Default)</b> 3 = Alarm
Assign behavior of diagnostic no. 937	2396	Integer	Read/write	0 = Off 1 = Logbook entry only <b>2 = Warning (Default)</b> 3 = Alarm
Assign behavior of diagnostic no. 302	2312	Integer	Read/write	<b>2 = Warning (Default)</b> 3 = Alarm

### 3.1.3 Sub-menu "Administration"

Navigation: Expert → System → Administration				
Parameter	Register	Data type	Access	Selection/Default
Define access code	3009	Integer	Read/write	0...9999
Device reset	6817	Integer	Read/write	<b>0 = Cancel (Default)</b> 1 = Restart device 2 = To delivery settings
Activate SW option	2795	Integer	Read/write	Positive integer
Software option overview	2902	Integer	Read	1 = Extended HistoROM 16384 = Heartbeat Monitoring 32768 = Heartbeat Verification 32 = Electrode cleaning circuit

## 3.2 Sub-menu "Sensor"

### 3.2.1 Sub-menu "Measured values"

#### Sub-menu "Process variables"

Navigation: Expert → Sensor → Measured values → Process variables				
Parameter	Register	Data type	Access	Selection/Default
Volume flow	2007	Float	Read	
Mass flow	2009	Float	Read	
Conductivity	2013	Float	Read	

#### Sub-menu "Totalizer"

Navigation: Expert → Sensor → Measured values → Totalizer				
Parameter	Register	Data type	Access	Selection/Default
Totalizer value 1	2610	Float	Read	Floating-point number with sign
Totalizer overflow 1	2612	Float	Read	-32000.0...32000.0
Totalizer value 2	2810	Float	Read	Floating-point number with sign
Totalizer overflow 2	2812	Float	Read	-32000.0...32000.0
Totalizer value 3	3010	Float	Read	Floating-point number with sign
Totalizer overflow 3	3012	Float	Read	-32000.0...32000.0

### 3.2.2 Sub-menu "System units"

Navigation: Expert → Sensor → System units				
Parameter	Register	Data type	Access	Selection/Default
Volume flow unit	2103	Integer	Read/write	0 = cm <sup>3</sup> /s 1 = cm <sup>3</sup> /min 2 = cm <sup>3</sup> /h 3 = cm <sup>3</sup> /d 4 = dm <sup>3</sup> /s 5 = dm <sup>3</sup> /min 6 = dm <sup>3</sup> /h 7 = dm <sup>3</sup> /d 8 = m <sup>3</sup> /s 9 = m <sup>3</sup> /min 10 = m <sup>3</sup> /h 11 = m <sup>3</sup> /d 12 = ml/s 13 = ml/min 14 = ml/h 15 = ml/d 16 = l/s 17 = l/min <b>18 = l/h (Default)*</b> 19 = l/d 20 = hl/s 21 = hl/min 22 = hl/h 23 = hl/d 24 = Ml/s 25 = Ml/min 26 = Ml/h 27 = Ml/d 32 = af/s 33 = af/min 34 = af/h 35 = af/d 36 = ft <sup>3</sup> /s 37 = ft <sup>3</sup> /min 38 = ft <sup>3</sup> /h 39 = ft <sup>3</sup> /d 40 = fl oz/s (us) 41 = fl oz/min (us) 42 = fl oz/h (us) 43 = fl oz/d (us) 44 = gal/s (us) 45 = gal/min (us) 46 = gal/h (us) 47 = gal/d (us) 48 = Mgal/s (us) 49 = Mgal/min (us) 50 = Mgal/h (us) 51 = Mgal/d (us) 52 = bbl/s (us;liq.) 53 = bbl/min (us;liq.) 54 = bbl/h (us;liq.) 55 = bbl/d (us;liq.) 56 = bbl/s (us;beer) 57 = bbl/min (us;beer) 58 = bbl/h (us;beer) 59 = bbl/d (us;beer) 60 = bbl/s (us;oil) 61 = bbl/min (us;oil) 62 = bbl/h (us;oil) 63 = bbl/d (us;oil) 64 = bbl/s (us;tank) 65 = bbl/min (us;tank) 66 = bbl/h (us;tank) 67 = bbl/d (us;tank) 68 = gal/s (imp)

Navigation: Expert → Sensor → System units				
Parameter	Register	Data type	Access	Selection/Default
				69 = gal/min (imp) 70 = gal/h (imp) 71 = gal/d (imp) 72 = Mgal/s (imp) 73 = Mgal/min (imp) 74 = Mgal/h (imp) 75 = Mgal/d (imp) 76 = bbl/s (imp;beer) 77 = bbl/min (imp;beer) 78 = bbl/h (imp;beer) 79 = bbl/d (imp;beer) 80 = bbl/s (imp;oil) 81 = bbl/min (imp;oil) 82 = bbl/h (imp;oil) 83 = bbl/d (imp;oil) 84 = User vol./s 85 = User vol./min 86 = User vol./h 87 = User vol./d 88 = kgal/s (us) 89 = kgal/min (us) 90 = kgal/h (us) 91 = kgal/d (us)
Volume unit	2104	Integer	Read/write	0 = cm <sup>3</sup> 1 = dm <sup>3</sup> <b>2 = m<sup>3</sup> (Default)*</b> 3 = ml 4 = l 5 = hl 6 = Ml Mega 8 = af 9 = ft <sup>3</sup> 10 = fl oz (us) 11 = gal (us) 12 = Mgal (us) 13 = bbl (us;liq.) 14 = bbl (us;beer) 15 = bbl (us;oil) 16 = bbl (us;tank) 17 = gal (imp) 18 = Mgal (imp) 19 = bbl (imp;beer) 20 = bbl (imp;oil) 21 = User vol. 22 = kgal (us)
Conductivity unit	2121	Integer	Read/write	1 = MS/m 2 = kS/m 3 = S/m 4 = S/cm 5 = mS/m 6 = mS/cm 7 = μS/m <b>8 = μS/cm (Default)*</b> 9 = μS/mm 10 = nS/cm
Temperature unit	2109	Integer	Read/write	<b>0 = °C (Default)*</b> 1 = K 2 = °F 3 = °R

Navigation: Expert → Sensor → System units				
Parameter	Register	Data type	Access	Selection/Default
Mass flow unit	2101	Integer	Read/write	0 = g/s 1 = g/min 2 = g/h 3 = g/d 4 = kg/s 5 = kg/min <b>6 = kg/h (Default)*</b> 7 = kg/d 8 = t/s 9 = t/min 10 = t/h 11 = t/d 12 = oz/s 13 = oz/min 14 = oz/h 15 = oz/d 16 = lb/s 17 = lb/min 18 = lb/h 19 = lb/d 20 = STon/s 21 = STon/min 22 = STon/h 23 = STon/d 24 = User mass/s 25 = User mass/min 26 = User mass/h 27 = User mass/d
Mass unit	2102	Integer	Read/write	50 = g <b>51 = kg (Default)*</b> 52 = t 53 = oz 54 = lb 55 = STon 56 = User mass
Density unit	2107	Integer	Read/write	0 = g/cm <sup>3</sup> 2 = kg/dm <sup>3</sup> <b>3 = kg/l (Default)*</b> 4 = kg/m <sup>3</sup> 5 = SD4°C 6 = SD15°C 7 = SD20°C 8 = SG4°C 9 = SG15°C 10 = SG20°C 11 = lb/ft <sup>3</sup> 12 = lb/gal (us) 13 = lb/bbl (us;liq.) 14 = lb/bbl (us;beer) 15 = lb/bbl (us;oil) 16 = lb/bbl (us;tank) 17 = lb/gal (imp) 18 = lb/bbl (imp;beer) 19 = lb/bbl (imp;oil) 21 = g/m <sup>3</sup>
Date/time format	2150	Integer	Read/write	<b>0 = dd.mm.yy hh:mm (Default)</b> 1 = mm/dd/yy hh:mm am/pm 2 = dd.mm.yy hh:mm am/pm 3 = mm/dd/yy hh:mm

### Sub-menu "User-specific units"

Navigation: Expert → Sensor → System units → User-specific units				
Parameter	Register	Data type	Access	Selection/Default
User volume text	2542	String	Read/write	
User volume offset	2528	Float	Read/write	Floating-point number with sign
User volume factor	2119	Float	Read/write	Floating-point number with sign
User mass text	2531	String	Read/write	
User mass offset	4339	Float	Read/write	Floating-point number with sign
User mass factor	2115	Float	Read/write	Floating-point number with sign

### 3.2.3 Sub-menu "Process parameters"

Navigation: Expert → Sensor → Process parameters				
Parameter	Register	Data type	Access	Selection/Default
Filter options	2273	Integer	Read/write	1 = Standard CIP off (Default) 2 = Standard CIP on 3 = Dynamic CIP off 4 = Dynamic CIP on 5 = Binomial filter
Flow damping	2274	Integer	Read/write	0..15
Flow override	5503	Integer	Read/write	0 = Off (Default) 1 = On
Conductivity damping	5508	Float	Read/write	0..999.9
Conductivity measurement	2268	Integer	Read/write	0 = Off (Default) 1 = On

### Sub-menu "Low flow cut off"

Navigation: Expert → Sensor → Process parameters → Low flow cut off				
Parameter	Register	Data type	Access	Selection/Default
Assign process variable	5101	Integer	Read/write	0 = Off 1 = Volume flow (Default) 2 = Mass flow
On value low flow cutoff	5138	Float	Read/write	
Off value low flow cutoff	5104	Float	Read/write	0..100.0
Pressure shock suppression	5140	Float	Read/write	0..100

### Sub-menu "Empty pipe detection"

Navigation: Expert → Sensor → Process parameters → Empty pipe detection				
Parameter	Register	Data type	Access	Selection/Default
Empty pipe detection	5106	Integer	Read/write	0 = Off (Default) 1 = On
Switch point empty pipe detection	2890	Float	Read/write	0..100
Response time empty pipe detection	5108	Float	Read/write	0..100
New adjustment	2335	Integer	Read/write	0 = Cancel (Default) 1 = Empty pipe adjust 2 = Full pipe adjust



Navigation: Expert → Sensor → Process parameters → Empty pipe detection				
Parameter	Register	Data type	Access	Selection/Default
Progress	2336	Integer	Read	<b>0 = Not ok (Default)</b> 6 = Ok 8 = Busy
Empty pipe adjust value	2181	Float	Read	Positive floating-point number
Full pipe adjust value	2832	Float	Read	Positive floating-point number
Measured value EPD	2298	Float	Read	

### Sub-menu "Electrode cleaning circuit"

Navigation: Expert → Sensor → Process parameters → Electrode cleaning circuit				
Parameter	Register	Data type	Access	Selection/Default
Electrode cleaning circuit	2280	Integer	Read/write	<b>0 = Off (Default)</b> 1 = On
ECC duration	2330	Float	Read/write	0.01...30
ECC recovery time	2332	Float	Read/write	1...3.0e+38
ECC cleaning cycle	2328	Float	Read/write	0.5...168
ECC Polarity	2334	Integer	Read	<b>0 = Positive (Default)</b> 1 = Negative

### 3.2.4 Sub-menu "External compensation"

Navigation: Expert → Sensor → External compensation				
Parameter	Register	Data type	Access	Selection/Default
Density source	2497	Integer	Read/write	<b>0 = Fixed density (Default)</b> 1 = External density
External density	2117	Float	Read	Positive floating-point number
Fixed density	2830	Float	Read/write	Positive floating-point number

### 3.2.5 Sub-menu "Sensor adjustment"

Navigation: Expert → Sensor → Sensor adjustment				
Parameter	Register	Data type	Access	Selection/Default
Installation direction	5501	Integer	Read/write	<b>0 = Flow in arrow direction (Default)</b> 1 = Flow against arrow direction
Integration time	2260	Float	Read	1...65
Measuring period	2852	Float	Read	50...1000

### Sub-menu "Process variable adjustment"

Navigation: Expert → Sensor → Sensor adjustment → Process variable adjustment				
Parameter	Register	Data type	Access	Selection/Default
Volume flow offset	5521	Float	Read/write	Floating-point number with sign
Volume flow factor	5519	Float	Read/write	Positive floating-point number
Mass flow offset	5525	Float	Read/write	Floating-point number with sign
Mass flow factor	5523	Float	Read/write	Positive floating-point number

Navigation: Expert → Sensor → Sensor adjustment → Process variable adjustment				
Parameter	Register	Data type	Access	Selection/Default
Conductivity offset	5529	Float	Read/write	Floating-point number with sign
Conductivity factor	5527	Float	Read/write	Positive floating-point number

### 3.2.6 Sub-menu "Calibration"

Navigation: Expert → Sensor → Calibration				
Parameter	Register	Data type	Access	Selection/Default
Nominal diameter	2048	String	Read	
Calibration factor	2313	Float	Read	0.01...3.4E+38
Zero point	2870	Float	Read	Floating-point number with sign
Conductivity calibration factor	19806	Float	Read	0...10000

## 3.3 Sub-menu "Communication"

### 3.3.1 Sub-menu "Modbus configuration"

Navigation: Expert → Communication → Modbus configuration				
Parameter	Register	Data type	Access	Selection/Default
Bus address	4910	Integer	Read/write	1...247
Baudrate	4912	Integer	Read/write	0 = 1200 BAUD 1 = 2400 BAUD 2 = 4800 BAUD 3 = 9600 BAUD <b>4 = 19200 BAUD (Default)</b> 5 = 38400 BAUD 6 = 57600 BAUD 7 = 115200 BAUD
Data transfer mode	4913	Integer	Read/write	<b>0 = RTU (Default)</b> 1 = ASCII
Parity	4914	Integer	Read/write	<b>0 = Even (Default)</b> 1 = Odd 2 = None / 2 stop bits 3 = None / 1 stop bit
Byte order	4915	Integer	Read/write	0 = 0-1-2-3 1 = 3-2-1-0 2 = 2-3-0-1 <b>3 = 1-0-3-2 (Default)</b>
Telegram delay	4916	Float	Read/write	0...100
Failure mode	4920	Integer	Read/write	1 = Last valid value <b>255 = NaN value (Default)</b>

### 3.3.2 Sub-menu "Modbus information"

Navigation: Expert → Communication → Modbus information				
Parameter	Register	Data type	Access	Selection/Default
Device ID	2547	Integer	Read	
Device revision	4481	Integer	Read	

### 3.3.3 Sub-menu "Modbus data map"

Navigation: Expert → Communication → Modbus data map				
Parameter	Register	Data type	Access	Selection/Default
Scan list register 0	5001	Integer	Read/write	0...65535
Scan list register 1	5002	Integer	Read/write	0...65535
Scan list register 2	5003	Integer	Read/write	0...65535
Scan list register 3	5004	Integer	Read/write	0...65535
Scan list register 4	5005	Integer	Read/write	0...65535
Scan list register 5	5006	Integer	Read/write	0...65535
Scan list register 6	5007	Integer	Read/write	0...65535
Scan list register 7	5008	Integer	Read/write	0...65535
Scan list register 8	5009	Integer	Read/write	0...65535
Scan list register 9	5010	Integer	Read/write	0...65535
Scan list register 10	5011	Integer	Read/write	0...65535
Scan list register 11	5012	Integer	Read/write	0...65535
Scan list register 12	5013	Integer	Read/write	0...65535
Scan list register 13	5014	Integer	Read/write	0...65535
Scan list register 14	5015	Integer	Read/write	0...65535
Scan list register 15	5016	Integer	Read/write	0...65535

### 3.3.4 Sub-menu "Web server"

Navigation: Expert → Communication → Web server				
Parameter	Register	Data type	Access	Selection/Default
Web server language	4219	Integer	Read/write	<b>0 = English (Default)</b> 1 = Deutsch 2 = Français 3 = Español 4 = Italiano 5 = Nederlands 8 = Svenska 10 = Bahasa Indonesia 11 = ??? (Japanese) 12 = Portuguesa 13 = Polski 14 = русский язык (Russian) 15 = čeština (Czech) 16 = ?? (Chinese) 17 = ??????? (Thai) 18 = Türkçe 19 = tiếng Việt (Vietnamese) 20 = ??? (Korean) 21 = ?????????? (Arabic)
MAC address	4210	String	Read	
IP address	4155	String	Read	
Subnet mask	4163	String	Read	
Default gateway	4171	String	Read	
Web server functionality	4220	Integer	Read/write	0 = Off <b>1 = On (Default)</b>

### 3.4 Sub-menu "Application"

Navigation: Expert → Application				
Parameter	Register	Data type	Access	Selection/Default
Reset all totalizers	2609	Integer	Read/write	<b>0 = Cancel (Default)</b> 1 = Reset + totalize

#### 3.4.1 Sub-menu "Totalizer 1"

Navigation: Expert → Application → Totalizer 1				
Parameter	Register	Data type	Access	Selection/Default
Assign process variable	2601	Integer	Read/write	0 = Off <b>1 = Volume flow (Default)</b> 2 = Mass flow
Unit totalizer	4604	Integer	Read/write	0 = cm <sup>3</sup> 1 = dm <sup>3</sup> 2 = m <sup>3</sup> 3 = ml <b>4 = l (Default)*</b> 5 = hl 6 = Ml Mega 8 = af 9 = ft <sup>3</sup> 10 = fl oz (us) 11 = gal (us) 12 = Mgal (us) 13 = bbl (us;liq.) 14 = bbl (us;beer) 15 = bbl (us;oil) 16 = bbl (us;tank) 17 = gal (imp) 18 = Mgal (imp) 19 = bbl (imp;beer) 20 = bbl (imp;oil) 21 = User vol. 22 = kgal (us) 50 = g 51 = kg 52 = t 53 = oz 54 = lb 55 = STon 56 = User mass
Totalizer operation mode	2605	Integer	Read/write	<b>0 = Net flow total (Default)</b> 1 = Forward flow total 2 = Reverse flow total
Control Totalizer 1	2608	Integer	Read/write	<b>0 = Totalize (Default)</b> 1 = Reset + totalize 2 = Preset + hold 3 = Reset + hold 4 = Preset + totalize
Preset value 1	2590	Float	Read/write	Floating-point number with sign
Failure mode	2606	Integer	Read/write	<b>0 = Stop (Default)</b> 1 = Actual value 2 = Last valid value

### 3.4.2 Sub-menu "Totalizer 2"

Navigation: Expert → Application → Totalizer 2				
Parameter	Register	Data type	Access	Selection/Default
Assign process variable	2801	Integer	Read/write	0 = Off <b>1 = Volume flow (Default)</b> 2 = Mass flow
Unit totalizer	4605	Integer	Read/write	0 = cm <sup>3</sup> 1 = dm <sup>3</sup> 2 = m <sup>3</sup> 3 = ml <b>4 = l (Default)*</b> 5 = hl 6 = Ml Mega 8 = af 9 = ft <sup>3</sup> 10 = fl oz (us) 11 = gal (us) 12 = Mgal (us) 13 = bbl (us;liq.) 14 = bbl (us;beer) 15 = bbl (us;oil) 16 = bbl (us;tank) 17 = gal (imp) 18 = Mgal (imp) 19 = bbl (imp;beer) 20 = bbl (imp;oil) 21 = User vol. 22 = kgal (us) 50 = g 51 = kg 52 = t 53 = oz 54 = lb 55 = STon 56 = User mass
Totalizer operation mode	2805	Integer	Read/write	<b>0 = Net flow total (Default)</b> 1 = Forward flow total 2 = Reverse flow total
Control Totalizer 2	2808	Integer	Read/write	<b>0 = Totalize (Default)</b> 1 = Reset + totalize 2 = Preset + hold 3 = Reset + hold 4 = Preset + totalize
Preset value 2	2592	Float	Read/write	Floating-point number with sign
Failure mode	2806	Integer	Read/write	<b>0 = Stop (Default)</b> 1 = Actual value 2 = Last valid value

### 3.4.3 Sub-menu "Totalizer 3"

Navigation: Expert → Application → Totalizer 3				
Parameter	Register	Data type	Access	Selection/Default
Assign process variable	3001	Integer	Read/write	0 = Off <b>1 = Volume flow (Default)</b> 2 = Mass flow

Navigation: Expert → Application → Totalizer 3				
Parameter	Register	Data type	Access	Selection/Default
Unit totalizer	4606	Integer	Read/write	0 = cm <sup>3</sup> 1 = dm <sup>3</sup> 2 = m <sup>3</sup> 3 = ml <b>4 = l (Default)*</b> 5 = hl 6 = Ml Mega 8 = af 9 = ft <sup>3</sup> 10 = fl oz (us) 11 = gal (us) 12 = Mgal (us) 13 = bbl (us;liq.) 14 = bbl (us;beer) 15 = bbl (us;oil) 16 = bbl (us;tank) 17 = gal (imp) 18 = Mgal (imp) 19 = bbl (imp;beer) 20 = bbl (imp;oil) 21 = User vol. 22 = kgal (us) 50 = g 51 = kg 52 = t 53 = oz 54 = lb 55 = STon 56 = User mass
Totalizer operation mode	3005	Integer	Read/write	<b>0 = Net flow total (Default)</b> 1 = Forward flow total 2 = Reverse flow total
Control Totalizer 3	3008	Integer	Read/write	<b>0 = Totalize (Default)</b> 1 = Reset + totalize 2 = Preset + hold 3 = Reset + hold 4 = Preset + totalize
Preset value 3	2594	Float	Read/write	Floating-point number with sign
Failure mode	3006	Integer	Read/write	<b>0 = Stop (Default)</b> 1 = Actual value 2 = Last valid value

### 3.5 Sub-menu "Diagnostics"

Navigation: Expert → Diagnostics				
Parameter	Register	Data type	Access	Selection/Default
Actual diagnostics	2732	Integer	Read	
Timestamp	2719	String	Read	
Previous diagnostics	2734	Integer	Read	
Timestamp	2068	String	Read	
Operating time from restart	2624	String	Read	
Operating time	2631	String	Read	

### 3.5.1 Sub-menu "Diagnostic list"

Navigation: Expert → Diagnostics → Diagnostic list				
Parameter	Register	Data type	Access	Selection/Default
Diagnostics 1	2736	Integer	Read	
Timestamp	2710	String	Read	
Diagnostics 2	2738	Integer	Read	
Timestamp	2701	String	Read	
Diagnostics 3	2740	Integer	Read	
Timestamp	2692	String	Read	
Diagnostics 4	2742	Integer	Read	
Timestamp	2683	String	Read	
Diagnostics 5	2744	Integer	Read	
Timestamp	2675	String	Read	

### 3.5.2 Sub-menu "Event logbook"

Navigation: Expert → Diagnostics → Event logbook				
Parameter	Register	Data type	Access	Selection/Default
Filter options	2639	Integer	Read/write	0 = Failure (F) 4 = Maintenance required (M) 8 = Function check (C) 12 = Out of specification (S) 16 = Information (I) <b>255 = All (Default)</b>

### 3.5.3 Sub-menu "Device information"

Navigation: Expert → Diagnostics → Device information				
Parameter	Register	Data type	Access	Selection/Default
Device tag	2026	String	Read	
Serial number	7003	String	Read	
Firmware version	7277	String	Read	
Device name	7263	String	Read	
Order code	2058	String	Read	
Extended order code 1	2212	String	Read	
Extended order code 2	2222	String	Read	
Extended order code 3	2232	String	Read	
Configuration counter	4818	Integer	Read	
ENP version	4003	String	Read	

### 3.5.4 Sub-menu "Data logging"

Navigation: Expert → Diagnostics → Data logging				
Parameter	Register	Data type	Access	Selection/Default
Assign channel 1	2445	Integer	Read/write	<b>0 = Off (Default)</b> 1 = Volume flow 2 = Mass flow 4 = Conductivity 23 = Electronic temperature 37 = Flow velocity
Assign channel 2	2446	Integer	Read/write	<b>0 = Off (Default)</b> 1 = Volume flow 2 = Mass flow 4 = Conductivity 23 = Electronic temperature 37 = Flow velocity
Assign channel 3	2548	Integer	Read/write	<b>0 = Off (Default)</b> 1 = Volume flow 2 = Mass flow 4 = Conductivity 23 = Electronic temperature 37 = Flow velocity
Assign channel 4	4286	Integer	Read/write	<b>0 = Off (Default)</b> 1 = Volume flow 2 = Mass flow 4 = Conductivity 23 = Electronic temperature 37 = Flow velocity
Logging interval	4288	Float	Read/write	
Clear logging data	4287	Integer	Read/write	<b>0 = Cancel (Default)</b> 1 = Clear data

### 3.5.5 Sub-menu "Min/max values"

Navigation: Expert → Diagnostics → Min/max values				
Parameter	Register	Data type	Access	Selection/Default
Reset min/max values	2269	Integer	Read/write	<b>0 = Cancel (Default)</b>

#### Sub-menu "Main electronic temperature"

Navigation: Expert → Diagnostics → Min/max values → Main electronic temperature				
Parameter	Register	Data type	Access	Selection/Default
Minimum value	2292	Float	Read	Floating-point number with sign
Maximum value	2294	Float	Read	Floating-point number with sign

### 3.5.6 Sub-menu "Heartbeat"

#### Sub-menu "Heartbeat base settings"

Navigation: Expert → Diagnostics → Heartbeat → Heartbeat base settings				
Parameter	Register	Data type	Access	Selection/Default
Plant operator	3414	String	Read/write	
Location	3430	String	Read/write	



## Sub-menu "Performing verification"

Navigation: Expert → Diagnostics → Heartbeat → Performing verification				
Parameter	Register	Data type	Access	Selection/Default
Year	2495	Integer	Read/write	9...99
Month	2494	Integer	Read/write	<b>0 = January (Default)</b> 1 = February 2 = March 3 = April 4 = May 5 = June 6 = July 7 = August 8 = September 9 = October 10 = November 11 = December
Day	2493	Integer	Read/write	
Hour	2492	Integer	Read/write	
AM/PM	2496	Integer	Read/write	<b>0 = AM (Default)</b> 1 = PM
Minute	2467	Integer	Read/write	0...59
Verification mode	2366	Integer	Read/write	<b>0 = Internal verification (Default)</b> 1 = External verification
External device information	20493	String	Read/write	
External reference voltage 1	20509	Float	Read/write	Floating-point number with sign
External reference voltage 2	20511	Float	Read/write	Floating-point number with sign
Start verification	2270	Integer	Read/write	<b>0 = Cancel (Default)</b> 1 = Start
Progress	6797	Integer	Read	
Status	2079	Integer	Read	0 = Failed <b>1 = Ready (Default)</b> 3 = Not done 8 = Busy
Overall result	2355	Integer	Read	0 = Failed 1 = Not used 2 = Passed <b>3 = Check not done (Default)</b>

## Sub-menu "Verification results"

Navigation: Expert → Diagnostics → Heartbeat → Verification results				
Parameter	Register	Data type	Access	Selection/Default
Date/time	2372	String	Read	
Verification ID	2315	Integer	Read	
Operating time	3346	String	Read	
Overall result	2355	Integer	Read	0 = Failed 1 = Not used 2 = Passed <b>3 = Check not done (Default)</b>
Sensor	2384	Integer	Read	0 = Failed 1 = Not used 2 = Passed <b>3 = Check not done (Default)</b>

Navigation: Expert → Diagnostics → Heartbeat → Verification results				
Parameter	Register	Data type	Access	Selection/Default
Sensor electronic module	2385	Integer	Read	0 = Failed 1 = Not used 2 = Passed <b>3 = Check not done (Default)</b>
I/O module	2386	Integer	Read	0 = Failed 1 = Not used 2 = Passed <b>3 = Check not done (Default)</b>

### Sub-menu "Monitoring results"

Navigation: Expert → Diagnostics → Heartbeat → Monitoring results				
Parameter	Register	Data type	Access	Selection/Default
Noise	2463	Float	Read	
Coil current shot time	2465	Float	Read	
Reference electrode potential against PE	3990	Float	Read	

### 3.5.7 Sub-menu "Simulation"

Navigation: Expert → Diagnostics → Simulation				
Parameter	Register	Data type	Access	Selection/Default
Assign simulation process variable	6813	Integer	Read/write	<b>0 = Off (Default)</b> 1 = Volume flow 2 = Mass flow 4 = Conductivity
Value process variable	6814	Float	Read/write	
Simulation device alarm	6812	Integer	Read/write	<b>0 = Off (Default)</b> 1 = On
Simulation diagnostic event	4259	Integer	Read/write	<b>0 = Off (Default)</b>



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