Modbus RTU data map for Siemens SITRANS LT500

Revision 1.5

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1 Modbus data map

SITRANS LT500 supports Modbus RTU EIA-RS485 communication with the addition of a Modbus communication card.
See device parameter menu “Modbus RTU” (4.3) for communication protocol setup for Modbus RTU.
The LT500 device parameters are mapped into the Modbus holding register address space and are available via "Read holding registers" and "Write multiple registers" commands.
For detailed parameter information, see the full Operating Instructions *SITRANS LT500 with mA/HART sensor inputs*.

The LT500 supports the following Modbus RTU commands.

Function code	Command text	Description
03	Read holding registers	Reads the content of multiple 16-bit registers
04	Read input registers	Reads the content of multiple 16-bit registers
06	Write single register	Writes the content of a single 16-bit register
07	Read exception status	Global alarms status of the device
08	Diagnostics	Provides a series of tests for checking communication
16	Write multiple registers	Write the content of multiple 16-bit registers
17	Report Server ID	Product type Device running = FF Manufacturer Product name and version
23	Read/write multiple registers	Performs a combination of one read and one write operation in a single Modbus transaction

03 (0x03) Read holding registers
Read holding registers function allows single or multiple registers to be read from the holding register area, the holding registers area allows read/write access.

04 (0x04) Read input registers
Read input registers function allows single or multiple registers to be read from the input register area, the input registers are read only.

06 (0x06) Write single register
Write to a single register in the holding register area.

07 (0x07) Read exception status
Read exception status (Global alarms status).

Register	Description		Data type
6246	Global alarms status	Bit 0: Process value alarm (NAMUR: Out of specification) Bit 1: Process value warning (NAMUR: Out of specification) Bit 2: Maintenance alarm (NAMUR: Failure) Bit 3: Maintenance demanded (NAMUR: Maintenance required) Bit 4: Maintenance required (NAMUR: Maintenance required) Bit 5: Function check (NAMUR: Function check) Bits 6 … 15: Reserved for future use	Unsigned16

08 (0x08) diagnostics
Diagnostics function provides means for checking the communication between Modbus master and slave. The function uses a sub-function code to select which function is to be performed.

The following sub-function codes are supported:

Sub-function code		Name
Hex	Dec	
00	0	Return query data
01	1	Restart communication option

After having restarted the communication, the user may have to adapt the baud rate, framing or Modbus address to get access to the device again.

17 (0x11) report server ID
The LT500 will respond to a Report server ID request from the master by returning information about the device.

Request

Slave address	1 byte	xxhex
Function code	1 byte	11hex
CRC-16	2 bytes	Lower xxhex
		Upper xxhex

Response

Slave address	1 byte	xxhex
Function code	1 byte	11hex
Byte count	1 byte	62
Server ID	1 byte	0 = FC 1 = FS standard 2 = FS hydrocarbon 3 = FS gas 4 = FS energy 6 = LT500
Run indicator	1 byte	FF = Running
Manufacturer name	12 bytes	SIEMENS
Product name	32 bytes	SITRANS LT500
Product firmware version	16 bytes	x.xx.xx-xx
CRC-16	2 bytes	Lower xxhex
		Upper xxhex

2 Access control

Access control manages whether the Modbus master is allowed to modify device parameters. The general access control rules are:

- The Modbus interface has an access level that can be changed by providing PIN information via the Modbus register Modbus End User Privilege (EUP) or Modbus Service User Privilege (SUP).
- Each parameter has a protection level assigned that specifies the required access level to modify the parameter via the Modbus interface.

Access level	Description
Restricted User Privilege (RUP)	Having this access level, the Modbus master is not able to modify the device configuration (setup parameters). The Modbus master is only able to execute commands, e.g. maintenance timers and reset totalizers. This is the default level of the Modbus interface.
End User Privilege (EUP)	Having this access level, the Modbus master is able to modify a subset of the device configuration. The Modbus master has to provide the correct end user password with Modbus register 8292 to reach this access level. The user is a normal user in the plant not having access to critical parts of the configuration.
Service User Privilege (SUP)	Having this access level, the Modbus master is able to modify the configuration of the device. The Modbus master has to provide the correct service user password with Modbus register 8293 to reach this access level. This user level would be a service user at the plant who is allowed full access.

The current access level can be queried via Modbus register 8294.

Modbus holding register	Parameter function	Description	Data type
8292	Input EUP PIN	The current access level can be queried via Modbus register 8294.	Unsigned16
8293	Input SUP PIN	User input of the service user PIN. The PIN must match the stored service user PIN to get the service user privileges.	Unsigned16
8294	Query access level	Current access level through the Modbus interface. 64: Service User Privilege (SUP). 32: End User Privilege (EUP). 16: Restricted User Privilege (RUP).	Unsigned8

3 Custom configurable data map

In addition to the complete Modbus register data map, the LT500 provides 20 reserved holding registers which can be used to create a custom data map. As default the LT500 has been configured with a default table which can be changed by the user by configuring a sources and destination address in menu "Register mapping" (4.3.8).

The source menu holds the register number being requested by the Modbus master. The target destination holds the LT500 internal Modbus register where the requested parameter data is stored.

The LT500 allows the user to configure up to 20 source/destination registers.

Source menu	Modbus source register	Target destination menu	LT500 destination register	Parameter description	Data type
4.3.8.2	5801	4.3.8.3	8120	Tag name	String32
4.3.8.4	5817	4.3.8.5	3000	PT1 Level	Float32
4.3.8.6	5819	4.3.8.7	3487	PT1 Level status	Unsigned8
4.3.8.8	5820	4.3.8.9	8556	PT1 Level units	Unsigned8
4.3.8.10	5821	4.3.8.11	3202	PT1 Distance	Float32
4.3.8.12	5823	4.3.8.13	3204	PT1 Volume	Float32
4.3.8.14	5825	4.3.8.15	8281	PT1 Volume units	Unsigned8
4.3.8.16	5826	4.3.8.17	3823	PT1 Rate of change	Float32
4.3.8.18	5828	4.3.8.19	3208	PT1 Temperature	Float32
4.3.8.20	5830	4.3.8.21	3206	PT1 Head	Float32
4.3.8.22	5832	4.3.8.23	3014	PT1 Volume flow	Float32
4.3.8.24	5834	4.3.8.25	7500	PT1 Volume flow units	Unsigned8
4.3.8.26	5835	4.3.8.27	8300	Totalizer 1	Float32
4.3.8.28	5837	4.3.8.29	8321	Totalizer 1 units	Unsigned8
4.3.8.30	5838	4.3.8.31	8400	Totalizer 2	Float32
4.3.8.32	5840	4.3.8.33	13589	Relay outputs (1 to 6)	Unsigned8
4.3.8.34	5841	4.3.8.35	6246	Global alarm status	Unsigned16
4.3.8.36	5842	4.3.8.37	3002	PT2 Level	Float32
4.3.8.38	5844	4.3.8.39	3214	PT2 Volume	Float32
4.3.8.40	5846	4.3.8.41	3018	PT2 Volume flow	Float32

Note

Data type for totalizers

If higher precision is required for Totalizer 1 and Totalizer 2, a 64-bit representation of the values is available.

- For Totalizer 1: Change (4.3.8.27) from 8300 to 10672
- For Totalizer 2: Change (4.3.8.31) from 8400 to 10676

4 Fixed Modbus data map

In addition to the custom data map the LT500 also supports a conventional fixed data map with all registers mapped into the Modbus holding register area.

Process values

Measurement values

Register	Data description	R/W	Data type
Process measurement PT1 and PT2			
3000	PT1 Level	R	Float32
3002	PT2 Level	R	Float32
3200	PT1 Space	R	Float32
3202	PT1 Distance	R	Float32
3204	PT1 Volume	R	Float32
3206	PT1 Head	R	Float32
3208	PT1 Temperature from connected HART sensor	R	Float32
3210	PT2 Space	R	Float32
3212	PT2 Distance	R	Float32
3214	PT2 Volume	R	Float32
3216	PT2 Head	R	Float32
3218	PT2 Temperature from connected HART sensor	R	Float32
Dual point average and differential			
3220	Level difference	R	Float32
3222	Level average	R	Float32
Auxiliary temperature			
3224	Auxiliary temperature input	R	Float32
Process measurement minimum/maximum			
3250	PT1 Space minimum	R	Float32
3252	PT1 Distance minimum	R	Float32
3254	PT1 Volume minimum	R	Float32
3256	PT1 Head minimum	R	Float32
3258	PT Temperature minimum	R	Float32
3260	PT2 Space minimum	R	Float32
3262	PT2 Distance minimum	R	Float32
3264	PT2 Volume minimum	R	Float32
3266	PT2 Head minimum	R	Float32
3268	PT2 Temperature minimum	R	Float32
3270	Level difference minimum	R	Float32
3272	Level average minimum	R	Float32
3274	Auxiliary temperature minimum	R	Float32

Register	Data description	R/W	Data type
3276	PT1 Level minimum	R	Float32
3278	PT2 Level minimum	R	Float32
3280	PT1 Volume flow minimum	R	Float32
3282	PT2 Volume flow minimum	R	Float32
3300	PT1 Space maximum	R	Float32
3302	PT1 Distance maximum	R	Float32
3304	PT1 Volume maximum	R	Float32
3306	PT1 Head maximum	R	Float32
3308	PT1 Temperature maximum	R	Float32
3310	PT2 Space maximum	R	Float32
3312	PT2 Distance maximum	R	Float32
3314	PT2 Volume maximum	R	Float32
3316	PT2 Head maximum	R	Float32
3318	PT2 Temperature maximum	R	Float32
3320	Level difference maximum	R	Float32
3322	Level average maximum	R	Float32
3324	Auxiliary temperature maximum	R	Float32
3326	PT1 Level maximum	R	Float32
3328	PT2 Level maximum	R	Float32
3330	PT1 Volume flow maximum	R	Float32
3332	PT2 Volume flow maximum	R	Float32

Volume flow

Register	Data description	R/W	Data type
3014	PT1 Volume flow	R	Float32
3018	PT2 Volume flow	R	Float32

mA input (mA)

Register	Data description		Parameter number	R/W	Data type
3801	PT1 Input current	4 … 20 mA input value	3.4.1.1	R	Float32
3803	PT2 Input current	4 … 20 mA input value	3.4.1.5.1	R	Float32
3805	mA input 1 status	0: BAD 1: Uncertain (mA has gone outside its limits) 2: Simulated value 3: Good		R	Unsigned8
3806	mA input 2 status			R	Unsigned8
3807	PT1 Sensor raw level	Raw level from the connected HART sensor		R	Float32

Register	Data description		Parameter number	R/W	Data type
3809	PT2 Sensor raw level	Raw level from the connected HART sensor		R	Float32
3811	PT1 Sensor level status	Status of the connected HART sensor		R	Unsigned8
3812	PT2 Sensor level status	Status of the connected HART sensor		R	Unsigned8

Relay status

Register	Data description		Parameter number	R/W	Data type
13589	Relay state	Shows the current status of the relays Bit 0 = Relay 1 Bit 1 = Relay 2 Bit 2 = Relay 3 Bit 3 = Relay 4 Bit 4 = Relay 5 Bit 5 = Relay 6 Bit 6 = Reserved Bit 7 = Reserved	(Main Process value display)	R	Unsigned8

mA outputs

Register	Data description	Parameter number	R/W	Data type
8803	Loop current 1 (mA)	3.4.4.2	R	Float32
9103	Loop current 2 (mA)	3.4.4.3	R	Float32

Totalizers (32 bit)

Register	Data description		Parameter number	R/W	Data type
8300	Totalizer 1	Shows the current volume flow Totalizer value	(Main Process value display)	R	Float32
8400	Totalizer 2			R	Float32
8500	Totalizer 3			R	Float32
13601	Totalizer 4			R	Float32

Totalizers (64 bit)

Register	Data description	Parameter number	R/W	Data type
10672	Totalizer 1	(Main process value display)	R	Float64
10676	Totalizer 2		R	Float64
10680	Totalizer 3		R	Float64
13603	Totalizer 4		R	Float64

Reset totalizers

Register	Data description		Parameter number	R/W	Data type
8549	Reset – Totalizer 1	Resets totalizers 1 to 4 Bit 0 = Do nothing Bit 1 = Reset all totalizers Bit 2 … 10 = Reserved Bit 11 = Reset totalizer 1 Bit 12 = Reset totalizer 2 Bit 13 = Reset totalizer 3 Bit 14 = Reset totalizer 4	2.3.1.9	R/W	Unsigned8
	Reset – Totalizer 2		2.3.2.9	R/W	
	Reset – Totalizer 3		2.3.3.9	R/W	
	Reset – Totalizer 4		2.3.4.9	R/W	

Rate of change

Register	Data description		Parameter number	R/W	Data type
3823	PT1 Rate of change	Rate of change in m/min	2.1.8.1	R	Float32
3836	PT2 Rate of change	Rate of change in m/min	2.1.20.8.1	R	Float32

Time to spill

Register	Data description		Parameter number	R/W	Data type	Units
4906	PT1 Time to spill threshold	Time-to-spill diagnostic threshold. If calculated time-to-spill is less than this time the diagnostic is raised	2.5.9.1	R	Float32	min
4932	PT2 Time to spill threshold	Time-to-spill diagnostic threshold. If calculated time-to-spill is less than this time the diagnostic is raised	2.5.12.9.1	R	Float32	min

Status and alarms

Smart sensor signal quality

Register	Data description		Parameter number	R/W	Data type	Units
4934	LU240 Short shot confidence PT1	The short shot confidence reported by an LU smart sensor, if attached.	3.2.13	R	Unsigned16	
4935	LU240 Short shot confidence PT2	The short shot confidence reported by an LU smart sensor, if attached.	3.2.14.13	R	Unsigned16	
4936	LU240 Long shot confidence PT1	The long shot confidence reported by an LU smart sensor, if attached.	3.2.12	R	Unsigned16	
4937	LU240 Long shot confidence PT2	The long shot confidence reported by an LU smart sensor, if attached.	3.2.14.12	R	Unsigned16	
4938	LR1xx Signal strength PT1	The echo strength reported by the smart sensor. This is "Echo Amplitude" for LR1xx devices. This parameter is Float so that we can display units with it.	3.2.11	R	Float32	dB
4940	LR1xx Signal strength PT2	The echo strength reported by the smart sensor. This is "Echo Amplitude" for LR1xx devices. This parameter is Float so that we can display units with it.	3.2.14.11	R	Float32	dB

Register	Data description		Parameter number	R/W	Data type	Units
4942	LR1xx Reliability PT1	The reliability reported by an LR, if attached.	3.2.12	R	Float32	
4944	LT1xx Reliability PT2	The reliability reported by an LR, if attached.	3.2.14.12	R	Float32	

LOE timer and damping for smart sensor

Register	Data description		Parameter number	R/W	Data type	Units
5380	PT1 LOE timer	Loss of echo timer	2.1.7	R/W	Float32	s
5382	PT2 LOE timer	Loss of echo timer	2.1.20.7	R/W	Float32	s
5384	PT1 LR1xx damping	Damping time for LR1xx process value	2.1.8.8	R/W	Float32	s
5386	PT2 LR1xx damping	Damping time for LR1xx process value	2.1.20.8.8	R/W	Float32	s

Status bytes

Register	Data description		R/W	Data type
3485	DI1 Scaled state		R	Unsigned8
3486	DI2 Scaled state		R	Unsigned8
3487	PT1 Level status	0 = Bad 1 = Uncertain (mA input has gone outside its limits) 2 = Simulated value 3 = Good	R	Unsigned8
3488	PT2 Level status		R	
3489	PT1 Volume status		R	
3490	PT2 Volume status		R	

Operating time (Sensor)

Register	Data description		Parameter number	R/W	Data type
4856	Total runtime sensor (point 1)	Number of hours the connected SITRANS LU240 sensor reports it has been in operation	3.3.1.3	R	Float32
4858	Total runtime sensor (point 2)	Number of hours the connected SITRANS LU240 sensor reports it has been in operation	3.3.1.4	R	Float32

Operating time (Transmitter)

Register	Data description		Parameter number	R/W	Data type
6160	Total runtime	Overall transmitter operating time in hours. Updated every hour by the transmitter	3.3.1.2	R	Unsigned32
6162	Time since last power on	Operating hours since startup of the device. Updated every hour by the transmitter	3.3.1.1	R	Unsigned32

Alarm status NAMUR

Register	Data description		R/W	Data type
6228	NAMUR status	Device status bitmap generated from the alarm bits. The following bits are defined: Bit 0: Out of specification Bit 1: Failure Bit 2: Maintenance required Bit 3: Function check Bits 4…15: Reserved for future use. The content of this device output parameter is derived from the GLOBAL ALARM STATUS parameter. See Global alarm status, register 6246.	R	Unsigned16

Device status

SITRANS LT500 device status information (read only) is reported in 13 (DWORD) status registers which are grouped as 32bit bitmapped values, each bit representing a specific fault code ID.

For further information per fault code ID, see the full operating instructions: “Fault codes and corrective actions” in chapter “Diagnostics and troubleshooting”.

Register	Alarm status	Bit	Data description	Fault code ID
Sensor diagnostics				
6200	Alarm status 1	0	PT1 – Sensor not found.	0
		1	PT1 – Sensor not supported.	1
		2	PT1 – Invalid device configuration.	2
		3	PT1 – Communication error.	3
		4	PT1 – Sensor security lock error.	4
		5	PT1 – Invalid pump configuration.	5
		6	PT1 – Low level cut-off active.	6
		7	PT1 – Sensor override active.	7

Register	Alarm status	Bit	Data description	Fault code ID
	Alarm status 1	8	PT1 – Filling too quickly.	8
		9	PT1 – Emptying too quickly.	9
		10	PT1 – Sensor has changed.	10
		11	PT1 – Sensor input not calibrated.	11
		12	PT1 – Loss of echo.	12
		13	PT1 – Sensor hardware failure (digital).	13
		14	PT1 – Sensor failure (digital).	14
		15	PT1 – Invalid primary measuring device (PMD) configuration.	15
		16	PT1 – Sensor type mismatch.	16
		17	PT1 – Invalid application configuration.	17
		18	PT1 – Sensor input mode changed.	18
		19	PT1 – Sensor failure (analog).	19
		20	PT1 – One or more process values with bad status.	20
		21	PT1 – Spill condition has been reached or is imminent. Stop filling vessel immediately.	21
		22	PT2 – Sensor not found.	22
		23	PT2 – Sensor not supported.	23
		24	PT2 – Invalid device configuration.	24
		25	PT2 – Communication error.	25
		26	PT2 – Sensor security lock error.	26
		27	PT2 – Invalid pump configuration.	27
		28	PT2 – Low level cut-off active.	28
		29	PT2 – Sensor override active.	29
		30	PT2 – Filling too quickly.	30
		31	PT2 – Emptying too quickly.	31

Register	Alarm status	Bit	Data description	Fault code ID
Sensor diagnostics				
6202	Alarm status 2	0	PT2 – Sensor has changed.	32
		1	PT2 – Sensor input not calibrated.	33
		2	PT2 – Loss of echo.	34
		3	PT2 – Sensor hardware failure (digital).	35
		4	PT2 – Sensor failure (digital).	36
		5	PT2 – Invalid primary measuring device (PMD) configuration.	37
		6	PT2 – Sensor type mismatch.	38
		7	PT2 – Invalid application configuration.	39
		8	PT2 – Sensor input mode change.	40
		9	PT2 – Sensor failure (analog).	41
		10	PT2 – One or more process values with bad status.	42
		11	PT2 – Spill condition has been reached or is imminent. Stop filling vessel immediately.	43
		12 … 23	Not used	
		24	Internal error.	56
		25	Internal error.	57
		26	Internal error.	58
		27	Invalid relay configuration.	59
		28	Internal error.	60
		29	Internal error.	61
		30	Internal error.	62
		31	Internal error.	63

Register	Alarm status	Bit	Data description	Fault code ID
Sensor diagnostics				
6204	Alarm status 3	0	PT1 - Maintenance required.	64
		1	PT1 - Maintenance demanded.	65
		2	PT1 - Echo profile storage memory is full.	66
		3	PT1 - Volume could not be calculated.	67
		4 … 9	Not used	
		10	PT2 - Maintenance required.	74
		11	PT2 - Maintenance demanded.	75
		12	PT2 - Echo profile storage memory is full.	76
		13	PT2 - Volume could not be calculated.	77
		14 … 31	Not used	

Register	Alarm status	Bit	Data description	Fault code ID
Transmitter diagnostics				
6206	Alarm status 4	0 … 3	Not used	
		4	Volume flow (point 1) above alarm limit.	100
		5	Volume flow (point 1) above warning limit.	101
		6	Volume flow (point 1) below warning limit.	102
		7	Volume flow (point 1) below alarm limit.	103
		8 … 11	Not used	
		12	Sensor temperature (point 1) above alarm limit.	108
		13	Sensor temperature (point 1) above warning limit.	109
		14	Sensor temperature (point 1) below warning limit.	110
		15	Sensor temperature (point 1) below alarm limit.	111
		16 … 31	Not used	

Register	Alarm status	Bit	Data description	Fault code ID
Transmitter diagnostics				
6208	Alarm status 5	0 … 7	Not used	
		8	Totalizer 1 above alarm limit.	136
		9	Totalizer 1 above warning limit.	137
		10	Totalizer 1 below warning limit.	138
		11	Totalizer 1 below alarm limit.	139
		12	Totalizer 2 above alarm limit.	140
		13	Totalizer 2 above warning limit.	141
		14	Totalizer 2 below warning limit.	142
		15	Totalizer 2 below alarm limit.	143
		16	Totalizer 3 above alarm limit.	144
		17	Totalizer 3 above warning limit.	145
		18	Totalizer 3 below warning limit.	146
		19	Totalizer 3 below alarm limit.	147
		20	Transmitter electronics temperature too high.	148
		21	Transmitter electronics temperature too low.	149
		22	Internal error.	150
		23	Memory card – Parameter backup disabled.	151
		24	Memory card (HART) – Parameter backup disabled.	152
		25		153
		26		154
		27		155
		28 … 29	Not used	
		30		158
		31	Internal error in transmitter	159

Register	Alarm status	Bit	Data description	Fault code ID
Transmitter diagnostics				
	Alarm status 6	0 to 4	Not used	
		5	Totalizer 4 simulated.	165
		6	Not used	
		7	Totalizer 1 simulated.	167
		8	Totalizer 2 simulated.	168
		9	Totalizer 3 simulated.	169
		10	Loop current simulated.	170
		11	Reserved	
		12	Transmitter firmware incompatible.	172
		13	Sensor firmware incompatible.	173
		14	Firmware local operation incompatible.	174
		15	Reserved	
		16	Reserved	
		17	Device startup.	177
		18	Transmitter firmware incompatible.	178
		19	Status signals simulated.	179
		20	Internal error.	180
		21	Memory card error.	181
		22	Communication card firmware incompatible.	182
		23 … 31	Not used	

Register	Alarm status	Bit	Data description	Fault code ID
Transmitter diagnostics				
6212	Alarm status 7	0 … 2	Not used	
		3	Current output 1 – Loop current in lower saturation.	195
		4	Current output 1 - Loop current in upper saturation.	196
		5 … 8	Not used	
		9	Current output 2 - Loop current in lower saturation.	201
		10	Current output 2 - Loop current in upper saturation.	202
		11	Not used	
		12 … 21	Not used	
		22	Current output 1 simulated.	214
		23	Current output 2 simulated.	215
		24	Not used	
		25	Process values frozen.	217
		26	Output channels forced.	218
		27 … 29	Not used	
		30	Invalid Modbus register mapping.	222
		31	Invalid Modbus coil configuration.	223

Register	Alarm status	Bit	Data description	Fault code ID
Transmitter diagnostics				
6214	Alarm status 8	0 … 31	Not used	

Register	Alarm status	Bit	Data description	Fault code ID
Transmitter diagnostics				
7000	Alarm status 9	0 … 28	Not used	
		29	Data logging, <30 days remaining.	285
		30	Data logging, <7 days remaining.	286
		31	Data logging memory full.	287

Register	Alarm status	Bit	Data description	Fault code ID
Transmitter diagnostics				
7002	Alarm status 10	0 … 23	Not used	
		24	Digital input 1 simulated.	312
		25	Digital input 2 simulated.	313
		26 … 27	Not used	
		28	Totalizer 4 above alarm limit.	316
		29	Totalizer 4 above warning limit.	317
		30	Totalizer 4 below warning limit.	318
		31	Totalizer 4 below alarm limit.	319

Register	Alarm status	Bit	Data description	Fault code ID
Transmitter diagnostics				
7004	Alarm status 11	0	Level (point 1) above alarm limit.	320
		1	Level (point 1) above warning limit.	321
		2	Level (point 1) below warning limit.	322
		3	Level (point 1) below alarm limit.	323
		4	Space (point 1) above alarm limit.	324
		5	Space (point 1) above warning limit.	325
		6	Space (point 1) below warning limit.	326
		7	Space (point 1) below alarm limit.	327
		8	Distance (point 1) above alarm limit.	328
		9	Distance (point 1) above warning limit.	329
		10	Distance (point 1) below warning limit.	330
		11	Distance (point 1) below alarm limit.	331
		12	Volume (point 1) above alarm limit.	332
		13	Volume (point 1) above warning limit.	333
		14	Volume (point 1) below warning limit.	334
		15	Volume (point 1) below alarm limit.	335
		16	Head (point 1) above alarm limit.	336
		17	Head (point 1) above warning limit.	337
		18	Head (point 1) below warning limit.	338
		19	Head (point 1) below alarm limit.	339
		20	Level (point 2) above alarm limit.	340
		21	Level (point 2) above warning limit.	341
		22	Level (point 2) below warning limit.	342
		23	Level (point 2) below alarm limit.	343
		24	Space (point 2) above alarm limit.	344
		25	Space (point 2) above warning limit.	345
		26	Space (point 2) below warning limit.	346
		27	Space (point 2) below alarm limit.	347
		28	Distance (point 2) above alarm limit.	348
		29	Distance (point 2) above warning limit.	349
		30	Distance (point 2) below warning limit.	350
		31	Distance (point 2) below alarm limit.	351

Register	Alarm status	Bit	Data description	Fault code ID
Transmitter diagnostics				
7006	Alarm status 12	0	Volume (point 2) above alarm limit.	352
		1	Volume (point 2) above warning limit.	353
		2	Volume (point 2) below warning limit.	354
		3	Volume (point 2) below alarm limit.	355
		4	Head (point 2) above alarm limit.	356
		5	Head (point 2) above warning limit.	357
		6	Head (point 2) below warning limit.	358
		7	Head (point 2) below alarm limit.	359
		8	Volume flow (point 2) above alarm limit.	360
		9	Volume flow (point 2) above warning limit.	361
		10	Volume flow (point 2) below warning limit.	362
		11	Volume flow (point 2) below alarm limit.	363
		12	Sensor temperature (point 2) above alarm limit.	364
		13	Sensor temperature (point 2) above warning limit.	365
		14	Sensor temperature (point 2) below warning limit.	366
		15	Sensor temperature (point 2) below alarm limit.	367
		16	Level difference above alarm limit.	368
		17	Level difference above warning limit.	369
		18	Level difference below warning limit.	370
		19	Level difference below alarm limit.	371
		20	Level average above alarm limit.	372
		21	Level average above warning limit.	373
		22	Level average below warning limit.	374
		23	Level average below alarm limit.	375
		24	Auxiliary temperature upper alarm	376
		25	Auxiliary temperature upper warning	377
		26	Auxiliary temperature lower warning	378
		27	Auxiliary temperature lower alarm	379
		28 … 31	Not used	

Register	Alarm status	Bit	Data description	Fault code ID
Transmitter diagnostics				
7050	Alarm status 13	0	Level (point 1) out-of-bounds alarm.	384
		1	Level (point 1) in-bounds alarm.	385
		2	Level (point 2) out-of-bounds alarm.	386
		3	Level (point 2) in-bounds alarm.	387
		4	Level (point 1) simulated. (3.8.1.1)	388
		5	Level (point 2) simulated. (3.8.1.8.1)	389
		6	Relay output 1 simulated. (3.8.3.6.1)	390
		7	Relay output 2 simulated. (3.8.3.6.2)	391
		8	Relay output 3 simulated. (3.8.3.6.3)	392
		9	Relay output 4 simulated. (3.8.3.6.4)	393
		10	Relay output 5 simulated. (3.8.3.6.5)	394
		11	Relay output 6 simulated. (3.8.3.6.6)	395
		12	Device - Maintenance required.	396
		13	Device - Maintenance demanded.	397
		14	Service - Maintenance required.	398
		15	Service - Maintenance demanded.	399
		16	Calibration - Maintenance required.	400
		17	Calibration - Maintenance demanded.	401
		18 … 25	Not used	
		26	Current output (HART) - Configuration error.	410
		27	Current output 1 - Configuration error.	411
		28	Current output 2 - Configuration error.	412
		29 … 31	Not used	

Setup

Length units for HMI

Register	Data description		Parameter number	R/W	Data type
8557	Units - Length units	Units for length quantities (used with Level, Space, Distance) that are applicable for parameters accessed via HMI 44: feet 45: meters 47: inches 48: centimeters 49: millimeters	2.2.1.1 (Level) 2.2.2.1 (Space) 2.2.3.1 (Distance)	R/W	Unsigned8

Sensor temperature units for HMI

Register	Data description		Parameter number	R/W	Data type
9006	Units – Sensor temperature units	Temperature unit used by HMI for sensor temperatures 32: °C 33: °F 34: °R 35: K	2.2.7.1	R/W	Unsigned8

Volume flow units for HMI

Register	Description		Parameter number	R/W	Data type
8398	Units – Volume flow units	Volume flow units shown on the HMI 1347: cubic meters per second 1348: cubic meters per minute 1349: cubic meter per hour 1350: cubic meters per day 1351: liters per second 1352: liters per minute 1353: liters per hour 1354: liters per day 1355: million liters per day 1356: cubic feet per second 1357: cubic feet per minute 1358: cubic feet per hour 1359: cubic feet per day 1362: gallons per second 1363: gallons per minute 1364: gallons per hour 1365: gallons per day 1366: million gallons per day 1367: imperial gallons per second 1368: imperial gallons per minute 1369: imperial gallons per hour 1370: imperial gallons per day 1371: oil barrels per second 1372: oil barrels per minute 1373: oil barrels per hour	2.2.6.1	R/W	Unsigned8

Register	Description		Parameter number	R/W	Data type
		1374: oil barrels per day 1493: kbbl/d - kilobarrel per day 1494: Mbbl/d - megabarrel per day 1510: Mm3/d - cubic megameter per day 1581: af/min - acre foot per minute 1582: af/h - acre foot per hour 1583: af/d - acre foot per day 1633: hectoliters per second 1634: hectoliters per minute 1635: hectoliters per hour 1636: hectoliters per day 1637: liquid barrels per second 1638: liquid barrels per minute 1639: liquid barrels per hour 1640: liquid barrels per day 642: beer barrels per second 1643: beer barrels per minute 1644: beer barrels per hour 1645: beer barrels per day 1999: custom unit 32768: bushels per second 32769: bushels per minute 32770: bushels per hour 32771: bushels per day 32772: cubic yards per second 32773: cubic yards per minute 32774: cubic yards per hour 32775: cubic yards per day 32776: cubic inches per second 32777: cubic inches per minute 32778: cubic inches per hour 32779: cubic inches per day			

Volume units for HMI

Register	Data description		Parameter number	R/W	Data type
8280	Units – Volume units	Unit that affects the values accessed by the HMI 40: US gallons 41: liters 42: imperial gallons 43: cubic meters 46: oil barrels 110: bushels 111: cubic yards 112: cubic feet 113: cubic inches 124: liquid barrels 170: beer barrels 236: hectoliters 253: custom volume unit	2.2.5.1	R/W	Unsigned8

Totalizer volume units for HMI

Register	Data description		Parameter number	R/W	Data type
8343	Units – Totalizer 1 volume units	Unit that affects the values accessed by the HMI 40: US gallons 41: liters 42: imperial gallons 43: cubic meters 46: oil barrels 110: bushels 111: cubic yards 112: cubic feet 113: cubic inches 124: liquid barrels 170: beer barrels 236: hectoliters 253: custom volume unit	2.3.1.2	R/W	Unsigned8
8443	Units – Totalizer 2 volume units		2.3.2.2	R/W	Unsigned8
8543	Units – Totalizer 3 volume units		2.3.3.2	R/W	Unsigned8
13595	Units – Totalizer 4 volume units		2.3.4.2	R/W	Unsigned8

Level source (Sensor type)

Register	Data description		Parameter number	R/W	Data type
3791	PT1 Type	Level source for measurement point: 0: Disabled 1: Generic mA input 2: SITRANS LR110 3: SITRANS LR120 4: SITRANS LU240	2.1.1	R/W	Unsigned8
3792	PT2 Type		2.1.20.1	R/W	Unsigned8

LR1xx region (Frequency)

Register	Data description		Parameter number	R/W	Data type
5405	Radar region	Mode number configuring the LR1xx radar frequencies for a specified region or countries 0= mode 1 (Europe, USA, Canada) 1= mode 2 (South Korea, Taiwan, Thailand) 2= mode 3 (China, Brazil, India), 3= mode 4 (Russia)	2.1.2	R	Unsigned8

Sensor

Register	Data description		Parameter number	R/W	Data type
3761	PT1 Input mode	0= Digital with failover 1= Digital 2= Analog	2.1.3	R/W	Unsigned8
3762	PT2 Input mode		2.1.20.3	R/W	
3763	PT1 Sensor offset		2.1.6.8	R/W	Float32
3765	PT2 Sensor offset		2.1.20.6.8	R/W	Float32
3767	PT1 Upper level point		2.1.6.6	R/W	Float32
3769	PT2 Upper level point		2.1.20.6.6	R/W	Float32
3771	PT1 Lower level point		2.1.6.5	R/W	Float32
3773	PT2 Lower level point		2.1.20.6.5	R/W	Float32
3775	PT1 Level offset		2.1.6.7	R/W	Float32
3777	PT2 Level offset		2.1.20.6.7	R/W	Float32

Material type

Register	Data description		Parameter number	R/W	Data type
3834	PT1 Material type	0: Liquid 1: Solid	2.1.5	R/W	Unsigned16
3835	PT2 Material type		2.1.20.5	R/W	Unsigned16

Upper and lower calibration points

Register	Data description	Parameter number	R//W	Data type
3465	PT1 Lower calibration point	2.1.6.1	R/W	Float32
3467	PT2 Lower calibration point	2.1.20.6.1	R/W	Float32
3469	PT1 Upper calibration point	2.1.6.2	R/W	Float32
3471	PT2 Upper calibration point	2.1.20.6.2	R/W	Float32
3473	PT1 Near range	2.1.6.9	R/W	Float32
3475	PT2 Near range	2.1.20.6.9	R/W	Float32
3477	PT1 Far range	2.1.6.10	R/W	Float32
3479	PT2 Far range	2.1.20.6.10	R/W	Float32

Rate (fill and empty)

Register	Data description		Parameter number	R/W	Data type
4445	PT1 Rate of change	Expected maximum rate at which process Level will increase. Actual units are m/min	Changed by the quick start wizard	R/W	Float32
4447	PT2 Rate of change	Expected maximum rate at which process Level will increase. Actual units are m/min	Changed by the quick start wizard	R/W	Float32
4449	PT1 Rate of change	Expected maximum rate at which process Level will decrease. Actual units are m/min	Changed by the quick start wizard	R/W	Float32
4451	PT2 Rate of change	Expected maximum rate at which process Level will decrease. Actual units are m/min	Changed by the quick start wizard	R/W	Float32
4453	PT1 Fill rate indicator limit	Filling rate at which the filling indicator on the HMI will indicate (typically 10% of fill rate)	2.1.8.2	R/W	Float32
4455	PT2 Fill rate indicator limit	Filling rate at which the filling indicator on the HMI will indicate (typically 10% of fill rate)	2.1.20.8.2	R/W	Float32
4457	PT1 Empty rate indicator limit	Emptying rate at which the emptying indicator on the HMI will indicate (typically 10% of empty rate)	2.1.8.3	R/W	Float32

Register	Data description		Parameter number	R/W	Data type
4459	PT2 Empty rate Indicator limit	Emptying rate at which the emptying indicator on the HMI will indicate (typically 10% of emptying rate)	2.1.20.8.3	R/W	Float32
4738	PT1 Fill rate alarm limit	Filling rate at which the filling diagnostic alarm is triggered.	2.1.8.4	R/W	Float32
4740	PT2 Fill rate alarm limit	Filling rate at which the filling diagnostic alarm is triggered.	2.1.20.8.4	R/W	Float32
4742	PT1 Empty rate alarm limit	Emptying rate at which the emptying diagnostic alarm is triggered.	2.1.8.5	R/W	Float32
4744	PT2 Empty rate alarm limit	Emptying rate at which the emptying diagnostic alarm is triggered.	2.1.20.8.5	R/W	Float32

Low Level cut-off

Register	Data description		Parameter number	R/W	Data type
3779	PT1 Low level cut-off	When low level cut-off is enabled and the level is less than low level cut-off value	2.1.16	R/W	Float32
3781	PT2 Low level cut-off		2.1.20.16	R/W	Float32

Sensor override

Register	Data description		Parameter number	R/W	Data type
4433	PT1 Sensor override input	1 to enable the Sensor override feature	2.1.12	R/W	Unsigned8
4434	PT1 Sensor override value	The override value to use when sensor override is enabled	2.1.13	R/W	Float32
4436	PT1 Sensor override DI	The DI# to use for sensor override	2.1.12	R/W	Unsigned8
4437	PT1 Sensor override time delay	Time delay before sensor override takes effect on DI assertion (in seconds)	2.1.14	R/W	Float32
4439	PT2 Sensor override input	1 to enable the Sensor override feature	2.1.20.12	R/W	Unsigned8

Register	Data description		Parameter number	R/W	Data type
4440	PT2 Sensor override value	The override value to use when sensor override is enabled	2.1.20.13	R/W	Float32
4442	PT2 Sensor override DI	The DI# to use for sensor override	2.1.20.12	R/W	Unsigned8
4443	PT2 Sensor override time delay	Time delay before sensor override takes effect on DI assertion (in seconds)	2.1.20.14	R/W	Float32

Current at lower and upper calibration

Register	Data description		Parameter number	R/W	Data type
3783	PT1 Current at lower calibration point	mA value that corresponds to the lower calibration point	2.1.6.3	R/W	Float32
3785	PT2 Current at lower calibration point		2.1.20.6.3	R/W	Float32
3787	PT1 Current at upper calibration point	mA value that corresponds to the upper calibration point	2.1.6.4	R/W	Float32
3789	PT2 Current at upper calibration point		2.1.20.6.4	R/W	Float32

Volume setup

Register	Data description	Parameter number	R/W	Data type
3491	PT1 Vessel dimension A	2.5.1.3	R/W	Float32
3493	PT1 Vessel dimension L	2.5.1.4	R/W	Float32
3495	PT1 Maximum volume	2.5.1.2	R/W	Float32
3497	PT1 Vessel shape	2.5.1.1	R/W	Unsigned8
3498	PT2 Vessel dimension A	2.5.12.1.3	R/W	Float32
3500	PT2 Vessel dimension L	2.5.12.1.4	R/W	Float32
3502	PT2 Maximum volume	2.5.12.1.2	R/W	Float32
3504	PT2 Vessel shape	2.5.12.1.1	R/W	Unsigned8

Custom volume breakpoints

Register	Data description	Parameter number	R/W	Data type
PT1 Custom volume breakpoints				
	Used for custom linear volume interpolation: X-values = Level values Y-values = Volume values			
3505	X-value 1	2.5.2.1	R/W	Float32
3507	X-value 2	2.5.2.3	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
3509	X-value 3	2.5.2.5	R/W	Float32
3511	X-value 4	2.5.2.7	R/W	Float32
3513	X-value 5	2.5.2.9	R/W	Float32
3515	X-value 6	2.5.2.11	R/W	Float32
3517	X-value 7	2.5.2.13	R/W	Float32
3519	X-value 8	2.5.2.15	R/W	Float32
3521	X-value 9	2.5.2.17	R/W	Float32
3523	X-value 10	2.5.2.19	R/W	Float32
3525	X-value 11	2.5.2.21	R/W	Float32
3527	X-value 12	2.5.2.23	R/W	Float32
3529	X-value 13	2.5.2.25	R/W	Float32
3531	X-value 14	2.5.2.27	R/W	Float32
3533	X-value 15	2.5.2.29	R/W	Float32
3535	X-value 16	2.5.2.31	R/W	Float32
3537	X-value 17	2.5.3.1	R/W	Float32
3539	X-value 18	2.5.3.3	R/W	Float32
3541	X-value 19	2.5.3.5	R/W	Float32
3543	X-value 20	2.5.3.7	R/W	Float32
3545	X-value 21	2.5.3.9	R/W	Float32
3547	X-value 22	2.5.3.11	R/W	Float32
3549	X-value 23	2.5.3.13	R/W	Float32
3551	X-value 24	2.5.3.15	R/W	Float32
3553	X-value 25	2.5.3.17	R/W	Float32
3555	X-value 26	2.5.3.19	R/W	Float32
3557	X-value 27	2.5.3.21	R/W	Float32
3559	X-value 28	2.5.3.23	R/W	Float32
3561	X-value 29	2.5.3.25	R/W	Float32
3563	X-value 30	2.5.3.27	R/W	Float32
3565	X-value 31	2.5.3.29	R/W	Float32
3567	X-value 32	2.5.3.31	R/W	Float32
3569	Y-value 1	2.5.2.2	R/W	Float32
3571	Y-value 2	2.5.2.4	R/W	Float32
3573	Y-value 3	2.5.2.6	R/W	Float32
3575	Y-value 4	2.5.2.8	R/W	Float32
3577	Y-value 5	2.5.2.10	R/W	Float32
3579	Y-value 6	2.5.2.12	R/W	Float32
3581	Y-value 7	2.5.2.14	R/W	Float32
3583	Y-value 8	2.5.2.16	R/W	Float32
3585	Y-value 9	2.5.2.18	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
3587	Y-value 10	2.5.2.20	R/W	Float32
3589	Y-value 11	2.5.2.22	R/W	Float32
3591	Y-value 12	2.5.2.24	R/W	Float32
3593	Y-value 13	2.5.2.26	R/W	Float32
3595	Y-value 14	2.5.2.28	R/W	Float32
3597	Y-value 15	2.5.2.30	R/W	Float32
3599	Y-value 16	2.5.2.32	R/W	Float32
3601	Y-value 17	2.5.3.2	R/W	Float32
3603	Y-value 18	2.5.3.4	R/W	Float32
3605	Y-value 19	2.5.3.6	R/W	Float32
3607	Y-value 20	2.5.3.8	R/W	Float32
3609	Y-value 21	2.5.3.10	R/W	Float32
3611	Y-value 22	2.5.3.12	R/W	Float32
3613	Y-value 23	2.5.3.14	R/W	Float32
3615	Y-value 24	2.5.3.16	R/W	Float32
3617	Y-value 25	2.5.3.18	R/W	Float32
3619	Y-value 26	2.5.3.20	R/W	Float32
3621	Y-value 27	2.5.3.22	R/W	Float32
3623	Y-value 28	2.5.3.24	R/W	Float32
3625	Y-value 29	2.5.3.26	R/W	Float32
3627	Y-value 30	2.5.3.28	R/W	Float32
3629	Y-value 31	2.5.3.30	R/W	Float32
3631	Y-value 32	2.5.3.32	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
PT2 Custom volume breakpoints				
	Used for custom linear volume interpolation: X-values = Level values Y-values = Volume values			
3633	X-value 1	2.5.12.2.1	R/W	Float32
3635	X-value 2	2.5.12.2.3	R/W	Float32
3637	X-value 3	2.5.12.2.5	R/W	Float32
3639	X-value 4	2.5.12.2.7	R/W	Float32
3641	X-value 5	2.5.12.2.9	R/W	Float32
3643	X-value 6	2.5.12.2.11	R/W	Float32
3645	X-value 7	2.5.12.2.13	R/W	Float32
3647	X-value 8	2.5.12.2.15	R/W	Float32
3649	X-value 9	2.5.12.2.17	R/W	Float32
3651	X-value 10	2.5.12.2.19	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
3653	X-value 11	2.5.12.2.21	R/W	Float32
3655	X-value 12	2.5.12.2.23	R/W	Float32
3657	X-value 13	2.5.12.2.25	R/W	Float32
3659	X-value 14	2.5.12.2.27	R/W	Float32
3661	X-value 15	2.5.12.2.29	R/W	Float32
3663	X-value 16	2.5.12.2.31	R/W	Float32
3665	X-value 17	2.5.12.3.1	R/W	Float32
3667	X-value 18	2.5.12.3.3	R/W	Float32
3669	X-value 19	2.5.12.3.5	R/W	Float32
3671	X-value 20	2.5.12.3.7	R/W	Float32
3673	X-value 21	2.5.12.3.9	R/W	Float32
3675	X-value 22	2.5.12.3.11	R/W	Float32
3677	X-value 23	2.5.12.3.13	R/W	Float32
3679	X-value 24	2.5.12.3.15	R/W	Float32
3681	X-value 25	2.5.12.3.17	R/W	Float32
3683	X-value 26	2.5.12.3.19	R/W	Float32
3685	X-value 27	2.5.12.3.21	R/W	Float32
3687	X-value 28	2.5.12.3.23	R/W	Float32
3689	X-value 29	2.5.12.3.25	R/W	Float32
3691	X-value 30	2.5.12.3.27	R/W	Float32
3693	X-value 31	2.5.12.3.29	R/W	Float32
3695	X-value 32	2.5.12.3.31	R/W	Float32
3697	Y-value 1	2.5.12.2.2	R/W	Float32
3699	Y-value 2	2.5.12.2.4	R/W	Float32
3701	Y-value 3	2.5.12.2.6	R/W	Float32
3703	Y-value 4	2.5.12.2.8	R/W	Float32
3705	Y-value 5	2.5.12.2.10	R/W	Float32
3707	Y-value 6	2.5.12.2.12	R/W	Float32
3709	Y-value 7	2.5.12.2.14	R/W	Float32
3711	Y-value 8	2.5.12.2.16	R/W	Float32
3713	Y-value 9	2.5.12.2.18	R/W	Float32
3715	Y-value 10	2.5.12.2.20	R/W	Float32
3717	Y-value 11	2.5.12.2.22	R/W	Float32
3719	Y-value 12	2.5.12.2.24	R/W	Float32
3721	Y-value 13	2.5.12.2.26	R/W	Float32
3723	Y-value 14	2.5.12.2.28	R/W	Float32
3725	Y-value 15	2.5.12.2.30	R/W	Float32
3727	Y-value 16	2.5.12.2.32	R/W	Float32
3729	Y-value 17	2.5.12.3.2	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
3731	Y-value 18	2.5.12.3.4	R/W	Float32
3733	Y-value 19	2.5.12.3.6	R/W	Float32
3735	Y-value 20	2.5.12.3.8	R/W	Float32
3737	Y-value 21	2.5.12.3.10	R/W	Float32
3739	Y-value 22	2.5.12.3.12	R/W	Float32
3741	Y-value 23	2.5.12.3.14	R/W	Float32
3743	Y-value 24	2.5.12.3.16	R/W	Float32
3745	Y-value 25	2.5.12.3.18	R/W	Float32
3747	Y-value 26	2.5.12.3.20	R/W	Float32
3749	Y-value 27	2.5.12.3.22	R/W	Float32
3751	Y-value 28	2.5.12.3.24	R/W	Float32
3753	Y-value 29	2.5.12.3.26	R/W	Float32
3755	Y-value 30	2.5.12.3.28	R/W	Float32
3757	Y-value 31	2.5.12.3.30	R/W	Float32
3759	Y-value 32	2.5.12.3.32	R/W	Float32

Volume flow setup

Register	Data description		Parameter number	R/W	Data type
4800	PT1 Maximum flow	Configuration parameter to specify maximum flow for ratiometric.	2.5.6.6	R/W	Float32
4802	PT2 Maximum flow	Configuration parameter to specify maximum flow for ratiometric	2.5.12.6.6	R/W	Float32
4804	PT1 Primary measuring device	0: None - Volume flow calculation off	2.5.6.1	R/W	Unsigned8
4805	PT2 Primary measuring device	0: None - Volume flow calculation off	2.5.12.6.1	R/W	Unsigned8
4806	PT1 Flow exponent		2.5.6.3	R/W	Float32
4808	PT2 Flow exponent		2.5.12.6.3	R/W	Float32
4810	PT1 K-factor	K-factor for flow unit m^3/s and linear unit of meters	2.5.6.11	R/W	Float32
4812	PT2 K-factor	K-factor for flow unit m^3/s and linear unit of meters	2.5.12.6.11	R/W	Float32
4814	PT1 V-notch angle		2.5.6.12	R/W	Float32
4816	PT2 V-notch angle		2.5.12.6.12	R/W	Float32
4818	PT1 Slope		2.5.6.13	R/W	Float32
4820	PT2 Slope		2.5.12.6.13	R/W	Float32

Register	Data description		Parameter number	R/W	Data type
4822	PT1 Roughness coefficient		2.5.6.14	R/W	Float32
4824	PT2 Roughness coefficient		2.5.12.6.14	R/W	Float32
4826	PT1 PMD dimension 1		2.5.6.15	R/W	Float32
4828	PT2 PMD dimension 1		2.5.12.6.15	R/W	Float32
4830	PT1 PMD dimension 2		2.5.6.16	R/W	Float32
4832	PT2 PMD dimension 2		2.5.12.6.16	R/W	Float32
4834	PT1 PMD dimension 3		2.5.6.17	R/W	Float32
4836	PT2 PMD dimension 3		2.5.12.6.17	R/W	Float32
4838	PT1 PMD dimension 4		2.5.6.18	R/W	Float32
4840	PT2 PMD dimension 4		2.5.12.6.18	R/W	Float32
4842	PT1 Method of flow calculation	Type of calculation, 0: Absolute, 1: Ratiometric	2.5.6.2	R/W	Unsigned8
4843	PT2 Method of flow calculation	Type of calculation, 0: Absolute, 1: Ratiometric	2.5.12.6.2	R/W	Unsigned8
4844	PT1 Maximum head	Largest head that will be used to calculate open channel flow.	2.5.6.4	R/W	Float32
4846	PT2 Maximum head	Largest head that will be used to calculate open channel flow.	2.5.12.6.4	R/W	Float32
4848	PT1 Maximum flow	Value contains the maximum calculated flow for the configured volume flow application which helps the customer when 'Absolute' method is chosen.	2.5.6.5	R	Float32
4850	PT2 Maximum flow	Value contains the maximum calculated flow for the configured volume flow application which helps the customer when 'Absolute' method is chosen.	2.5.12.6.5	R	Float32

Register	Data description		Parameter number	R/W	Data type
4852	PT1 Zero head offset	Allows the zero head to exist above zero level in a volume flow application. Head=Level in zero head offset	2.5.6.8	R/W	Float32
4854	PT2 Zero head offset	Allows the zero head to exist above zero level in a volume flow application. Head=Level in zero head offset	2.5.12.6.8	R/W	Float32
4860	PT1 Enable low flow cut-off	1: Enabled, 0: Disabled	2.5.6.9	R/W	Unsigned8
4861	PT2 Enable low flow cut-off	1: Enabled, 0: Disabled	2.5.12.6.9	R/W	Unsigned8
4862	PT1 Low flow cut-off	When the calculated flow is below this value and the feature is enabled, the published flow is zero.	2.5.6.10	R/W	Float32
4864	PT2 Low flow cut-off	When the calculated flow is below this value and the feature is enabled, the published flow is zero.	2.5.12.6.10	R/W	Float32

Flow totalizer units

Register	Data description		Parameter number	R/W	Data type
8321	Totalizer 1	40: US gallons 41: Liters 42: Imperial gallons 43: Cubic meters 46: Oil barrels 110: Bushels 111: Cubic yards 112: Cubic feet 113: Cubic inches 124: Liquid barrels 170: Beer barrels 236: Hectoliters 253: Custom volume unit	4.3.9.2.1	R/W	Unsigned8
8421	Totalizer 2		4.3.9.2.2	R/W	
8521	Totalizer 3		4.3.9.2.3	R/W	
8621	Totalizer 4		4.3.9.2.4	R/W	

Volume flow breakpoints

Register	Data description	Parameter number	R/W	Data type
PT1 Custom volume flow breakpoints				
	Used for custom linear volume flow interpolation: X-values = Head values Y-values = Volume flow values			
4461	X-value 1	2.5.7.1	R/W	Float32
4463	X-value 2	2.5.7.3	R/W	Float32
4465	X-value 3	2.5.7.5	R/W	Float32
4467	X-value 4	2.5.7.7	R/W	Float32
4469	X-value 5	2.5.7.9	R/W	Float32
4471	X-value 6	2.5.7.11	R/W	Float32
4473	X-value 7	2.5.7.13	R/W	Float32
4475	X-value 8	2.5.7.15	R/W	Float32
4477	X-value 9	2.5.7.17	R/W	Float32
4479	X-value 10	2.5.7.19	R/W	Float32
4481	X-value 11	2.5.7.21	R/W	Float32
4483	X-value 12	2.5.7.23	R/W	Float32
4485	X-value 13	2.5.7.25	R/W	Float32
4487	X-value 14	2.5.7.27	R/W	Float32
4489	X-value 15	2.5.7.29	R/W	Float32
4491	X-value 16	2.5.7.31	R/W	Float32
4493	X-value 17	2.5.8.1	R/W	Float32
4495	X-value 18	2.5.8.3	R/W	Float32
4497	X-value 19	2.5.8.5	R/W	Float32
4499	X-value 20	2.5.8.7	R/W	Float32
4501	X-value 21	2.5.8.9	R/W	Float32
4503	X-value 22	2.5.8.11	R/W	Float32
4505	X-value 23	2.5.8.13	R/W	Float32
4507	X-value 24	2.5.8.15	R/W	Float32
4509	X-value 25	2.5.8.17	R/W	Float32
4511	X-value 26	2.5.8.19	R/W	Float32
4513	X-value 27	2.5.8.21	R/W	Float32
4515	X-value 28	2.5.8.23	R/W	Float32
4517	X-value 29	2.5.8.25	R/W	Float32
4519	X-value 30	2.5.8.27	R/W	Float32
4521	X-value 31	2.5.8.29	R/W	Float32
4523	X-value 32	2.5.8.31	R/W	Float32
4525	Y-value 1	2.5.7.2	R/W	Float32
4527	Y-value 2	2.5.7.4	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
4529	Y-value 3	2.5.7.6	R/W	Float32
4531	Y-value 4	2.5.7.8	R/W	Float32
4533	Y-value 5	2.5.7.10	R/W	Float32
4535	Y-value 6	2.5.7.12	R/W	Float32
4537	Y-value 7	2.5.7.14	R/W	Float32
4539	Y-value 8	2.5.7.16	R/W	Float32
4541	Y-value 9	2.5.7.18	R/W	Float32
4543	Y-value 10	2.5.7.20	R/W	Float32
4545	Y-value 11	2.5.7.22	R/W	Float32
4547	Y-value 12	2.5.7.24	R/W	Float32
4549	Y-value 13	2.5.7.26	R/W	Float32
4551	Y-value 14	2.5.7.28	R/W	Float32
4553	Y-value 15	2.5.7.30	R/W	Float32
4555	Y-value 16	2.5.7.32	R/W	Float32
4557	Y-value 17	2.5.8.2	R/W	Float32
4559	Y-value 18	2.5.8.4	R/W	Float32
4561	Y-value 19	2.5.8.6	R/W	Float32
4563	Y-value 20	2.5.8.8	R/W	Float32
4565	Y-value 21	2.5.8.10	R/W	Float32
4567	Y-value 22	2.5.8.12	R/W	Float32
4569	Y-value 23	2.5.8.14	R/W	Float32
4571	Y-value 24	2.5.8.16	R/W	Float32
4573	Y-value 25	2.5.8.18	R/W	Float32
4575	Y-value 26	2.5.8.20	R/W	Float32
4577	Y-value 27	2.5.8.22	R/W	Float32
4579	Y-value 28	2.5.8.24	R/W	Float32
4581	Y-value 29	2.5.8.26	R/W	Float32
4583	Y-value 30	2.5.8.28	R/W	Float32
4585	Y-value 31	2.5.8.30	R/W	Float32
4587	Y-value 32	2.5.8.32	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
PT2 Custom volume flow breakpoints				
	Used for custom linear volume flow interpolation: X-values = Head values Y-values = Volume flow values			
4589	X-value 1	2.5.12.7.1	R/W	Float32
4591	X-value 2	2.5.12.7.3	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
4593	X-value 3	2.5.12.7.5	R/W	Float32
4595	X-value 4	2.5.12.7.7	R/W	Float32
4597	X-value 5	2.5.12.7.9	R/W	Float32
4599	X-value 6	2.5.12.7.11	R/W	Float32
4601	X-value 7	2.5.12.7.13	R/W	Float32
4603	X-value 8	2.5.12.7.15	R/W	Float32
4605	X-value 9	2.5.12.7.17	R/W	Float32
4607	X-value 10	2.5.12.7.19	R/W	Float32
4609	X-value 11	2.5.12.7.21	R/W	Float32
4611	X-value 12	2.5.12.7.23	R/W	Float32
4613	X-value 13	2.5.12.7.25	R/W	Float32
4615	X-value 14	2.5.12.7.27	R/W	Float32
4617	X-value 15	2.5.12.7.29	R/W	Float32
4619	X-value 16	2.5.12.7.31	R/W	Float32
4621	X-value 17	2.5.12.8.1	R/W	Float32
4623	X-value 18	2.5.12.8.3	R/W	Float32
4625	X-value 19	2.5.12.8.5	R/W	Float32
4627	X-value 20	2.5.12.8.7	R/W	Float32
4629	X-value 21	2.5.12.8.9	R/W	Float32
4631	X-value 22	2.5.12.8.11	R/W	Float32
4633	X-value 23	2.5.12.8.13	R/W	Float32
4635	X-value 24	2.5.12.8.15	R/W	Float32
4637	X-value 25	2.5.12.8.17	R/W	Float32
4639	X-value 26	2.5.12.8.19	R/W	Float32
4641	X-value 27	2.5.12.8.21	R/W	Float32
4643	X-value 28	2.5.12.8.23	R/W	Float32
4645	X-value 29	2.5.12.8.25	R/W	Float32
4647	X-value 30	2.5.12.8.27	R/W	Float32
4649	X-value 31	2.5.12.8.29	R/W	Float32
4651	X-value 32	2.5.12.8.31	R/W	Float32
4653	Y-value 1	2.5.12.7.2	R/W	Float32
4655	Y-value 2	2.5.12.7.4	R/W	Float32
4657	Y-value 3	2.5.12.7.6	R/W	Float32
4659	Y-value 4	2.5.12.7.8	R/W	Float32
4661	Y-value 5	2.5.12.7.10	R/W	Float32
4663	Y-value 6	2.5.12.7.12	R/W	Float32
4665	Y-value 7	2.5.12.7.14	R/W	Float32
4667	Y-value 8	2.5.12.7.16	R/W	Float32
4669	Y-value 9	2.5.12.7.18	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
4671	Y-value 10	2.5.12.7.20	R/W	Float32
4673	Y-value 11	2.5.12.7.22	R/W	Float32
4675	Y-value 12	2.5.12.7.24	R/W	Float32
4677	Y-value 13	2.5.12.7.26	R/W	Float32
4679	Y-value 14	2.5.12.7.28	R/W	Float32
4681	Y-value 15	2.5.12.7.30	R/W	Float32
4683	Y-value 16	2.5.12.7.32	R/W	Float32
4685	Y-value 17	2.5.12.8.2	R/W	Float32
4687	Y-value 18	2.5.12.8.4	R/W	Float32
4689	Y-value 19	2.5.12.8.6	R/W	Float32
4691	Y-value 20	2.5.12.8.8	R/W	Float32
4693	Y-value 21	2.5.12.8.10	R/W	Float32
4695	Y-value 22	2.5.12.8.12	R/W	Float32
4697	Y-value 23	2.5.12.8.14	R/W	Float32
4699	Y-value 24	2.5.12.8.16	R/W	Float32
4701	Y-value 25	2.5.12.8.18	R/W	Float32
4703	Y-value 26	2.5.12.8.20	R/W	Float32
4705	Y-value 27	2.5.12.8.22	R/W	Float32
4707	Y-value 28	2.5.12.8.24	R/W	Float32
4709	Y-value 29	2.5.12.8.26	R/W	Float32
4711	Y-value 30	2.5.12.8.28	R/W	Float32
4713	Y-value 31	2.5.12.8.30	R/W	Float32
4715	Y-value 32	2.5.12.8.32	R/W	Float32

Alarm limit setpoints

Register	Data description	Parameter number	R/W	Data type
11981	PT1 Level – Upper alarm limit	2.2.1.4	R/W	Float32
11983	PT1 Level – Upper warning limit	2.2.1.5	R/W	Float32
11985	PT1 Level – Lower warning limit	2.2.1.6	R/W	Float32
11987	PT1 Level – Lower alarm limit	2.2.1.7	R/W	Float32
11989	PT1 Level – Hysteresis	2.2.1.8	R/W	Float32
11991	PT2 Level – Upper alarm limit	2.2.8.4	R/W	Float32
11993	PT2 Level – Upper warning limit	2.2.8.5	R/W	Float32
11995	PT2 Level – Lower warning limit	2.2.8.6	R/W	Float32
11997	PT2 Level – Lower alarm limit	2.2.8.7	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
12053	PT2 Level – Hysteresis	2.2.8.8	R/W	Float32
12055	PT1 Distance – Upper alarm limit	2.2.3.4	R/W	Float32
12057	PT1 Distance – Upper warning limit	2.2.3.5	R/W	Float32
12059	PT1 Distance – Lower warning limit	2.2.3.6	R/W	Float32
12061	PT1 Distance – Lower alarm limit	2.2.3.7	R/W	Float32
12063	PT1 Distance – Hysteresis	2.2.3.8	R/W	Float32
12065	PT2 Distance – Upper alarm limit	2.2.10.4	R/W	Float32
12067	PT2 Distance – Upper warning limit	2.2.10.5	R/W	Float32
12069	PT2 Distance – Lower warning limit	2.2.10.6	R/W	Float32
12071	PT2 Distance – Lower alarm limit	2.2.10.7	R/W	Float32
12073	PT2 Distance – Hysteresis	2.2.10.8	R/W	Float32
12075	PT1 Space – Upper alarm limit	2.2.2.4	R/W	Float32
12077	PT1 Space – Upper warning limit	2.2.2.5	R/W	Float32
12079	PT1 Space – Lower warning limit	2.2.2.6	R/W	Float32
12081	PT1 Space – Lower alarm limit	2.2.2.7	R/W	Float32
12083	PT1 Space – Hysteresis	2.2.2.8	R/W	Float32
12085	PT2 Space – Upper alarm limit	2.2.9.4	R/W	Float32
12087	PT2 Space – Upper warning limit	2.2.9.5	R/W	Float32
12089	PT2 Space – Lower warning limit	2.2.9.6	R/W	Float32
12091	PT2 Space – Lower alarm limit	2.2.9.7	R/W	Float32
12093	PT2 Space – Hysteresis	2.2.9.8	R/W	Float32
12095	PT1 Head – Upper alarm limit	2.2.4.4	R/W	Float32
12097	PT1 Head – Upper warning limit	2.2.4.5	R/W	Float32
12153	PT1 Head – Lower warning limit	2.2.4.6	R/W	Float32
12155	PT1 Head – Lower alarm limit	2.2.4.7	R/W	Float32
12157	PT1 Head - Hysteresis	2.2.4.8	R/W	Float32
12159	PT2 Head – Upper alarm limit	2.2.11.4	R/W	Float32
12161	PT2 Head – Upper warning limit	2.2.11.5	R/W	Float32
12163	PT2 Head – Lower warning limit	2.2.11.6	R/W	Float32
12165	PT2 Head – Lower alarm limit	2.2.11.7	R/W	Float32
12167	PT2 Head – Hysteresis	2.2.11.8	R/W	Float32
12258	Level difference – Upper warning limit	2.2.15.5	R/W	Float32
12260	Level difference – Lower warning limit	2.2.15.6	R/W	Float32
12262	Level difference – Lower alarm limit	2.2.15.7	R/W	Float32
12264	Level difference –Hysteresis	2.2.15.8	R/W	Float32
12266	Level average – Upper alarm limit	2.2.16.4	R/W	Float32
12268	Level average – Upper warning limit	2.2.16.5	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
12270	Level average – Lower warning limit	2.2.16.6	R/W	Float32
12272	Level average – Lower alarm limit	2.2.16.7	R/W	Float32
12274	Level average – Hysteresis	2.2.16.8	R/W	Float32

Pump control

Register	Data description	Parameter number	R/W	Data type
4204	PT1 Pump 1 (Relay assignment)	2.5.4.12	R/W	Unsigned8
4205	PT1 Pump 2 (Relay assignment)	2.5.4.21	R/W	Unsigned8
4206	PT1 Pump 3 (Relay assignment)	2.5.4.30	R/W	Unsigned8
4207	PT1 Pump 4 (Relay assignment)	2.5.4.39	R/W	Unsigned8
4208	PT1 Pump 5 (Relay assignment)	2.5.4.48	R/W	Unsigned8
4209	PT1 Pump 6 (Relay assignment)	2.5.4.57	R/W	Unsigned8
4210	PT2 Pump 1 (Relay assignment)	2.5.12.4.12	R/W	Unsigned8
4211	PT2 Pump 2 (Relay assignment)	2.5.12.4.21	R/W	Unsigned8
4212	PT2 Pump 3 (Relay assignment)	2.5.12.4.30	R/W	Unsigned8
4213	PT2 Pump 4 (Relay assignment)	2.5.12.4.39	R/W	Unsigned8
4214	PT2 Pump 5 (Relay assignment)	2.5.12.4.48	R/W	Unsigned8
4215	PT2 Pump 6 (Relay assignment)	2.5.12.4.57	R/W	Unsigned8
4216	PT1 On setpoint pump 1	2.5.4.13	R/W	Float32
4218	PT1 On setpoint pump 2	2.5.4.22	R/W	Float32
4220	PT1 On setpoint pump 3	2.5.4.31	R/W	Float32
4222	PT1 On setpoint pump 4	2.5.4.40	R/W	Float32
4224	PT1 On setpoint pump 5	2.5.4.49	R/W	Float32
4226	PT1 On setpoint pump 6	2.5.4.58	R/W	Float32
4228	PT2 On setpoint pump 1	2.5.12.4.13	R/W	Float32
4230	PT2 On setpoint pump 2	2.5.12.4.22	R/W	Float32
4232	PT2 On setpoint pump 3	2.5.12.4.31	R/W	Float32
4234	PT2 On setpoint pump 4	2.5.12.4.40	R/W	Float32
4236	PT2 On setpoint pump 5	2.5.12.4.49	R/W	Float32
4238	PT2 On setpoint pump 6	2.5.12.4.58	R/W	Float32
4240	PT1 Off setpoint pump 1	2.5.4.14	R/W	Float32
4242	PT1 Off setpoint pump 2	2.5.4.23	R/W	Float32
4244	PT1 Off setpoint pump 3	2.5.4.32	R/W	Float32
4246	PT1 Off setpoint pump 4	2.5.4.41	R/W	Float32
4248	PT1 Off setpoint pump 5	2.5.4.50	R/W	Float32
4250	PT1 Off setpoint pump 6	2.5.4.59	R/W	Float32
4252	PT2 Off setpoint pump 1	2.5.12.4.14	R/W	Float32
4254	PT2 Off setpoint pump 2	2.5.12.4.23	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
4256	PT2 Off setpoint pump 3	2.5.12.4.32	R/W	Float32
4258	PT2 Off setpoint pump 4	2.5.12.4.41	R/W	Float32
4260	PT2 Off setpoint pump 5	2.5.12.4.50	R/W	Float32
4262	PT2 Off setpoint pump 6	2.5.12.4.59	R/W	Float32
4264	PT1 Service ratio pump 1	2.5.4.15	R/W	Unsigned8
4265	PT1 Service ratio pump 2	2.5.4.24	R/W	Unsigned8
4266	PT1 Service ratio pump 3	2.5.4.33	R/W	Unsigned8
4267	PT1 Service ratio pump 4	2.5.4.42	R/W	Unsigned8
4268	PT1 Service ratio pump 5	2.5.4.51	R/W	Unsigned8
4269	PT1 Service ratio pump 6	2.5.4.60	R/W	Unsigned8
4270	PT2 Service ratio pump 1	2.5.12.4.15	R/W	Unsigned8
4271	PT2 Service ratio pump 2	2.5.12.4.24	R/W	Unsigned8
4272	PT2 Service ratio pump 3	2.5.12.4.33	R/W	Unsigned8
4273	PT2 Service ratio pump 4	2.5.12.4.42	R/W	Unsigned8
4274	PT2 Service ratio pump 5	2.5.12.4.51	R/W	Unsigned8
4275	PT2 Service ratio pump 6	2.5.12.4.60	R/W	Unsigned8
Runtime				
4276	Runtime relay 1	3.4.6.1	R/W	Float32
4278	Runtime relay 2	3.4.6.2	R/W	Float32
4280	Runtime relay 3	3.4.6.3	R/W	Float32
4282	Runtime relay 4	3.4.6.4	R/W	Float32
4284	Runtime relay 5	3.4.6.5	R/W	Float32
4286	Runtime relay 6	3.4.6.6	R/W	Float32
Pump energy savings				
4288	Enable	2.5.5.1	R/W	Unsigned8
4289	Peak lead time	2.5.5.2	R/W	Float32
4291	Peak 1 start time	2.5.5.3	R/W	Float32
4293	Peak 2 start time	2.5.5.5	R/W	Float32
4295	Peak 3 start time	2.5.5.7	R/W	Float32
4297	Peak 4 start time	2.5.5.9	R/W	Float32
4299	Peak 5 start time	2.5.5.11	R/W	Float32
4301	Peak 1 end time	2.5.5.4	R/W	Float32
4303	Peak 2 end time	2.5.5.6	R/W	Float32
4305	Peak 3 end time	2.5.5.8	R/W	Float32
4307	Peak 4 end time	2.5.5.10	R/W	Float32
4309	Peak 5 end time	2.5.5.12	R/W	Float32
4311	PT1 Peak on setpoint pump 1	2.5.5.13	R/W	Float32
4313	PT1 Peak on setpoint pump 2	2.5.5.15	R/W	Float32
4315	PT1 Peak on setpoint pump 3	2.5.5.17	R/W	Float32

Register	Data description	Parameter number	R/W	Data type
4317	PT1 Peak on setpoint pump 4	2.5.5.19	R/W	Float32
4319	PT1 Peak on setpoint pump 5	2.5.5.21	R/W	Float32
4321	PT1 Peak on setpoint pump 6	2.5.5.23	R/W	Float32
4323	PT2 Peak on setpoint pump 1	2.5.12.5.1	R/W	Float32
4325	PT2 Peak on setpoint pump 2	2.5.12.5.3	R/W	Float32
4327	PT2 Peak on setpoint pump 3	2.5.12.5.5	R/W	Float32
4329	PT2 Peak on setpoint pump 4	2.5.12.5.7	R/W	Float32
4331	PT2 Peak on setpoint pump 5	2.5.12.5.9	R/W	Float32
4333	PT1 Peak on setpoint pump 6	2.5.12.5.11	R/W	Float32
4335	PT1 Peak off setpoint pump 1	2.5.5.14	R/W	Float32
4337	PT1 Peak off setpoint pump 2	2.5.5.16	R/W	Float32
4339	PT1 Peak off setpoint pump 3	2.5.5.18	R/W	Float32
4341	PT1 Peak off setpoint pump 4	2.5.5.20	R/W	Float32
4343	PT1 Peak off setpoint pump 5	2.5.5.22	R/W	Float32
4345	PT1 Peak off setpoint pump 6	2.5.5.24	R/W	Float32
4347	PT2 Peak off setpoint pump 1	2.5.12.5.2	R/W	Float32
4349	PT2 Peak off setpoint pump 2	2.5.12.5.4	R/W	Float32
4351	PT2 Peak off setpoint pump 3	2.5.12.5.6	R/W	Float32
4353	PT2 Peak off setpoint pump 4	2.5.12.5.8	R/W	Float32
4355	PT2 Peak off setpoint pump 5	2.5.12.5.10	R/W	Float32
4357	PT2 Peak off setpoint pump 6	2.5.12.5.12	R/W	Float32
Interlock (Digital input)				
4366	PT1 Interlock pump 1 (Enabled)	2.5.4.17	R/W	Unsigned8
4367	PT1 Interlock pump 2 (Enabled)	2.5.4.26	R/W	Unsigned8
4368	PT1 Interlock pump 3 (Enabled)	2.5.4.35	R/W	Unsigned8
4369	PT1 Interlock pump 4 (Enabled)	2.5.4.44	R/W	Unsigned8
4370	PT1 Interlock pump 5 (Enabled)	2.5.4.53	R/W	Unsigned8
4371	PT1 Interlock pump 6 (Enabled)	2.5.4.62	R/W	Unsigned8
4372	PT2 Interlock pump 1 (Enabled)	2.5.12.4.17	R/W	Unsigned8
4373	PT2 Interlock pump 2 (Enabled)	2.5.12.4.26	R/W	Unsigned8
4374	PT2 Interlock pump 3 (Enabled)	2.5.12.4.35	R/W	Unsigned8
4375	PT2 Interlock pump 4 (Enabled)	2.5.12.4.44	R/W	Unsigned8
4376	PT2 Interlock pump 5 (Enabled)	2.5.12.4.53	R/W	Unsigned8
4377	PT2 Interlock pump 6 (Enabled)	2.5.12.4.62	R/W	Unsigned8
4378	DI1 Pump 1 Interlock	2.5.4.17	R/W	Unsigned8
4379	DI1 Pump 2 Interlock	2.5.4.26	R/W	Unsigned8
4380	DI1 Pump 3 Interlock	2.5.4.35	R/W	Unsigned8
4381	DI1 Pump 4 Interlock	2.5.4.44	R/W	Unsigned8
4382	DI1 Pump 5 Interlock	2.5.4.53	R/W	Unsigned8

Register	Data description	Parameter number	R/W	Data type
4383	DI1 Pump 6 Interlock	2.5.4.62	R/W	Unsigned8
4384	DI2 Pump 1 Interlock	2.5.4.17	R/W	Unsigned8
4385	DI2 Pump 2 Interlock	2.5.4.26	R/W	Unsigned8
4386	DI2 Pump 3 Interlock	2.5.4.35	R/W	Unsigned8
4387	DI2 Pump 4 Interlock	2.5.4.44	R/W	Unsigned8
4388	DI2 Pump 5 Interlock	2.5.4.53	R/W	Unsigned8
4389	DI2 Pump 6 Interlock	2.5.4.62	R/W	Unsigned8
Power resumption and start delay				
4390	Delay between starts	2.5.4.8	R/W	Float32
4392	Power resumption delay	2.5.4.9	R/W	Float32
Pump run-on				
4394	PT1 Enable pump run-on	2.5.4.6	R/W	Unsigned8
4395	PT1 Pump run-on interval	2.5.4.7	R/W	Float32
4397	PT1 Run-on duration pump 1	2.5.4.16	R/W	Float32
4399	PT1 Run-on duration pump 2	2.5.4.25	R/W	Float32
4401	PT1 Run-on duration pump 3	2.5.4.34	R/W	Float32
4403	PT1 Run-on duration pump 4	2.5.4.43	R/W	Float32
4405	PT1 Run-on duration pump 5	2.5.4.52	R/W	Float32
4407	PT1 Run-on duration pump 6	2.5.4.61	R/W	Float32
4409	PT2 Run-on duration pump 1	2.5.12.4.16	R/W	Float32
4411	PT2 Run-on duration pump 2	2.5.12.4.25	R/W	Float32
4413	PT2 Run-on duration pump 3	2.5.12.4.34	R/W	Float32
4415	PT2 Run-on duration pump 4	2.5.12.4.43	R/W	Float32
4417	PT2 Run-on duration pump 5	2.5.12.4.52	R/W	Float32
4419	PT2 Run-on duration pump 6	2.5.12.4.61	R/W	Float32
4762	PT2 Enable pump run-on	2.5.12.4.6	R/W	Unsigned8
4763	PT2 Pump run-on interval	2.5.12.4.7	R/W	Float32
Wall cling reduction PT1				
4421	Enable wall cling reduction	2.5.4.3	R/W	Unsigned8
4422	Wall cling variation	2.5.4.4	R/W	Float32
Wall cling reduction PT2				
4735	Enable wall cling reduction	2.5.12.4.3	R/W	Unsigned8
4736	Wall cling variation	2.5.12.4.4	R/W	Float32
Time of day relay				
4424	Time relay enabled	2.5.10.1	R/W	Unsigned8
4425	Activation time	2.5.10.2	R/W	Float32
4427	Duration	2.5.10.3	R/W	Float32
4429	Assigned relay	2.5.10.1	R/W	Unsigned8

Control relay

Register	Data description		Parameter number	R/W	Data type
4870	Control relay 1 ON		2.5.11.1.2	R/W	Float32
4872	Control relay 2 ON		2.5.11.2.2	R/W	Float32
4874	Control relay 3 ON		2.5.11.3.2	R/W	Float32
4876	Control relay 4 ON		2.5.11.4.2	R/W	Float32
4878	Control relay 5 ON		2.5.11.5.2	R/W	Float32
4880	Control relay 6 ON		2.5.11.6.2	R/W	Float32
4882	Control relay 1 OFF		2.5.11.1.3	R/W	Float32
4884	Control relay 2 OFF		2.5.11.2.3	R/W	Float32
4886	Control relay 3 OFF		2.5.11.3.3	R/W	Float32
4888	Control relay 4 OFF		2.5.11.4.3	R/W	Float32
4890	Control relay 5 OFF		2.5.11.5.3	R/W	Float32
4892	Control relay 6 OFF		2.5.11.6.3	R/W	Float32
4894	Level to spill PT1	The level at which a spill will occur in the application	2.5.9.2	R/W	Float32
4896	Level to spill PT2	The level at which a spill will occur in the application	2.5.12.9.2	R/W	Float32
4898	Time to spill PT1	The calculated time at which a spill will occur at the current rate of change of level	2.5.9.1	R/W	Float32
4900	Time to spill PT2	The calculated time at which a spill will occur at the current rate of change of level	2.5.12.9.1	R/W	Float32
4902	Level to spill threshold PT 1	Below this level we ignore time-to-spill (it is not evaluated)	2.5.9.3	R/W	Float32
4904	Level to spill threshold PT 2	Below this level we ignore time-to-spill (it is not evaluated)	2.5.12.9.3	R/W	Float32
4906	Time to spill diagnostic PT1	Time-to-spill diagnostic threshold. If calculated time-to-spill is less than this time the diagnostic is raised	3.4.1.4	R/W	Float32
4932	Time to spill diagnostic PT2	Time-to-spill diagnostic threshold. If calculated time-to-spill is less than this time the diagnostic is raised	3.4.1.5.4	R/W	Float32

On/off delay for status relay function

Register	Data description		Parameter number	R/W	Data type	Units
13899	On delay for status relay	Time to delay the leading edge of the output value	2.4.6.15	R/W	Float32	s
13901	Off delay for status relay	Time to delay the trailing edge of the output value	2.4.6.16	R/W	Float32	s

Pump exercise

Register	Data description		Parameter number	R/W	Data type	Units
5121	PT1 Pump 1 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.4.18	R/W	Unsigned8	
5122	PT1 Pump 2 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.4.27	R/W	Unsigned8	
5123	PT1 Pump 3 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.4.36	R/W	Unsigned8	
5124	PT1 Pump 4 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.4.45	R/W	Unsigned8	
5125	PT1 Pump 5 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.4.54	R/W	Unsigned8	
5126	PT1 Pump 6 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.4.63	R/W	Unsigned8	
5127	PT2 Pump 1 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.12.4.18	R/W	Unsigned8	

Register	Data description		Parameter number	R/W	Data type	Units
5128	PT2 Pump 2 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.12.4.27	R/W	Unsigned8	
5129	PT2 Pump 3 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.12.4.36	R/W	Unsigned8	
5130	PT2 Pump 4 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.12.4.45	R/W	Unsigned8	
5131	PT2 Pump 5 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.12.4.54	R/W	Unsigned8	
5132	PT2 Pump 6 exercise enable	1 to Enable the Pump Exercise feature for the specified pump (indexed)	2.5.12.4.63	R/W	Unsigned8	
5133	Last time relay 1 was used	Last time the relay was used (real time clock in seconds since Jan 1, 2000) - either in a pump cycle or an exercise cycle.	3.4.6.7	R	Float32	
5135	Last time relay 2 was used	Last time the relay was used (real time clock in seconds since Jan 1, 2000) - either in a pump cycle or an exercise cycle.	3.4.6.8	R	Float32	
5137	Last time relay 3 was used	Last time the relay was used (real time clock in seconds since Jan 1, 2000) - either in a pump cycle or an exercise cycle.	3.4.6.9	R	Float32	

Register	Data description		Parameter number	R/W	Data type	Units
5139	Last time relay 4 was used	Last time the relay was used (real time clock in seconds since Jan 1, 2000) - either in a pump cycle or an exercise cycle.	3.4.6.10	R	Float32	
5141	Last time relay 5 was used	Last time the relay was used (real time clock in seconds since Jan 1, 2000) - either in a pump cycle or an exercise cycle.	3.4.6.11	R	Float32	h
5143	Last time relay 6 was used	Last time the relay was used (real time clock in seconds since Jan 1, 2000) - either in a pump cycle or an exercise cycle.	3.4.6.12	R	Float32	h
5145	PT1 Pump 1 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.4.19	R	Float32	h
5147	PT1 Pump 2 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.4.28	R	Float32	h
5149	PT1 Pump 3 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.4.37	R	Float32	h
5151	PT1 Pump 4 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.4.46	R	Float32	h
5153	PT1 Pump 5 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.4.55	R	Float32	h

Register	Data description		Parameter number	R/W	Data type	Units
5155	PT1 Pump 6 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.4.64	R	Float32	h
5157	PT2 Pump 1 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.12.4.19	R	Float32	h
5159	PT2 Pump 2 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.12.4.28	R	Float32	h
5161	PT2 Pump 3 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.12.4.37	R	Unsigned32	h
5163	PT2 Pump 4 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.12.4.46	R	Unsigned32	h
5165	PT2 Pump 5 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.12.4.55	R	Float32	h
5167	PT2 Pump 6 exercise interval	The time interval between successive Pump Exercise events for the specified pump	2.5.12.4.64	R	Float32	h
5169	PT1 Pump 1 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.4.20	R	Float32	min
5171	PT1 Pump 2 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.4.29	R	Float32	min

Register	Data description		Parameter number	R/W	Data type	Units
5173	PT1 Pump 3 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.4.38	R	Float32	min
5175	PT1 Pump 4 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.4.47	R	Float32	min
5177	PT1 Pump 5 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.4.56	R	Float32	min
5179	PT1 Pump 6 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.4.65	R	Float32	min
5181	PT2 Pump 1 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.12.4.20	R	Float32	min
5183	PT2 Pump 2 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.12.4.29	R/W	Float32	min
5185	PT2 Pump 3 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.12.4.38	R/W	Float32	min
5187	PT2 Pump 4 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.12.4.47	R/W	Float32	min
5189	PT2 Pump 5 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.12.4.56	R/W	Unsigned32	min

Register	Data description		Parameter number	R/W	Data type	Units
5191	PT2 Pump 6 exercise cycle	How long to run a Pump Exercise cycle for the specified pump (indexed)	2.5.12.4.65	R/W	Unsigned32	min
5193	PT1 exercise guard enable	Whether to use a Safe-guard level for the vessel. Indexed by Vessel.	2.5.4.10	R/W	Float32	
5194	PT2 exercise guard enable	Whether to use a Safe-guard level for the vessel. Indexed by Vessel.	2.5.12.4.10	R/W	Float32	
5195	PT1 exercise pump guard level	Safe-guard level for the vessel. Indexed by Vessel.	2.5.4.11	R/W	Float32	m
5197	PT2 exercise pump guard level	Safe-guard level for the vessel. Indexed by Vessel.	2.5.12.4.11	R/W	Float32	m

Auto false echo suppression (AFES)

Register	Data description		Parameter number	R/W	Data type
4769	PT1 (AFES) Enable status	AFES is enabled or disabled.	2.1.9.1	R	Unsigned8
4770	PT1 (AFES) Learn	0: Idle, 1: Learn, 2: Turn AFES off, 3: Turn AFES on	2.1.9.3	R/W	Unsigned8
4771	PT1 AFES learn status	Status of 'learn' shown on HMI: 0: Idle, 1: Busy, 2: Success, 3: Failure	2.1.9.3	R/W	Unsigned8
4772	PT1 (AFES) Range	The AFES range (sent on to the sensor prior to a 'Learn' command)	2.1.9.2	R/W	Float32
4774	PT2 (AFES) Enable status	AFES is enabled or disabled.	2.1.20.9.1	R	Unsigned8
4775	PT2 (AFES) Learn	0: Idle, 1: Learn, 2: Turn AFES off, 3: Turn AFES on	2.1.20.9.3	R/W	Unsigned8
4776	PT2 AFES learn status	Status of 'learn' shown on HMI: 0: Idle, 1: Busy, 2: Success, 3: Failure	2.1.20.9.3	R/W	Unsigned8
4777	PT2 (AFES) Range	The AFES range (sent on to the sensor prior to a 'Learn' command)	2.1.20.9.2	R/W	Float32

Manual shaper for LU240

Register	Data description		Parameter number	R/W	Data type	Units
5412	PT1 Manual TVT shaper mode	LU240 Enable/Disable TVT shaper parameters	2.1.10	R/W	Unsigned8	
5413	PT2 Manual TVT shaper mode	LU240 Enable/Disable TVT shaper parameters	2.1.20.10	R/W	Unsigned8	
5414	PT1 TVT shaper index 1	PT1 LU240 TVT shaper index number, enter value in dB	2.1.11.1	R/W	Float32	dB
5416	PT1 TVT shaper index 2		2.1.11.2	R/W	Float32	dB
5418	PT1 TVT shaper index 3		2.1.11.3	R/W	Float32	dB
5420	PT1 TVT shaper index 4		2.1.11.4	R/W	Float32	dB
5422	PT1 TVT shaper index 5		2.1.11.5	R/W	Float32	dB
5424	PT1 TVT shaper index 6		2.1.11.6	R/W	Float32	dB
5426	PT1 TVT shaper index 7		2.1.11.7	R/W	Float32	dB
5428	PT1 TVT shaper index 8		2.1.11.8	R/W	Float32	dB
5430	PT1 TVT shaper index 9		2.1.11.9	R/W	Float32	dB
5432	PT1 TVT shaper index 10		2.1.11.10	R/W	Float32	dB
5434	PT1 TVT shaper index 11		2.1.11.11	R/W	Float32	dB
5436	PT1 TVT shaper index 12		2.1.11.12	R/W	Float32	dB
5438	PT1 TVT shaper index 13		2.1.11.13	R/W	Float32	dB
5440	PT1 TVT shaper index 14		2.1.11.14	R/W	Float32	dB
5442	PT1 TVT shaper index 15		2.1.11.15	R/W	Float32	dB
5444	PT1 TVT shaper index 16		2.1.11.16	R/W	Float32	dB

Register	Data description		Parameter number	R/W	Data type	Units
5446	PT1 TVT shaper index 17	PT1 LU240 TVT shaper index number, enter value in dB	2.1.11.17	R/W	Float32	dB
5448	PT1 TVT shaper index 18		2.1.11.18	R/W	Float32	dB
5450	PT1 TVT shaper index 19		2.1.11.19	R/W	Float32	dB
5452	PT1 TVT shaper index 20		2.1.11.20	R/W	Float32	dB
5454	PT1 TVT shaper index 21		2.1.11.21	R/W	Float32	dB
5456	PT1 TVT shaper index 22		2.1.11.22	R/W	Float32	dB
5458	PT1 TVT shaper index 23		2.1.11.23	R/W	Float32	dB
5460	PT1 TVT shaper index 24		2.1.11.24	R/W	Float32	dB
5462	PT1 TVT shaper index 25		2.1.11.25	R/W	Float32	dB
5464	PT1 TVT shaper index 26		2.1.11.26	R/W	Float32	dB
5466	PT1 TVT shaper index 27		2.1.11.27	R/W	Float32	dB
5468	PT1 TVT shaper index 28		2.1.11.28	R/W	Float32	dB
5470	PT1 TVT shaper index 29		2.1.11.29	R/W	Float32	dB
5472	PT1 TVT shaper index 30		2.1.11.30	R/W	Float32	dB
5474	PT1 TVT shaper index 31		2.1.11.31	R/W	Float32	dB
5476	PT1 TVT shaper index 32		2.1.11.32	R/W	Float32	dB
5478	PT1 TVT shaper index 33		2.1.11.33	R/W	Float32	dB
5480	PT1 TVT shaper index 34		2.1.11.34	R/W	Float32	dB
5482	PT1 TVT shaper index 35		2.1.11.35	R/W	Float32	dB
5484	PT1 TVT shaper index 36		2.1.11.36	R/W	Float32	dB
5486	PT1 TVT shaper index 37		2.1.11.37	R/W	Float32	dB

Register	Data description		Parameter number	R/W	Data type	Units
5488	PT1 TVT shaper index 38	PT1 LU240 TVT shaper index number, enter value in dB	2.1.11.38	R/W	Float32	dB
5490	PT1 TVT shaper index 39		2.1.11.39	R/W	Float32	dB
5492	PT1 TVT shaper index 40		2.1.11.40	R/W	Float32	dB
5494	PT2 TVT shaper index 1	PT2 LU240 TVT shaper index number, enter value in dB	2.1.20.11.1	R/W	Float32	dB
5496	PT2 TVT shaper index 2		2.1.20.11.2	R/W	Float32	dB
5498	PT2 TVT shaper index 3		2.1.20.11.3	R/W	Float32	dB
5500	PT2 TVT shaper index 4		2.1.20.11.4	R/W	Float32	dB
5502	PT2 TVT shaper index 5		2.1.20.11.5	R/W	Float32	dB
5504	PT2 TVT shaper index 6		2.1.20.11.6	R/W	Float32	dB
5506	PT2 TVT shaper index 7		2.1.20.11.7	R/W	Float32	dB
5508	PT2 TVT shaper index 8		2.1.20.11.8	R/W	Float32	dB
5510	PT2 TVT shaper index 9		2.1.20.11.9	R/W	Float32	dB
5512	PT2 TVT shaper index 10		2.1.20.11.10	R/W	Float32	dB
5514	PT2 TVT shaper index 11		2.1.20.11.11	R/W	Float32	dB
5516	PT2 TVT shaper index 12		2.1.20.11.12	R/W	Float32	dB
5518	PT2 TVT shaper index 13		2.1.20.11.13	R/W	Float32	dB
5520	PT2 TVT shaper index 14		2.1.20.11.14	R/W	Float32	dB
5522	PT2 TVT shaper index 15		2.1.20.11.15	R/W	Float32	dB
5524	PT2 TVT shaper index 16		2.1.20.11.16	R/W	Float32	dB
5526	PT2 TVT shaper index 17		2.1.20.11.17	R/W	Float32	dB
5528	PT2 TVT shaper index 18		2.1.20.11.18	R/W	Float32	dB

Register	Data description		Parameter number	R/W	Data type	Units
5530	PT2 TVT shaper index 19	PT2 LU240 TVT shaper index number, enter value in dB	2.1.20.11.19	R/W	Float32	dB
5532	PT2 TVT shaper index 20		2.1.20.11.20	R/W	Float32	dB
5534	PT2 TVT shaper index 21		2.1.20.11.21	R/W	Float32	dB
5536	PT2 TVT shaper index 22		2.1.20.11.22	R/W	Float32	dB
5538	PT2 TVT shaper index 23		2.1.20.11.23	R/W	Float32	dB
5540	PT2 TVT shaper index 24		2.1.20.11.24	R/W	Float32	dB
5542	PT2 TVT shaper index 25		2.1.20.11.25	R/W	Float32	dB
5544	PT2 TVT shaper index 26		2.1.20.11.26	R/W	Float32	dB
5546	PT2 TVT shaper index 27		2.1.20.11.27	R/W	Float32	dB
5548	PT2 TVT shaper index 28		2.1.20.11.28	R/W	Float32	dB
5550	PT2 TVT shaper index 29		2.1.20.11.29	R/W	Float32	dB
5552	PT2 TVT shaper index 30		2.1.20.11.30	R/W	Float32	dB
5554	PT2 TVT shaper index 31		2.1.20.11.31	R/W	Float32	dB
5556	PT2 TVT shaper index 32		2.1.20.11.32	R/W	Float32	dB
5558	PT2 TVT shaper index 33		2.1.20.11.33	R/W	Float32	dB
5560	PT2 TVT shaper index 34		2.1.20.11.34	R/W	Float32	dB
5562	PT2 TVT shaper index 35		2.1.20.11.35	R/W	Float32	dB
5564	PT2 TVT shaper index 36		2.1.20.11.36	R/W	Float32	dB
5566	PT2 TVT shaper index 37		2.1.20.11.37	R/W	Float32	dB
5568	PT2 TVT shaper index 38		2.1.20.11.38	R/W	Float32	dB

Register	Data description		Parameter number	R/W	Data type	Units
5570	PT2 TVT shaper index 39	PT2 LU240 TVT shaper index number, enter value in dB	2.1.20.11.39	R/W	Float32	dB
5572	PT2 TVT shaper index 40		2.1.20.11.40	R/W	Float32	dB

Communication setup

Baud rate and parity settings

Register	Data description		Parameter number	R/W	Data type
8298	Data rate	Current baud rate shown in Modbus Communication menu 4.3.4 0: 9600 bps 1: 19200 bps (Default) 2: 115200 bps 4: 38400 bps 5: 57600 bps 6: 76800 bps 7: 1200 bps 8: 2400 bps 9: 4800 bps	4.3.4	R/W	Unsigned8
8299	Parity and stopbits	Current parity shown in Modbus Communication menu 4.3.5 (8 databits are always used) 0: Even parity, 1 stopbit 1: Odd parity, 1 stopbit 2: No parity, 2 stopbits 3: No parity, 1 stopbit	4.3.5	R/W	Unsigned8

Byte format

Register	Data description		Parameter number	R/W	Data type
8295	Integer byte order	Integer byte order is set in Modbus Communication menu 4.3.7 0: MSB - LSB (big endian) 1: LSB - MSB (little endian) MSB=most significant byte/high byte LSB=least significant byte/low byte	4.3.7	R/W	Unsigned8
8296	Floating point byte order	Float32 byte order is set in Modbus Communication menu 4.3.6 0: 1-0-3-2 1: 0-1-2-3 2: 2-3-0-1 3: 3-2-1-0 The first mentioned byte is the first byte sent. Byte 3 corresponds to the left-most byte (MSB) of a 32 bit float in big endian format, byte 0 to the right-most byte.	4.3.6	R/W	Unsigned8

Modbus address

Register	Data description		Parameter number	R/W	Data type
8297	Slave address (SW)	Modbus slave address 1 … 255	4.3.1	R/W	Unsigned8

Length units for Modbus

Register	Data description		Parameter number	R/W	Data type
8556	Level – Length units (Used for Level, Space, Distance)	Unit for length quantities that is applicable for parameters accessed via the fieldbus interface. 44: feet 45: meters 47: inches 48: centimeters 49: millimeters	4.3.9.1.1	R/W	Unsigned8

Volume flow units for Modbus

Register	Data description		Parameter number	R/W	Data type
7500	Volume flow – units	15: Cubic feet per minute 16: US gallons per minute 17: Liters per minute 18: Imperial gallons per minute 19: Cubic meters per hour 22: US gallons per second 23: Million US gallons per day 24: Liters per second 25: Million liters per day 26: Cubic feet per second 27: Cubic feet per day 28: Cubic meters per second 29: Cubic meters per day 30: Imperial gallons per hour 31: Imperial gallons per day 130: Cubic feet per hour 131: Cubic meters per minute 132: Barrels (= 42 US gallons) per second	4.3.9.1.3	R/W	Unsigned8

Register	Data description		Parameter number	R/W	Data type
		133: Barrels (= 42 US gallons) per minute 134: Barrels (= 42 US gallons) per hour 135: Barrels (= 42 US gallons) per day 136: US gallons per hour 137: Imperial gallons per second 138: Liters per hour 170: Beer barrel per second 171: Beer barrel per minute 172: Beer barrel per hour 173: Beer barrel per day 235: US gallons per day 253: Custom volume unit			

Volume units for Modbus

Register	Data description		Parameter number	R/W	Data type
8281	Volume – units	40: US gallons 41: Liters 42: Imperial gallons 43: Cubic meters 46: Oil barrels 110: Bushels 111: Cubic yards 112: Cubic feet 113: Cubic inches 124: Liquid barrels 170: Beer barrels 236: Hectoliters 253: Custom volume unit	4.3.9.1.2	R/W	Unsigned8

Totalizer volume units for Modbus

Register	Data description		Parameter number	R/W	Data type
8321	Totalizer 1 – units	40: US gallons 41: Liters 42: Imperial gallons 43: Cubic meters 46: Oil barrels 110: Bushels 111: Cubic yards 112: Cubic feet 113: Cubic inches 124: Liquid barrels 170: Beer barrels 236: Hectoliters 253: Custom volume unit	4.3.9.2.1	R/W	Unsigned8
8421	Totalizer 2 – units		4.3.9.2.2		
8521	Totalizer 3 – units		4.3.9.2.3		
13677	Totalizer 4 – units		4.3.9.2.4		

Sensor temperature units for Modbus

Register	Data description		Parameter number	R/W	Data type
7700	Temperature – units	32: °C 33: °F 34: °R 35: K	4.3.9.1.4	R/W	Unsigned8