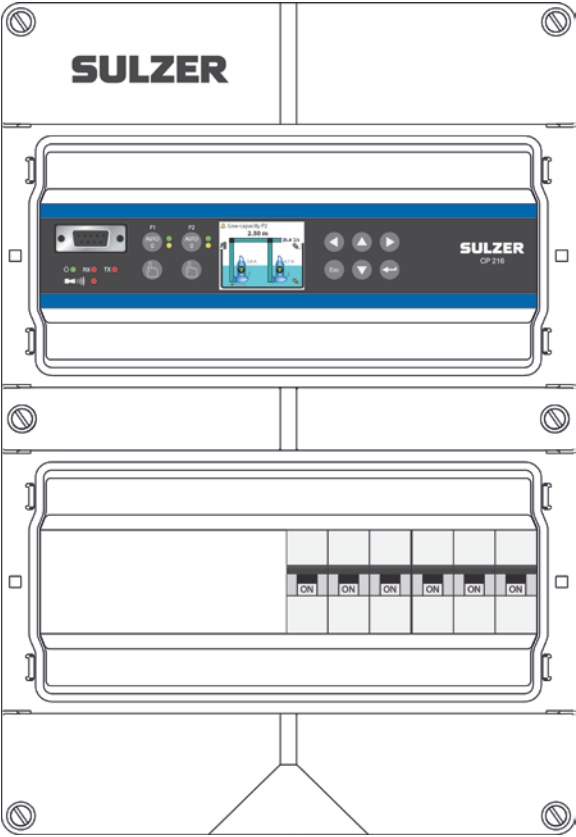


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**Control Panel Type ABS CP 116/216  
COMLI/Modbus - Version 1.25**

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# 1 Comli/Modbus IO number layout

## 1.1 Digital outputs

DO1 Alarm Relay 1	DO2 Alarm Relay 2	DO3 Alarm Relay 3	DO4 Control P1	DO5 Control P2
** 0	** 1	** 2	* 3	* 4

\* = Remote control possible.

\*\* Type "Remote Control" allows remote write.

## 1.2 Pump status (P1-P2)

IO-Bit P1	IO-Bit P2	Function	Note
16	32	Pump Relay *	Remote Control possible
17	33	Pump run indication	
18	34	Pump blocked	DI not in auto
19	35	Pump alarm blocked	Alarm ackn. required to restart
20	36	Pump fail	DI pump fail
21	37	Fallen M-protector ***	Remote Reset possible
22	38	Fallen temperature protector	
23	39	Leakage	
24	40	Start float On	
25	41	Hand flag	Forced pump run
26	42	Start flag	Manual start
27	43	Stop flag	Manual stop
28	44	Stop float	
29	45	Set point	
30	46	Max runtime reached	
31	47	Optional SW pump run	Tariff control, High float etc.

\*\*\* Reset sequence is activated by writing 1 (Resets retry counter to zero). Writing 0 stops reset sequence and trips the motor protector.

IO-Bit P1	IO-Bit P2	Function	Note
48	56	Pump Dry Run Blocked	While Block Timer <> 0
49	57	Spare = 0	
50	58	Spare = 0	
51	59	Spare = 0	
52	60	Spare = 0	
53	61	Spare = 0	
54	62	Spare = 0	
55	63	Spare = 0	

## 1.3 Digital inputs

DI1	DI2	DI3	DI4	DI5	DI6	DI Block P1	DI Block P2
64	65	66	67	68	69	70	71

## 1.4 Pump pit status

IO-Bit	Function	Note
96	Remote block	Write resets timeout timer. 0=Deblock, 1=Block
97	Pressure block	
98	Low level float	
99	High level	
100	Low level	
101	High level float	
102	Unused	
103	Unused	
104	High inflow	
105	Low inflow	
106	Backup start	
107	High pressure	
108	Low pressure	
109	Overflow	
110	Unused	
111	Sensor Error	Analogue sensor

## 1.5 Comp. alarm status

IO-Bit	Function	Note
496	Not ackn, B-Alarm	
497	Not ackn. A-Alarm	
504	Active B-Alarm	
505	Active A-Alarm	
511	Ackn, Alarm Call	Same as ackn. to R333, 0=CP 116/216 discon./ 1=System discon.

## 1.6 System info

IO-Bit	Function	Note
992	Ackn. Personal alarm	
993	Spare = 0	
994	Local mode	
995	Modem error	
996	Line error	

## 1.7 Alarm status

	IO-Bit	Octal	Hex
Alarm 0 = IO 1024 and so on	1024-1081	2000-2071	400-439

Alarm status indicate 1 if alarm is active 0 when alarm is off, independent of alarm type (A/B)  
 Alarm numbers, which are set "Inactive", always show 0.

Alarm no.	IO-Bit	Description
0	1024	Unused
1	1025	Power fail
2	1026	Phase Error (Incoming phase missing)
3	1027	NV checksum error
4	1028	Personal alarm
Alarm no.	IO-bit	Description
5	1029	High level pump pit
6	1030	Low level pump pit
7	1031	High level float
8	1032	Low level float
9	1033	High inflow
10	1034	Low inflow
11	1035	Backup start
12	1036	Remote blocked
13	1037	High pressure
14	1038	Low pressure
15	1039	Overflow
16	1040	Back-Pressure block
17	1041	Sensor Error
18	1042	P1: Phase missing
19	1043	P1: Dry Run
20	1044	P1: No run confirm
21	1045	P1: Fallen motor protector
22	1046	P1: Motor protector reset unsuccessful
23	1047	P1: High motor current
24	1048	P1: Low motor current
25	1049	P1: Leakage
26	1050	P1: High temperature
27	1051	P1: Low pump capacity
28	1052	P1: Not in auto
29	1053	P1: Pump error
30	1054	P1: Max continuous runtime
31	1055	P1: Alarm blocked
32	1056	P2: Phase missing
33	1057	P2: Dry Run
34	1058	P2: No run confirm
35	1059	P2: Fallen motor protector
36	1060	P2: Motor protector reset unsuccessful
37	1061	P2: High motor current
38	1062	P2: Low motor current
39	1063	P2: Leakage
40	1064	P2: High temperature
41	1065	P2: Low pump capacity
42	1066	P2: Not in auto
43	1067	P2: Pump error
44	1068	P2: Max continuous runtime
45	1069	P2: Alarm blocked
46	1070	Both Pumps Blocked
47	1071	High precipitation pulse channel
48	1072	High effect pulse channel
49	1073	High flow pulse channel
50	1074	Low flow pulse channel
51	1075	Modem error
52	1076	Tele line error
53	1077	High alarm user mA2
54	1078	Low alarm user mA2
55	1079	Wrong phase order
56	1080	Communication Error I/O CPU
57	1081	Checksum Error I/O CPU

## 1.8 Latched alarm status

	IO-Bit	Octal	Hex
Alarm 0 = IO 1280 and so on	1280-1337	2400-2471	500-539

Latched alarm status is set to 1 when alarm goes active and are updated after Comli/Modbus readout with actual alarm status. This is made to not lose alarms, witch have gone inactive before the call is ready.

## 1.9 Acknowledged alarms

	IO-Bit	Octal	Hex
Alarm 0 = IO 1536 and so on	1536-1593	3000-3071	600-639

Status for ackn. alarm are set to 0 each time a new alarm occurs and gives the possibility for a central system to ackn. each alarm individually.

The ackn,. works the same way as local ackn. on CP 216 and is made by writing a 1 to actual alarm bit.

This ackn. is time stamped in the local alarm list. Even local ackn. in substation ackn, actual IO-bits.

You can also ackn. all alarm by write to R333 ( if you have select that function ).

For system that can handle the Comli/Modbus telegram for time stamped events, we recommend to use that method for readout of new alarms.

## 1.10 Pending alarms

	IO-Bit	Octal	Hex
Alarm 0 = IO 1792 and so on	1792-1849	3400-3471	700-739

Pending alarms bits maybe active even if alarm is set inactive.

## 1.11 Configurations bits

**Pit flags 1: Same as bit mapped register R1010.**

IO-Bit	Function	Note
2048	Remote pump block	0=Off / 1=On
2049	Back pressure pump block	0=Off / 1=On
2050	Low level float pump block	0=Off / 1=On
2051	Sensor type connected	0=Analogue sensor/ 1= Start/stop floats
2052	Max No pumps running	0= 1 pump / 1= 2 pumps
2053	Type of alternation	0=Every pump stop / 1=Last pump stop
2054	Primary pump	0=Pump 1 / 1= Pump 2
2055	Leakage pump block	0=Off / 1=On
2056	Runtime alternation	0=Off / 1=On
2057	Start pump on level change	0=Off / 1=On
2058	Stop pump on level change	0=Off / 1=On
2059	Unused	0=Off / 1=On
2060	Inflow calculation	0=Off / 1=On
2061	Calc. pump capacity	0=Off / 1=On
2062	Backup run P1	0=Off / 1= On
2063	Backup run P2	0=Off / 1= On

**Pit flags 2: Same as bit mapped register R1011.**

2064	Pit shape	0=Rectangular / 1=Conical
2065	Emptying/Filling pit	0=Emptying / 1=Filling
2066	Tariff control	0=Off / 1= On
2067	High float check of level sensor	0=Off / 1= On
2068	Low float check of level sensor	0=Off / 1= On
2069	Level change check of level sensor	0=Off / 1= On
2070	Analogue level sensor type	0=External level sensor mA1 / 1= Internal pressure sensor
2071	Alternative stop level	0=Off/ 1= On
2072	Spare = 0	
2073	Spare = 0	
2074	Spare = 0	
2075	Spare = 0	
2076	Spare = 0	
2077	Spare = 0	
2078	Spare =0	
2079	Spare =0	

**Pump 1 flags 1: Same as bit mapped register R1120.**

IO-bit	Function	Note
2080	Relay control pump	0= No/ 1= Yes
2081	Reset of motor protector	0=Off / 1= On
2082	Control run (Pump exercise)	0=Off / 1= On
2083	Max cont. runtime stop pump	0=Off / 1= On
2084	Phase missing block pump	0=No / 1=Yes
2085	Spare = 0	
2086	Alarm No confirm block pump	0=No / 1=Yes
2087	Alarm fallen M.prot block pump	0=No / 1=Yes
2088	Spare = 0	
2089	Alarm high motor cur. block pump	0=No / 1=Yes
2090	Alarm low motor cur. block pump	0=No / 1=Yes
2091	Alarm leakage block pump	0=No / 1=Yes
2092	Alarm high temp. block pump	0=No / 1=Yes
2093	Alarm low capacity block pump	0=No / 1=Yes
2094	Spare = 0	
2095	Alarm pump fail block pump	0=No / 1=Yes

**Pump 1 flags 2: Same as bit mapped register R1121.**

IO-bit	Function	Note
2096	Low Cos $\phi$ (dry run) stop pump	0=Off / 1= On
2097	Temperature monitor	0=Off / 1= On
2098	Leakage monitor	0=Off / 1= On
2099	Spare =0	
2100	Spare =0	
2101	Spare =0	
2102	Spare= 0	
2103	Spare= 0	
2104	Spare= 0	
2105	Spare=0	
2106	Spare=0	
2107	Spare=0	
2108	Spare=0	
2109	Spare=0	
2110	Spare=0	
2111	Spare=0	

**Pump 2 flags 1: Same as bit mapped register R1150**

IO-bit	Function	Note
2112	Relay control pump	0= No/ 1= Yes
2113	Reset of motor protector	0=Off / 1= On
2114	Control run (Pump exercise)	0=Off / 1= On
2115	Max cont. runtime stop pump	0=Off / 1= On
2116	Phase missing block pump	0=Off/ 1= On
2117	Spare=0	
2118	Alarm No confirm block pump	0=No / 1=Yes
2119	Alarm fallen M.prot block pump	0=No / 1=Yes
2120	Spare = 0	
2121	Alarm high motor cur. block pump	0=No / 1=Yes
2122	Alarm low motor cur. block pump	0=No / 1=Yes
2123	Alarm leakage block pump	0=No / 1=Yes
2124	Alarm high temp. block pump	0=No / 1=Yes
2125	Alarm low capacity block pump	0=No / 1=Yes
2126	Spare = 0	
2127	Alarm pump fail block pump	0=No / 1=Yes

**Pump 2 flags 2: Same as bit mapped register R1151**

IO-bit	Function	Note
2128	Low Cos $\phi$ (dry run) stop pump	0=Off / 1= On
2129	Temperature monitor	0=Off / 1= On
2130	Leakage monitor	0=Off / 1= On
2131	Spare =0	
2132	Spare =0	
2133	Spare =0	
2134	Spare= 0	
2135	Spare= 0	
2136	Spare= 0	
2137	Spare=0	
2138	Spare=0	
2139	Spare=0	
2140	Spare=0	
2141	Spare=0	
2142	Spare=0	
2143	Spare=0	

## 2 Text addresses

All text addresses are given in Hex format.  
All addresses below 1000H allow max 20 character string.

### 2.1 Analogue inputs

Address(Hex)	Description	Scale/Unit/Note
3	Analogue in mA2	User text
103	Analogue in mA2	User unit

### 2.2 Tele and alarm setup

Address(Hex)	Description
0801	Tel. no. alarm call 1
0802	Tel. no. alarm call 2
0803	Tel. no. alarm call 3
0804	Tel. no. alarm call 4
080B	GPRS SMS fallback number
0810	Extra Hayes init. before calling
0811	Hayes init after disconnecting line
0812	PIN code for GSM modem
0813	PUK code for GSM modem
0814	SMSC number. International format (Leave blank for SIM card default)
0815	GPRS IP address
0816	GPRS apn.
0817	GPRS apn continued.
0818	GPRS username.
0819	GPRS password.
0820	Local (GPRS modem) IP address
0830	Station name
0831	Id string to send on connect

### 2.3 GPRS modem status

0A00	Manufacturer
0A01	Model
0A02	Firmware
0A03	SIM card ID
0A04	Subscriber ID
0A05	Equipment ID
0A06	Connect error cause
0A07	Operator
0A08	Operator 2
0A09	Operator 3
0A0A	Operator 4
0A0B	Operator 5
0A0C	Operator 6
0A0D	Operator 7
0A0E	Cell info
0A0F	Cell 2 info
0A10	Cell 3 info
0A11	Cell 4 info
0A02	Cell 5 info
0A13	Cell 6 info
0A14	Cell 7 info



## 2.4 Digital history time stamped events I chronological order

Event type: ALARM ON/ALARM OFF/ALARM ACKN./D.IN-D.OUT ON/OFF

Text like: Date (yymmddmss)[TAB]Event type[TAB]Source

Address(Hex)	Description
2000	Last time stamped event
2001	Event before last
2002	And so on. Max 4096 events backwards
.....	
2FFF	

## 3 CP 116/216 COMLI/Modbus Register

### 3.1 Remote/Local status

Register no	Description	Scale factor/ unit / note
0	Local Mode	1 = Local

### 3.2 Analogue inputs in engineering units

Register no	Description	Scale factor/ unit / note
1	mA1 Ext. Level sensor	0.01 m (0.01ft)
2	Current P1	0.1 A Max of L1, L2 and L3
3	Current P2	0.1 A Max of L1, L2 and L3
4	mA2 Pressure/User	0.1 bar /User defined
5	Internal Pressure sensor	0.01 m (0.01ft)

### 3.3 Actual values in engineering units

Register no	Description	Scale factor/ unit / note
10	Pit Level	0.01 m (0.01ft)
11	Inflow	0.1 l/s (1 GPM)
12	Outflow	0.1 l/s (1 GPM)
13	Overflow level	1 mm (0.001 ft)
14	Overflow flow m3/h	0.1 m3/h (1 GPM)
15	Overflow flow l/s	0.1 l/s (1 GPM)
16	Last pump capacity P1	0.1 l/s (1 GPM)
17	Last pump capacity P2	0.1 l/s (1 GPM)
18	Precip./Effect/Flow pulse Ch	0.1 l/s*ha/ 0.1 kW/m3/h (0.01 inch/h/1 GPM)
19	Cos φ P1	0.01
20	Cos φ P2	0.01
21	Current L1 P1	0.01 A
22	Current L2 P1	0.01 A
23	Current L3 P1	0.01 A
24	Current L1 P2	0.01 A
25	Current L2 P2	0.01 A
26	Current L3 P2	0.01 A
27	Case temperature	0.1 °C (0.1 F)

### 3.4 Accumulated total values

Register no	Description	Scale factor/ unit / note
40-41	Overflow count	times
42-43	Overflow time	sec
44-45	Overflow volume	0.1 m3 (1 gal)
46-47	Pumped volume	0.1 m3 (1 gal)
48-49	P1 runtime	sec
50-51	P1 start count	times
52	P1 nominal cap.	0.1 l/s (1 GPM)
53	P2 nominal cap.	0.1 l/s (1 GPM)
54-55	P2 runtime	sec
56-57	P2 start count	times
58-59	Pulse Channel	0.1 kWh/ mm/m3 (0.1 inch/1 gal)

### 3.5 Accumulated values today

Register no	Description	Scale factor/ unit / note
70-71	Overflow count	times
72-73	Overflow time	sec
74-75	Overflow volume	0.1 m3 (1 gal)
76-77	Pumped volume	0.1 m3 (1 gal)
78-79	P1 runtime	sec
80-81	P1 start count	times
82	P1 avg. cap.	0.1 l/s (1 GPM)
83	P2 avg. cap.	0.1 l/s (1 GPM)
84-85	P2 runtime	sec
86-87	P2 start count	times
88-89	Pulse Channel	0.1 kWh/mm /m3 (0.1 inch/ 1 gal)

### 3.6 Accumulated values yesterday

Register no	Description	Scale factor/ unit / note
100-101	Overflow count	times
102-103	Overflow time	sec
104-105	Overflow volume	0.1 m3 (1 gal)
106-107	Pumped volume	0.1 m3 (1 gal)
108-109	P1 runtime	sec
110-111	P1 start count	times
112	P1 avg. cap.	0.1 l/s (1 GPM)
113	P2 avg. cap.	0.1 l/s (1 GPM)
114-115	P2 runtime	sec
116-117	P2 start count	times
118-119	Pulse Channel	0.1 kWh/mm/m3 (0.1 inch /1 gal)

### 3.7 Accumulated values 2 days ago

Register no	Description	Scale factor/ unit / note
130-131	Overflow count	times
132-133	Overflow time	sec
134-135	Overflow volume	0.1 m3 (1 gal)
136-137	Pumped volume	0.1 m3 (1 gal)
138-139	P1 runtime	sec
140-141	P1 start count	times
142	P1 avg. cap.	0.1 l/s (1 GPM)
143	P2 avg. cap.	0.1 l/s (1 GPM)
144-145	P2 runtime	sec
146-147	P2 start count	times
148-149	Pulse Channel	0.1 kWh/mm/m3 (0.1 inch/1 gal)

### 3.8 Accumulated values 3 days ago

Register no	Description	Scale factor/ unit / note
160-161	Overflow count	times
162-163	Overflow time	sec
164-165	Overflow volume	0.1 m3 (1 gal)
166-167	Pumped volume	0.1 m3 (1 gal)
168-169	P1 runtime	sec
170-171	P1 start count	times
172	P1 avg. cap.	0.1 l/s (1 GPM)
173	P2 avg. cap.	0.1 l/s (1 GPM)
174-175	P2 runtime	sec
176-177	P2 start count	times
178-179	Pulse Channel	0.1 kWh/mm/m3 (0.1 inch/ 1 gal)

### 3.9 Accumulated values 4 days ago

Register no	Description	Scale factor/ unit / note
190-191	Overflow count	times
192-193	Overflow time	sec
194-195	Overflow volume	0.1 m3 (1 gal)
196-197	Pumped volume	0.1 m3 (1 gal)
198-199	P1 runtime	sec
200-201	P1 start count	times
202	P1 avg. cap.	0.1 l/s (1 GPM)
203	P2 avg. cap.	0.1 l/s (1 GPM)
204-205	P2 runtime	sec
206-207	P2 start count	times
208-209	Pulse Channel	0.1 kWh/mm/m3 (0.1 inch/ 1 gal)

### 3.10 Accumulated values 5 days ago

Register no	Description	Scale factor/ unit / note
220-221	Overflow count	times
222-223	Overflow time	sec
224-225	Overflow volume	0.1 m3 (1 gal)
226-227	Pumped volume	0.1 m3 (1 gal)
228-229	P1 runtime	sec
230-231	P1 start count	times
232	P1 avg. cap.	0.1 l/s (1 GPM)
233	P2 avg. cap.	0.1 l/s (1 GPM)
234-235	P2 runtime	sec
236-237	P2 start count	times
238-239	Pulse Channel	0.1 kWh/mm/m3 (0.1 inch/ 1 gal)

### 3.11 Accumulated values 6 days ago

Register no	Description	Scale factor/ unit / note
250-251	Overflow count	times
252-253	Overflow time	sec
254-255	Overflow volume	0.1 m3 (1 gal)
256-257	Pumped volume	0.1 m3 (1 gal)
258-259	P1 runtime	sec
260-261	P1 start count	times
262	P1 avg. cap.	0.1 l/s (1 GPM)
263	P2 avg. cap.	0.1 l/s (1 GPM)
264-265	P2 runtime	sec
266-267	P2 start count	times
268-269	Pulse Channel	0.1 kWh/mm/m3 (0.1 inch/1 gal)

### 3.12 Accumulated values 7 days ago

Register no	Description	Scale factor/ unit / note
280-281	Overflow count	times
282-283	Overflow time	sec
284-285	Overflow volume	0.1 m3 (1 gal)
286-287	Pumped volume	0.1 m3 (1 gal)
288-289	P1 runtime	sec
290-291	P1 start count	times
292	P1 avg. cap.	0.1 l/s (1 GPM)
293	P2 avg. cap.	0.1 l/s (1 GPM)
294-295	P2 runtime	sec
296-297	P2 start count	times
298-299	Pulse Channel	0.1 kWh/mm /m3 (0.1 inch/1 gal)

### 3.13 IO 0-255

Register no	Description	Scale factor/ unit / note
312	IO 0 -15	Read only
313	IO 16 -31	Read only
314	IO 32 -47	Read only
315	IO 48 -63	Read only
316	IO 64 -79	Read only
317	IO 80 -95	Read only
318	IO 96 -111	Read only
319	IO 112-127	Read only
320	IO 128-143	Read only
321	IO 144-159	Read only
322	IO 160-175	Read only
323	IO 176-191	Read only
324	IO 192-207	Read only
325	IO 208-223	Read only
326	IO 224-239	Read only
327	IO 240-255	Read only

### 3.14 Real Time Clock RTC

Register no	Description	Scale factor/ unit / note
328	Year	
329	Month	
330	Day	
331	Hour	
332	Minute	

### 3.15 Acknowledge alarm dialup

Register no	Description	Scale factor/ unit / note
333	Write to ackn. alarm dialup	for value 1 master takes response for disconnecting
34	“ “ “ “ “	

### 3.16 GPRS status

Register no	Description	Scale factor/ unit / note
336	GPRS connect status	0=dsisconnected, 1=reconnecting, 2=connected
337	urc.ProfileId	From last ^SIS msg
338	urc.Cause	From last ^SIS msg
339	urc.InfoId	From last ^SIS msg
340	Previous urc.IfoId	^SIS msg before last

### 3.17 Raw AD values

Register no	Description	Scale factor/ unit / note
402	P1 Klixon (Temperature)	0 – 4095
403	P1 DI (Leakage)	0 – 4095
404	P2 Klixon (Temperature)	0 – 4095
405	P2 DI (Leakage)	0 – 4095

### 3.18 Communication status

Register no	Description	Scale factor/ unit / note
<b>Service port</b>		
420	Overflow counter	
421	Parity error counter	
422	Framing error counter	
423	Break counter	
424	Error messages counter	
425	Ok Messages counter	
426	Checksum error counter	
<b>Com port</b>		
430	Overflow counter	
431	Parity error counter	
432	Framing error counter	
433	Break counter	
434	Error messages counter	
435	Ok Messages counter	
436	Checksum error counter	
<b>SPI bus</b>		
438	Ok Messages counter	
439	Error Messages Counter	

### 3.19 General info

Register no	Description	Scale factor/ unit / note
442	Program version I/O board	100 = 1.00
443	Program version	100 = 1.00
444	Special version	0 = Standard version
445	Station type	50=CP 116 / 51= CP 216
30	“ “	“ “ “
446	CPU clock frequency	1/1000 in MHz and three decimals
447	Program version in hex	1.00 = 0x100
449	GSM-GPRS signal (CSQ)	0-31, 99=unknown
334	Same as reg. 449	
335	GPRS connect count	
584	Station number	Station identification for monitoring systems
32	“ “	“ “ “ “ “

### 3.20 No decimals for flow values. default 1 dec. (us = 0)

Register no	Description	Scale factor/ unit / note
990	Inflow decimals	0-4
991	Outflow decimals	0-4
992	Pump capacity P1/P2	0-4
993	Overflow flow	0-4
994	Pulse flow	0-4

### 3.21 System configuration

Register no	Description	Scale factor/ unit / note
995	Logg GPRS events	0=Off, 1=On
1000	Menu language	0=Swe/1=Eng/2=Ger/3=Fre .....
1001	Date format	0=YY:MM:DD / 1=DD:MM/YY/ 2=MM:DD:YY
1002	Units	0=Metric / 1= Us Units (Only metric support in V.1.xx
1003	LCD Back light time	min 0= always On
1004	Pit fill graphics range	centimetre (0.01 ft)
1005	Buzzer On/Off	0=Off/ 1=On
1006	Buzzer Alert Time	min 0=No limit
1007	Buzzer Pause Time	min

### 3.22 Pit configuration

Register no	Description	Scale factor/ unit / note			
1010	Pit flags 1	Bit mapped register, See IO-bits.			
1011	Pit flags 2	“ “ “ “ “			
1013	Min time between relay changes	s			
1015	Pump alternation	0=Off/1=Normal/2=Asymmetrical			
1016	No stop to alternation	Asymmetrical alternation			
1017	Runtime to alternation	min. Runtime alternation			
1020	Level change to start	0.01 m	(0.01 ft)	Level change start/stop	
1021	/ time unit	min			
1024	Level change to stop	min			
1025	/ time unit				
1030	Calculation interval inflow	s	Inflow		
1031	Flow compensation 2 pumps	1 %			
1036	Pit level 0	0.01 m	(0.01 ft)	Pit area	
1037	Pit area 0	0.1 m <sup>2</sup>	(1 ft <sup>2</sup> )		
1038	Pit level 1	0.01 m	(0.01 ft)		
1039	Pit area 1	0.1 m <sup>2</sup>	(1 ft <sup>2</sup> )		
1040	Pit level 2	0.01m	(0.01 ft)		
1041	Pit area 2	0.1 m <sup>2</sup>	(1 ft <sup>2</sup> )		
1042	Pit level 3	0.01 m	(0.01 ft)		
1043	Pit area 3	0.1 m <sup>2</sup>	(1 ft <sup>2</sup> )		
1044	Pit level 4	0.01 m	(0.01 ft)		
1045	Pit area 4	0.1 m <sup>2</sup>	(1 ft <sup>2</sup> )		
1046	Pit level 5	0.01m	(0.01 ft)		
1047	Pit area 5	0.1 m <sup>2</sup>	(1 ft <sup>2</sup> )		
1048	Pit level 6	0.01 m	(0.01 ft)		
1049	Pit area 6	0.1 m <sup>2</sup>	(1 ft <sup>2</sup> )		
1050	Pit level 7	0.01 m	(0.01 ft)		
1051	Pit area 7	0.1 m <sup>2</sup>	(1 ft <sup>2</sup> )		
1052	Pit level 8	0.01m	(0.01 ft)		
1053	Pit area 8	0.1 m <sup>2</sup>	(1 ft <sup>2</sup> )		
1054	Pit level 9	0.01m	(0.01 ft)		
1055	Pit area 9	0.1 m <sup>2</sup>			
1060	Min level calc. pump capacity	0.01 m	(0.01 ft)	Pump capacity	
1061	Start delay	s			
1062	Calculation time	s			
1063	Stop delay	s			

Register no	Description	Scale factor/ unit / note		
1065	Leakage block delay	s		
1066	Remote block timeout	s	0 = No timeout	
1067	Pressure block set-point	0.1 bar	(0.1 ft)	
1068	Pressure block timeout	s	0 = No timeout	
1069	Pressure block delay	s		
1070	Backup runtime	s	High float run on time	
1072	Sensor level at high float	0.01 m	(0.01 ft)	Sensor check
1073	Max difference at high float	+/-0.01 m	(0.01 ft)	
1074	Sensor level at low float	0.01 m	(0.01 ft)	
1075	Max difference at low float	+/-0.01 m	(0.01 ft)	
1076	Sensor control time	s		
1077	Min level change	0.01m	(0.01 ft)	
1080	Hi tariff pump pre-start	min	Tariff control	
1081	Pump down level	0.01 m	(0.01 ft)	
1082	Monday peak 1 On	min	0-1440 min	
1083	Monday peak 1 Off	min		
1084	Monday peak 2 On	min		
1085	Monday peak 2 Off	min		
1086	Tuesday peak 1 On	min		
1087	Tuesday peak 1 Off	min		
1088	Tuesday peak 2 On	min		
1089	Tuesday peak 2 Off	min		
1090	Wednesday peak 1 On	min		
1091	Wednesday peak 1 Off	min		
1092	Wednesday peak 2 On	min		
1093	Wednesday peak 2 Off	min		
1094	Thursday peak 1 On	min		
1095	Thursday peak 1 Off	min		
1096	Thursday peak 2 On	min		
1097	Thursday peak 2 Off	min		
1098	Friday peak 1 On	min		
1099	Friday peak 1 Off	min		
1100	Friday peak 2 On	min		
1101	Friday peak 2 Off	min		
1102	Saturday peak 1 On	min		
1103	Saturday peak 1 Off	min		
1104	Saturday peak 2 On	min		
1105	Saturday peak 2 Off	min		
1106	Sunday peak 1 On	min		
1107	Sunday peak 1 Off	min		
1108	Sunday peak 2 On	min		
1109	Sunday peak 2 Off	min		
1112	Relative level m.a.s.	0.01 m	(0.01 ft)	
1115	No starts to alt. stop level	times		
1116	Alternative stop level	0.01 m	(0.01 ft)	
1117	Stop delay	s		



### 3.23 Pump 1 configuration

Register no	Description	Scale factor/ unit / note		
1120	Pump 1 flags 1	Bit mapped register, See IO-bits.		
1121	Pump 1 flags 2	Bit mapped register, See IO-bits.		
1122	Normal start level	0.01 m	(0.01 ft)	Start/Stop levels
1123	Normal stop level	0.01 m	(0.01 ft)	
1124	High tariff start level	0.01 m	(0.01 ft)	
1125	High tariff stop level	0.01 m	(0.01 ft)	
1126	Random start range	+/- 0.01m	(0.01 ft)	
1128	Start delay	s		
1129	Stop delay	s		
1133	Min run current	0.1 A		
1135	Max continuous runtime	min		
1143	Dry Cos $\phi$ set-point	0.01		
1144	Dry run block timeout	s		
1145	Dry run block delay	s		
1147	Nominal motor current	0.1 A		
1148	Nominal Cos $\phi$	0.01		

### 3.24 Pump 2 configuration

Register no	Description	Scale factor/ unit / note		
1150	Pump 2 flags 1	Bit mapped register, See IO-bits.		
1151	Pump 2 flags 2	Bit mapped register, See IO-bits.		
1152	Normal start level	0.01 m	(0.01 ft)	Start/Stop levels
1153	Normal stop level	0.01 m	(0.01 ft)	
1154	High tariff start level	0.01 m	(0.01 ft)	
1155	High tariff stop level	0.01 m	(0.01 ft)	
1156	Random start range	+/- 0.01m	(0.01 ft)	
1158	Start delay	s		
1159	Stop delay	s		
1163	Min run current	0.1 A		
1165	Max continuous runtime	min		
1173	Dry run current set-point	0.1 A		
1174	Dry run block timeout	s		
1175	Dry run block delay	s		
1177	Nominal motor current	0.1 A		
1178	Nominal Cos $\phi$	0.01		

### 3.25 Pump 1 and 2 common configuration

Register no	Description	Scale factor/ unit / note	
1180	Log pump events	0=Timestamp off, 1=on.	
1183	Pause time	s	Reset motor protector
1184	Max no attempts	Max 3	
1186	Max stand still time	min	Control run
1187	Control runtime	s	
1188	Start if level >	0.01 m	(0.01 ft)
1189	Start if level <	0.01 m	(0.01 ft)

### 3.26 Overflow configuration

Register no	Description	Scale factor/ unit / note	
1190	Overflow measuring	0=Off / 1=Sensor / 2=Level	
1191	Overflow calculation	0=Exp+Const / 1=Lock on inflow	
1192-1193	Exponent 1	0.0001	
1194-1195	Constant 1	0.0001	
1196-1297	Exponent 2	0.0001	
1198-1199	Constant 2	0.0001	
1200	Level at overflow	0.001 m	(0.001ft)

### 3.27 Digital inputs configuration

Register no	Description	Scale factor/ unit / note	
1210	DI 1. Function	0=Off/ 1=Man start P1 /2=Man start ind. P2 .....	
1211	DI 1. NO/NC	0=NO / 1=NC	
1212	DI 2. Function	0=Off/ 1=Man start. P1 /2=Man start P2 .....	
1213	DI 2. NO/NC	0=NO / 1=NC	
1214	DI 3. Function	0=Off/ 1=Man start P1 /2=Man start P2 .....	
1215	DI 3. NO/NC	0=NO / 1=NC	
1216	DI 4. Function	0=Off/ 1=Man start P1 /2=Man start P2 .....	
1217	DI 4. NO/NC	0=NO / 1=NC	
1218	DI 5. Function	0=Off/ 1=Man start. P1 /2=Man start P2 .....	
1219	DI 5. NO/NC	0=NO / 1=NC	
1220	DI 6. Function	0=Off/ 1=Man start P1 /2=Man start P2 .....	
1221	DI 6. NO/NC	0=NO / 1=NC	

### 3.28 Digital outputs configuration

Register no	Description	Scale factor/ unit / note	
1240	Alarm Relay 1 Function	1=Not ackn. A-alarm/ 2= Not ackn. A-B alarm	
1241	Relay 1 NO/NC	0=NO / 1=NC	
1242	Alarm Relay 2 Function	1=Not ackn. A-alarm/ 2= Not ackn. A-B alarm	
1243	Relay 2 NO/NC	0=NO / 1=NC	
1244	Alarm Relay 3 Function	1=Not ackn. A-alarm/ 2= Not ackn. A-B alarm	
1245	Relay 3 NO/NC	0=NO / 1=NC	

### 3.29 Analogue inputs configuration

**Register no Description Scale factor/ unit / note**

#### **mA1 External level sensor**

1271	mA1. Signal range	0=4-20mA / 1=0-20mA
1272	mA1. Scale 0%=	0.01 m / 0.1 bar (0.01 ft)
1273	mA1. Scale 100%=	0.01 m / 0.1 bar (0.01 ft)
1274	mA1. Zero offset	0.01 m / 0.1 bar (0.01 ft)
1275	mA1. Filter constant	s

#### **Motor Current P1**

1284	Dead band	0.1 A
1285	Filter constant	s

#### **Motor Current P2**

1294	Dead band	0.1 A
1295	Filter constant	s

#### **mA2 External pressure sensor/ Free Choice**

1300	mA2. Function	4=Back-pressure / 5= Free Choice
1301	mA2. Signal range	0=4-20mA / 1=0-20mA
1302	mA2. Scale 0%=	0.1 bar / User select (0.1 ft)
1303	mA2. Scale 100%=	0.1 bar / User select (0.1 ft)
1304	Not used	
1305	mA2. Filter constant	s
1306	mA2. No decimals	If free choice

#### **Internal Pressure sensor**

1312	Scale 0%=	0.01 m / 0.1 bar (0.01 ft)
1313	Scale 100%=	0.01 m / 0.1 bar (0.01 ft)
1314	Zero offset	0.01 m / 0.1 bar (0.01 ft)
1315	Filter constant	s

### 3.30 Pulse channel configuration

<b>Register no</b>	<b>Description</b>	<b>Scale factor/ unit / note</b>
1331	Function	0=Precipitation/ 1= Energy/2=Flow
1332-1333	Scale 1 pulse =	0.0001 mm / 0.0001 kW / 0.001 m <sup>3</sup>

### 3.31 Log channels configuration

Register no	Description	Scale factor/ unit / note
1340	Ch 1. Log signal	0=Closed/1=Level / 2=Inflow / 3=Outflow .....
1341	Ch 1. Log interval	min
1342	Ch 1. Function	0=Closed/1=Act. Value / 2=Average val/3=Min / 4=Max
1345	Ch 2. Log signal	0=Closed/ 1=Level / 2=Inflow / 3=Outflow .....
1346	Ch 2. Log interval	min
1347	Ch 2. Function	0=Closed/1=Act. Value / 2=Average val / 3=Min / 4=Max
1350	Ch 3. Log signal	0=Closed/ 1=Level / 2=Inflow / 2=Outflow .....
1351	Ch 3. Log interval	min
1352	Ch 3. Function	0=Closed/1=Act. Value / 2=Average val / 3=Min / 4=Max
1355	Ch 4. Log signal	0=Closed/1=Level / 2=Inflow / 3=Outflow .....
1356	Ch 4. Log interval	min
1357	Ch 4. Function	0=Closed/1=Act. Value / 2=Average val / 3=Min / 4=Max
1360	Ch 5. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow .....
1361	Ch 5. Log interval	min
1362	Ch 5. Function	0=Closed/1=Act. value/2=Average val/3=Min/4=Max
1365	Ch 6. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow .....
1366	Ch 6. Log interval	min
1367	Ch 6. Function	0=Closed/1=Act. value/2=Average val/3=Min/4=Max
1370	Ch 7. Log signal	0=Closed /1=Level / 2=Inflow /3=Outflow .....
1371	Ch 7. Log interval	min
1372	Ch 7. Function	0=Closed/1=Act. value/2=Average val/3=Min/4=Max
1375	Ch 8. Log signal	0=Closed/1=Level / 2=Inflow /3=Outflow .....
1376	Ch 8. Log interval	min
1377	Ch 8. Function	0=Closed/1=Act. value/2=Average val/3=Min/4=Max

### 3.32 Trend curves configuration

Register no	Description	Scale factor/ unit / note
1380	Sample time	s
1381	Tr. 1 Signal	0=Off/1=Level/2=Inflow/3=Outflow .....
1382-1383	Tr. 1 Signal max value	0.0001
1384-1385	Tr. 1 Signal min value	0.0001
1391	Tr. 2 Signal	0=Off/1=Level/2=Inflow/3=Outflow .....
1392-1393	Tr. 2 Signal max value	0.0001
1394-1395	Tr. 2 Signal min value	0.0001
1401	Tr. 3 Signal	0=Off/1=Level/2=Inflow/3=Outflow .....
1402-1403	Tr. 3 Signal max value	0.0001
1404-1405	Tr. 3 Signal min value	0.0001
1411	Tr. 4 Signal	0=Off/1=Level/2=Inflow/3=Outflow .....
1412-1413	Tr. 4 Signal max value	0.0001
1414-1415	Tr. 4 Signal min value	0.0001

### 3.33 System alarms configuration part 1

Register no	Description	Scale factor/ unit / note
<b>Power fail:</b>		
1420	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1421	Delay	s
<b>Incoming Phase Missing:</b>		
1425	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1426	Delay	s
<b>NV Checksum error:</b>		
1430	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1431	Delay	s
<b>Personal alarm:</b>		
1435	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1436	Delay	s
1437	Max time to reset	min

### 3.34 Pit alarms configuration

Register no	Description	Scale factor/ unit / note
<b>High level:</b>		
1440	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1441	Delay	s
1442	Limit	0.01 m (0.01 ft)
1443	Hysteresis	0.01 m (0.01 ft)
<b>Low level:</b>		
1445	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1446	Delay	s
1447	Limit	0.01 m (0.01 ft)
1448	Hysteresis	0.01 m (0.01 ft)
<b>High level float:</b>		
1450	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1451	Delay	s
<b>Low level float:</b>		
1455	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1456	Delay	s
<b>High inflow:</b>		
1460	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1461	Delay	s
1462	Limit	0.1 l/s (1 GPM)
1463	Hysteresis	0.1 l/s (1 GPM)
<b>Low inflow:</b>		
1465	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1466	Delay	s
1467	Limit	0.1 l/s (1 GPM)
1468	Hysteresis	0.1 l/s (1 GPM)

Register no	Description	Scale factor/ unit / note
<b>Backup running:</b>		
1470	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1471	Delay	s
<b>Remote block:</b>		
1475	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1476	Delay	s
<b>High pressure:</b>		
1480	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1481	Delay	s
1482	Limit	0.1 bar (0.1 ft)
1483	Hysteresis	0.1 bar (0.1 ft)
<b>Low pressure:</b>		
1485	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1486	Delay	s
1487	Limit	0.1 bar
1488	Hysteresis	0.1 bar
<b>Overflow float:</b>		
1490	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1491	Delay	s

Register no	Description	Scale factor/ unit / note
<b>High Back-Pressure block:</b>		
1495	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1496	Delay	s
<b>Sensor error:</b>		
1500	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1501	Delay	s

### 3.35 Pump alarms configuration

Register no	Description	Scale factor/ unit / note
<b>Phase Missing P1:</b>		
1505	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1506	Delay	s
<b>Dry Run P1:</b>		
1510	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1511	Delay	s
<b>No run confirm P1:</b>		
1515	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1516	Delay	s
<b>Motor protector On P1:</b>		
1520	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1521	Delay	s
<b>Motor protector reset error P1:</b>		
1525	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1526	Delay	s

Register no	Description	Scale factor/ unit / note
<b>High Motor current P1:</b>		
1530	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1531	Delay	s
1532	Limit	0.1 A
1533	Hysteresis	0.1 A
<b>Low Motor current P1:</b>		
1535	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1536	Delay	s
1537	Limit	0.1 A
1538	Hysteresis	0.1 A
<b>Leakage P1:</b>		
1540	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1541	Delay	s
<b>High temperature P1:</b>		
1545	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1546	Delay	s
<b>Low pump capacity P1:</b>		
1550	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1551	Delay	s
1552	Limit	0.1 l/s (1 GPM)
1553	Hysteresis	0.1 l/s (1 GPM)
<b>P1 not in AUTO:</b>		
1555	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1556	Delay	s
<b>Pump error P1:</b>		
1560	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1561	Delay	s
<b>Max runtime P1:</b>		
1565	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1566	Delay	s
<b>P1 Alarm blocked:</b>		
1570	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1571	Delay	s
<b>Phase Missing P2:</b>		
1575	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1576	Delay	s
<b>Dry Run P2:</b>		
1580	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1581	Delay	s
<b>No run confirm P2:</b>		
1585	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1586	Delay	s
<b>Motor protector On P2:</b>		
1590	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1591	Delay	s

Register no	Description	Scale factor/ unit / note
<b>Motor protector reset error P2:</b>		
1595	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1596	Delay	s
<b>High Motor current P2:</b>		
1600	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1601	Delay	s
1602	Limit	0.1 A
1603	Hysteresis	0.1 A
<b>Low Motor current P2:</b>		
1605	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1606	Delay	s
1607	Limit	0.1 A
1608	Hysteresis	0.1 A
<b>Leakage P2:</b>		
1610	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1611	Delay	s
<b>High temperature P2:</b>		
1615	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1616	Delay	s
<b>Low pump capacity P2:</b>		
1620	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1621	Delay	s
1622	Limit	0.1 l/s (1 GPM)
1623	Hysteresis	0.1 l/s (1 GPM)
<b>P2 not in AUTO:</b>		
1625	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1626	Delay	s
<b>Pump error P2:</b>		
1630	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1631	Delay	s
<b>Max runtime P2:</b>		
1635	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1636	Delay	s
<b>P2 Alarm blocked:</b>		
1640	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1641	Delay	s
<b>Both pumps blocked:</b>		
1645	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1646	Delay	s



### 3.36 Pulse channel alarms configuration

Register no	Description	Scale factor/ unit / note
<b>If precipitation selected: High precipitation</b>		
1650	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1651	Delay	s
1652	Limit	0.1 l/s*ha (0.01 inch/h)
1653	Hysteresis	0.1 l/s*ha (0.01 inch/h)
<b>If energy selected: High Effect</b>		
1655	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1656	Delay	s
1657	Limit	0.1 kW
1658	Hysteresis	0.1 kW
<b>If flow selected: High flow</b>		
1660	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1661	Delay	s
1662	Limit	0.1 m3/h (GPM)
1663	Hysteresis	0.1 m3/h (GPM)
<b>If flow selected: Low flow</b>		
1665	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1666	Delay	s
1667	Limit	0.1 m3/h (GPM)
1668	Hysteresis	0.1 m3/h (GPM)

### 3.37 Communication alarms configuration

Register no	Description	Scale factor/ unit / note
<b>Modem error:</b>		
1670	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1671	Delay	s
<b>Line error:</b>		
1675	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1676	Delay	s

### 3.38 mA 2 user alarms

<b>High alarm:</b>		
1680	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1681	Delay	s
1682	Limit	User unit and decimals
1683	Hysteresis	
<b>Low alarm:</b>		
1685	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1686	Delay	s
1687	Limit	User unit and decimals
1688	Hysteresis	

### 3.39 System alarms part 2

#### Incoming wrong phase order:

1690	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1691	Delay	s

#### Communication Error I/O PCB:

1695	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1696	Delay	s

#### NV Checksum Error I/O PCB:

1700	Priority	0=Inactive, 1=B-alarm, 2=A-alarm
1701	Delay	

### 3.40 Com port configuration

Register no	Description	Scale factor/ unit / note
<b>Service port:</b>		
1720	Baudrate	0=Off/ 1= 300/2=600 ....10=115200
<b>Com port:</b>		
1722	Baudrate	0=Off/ 1= 300/2=600 ....10=115200
1723	Parity	0=None/1=Odd/2=Even
1724	Protocol	0=Modbus/ 1=Comli/ 2=Modbus TCP
1725	Handshake	0=Off/1=On
1726	Protocol id	
1727	Message timeout	s
1728	Cross reference	0=off, 1=Enabled

### 3.41 Modem configuration

Register no	Description	Scale factor/ unit / note
1730	Modem connected to port	0=None / 1=Dial up/ 2=GPRS Siemens
1731	No signal to answer	
1732	GPRS TCP/IP port	
1733	GPRS Heart Beat	min
1734	GPRS SMS fallback	0=Off, 1=On
1735	Heartbeat operator scan	0=Off, 1=On (only for troubleshooting)

### 3.42 Alarm call configuration

Register no	Description	Scale factor/ unit / note
1740	No call attempts/alarm	
1741	Ackn. call function	0=No ackn./1=Ring sign/2=Write to R333/3=All com
1742	Ackn. alarm R333	0=No / 1=Yes
1743	Interval between call attempts	s

### 3.43 Call attempts configuration

Register no	Description	Scale factor/ unit / note
<b>Call attempts 1:</b>		
1750	Alarm receiver	0=Off /1=Central System/2=SMS GSM
1751	Condition for alarm call	0=A-alarm On/1=A-alarm On/Off /2=A+B On /3=A+B On/Off
1752	Send ID-String on connect	0=No / 1=Yes
1753	Timeout alarm ackn.	s
1754	ID-String transmit delay	s
1755	Parallel call	0=No, 1=Yes
<b>Call attempts 2:</b>		
1760	Alarm receiver	0=Off /1=Central System/2=SMS GSM
1761	Condition for alarm call	0=A-alarm On/1=A-alarm On/Off /2=A+B On /3=A+B On/Off
1762	Send ID-String on connect	0=No / 1=Yes
1763	Timeout alarm ackn.	s
1764	ID-String transmit delay	s
1765	Parallel call	0=No, 1=Yes
<b>Call attempts 3:</b>		
1770	Alarm receiver	0=Off /1=Central System/2=SMS GSM
1771	Condition for alarm call	0=A-alarm On/1=A-alarm On/Off /2=A+B On /3=A+B On/Off
1772	Send ID-String on connect	0=No / 1=Yes
1773	Timeout alarm ackn.	s
1774	ID-String transmit delay	s
1775	Parallel call	0=No, 1=Yes
<b>Call attempts 4:</b>		
1780	Alarm receiver	0=Off /1=Central System/2=SMS GSM
1781	Condition for alarm call	0=A-alarm On/1=A-alarm On/Off /2=A+B On /3=A+B On/Off
1782	Send ID-String on connect	0=No / 1=Yes
1783	Timeout alarm ackn.	s
1784	ID-String transmit delay	s
1785	Parallel call	0=No, 1=Yes

### 3.44 Register Cross Reference Config

Register no	Description
13312	Cross reference for Data register 0
13313	Scale factor and sign flag for Data register 0
13314	Cross reference for Data register 1
13315	Scale factor and sign flag for Data register 1
...	
13822	Cross reference for Data register 254
13823	Scale factor and sign flag for Data register 254

### 3.45 IO Cross Reference Config

13824	Cross reference for IO bit 0
13825	Cross reference for IO bit 1
...	
14079	Cross reference for IO bit 255

### 3.46 Get log data ch1-ch8

Ch1 start at base address R16384 (4000H)  
 Ch2 start at base address R18432 (4800H)  
 Ch3 start at base address R20480 (5000H)  
 Ch4 start at base address R22528 (5800H)  
 Ch5 start at base address R24576 (6000H)  
 Ch6 start at base address R26624 (6800H)  
 Ch7 start at base address R28672 (7000H)  
 Ch8 start at base address R30720 (7800H)

Register no	Description	Scale factor/ unit / note
Base + 0	Day (block) select	0-15, 0=Today,1=Yesterday/2=2 days ago ....15
Base + 1	No logged days	0-16
Base + 2	No logged values in block	
Base + 3	Log signal in block	0=Level/1=Inflow .....
Base + 4	No decimals	0 - 4
Base + 5	Log interval in block	min
Base + 6	Log function in block	0=Closed/1=Act. value/2=Average val/3=Min/4=Max
Base + 7	Year in block	
Base + 8	Month in block	1-12
Base + 9	Date in block	1-32
Base +10	Time for activate block	0 = 00:00/1=00:01/2=00:02...1439=23:59 (Interval=1min)
Base +11	First logged value	00:00-00:01 (1 min interval)
Base +12	Second logged value	00:01-00:02
.		
.		
Base + 1450	Last logged value	23:59-24:00 (1 min interval)

## 4 Appendices

### 4.1 Digital input types

Type no.	Function	
0	DI Off	
1	Man start P1	
2	Man start P2	Only CP 216
3	Start float P1	
4	Start float P2	Only CP 216
5	Stop float P1/P2	
6	Pump failure P1	
7	Pump failure P2	Only CP 216
8	Low level float	
9	Local mode	
10	Alarm reset	
11	High level float	
12	Overflow float	
13	DI Pulse channel	Only DI 2

### 4.2 Log and Trend signals

Default =unsigned (0-65535) data. Possible negative data as 2-complement.

Type no.	Function	Scale/Note
0	Closed	
1	Level pit	0.01 m 2-complement
2	Inflow	0.1 l/s
3	Outflow	0.1 l/s
4	P1 Motor current	0.1 A
5	P2 Motor current	0.1 A Only CP 216
6	Pressure/Free choice	0.1 bar/User choice 2-complement
7	Cos $\phi$ P1	0.01
8	Cos $\phi$ P2	0.01 Only CP 216
9	Overflow level	0.001 m
10	Overflow flow	0.1 l/s
11	P1 Pump capacity	0.1 l/s
12	P2 Pump capacity	0.1 l/s Only CP 216
13	Pulse channel	0.1 l/s*ha / 0.1kW/0.1 m <sup>3</sup> /h, <b>Only Log Ch.</b>

### 4.3 Digital output types (Alarm Relays 1 - 3)

Type no.	Function	
0	DO Off	
1	Not ackn. A-alarm	
2	Not ackn. A/B-alarm	
3	Active A-alarm	
4	Active A/B-alarm	
5	High level	
6	Pump failure P1	
7	Remote control	
8	Personal alarm	
9	Alarm Horn	
10	Pump failure P2	Only CP 216
11	Pump failure P1 or P2	Only CP 216
12	Pump failure P1 and P2	Only CP 216

# 5 Register

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